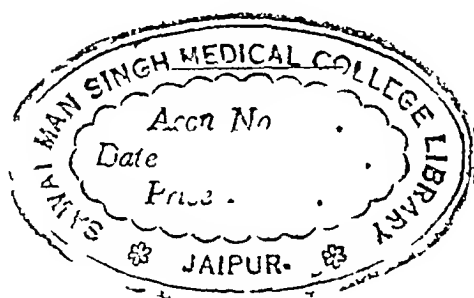


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SUBJECT INDEX

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Am—American
As—Association
Coll—College
Conf—Conference
Cong—Congress
Conv—Convention
Dist—District
Hosp—Hospital
Internat—
International
M—Medical
Med—Medicine
Nat—National
Phar—Pharmaceutical
Phys—Physicians
Rev—Revision
Ry—Railway
S—Surgical
Soc—Society
Surg—Surgery
Surgs—Surgeons
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THE SPECIFICNESS OF CERTAIN HEMOLYTIC STREPTOCOCCI

HONORARY CHAIRMAN'S ADDRESS

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In the years since the organization of this section, great advances have been made in the study of the pathogenic streptococci. It is not my intention to review these advances in detail. The problem whether there are specific pathogenic streptococci has not been settled, and I wish to discuss briefly and in a general way only the question whether the streptococci that cause erysipelas and scarlet fever are distinct groups or species of streptococci.

There can be no question about the etiologic relationship of hemolytic streptococci to erysipelas and to scarlet fever, but there is lack of agreement on the relationship of these streptococci to each other and to hemolytic streptococci in general. There are two principal and opposing views concerning this relationship. One that all streptococci in question form one group in which are no members with fixed and distinctive pathogenic properties. According to this view there is really only one pathogenic hemolytic streptococcus that may cause different processes of disease in man, depending on variations in virulence, in toxigenesis, in resistance and in other conditions. The second view holds that there are distinct pathogenic groups among the hemolytic streptococci. At present the strongest claims for recognition as distinct pathogenic groups are made for the streptococci of erysipelas and of scarlet fever, but similar claims are made also for the streptococci of septic or epidemic sore throat and of puerperal fever, at least in some of the instances.

To go back briefly, new doubts about the unity of hemolytic streptococci arose when it was found that according to specific agglutination and opsonification the streptococci of scarlet fever and of erysipelas form what seemed to be distinct and closed groups. Then came the Dick discoveries that scarlet fever is caused by hemolytic streptococci, that scarlet fever like diphtheria is a toxin disease, and that the streptococci of scarlet fever and of erysipelas (Birkhaug) appeared to produce distinct toxins with specific antigenic and other properties. Here it may be emphasized that the toxin of scarlet fever streptococci is something more than just erythrogenic. It has wider action. In susceptible persons it causes vomiting and other symptoms of scarlet fever in addition to the redness of the skin.

But strenuous objections have been made to the conclusion that these streptococci are endowed with such immunologic and toxigenic specificness that they constitute distinct groups or species. Many results, sometimes bewildering, have been published as showing that pathogenic hemolytic streptococci produce the same toxins. It has been pointed out that in working with hemolytic streptococci, their toxins and their antigenic properties there is greater danger than seems to have been realized at all times of faulty methods. Tests with cultures of doubtful origin and purity and with unreliable and unstandardized toxins and serums without any value. And the influence of dissociation on the specificness of the reactions of hemolytic streptococci has not received any consideration until just recently. It is quite probable that some investigations of streptococcus specificness have yielded results of uncertain value because unstable and dissociating strains were used. It appears certain that dissociation may modify the antigenic as well as other properties of the stable state of an organism.

The view that the streptococci of scarlet fever and of erysipelas are specific agents receives support from experiments with their toxins, from observations on their immunologic and cultural characteristics and from the relations of the two diseases to each other.

The skin tests with the toxins of erysipelas and of scarlet fever are significant. Birkhaug¹ found that the erythrogenic action of the erysipelas toxin was neutralized by immune erysipelas serum but not by scarlet fever antitoxin. I shall cite the results of G. F. Dick and G. H. Dick² more in detail because they have not received the consideration their significance demands. Carefully standardized materials were used. Of 500 persons of all ages, 36 per cent reacted to the scarlet toxin and 46.4 per cent to the erysipelas toxin. Of those insusceptible to the scarlet toxin, 42.1 per cent were susceptible to the erysipelas toxin. Of those insusceptible to the erysipelas toxin, 31.3 per cent were susceptible to the scarlet toxin. Of 100 convalescents from scarlet fever, the Dick test having turned negative, 52 per cent reacted to the erysipelas toxin. Twenty-four susceptibles to both toxins were immunized with the scarlet toxin and when the skin no longer reacted to that toxin the reaction to the erysipelas toxin remained positive. Finally, tests with antitoxic horse serums gave strictly specific neutralization. These results establish that the streptococci of scarlet fever and of erysipelas are distinct at least in the sense that they produce specific toxins. Differences in the antigenic powers of these toxins may explain why the immunity after scarlet fever is permanent while in erysipelas the immunity is more transitory.

From the John McCormick Institute for Infectious Diseases.
Read in the anniversary program by founders of the section before the Section on Pathology and Physiology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1 Birkhaug, K. E. Studies on the Biology of Streptococcus Erysipelatis. IV. Toxin Production of Streptococcus Erysipelatis. Proc. Soc. Exper. Biol. & Med. 23: 201, 1925-1926.

2 Dick, G. F., and Dick, Gladys H. Specificity of Soluble Toxins Produced by Hemolytic Streptococci. J. A. M. A. 93: 1784 (Dec. 7) 1929.

The recent work by Ruth Tunnichliff³ with stable as well as unstable strains of streptococci confirms the earlier results,⁴ showing that the streptococci of scarlet fever and of erysipelas form distinct groups according to their agglutination and opsonification as well as according to their absorption of agglutinins and opsonins. It is interesting to note that streptococci from epidemic sore throat may not fall into either of these two groups. Tunnichliff⁵ has shown also that the streptococci from each of these diseases form distinctive colonies on chocolate agar. On this medium the nondissociating scarlet streptococcus does not produce any changes in color, while streptococci from erysipelas and septic sore throat turn the chocolate agar a vivid green.

As I have mentioned elsewhere,⁶ erysipelas and scarlet fever have been accepted as distinct diseases since scarlet fever was recognized. They do not overlap. Epidemiologically they have nothing in common. There are no records of epidemics in which some patients had scarlet fever, some erysipelas and some both diseases. In 1873 scarlet fever was introduced into the Faroe Islands. For fifty-seven years before, the islands had been free from the disease. In 1873-1875, 38.3 per cent of the population had scarlet fever, but there is no mention of any cases of erysipelas, which would be expected to occur under those circumstances if erysipelas and scarlet fever are caused by the same streptococcus. In rare instances as in Henoch's and Heubner's cases, facial erysipelas has been contracted by physicians and nurses in attendance on patients with scarlet fever. I have not found any good record of the apparent transmission of scarlet fever by erysipelas patients.

The instances in which erysipelas has developed as a complication in scarlet fever are remarkably few. Of 5,416 cases of scarlet fever observed in recent years by Weaver,⁷ six are recorded as complicated with erysipelas, or one in 900. Of 48,366 cases of scarlet fever in the Metropolitan Asylum Board Hospitals in London, 1,094 were complicated with diphtheria, 899 with chickenpox, 703 with measles, 404 with whooping cough, fifty-five with erysipelas (one in 880), eleven with typhoid and one with typhus fever. In 1920 Jenot⁸ reviewed the reports and found that in somewhat more than 50,000 cases of scarlet fever, including the English cases just cited, the complication with erysipelas was many times less frequent than with diphtheria, chickenpox, measles or whooping cough, and of course even far less frequent again than the common secondary streptococcal infections in scarlet fever. As a complication of scarlet fever erysipelas is usually mild and in most cases it develops after convalescence is well under way.

It has been questioned whether scarlet fever can be caused solely by a streptococcus, because, "as a rule, scarlet fever confers lifelong immunity, and it is very rare for the same individual to be attacked twice, whereas streptococcus infections usually increase the

susceptibility with respect to a fresh attack."⁹ This and other doubts about the streptococcal nature of scarlet fever, because it does not correspond closely to other streptococcal diseases, would vanish on acceptance of the view that scarlet fever is caused by a specific streptococcus and is followed by a specific immunity. Right here it should be noted that the immunity to scarlet fever, whether from natural disease or from immunization with toxin, if, as is apparently the case, essentially antitoxic in nature, need not be expected to exclude local and other infections by the scarlet streptococcus either in the course of scarlet fever or independently.

As this matter now stands, it seems quite reasonable to regard scarlet fever and erysipelas, which certainly are distinct clinically, as distinct etiologically also and as caused each by a hemolytic streptococcus. It also seems reasonable to believe that continued work on the problems of streptococcus differentiation will yield new results of interest and practical value.

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OBSERVATIONS ON THE CLINICAL COURSE OF CORONARY ARTERY DISEASE

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An inadequate circulation to the myocardium, particularly of the left ventricle, is primarily responsible for the cardiac disability in coronary artery disease. This varies in extent and distribution with the size and number of vessels involved by the sclerotic process and whether they are partially or completely occluded. Moreover, it may develop gradually or occur abruptly as from the sudden closure of one of the larger coronary arteries. In view of the great variation in these and other factors, it is not surprising that the clinical manifestations of coronary artery disease are varied and that sudden death may be the first intimation of the disease in some, whereas others may live for years after the appearance of the first symptom.

This report is based on the study of 420 cases of coronary artery disease in which the progress of the cardiac disability was analyzed with reference to the character of the clinical expression and their significance from the standpoint of further insults to the coronary circulation. In forty-four instances the clinical interpretations were checked by postmortem examination.

These cases were divided into five groups on the basis of the initial or dominant initial symptom, namely, shortness of breath, paroxysmal dyspnea, severe anginal pain, angina of effort and pain in the epigastrium or chest of an indefinite nature. The number in each of these groups and the distribution as to sex is indicated in chart 1.

⁹ Kolle, W and Hetsch, H. *Experimental Bacteriology*. English Version edited by John Eyre. New York: Macmillan Company 1:418 1935.

From the Department of Internal Medicine, State University of Iowa College of Medicine.

Read in part before the meeting of the Association of American Physicians, Atlantic City, N. J., May 1, 1934, and the meeting of the American Heart Association, Cleveland, June 11, 1934.

³ Tunnichliff, Ruth. Dissociation of Hemolytic Streptococci from Erysipelas, Scarlet Fever and Septic Sore Throat. *J. Infect. Dis.* 48: 511 (June) 1931. Effect of Dissociation on Specificity of Hemolytic Streptococci. *J. Bact.* 29: 37 (Jan.) 1935.

⁴ Tunnichliff, Ruth. Further Studies on the Specificity of Streptococci. *J. A. M. A.* 75: 1339 (Nov. 13) 1920.

⁵ Tunnichliff, Ruth. The Various Colonies of Hemolytic Streptococci in Scarlet Fever. *J. Infect. Dis.* 49: 357 (Oct.) 1931.

⁶ Hektoen, Ludwig. Advances in the Study of Streptococci. *J. Bact.* 19: 57 (Feb.) 1930.

⁷ Weaver, G. H. Medical Report of the Durand Hospital of the John McCormick Institute for Infectious Diseases for Twenty Years. Ann Arbor: Mich. Edwards Brothers, Inc. 1933.

⁸ Jenot, Marcel. De l'érysipèle au cours de la scarlatine. Thèse de Paris 1920.

The following cases are illustrative of each of these groups both with reference to the character of the onset and on the basis of our conclusion concerning the progression of the coronary artery disease

GROUP 1—F M, a man, aged 60, was admitted to the University Hospital, Sept 27, 1932. Shortness of breath first appeared in 1920. The patient was working in a battery station and noticed that he became winded easily when he lifted a battery or crawled under a car. There was no particular change in his condition until the spring of 1923. He then had an attack of severe substernal pain radiating to the left shoulder and down the left arm, which lasted for several hours and required morphine for relief. Following this he became very dyspneic, and edema appeared in the extremities. He was confined to bed for three months. Thereafter he became short of breath rather easily and occasionally had angina of effort. In 1931 he had another attack of precordial pain quite similar to that in 1923. This attack was also followed by congestive failure. There was considerable improvement in the condition but the edema soon returned and the patient presented advanced congestive failure when admitted to the University Hospital.

The heart was very large and there was an auricular fibrillation. The systolic blood pressure was 148 and the diastolic 98. An electrocardiogram showed bundle branch block, auricular fibrillation and frequent premature beats arising from different foci. The patient died on the fifth day following admission.

We believed that this patient undoubtedly had advanced coronary artery disease and concluded that there had been an occlusion of one, and possibly two of the larger vessels.

The heart weighed 850 Gm. There was an extensive sclerosis of the coronary arteries with complete occlusion of the anterior descending branch of the left coronary artery. In addition to the large area of fibrosis resulting from the obstruction of this vessel, scars of varying size but much smaller than the one mentioned, were encountered elsewhere in the myocardium, particularly of the left ventricle.

GROUP 2—L G, a man, aged 65, admitted to the University Hospital, July 20, 1929, had experienced intense dyspnea lasting for more than an hour, in October 1928 after running about a block for a train. Shortly following the recovery from this episode he began to notice shortness of breath. This became more evident in January 1929 and he soon began to have difficulty in sleeping, from paroxysmal dyspnea. He finally reached the stage at which he was compelled to sit up continually. Chest pain of an indefinite nature but never in severe form occurred from time to time and occasionally was transmitted to the left shoulder.

When he was admitted to the University Hospital there was orthopnea and some edema of the lower extremities. The area of cardiac dullness was considerably increased both to the right and to the left. The tones were of poor quality, and an occasional premature beat was heard. The systolic blood pressure was 160 and the diastolic 80. Moist rales were present in the bases of the lungs and the margin of the liver extended about three fingerbreadths below the costal margin. The electrocardiogram showed a bizarre QRS group of low amplitude.

The patient gradually improved and on August 22 was discharged from the hospital. The symptoms, however, soon returned. He was back again in October and finally died from cardiac failure in June 1930, during his third stay in the hospital. During the period of our observation, paroxysmal dyspnea was a prominent feature.

The onset and subsequent course of the cardiac disability pointed to coronary artery disease with occlusion of one of the larger branches in October 1928. The signs of recurring attacks of left ventricular failure dominated the clinical picture until the third admission to the hospital.

The heart weighed 640 Gm. There was an advanced sclerosis of the anterior descending and circumflex branches of the left coronary arteries, with complete occlusion of the former branch. The myocardium of the apical region of the left ventricle was almost entirely replaced by fibrous tissue. Many small scars were found elsewhere in the myocardium of the left ventricle.

GROUP 3—E A, a man, aged 61, admitted to the University Hospital Dec 4, 1928 stated that he was well until a severe

attack of substernal pain ten years before. He recalled that he was very short of breath and, in attempting to walk to the house, fainted. The pain lasted about one hour and required morphine for relief. He was permitted to be up the next day but noticed that he was short of breath for about two weeks. He had no further trouble, however, for four years, or until about six years before admission and in the meantime was able to do the usual work about the farm without any difficulty. While picking corn he was again seized by very severe pain in the chest and shortness of breath. The pain was so severe that he was afraid that he would die before the physician arrived. Following this, edema of the feet and legs developed. This disappeared during a period of two weeks in bed. Thereafter he became short of breath rather easily and every few months was compelled to go to bed for a period of rest. In October 1928 the breathlessness increased and the edema became more marked.

There was generalized anasarca when he was admitted to the University Hospital. The heart was very large and the cardiac tones were distant and poorly differentiated. A musical systolic murmur was heard over the apical region. The rhythm was that of auricular fibrillation. The systolic blood pressure was 144 the diastolic 70. Electrocardiogram showed a partial bundle-branch block and auricular fibrillation.

The patient did not respond to treatment and died after several months in the hospital. We concluded that he had had an occlusion of two of the larger coronary arteries. The first occurred in 1918 and the second in 1922. He withstood the first attack without any significant lasting impairment in the cardiac function, as evidenced by the fact that he was able to do the

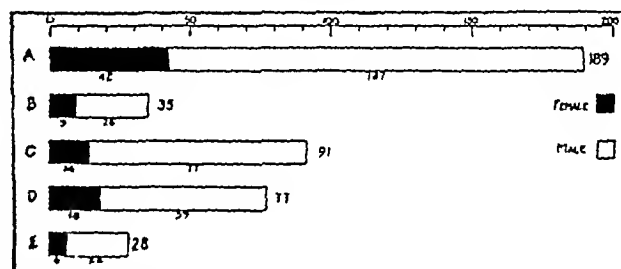


Chart 1—Coronary artery disease. Initial symptoms in 420 cases. A shortness of breath B paroxysmal dyspnea C severe anginal pain D angina of effort E indefinite pain

usual work on a farm for a period of four years or until the second coronary occlusion.

The heart weighed 625 Gm. The right coronary artery and the anterior descending branch of the left coronary artery were completely occluded a short distance from their origin.

GROUP 4—A K., a man, aged 50, admitted to the University Hospital, June 9, 1930, was apparently in good health until an automobile accident in August 1929. He was badly shaken up by the accident and required several weeks for recovery. In November 1929 he began to notice substernal pain with certain physical activities and excitement. This gradually progressed and when we first saw him the history was typical of angina of effort. The results of the examination of the heart were entirely negative aside from a rather tall T wave in leads 2 and 3 and a prominent Q wave in lead 3 of the electrocardiogram.

The condition improved somewhat but he continued to have an occasional attack of pain. In May 1931 the pain began one evening while the patient was sitting quietly on his porch. It soon became very severe, lasting until the next day, and repeated administration of morphine was required before complete relief was obtained. The pain, according to the patient, was identical in every respect to that of his previous attacks of angina of effort except that it was more severe and more lasting. The patient was confined to bed for twelve days. Three days later he had a cerebral accident followed by weakness of the right arm. This was the occasion for the second admission to the hospital, June 26, 1931.

There was at this time some shortness of breath and the heart was definitely increased in size. The cardiac rate was increased, the sounds were of poor quality and a gallop rhythm was noted. The systolic blood pressure was 102, the diastolic 74. Striking

alterations had occurred in the electrocardiogram. The amplitude of the QRS group was greatly reduced and the duration increased. There was a sharply negative T wave in leads 2 and 3, with some alteration in the RT segment of all leads. The shortness of breath disappeared during the two months stay in the hospital, but the persistence of the elevated cardiac rate and the gallop rhythm pointed to an extensively damaged heart. During this time there was very little change in the electrocardiogram.

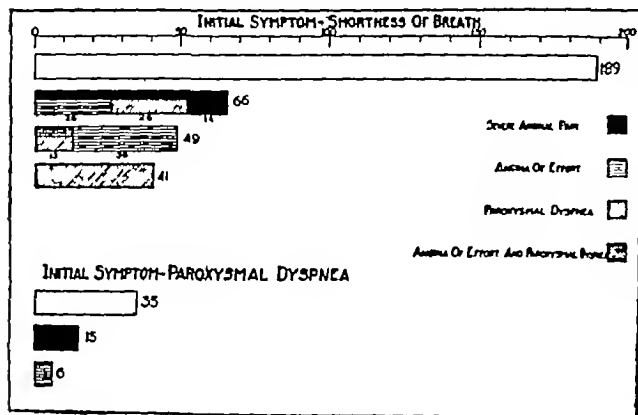


Chart 2—Subsequent course

Within a few weeks after his discharge from the hospital the shortness of breath returned and soon paroxysmal dyspnea appeared. The patient was again admitted to the hospital, Dec. 27, 1931, and died a few days later from a pulmonary embolus.

When the patient was examined in 1930 there was no evidence of structural changes in the heart except as suggested by alteration in the electrocardiogram. The history, however, indicated the presence of a sclerosis of the coronary arteries. The severe attack of pain in May 1931 and the subsequent course justified the diagnosis of the occlusion of one of the larger branches of the coronary arteries resulting in extensive change to the myocardium.

The heart weighed 460 Gm. There was an extensive sclerosis of the coronary arteries. The anterior descending branch of the left coronary artery was completely occluded, resulting in the formation of a large area of fibrosis involving the apical region of the left ventricle, the interventricular septum and a small section of the right ventricle. Scattered areas of fibrosis were encountered elsewhere throughout the myocardium of the left ventricle.

GROUP 5—L. W., a man, aged 67, admitted to the University Hospital, Jan. 14, 1931, stated that for the past three years he had been troubled with gas on the stomach. In October 1929 he was run over by a car passing over his lower ribs and epigastrium. He was in bed for five weeks. Following the accident there was a progression of the indigestion, and in August 1930 definite pain was noted. Later the pain extended up on the chest and was accompanied by a sensation of pressure. The day before admission to the hospital the patient was taken with a more severe attack of pain, lasting all night. There was still some distress when he was admitted to the hospital the following afternoon. The later appearance of a pericardial friction rub and the occurrence of characteristic alterations in the electrocardiogram verified the diagnosis of coronary occlusion. The patient was retained in the hospital for six weeks and when discharged was free from cardiac symptoms.

The distress in the beginning was very indefinite and confined for the most part, if not entirely, to the epigastrium. Later, however, the extension to the chest, the associated feeling of constriction and finally the coronary occlusion established the diagnosis of coronary artery disease.

In the first group the shortness of breath frequently persisted for months and often for years before further evidence of an impaired cardiac function developed. The onset in group 2, classified as paroxysmal dyspnea,

was characterized by the sudden appearance of intense dyspnea in an individual who previously had been free from cardiac symptoms. These attacks often occurred at night but in many instances appeared during the day following some form of exertion. They might last for several hours and were invariably followed by a reduction in the exercise tolerance or other symptoms directing attention to the heart. In group 3, in which the dominant initial symptom was severe anginal pain, the severity and duration of the pain and the subsequent course were such that one would not hesitate to make the diagnosis of coronary occlusion. The same criteria relative to the character and significance of this particular manifestation was adhered to in the analysis of the subsequent course of this series of cases except in those under observation when other information was available. Group 4, beginning with angina of effort, included only those patients whose history was in every respect typical of the disorder. Those patients in whom there was doubt concerning the nature of the pain were placed in group 5. In many of them the discomfort was confined for the most part to the epigastrium.

The subsequent developments in groups 1, 2, 3 and 4 are indicated in charts 2 and 3. The later course of group 5 indicated that the pain was anginal in nature from the onset and consequently these patients were later included in group 4. It is to be noted that shortness of breath on exertion was the initial symptom in 189 (59 per cent). The subsequent course in this group was of particular interest to us. One might expect that a large percentage of these patients would gradually pass into congestive failure, but our analysis shows that in 156 (82 per cent) the further progression of the cardiac disability was evidenced by either angina of effort, attacks of severe anginal pain (indicating a coronary occlusion), paroxysmal dyspnea or a combination of these manifestations. Pain was a prominent feature in that it occurred in 115 (60 per cent). In sixty-six (34 per cent) it was on the basis of coronary occlusion, whereas in forty-nine (25 per cent) it was

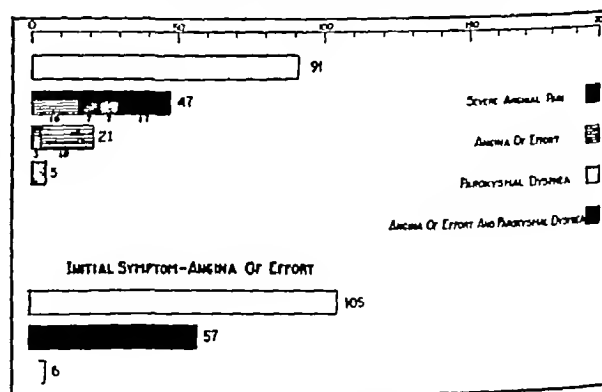


Chart 3—Subsequent course.

that of angina of effort. When these patients were later seen by one of us or admitted to the hospital, 107 (56 per cent) presented congestive failure, usually in an advanced form. Pain, however, was still rather conspicuous, since twenty-one sought medical advice primarily because of angina of effort and twenty because of the immediate or later effects of coronary occlusion.

The clinical course of the other groups was quite similar to that of the foregoing, varying only in the incidence of the different manifestations. In the group with the onset of severe and prolonged pain, forty-

seven (52 per cent) had subsequent attacks of a similar character. Angina of effort and paroxysmal dyspnea were likewise prominent in the subsequent course of the patients in this group. Even in the group in which the onset was with paroxysmal dyspnea, fifteen (43 per cent) later had attacks of severe chest pain characteristic of coronary occlusion.

The composite clinical picture presented by groups 2, 3 and 4 were still quite similar to that of group 1 when the patients were admitted to the hospital (chart 4).

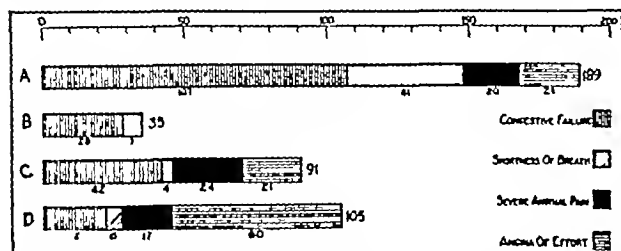


Chart 4—Cause of admission to hospital. A, shortness of breath; B, paroxysmal dyspnea; C, severe anginal pain; D, angina of effort.

There was a higher incidence of congestive failure in groups 2 and 3. Pain was still a prominent manifestation in groups 3 and 4.

Eighty-five of this series of patients died while in the hospital and forty-four came to necropsy. The clinical analysis and the postmortem observations with reference to the coronary arteries are shown in chart 5. The clinical study justified the diagnosis of an occlusion of one or more of the larger branches in twenty-six instances. At necropsy there was in every instance a disseminated fibrosis from the occlusion of smaller branches, and in twenty-eight one or more of the larger vessels were obstructed. In the two in which the occlusion of one of the larger branches was not diagnosed before death the onset was with paroxysmal dyspnea, and in one specific mention was made in the record to the effect that the patient had never had substernal pain.

COMMENT

In the analysis of the foregoing series of cases the intimate relationship between angina of effort, severe anginal pain (coronary occlusion) and paroxysmal dyspnea was one of the outstanding features. Either of these manifestations might occur alone in the beginning of the cardiac disability, but sooner or later they were commonly combined to a varying extent in the same individual. This would indicate that these manifestations were merely different expressions of the same basic factor, namely, a deficiency in the coronary circulation.

The data in chart 3 show that, in the group in which the onset of the cardiac disability was initiated by a coronary occlusion, approximately 50 per cent later gave a history of angina of effort. The incidence of angina of effort was also high in the other groups following a coronary occlusion. Moreover, in the group in which the initial symptom was represented by angina of effort, fifty-seven (54 per cent) subsequently had an attack of very severe pain indicative of an obstruction of one of the larger vessels. It is well to recall that before the identification of the syndrome of coronary occlusion the latter was included in the description of angina pectoris. In recent years there has been a tendency to lose sight of what Parkinson¹ has referred

to as the essential unity of angina pectoris and coronary occlusion. It is believed that we are justified in assuming that angina of effort, particularly in the type of case under consideration, is generally indicative of a deficiency of the coronary circulation. In many instances the deficiency in the circulation responsible for the angina results from the obstruction of a larger vessel. The same condition, in our opinion, often follows the closure of smaller branches. A more detailed analysis of certain of our cases in which at first the angina of effort was apparently the initial symptom disclosed a history very suggestive of coronary occlusion. The first attack of pain in these particular patients was either more severe and lasting than the subsequent attacks or occurred under unusual circumstances for angina of effort, such as while the individual was at rest and completely relaxed. Further support of this is provided in many by the occurrence of a sharply negative T wave, a prominent Q wave or perhaps a broad and bizarre QRS group in the electrocardiogram. This conception has a significant bearing on treatment, for if these occlusions are recognized and therapy is directed toward the restoration of the coronary circulation it is possible that the angina of effort may be prevented or postponed.

The relationship between coronary occlusion and paroxysmal dyspnea is as intimate as that of coronary occlusion and angina of effort. These conditions, likewise, may occur independently or be combined in the same individual. In the typical case of coronary occlusion, pain is the outstanding feature and often there is surprisingly little dyspnea. In others, however, even though the pain is severe and lasting, the dyspnea is a conspicuous aspect of the clinical picture. Finally, there is a smaller group in which the dominant symptom is that of intense air hunger. While there is usually a varying degree of tightness or heaviness of the chest,

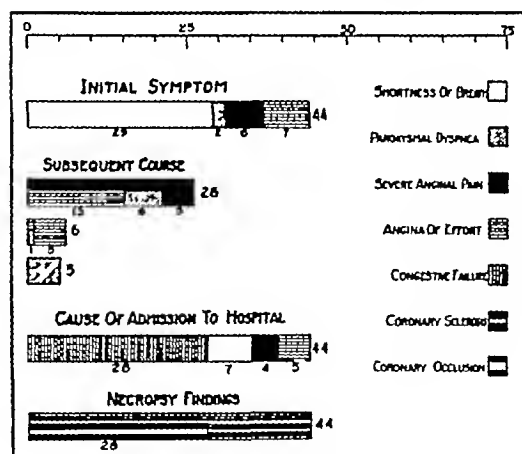


Chart 5—Necropsy cases

the respiratory distress far overshadows that of pain. These attacks constitute what is generally known as paroxysmal dyspnea (cardiac asthma). They are indicative of an abrupt and profound disturbance in the function of the left ventricle or acute left ventricular failure.² When paroxysmal dyspnea occurs as the initial manifestation of a cardiac disability in coronary artery disease it is invariably dependent on a sudden

2 Hart, T. S. Angina Pectoris. A Plea for Greater Optimism in Prognosis. *Am Heart J* 8: 755 (Aug.) 1932. Korns H. M. Notes on Heart Failure. *ibid* 8: 242 (Dec.) 1932. Weiss, Soma and Robb G. P. Cardiac Asthma (Paroxysmal Dyspnea) and the Syndrome of Left Ventricular Failure. *J A M A* 100: 1841 (June 10) 1933.

and extensive reduction in the coronary circulation, as from the obstruction of one of the larger coronary vessels. It appeared as the initial symptom in thirty-five (85 per cent) of our cases. Two of these later came to necropsy and the heart in each showed a large healed infarct. In the group beginning with shortness of breath the subsequent progression of the cardiac disability was evidenced by the appearance of paroxysmal dyspnea in forty-one (21.5 per cent). This type of clinical manifestation, as will be noted in our cases, occurred commonly during the later stages of the coronary artery disease regardless of the character of the onset. At this stage the functional efficiency of the left ventricle may be so reduced that temporary failure is readily precipitated. Under these circumstances, however, the appearance of paroxysmal dyspnea may mean a further reduction in the coronary circulation in many instances perhaps through the closure of a small vessel. In certain of our cases this possibility was supported by the occurrence of consecutive alterations in the electrocardiogram.

It is well to bear in mind that the coronary circulation is frequently capable of compensating to a remarkable extent to the major insults incident to a sclerotic process. In the first place it is generally known that an advanced sclerosis of the coronary arteries may be present without cardiac symptoms. Furthermore, an individual may live for years after the onset of symptoms. We have recently observed a patient in whom the angina of effort first appeared seventeen years before his death at 74 years of age. During the past few years he had experienced many attacks of severe and lasting pain pointing to the possibility of repeated coronary occlusion. At necropsy there was a complete occlusion of the anterior descending branch of the left coronary artery and extensive sclerosis of the other main branches. In addition to the large scar from the obstruction of the anterior descending branch of the left coronary artery, the left ventricle presented numerous smaller areas of fibrosis. These changes illustrate in a striking manner the remarkable adaptability of the coronary circulation in this particular instance. There are numerous instances in the literature on angina of effort of patients living from ten to fifteen, and a few even twenty years or more after the onset of the disorder.³ Many if not all of these no doubt had had coronary occlusion not necessarily, however, involving one of the main branches. White and Bland,⁴ in discussing the prognosis of angina of effort, state that coronary occlusion was frequently encountered in their series of cases but that it did not affect appreciably the duration of life, provided the patient survived the acute attack. The duration of the cardiac disability in our series of cases from the time of onset until seen by us ranged from a few weeks to twenty years. In eighty-five (20 per cent) the cardiac disability dated back five years or longer. According to our clinical interpretation, 311 (74 per cent) of our series had had an occlusion of one of the larger coronary vessels. Of these, we believe that there were 105 in which more than one of the larger branches were occluded. Furthermore, the history of many of these patients indicated that they withstood their attack and later had a fairly

efficient heart, even though they were permitted to be up and about the next day or were allowed this privilege within a few days following the coronary accident.

While an individual may withstand the occlusion of one of the larger coronary arteries and live for years afterward, even though he may have received little or no treatment except perhaps morphine for the control of the pain, the aftercare is commonly the deciding factor in determining the extent of the resulting cardiac disability. This may mean the difference between an irreparably damaged heart and one in which the subject is free from symptoms. The results from rest and therapy directed toward the restoration of the coronary circulation are occasionally striking even after the development of congestive failure. Any significant progression of the cardiac disability in coronary artery disease is generally dependent on further damage to the coronary circulation. If this is borne in mind and the patient is treated accordingly, much may be accomplished toward conserving the cardiac function.

SUMMARY

A series of 420 cases of coronary artery disease was analyzed with particular reference to the character and significance of the clinical manifestations. These cases were divided into five groups on the basis of the initial or the dominant initial symptom, namely, shortness of breath, paroxysmal dyspnea, severe anginal pain, angina of effort, and pain of an indefinite nature. The subsequent developments were quite similar and varied only in the incidence of the different manifestations. In the vast majority, further progression of the cardiac disability was evidenced by either angina of effort, attacks of severe anginal pain, paroxysmal dyspnea or varying combinations of these. The intimate relation of these clinical manifestations was one of the outstanding features in the progression of the cardiac disability in this series of cases. This would indicate that they are merely different expressions of the same basic factor, namely, a deficiency of the coronary circulation.

The attacks of severe anginal pain were typical of coronary occlusion. According to our analysis, 311 (74 per cent) of our cases presented an occlusion of one or more of the larger coronary vessels. In the forty-four cases that came to necropsy there was an obstruction of one of the main branches in twenty-eight. These pathologic changes were predicted in twenty-six, and in all there was a history of an attack of severe anginal pain. Angina of effort commonly follows a major coronary accident, and it is believed that it is frequently precipitated by the obstruction of smaller branches. The occurrence of paroxysmal dyspnea as the initial manifestation of a cardiac disability, particularly in the type of case under consideration, is invariably dependent on the abrupt closure of one of the larger coronary vessels. Subsequent attacks or those occurring during the later course of coronary artery disease may mean a further reduction in the coronary circulation, possibly in many instances through the obstruction of the smaller branches.

The coronary circulation frequently shows remarkable ability in compensating for the insults incident to a sclerotic process. The extent of the resulting cardiac disability, however, is greatly influenced by treatment. It is thus important that the possibility of further damage to the coronary circulation is considered whenever there is a significant progression of the cardiac disability and that the patient is treated accordingly.

³ White, P. D. Weakness and Failure of the Left Ventricle With or Without Failure of the Right Ventricle. *J. A. M. A.* 100: 1993 (June 24) 1933.

⁴ White, P. D. and Bland, E. F. A Further Report on the Prognosis of Angina Pectoris and of Coronary Thrombosis. A Study of Five Hundred Cases of the Former Condition and of Two Hundred Cases of the Latter. *Am. Heart J.* 7: 1 (Oct.) 1931.

THE DIFFERENTIAL DIAGNOSIS IN
PATIENTS ENTERING THE
HOSPITAL IN COMAPHILIP SOLOMON, M.D.
AND
CHARLES D. ARING, M.D.
BOSTON

In the year 1933, 1,167 patients, or 3 per cent of the total hospital admissions, entered the Boston City Hospital in coma. The size of this figure is startling and certainly is greater than is generally appreciated. Since there are many causes of coma which require emergency treatment to save life, for example, diabetes, hyperinsulinism, poisoning, traumatic shock, exsanguination, subdural hematoma, brain tumor, meningitis and eclampsia, the importance of immediate diagnosis is evident.

Textbook articles on coma¹ discuss the subject in a general and abstract way without special regard to the practical problems involved. The literature in the journals² is on the whole subject to the same criticism, although a few authors³ have attempted to aid the practitioner in the diagnosis of coma of unknown cause. In no case, however, have the actual conditions found in comatose patients been analyzed with the purpose of obtaining information of practical diagnostic value.

The records of the 1,167 admissions in coma to the Boston City Hospital in the year 1933 have been analyzed, and the frequency of the various causes for coma has been previously reported.⁴ The present paper is a critical analysis of these causes with the purpose of determining criteria of use in the diagnosis of coma. The various conditions that produced coma in our 1,167 cases are discussed in their order of frequency. A large proportion of these cases were seen by one or the other of us in our capacity as neurologic consultants.

CONDITIONS PRODUCING COMA

Alcoholism (690 cases, 59.1 per cent of total cases of coma, mortality in this group 2 per cent).—Individuals under the influence of alcohol are brought to the City Hospital from all parts of the city, usually by the police ambulance. There were 2,079 admissions for alcoholism (6 per cent of the total admissions) in

the year 1933. Six hundred and ninety of these 2,079 cases, or 33 per cent, were admitted to the hospital in coma. The records of most of the alcoholic patients are inadequate, and the data regarding alcoholic coma are therefore subject to error. Many reentries are included in this group.

Usually a history of alcoholism was obtained, not on entry but later. The typical patient had a flushed face, injected throat and conjunctivae, diminished or absent reflexes, and an alcoholic odor to the breath. Minor injuries about the head were present in 11 per cent of our 690 cases and minor injuries elsewhere about the body in 2 per cent. Vomiting was common, and convulsions occasionally occurred. Laboratory examinations were negative. In the fatal cases the coma was usually more complete from the outset, and convulsions were more common. In these cases the physical examination was likely to show some further abnormality such as cyanosis, enlarged heart, heart sounds irregular or of poor quality, pulmonary râles, low blood pressure, high blood white cell count or non-protein nitrogen.

The chief diagnostic features of alcoholic coma were the alcoholic odor to the breath, the hyperemia of the face, throat and conjunctivae, and the absence of other abnormalities.

Trauma (152 cases, 13 per cent of total cases of coma, mortality in this group 31.5 per cent).—A history of trauma was available on entry in more than 90 per cent of these cases. Seven per cent of the patients were under the influence of alcohol at the time the trauma occurred. Three per cent were epileptic patients injured in a convulsion. In children, a history of vomiting following the accident was considered important as probably signifying increased intracranial pressure. Injury to the head was the cause of the coma in 90 per cent in this group, while chest, pelvis and spinal cord injuries made up the remaining cases. Among the patients with head injuries, twelve had a subdural and three an extradural hemorrhage.

In the physical examination, evidence of injury was present in every case. Serious prognostic signs were compound fracture of the skull, bleeding or drainage of cerebrospinal fluid from the nose or ear, and signs of surgical shock. In one third of the cases there was some abnormality in temperature, pulse or respiration, the usual conditions observed being a low temperature and high pulse and respiration. In one fourth of the cases the pupils were abnormal. Significant neurologic signs were present in the cases of brain or spinal cord injury. In 43 per cent of the patients with head injuries a fractured skull was demonstrated by roentgen examination. By lumbar puncture bloody cerebrospinal fluid was obtained in sixty-two cases, and in forty-two the pressure of the fluid was increased.

The diagnosis of traumatic coma was not difficult, because of the history of accident and the evidences of injury on examination. In the further differentiation of the type of injury, roentgenograms and lumbar puncture were helpful. The differential diagnosis between a contusion or laceration of the brain and an extradural or subdural hemorrhage may be very difficult. This subject has been fully discussed recently by Munro.⁵

From the Neurological Unit Boston City Hospital and the Department of Neurophysiology and Neurology Harvard Medical School.

1 Brain, W. R. *Diseases of the Nervous System* London: Oxford University Press, 1933, p. 274. Cecil, R. L. *A Textbook of Medicine* Philadelphia, W. B. Saunders Company, 1927, p. 1303. French, Herbert. *Index of Differential Diagnosis* New York, William Wood & Co., 1928, p. 153. Hun, Henry. *An Atlas of the Differential Diagnosis of the Diseases of the Nervous System* Troy, N. Y. Southworth Company, 1913, pp. 32, 175. Osler, William. *The Principles and Practice of Medicine* New York, D. Appleton & Co., p. 1024. Purves Stewart, James. *The Diagnosis of Nervous Diseases* St. Louis, C. V. Mosby Company, 1931, p. 102. Thomson, H. C. and Riddoch, George. *Diseases of the Nervous System*, London: Cassell & Co. Ltd., 1925, p. 344. Wechsler, I. S. *A Textbook of Clinical Neurology* Philadelphia: W. B. Saunders Company, 1932, p. 351.

2 Carlo Cipriani. *Differenze e affinità chimico-biologiche nei vari tipi di coma umano*, Boll. Soc. ital. di biol. sper. 2, 90, 93 (Jan.) 1927. Friedman, E. D. *The Care of Coma from Unknown Cause* New York State J. Med. 33, 132, 137 (Feb. 1) 1933. Henderson, John. *Coma*, Practitioner 130, 286-298 (March) 1933. Hess, Leo. *Diagnose und Pathologie komatöser Zustände* Wien med. Wchnschr. 82, 263, 267 (Feb. 27) 1932. Hitzinger, Karl. *Komatöse Zustände* ibid. 83, 356 (March 25) 1933. Kahler, H. *Komatöse Zustände*, ibid. 77, 541 (April 23) 1927.

3 Bishop, L. F. Jr. and Appelbaum, E. *A Coma Routine* New York State J. Med. 29, 1382, 1383 (Nov. 15) 1929. Holler, Gottfried. *Wie orientiert sich der praktische Arzt rasch über einen komatösen Zustand?* Wien klin. Wchnschr. 40, 93, 95 (Jan. 20) 1927. Kahler, H. *Behandlung komatöser Zustände*, Deutsche med. Wchnschr. 58, 1132 (July 15) 1932. Marriott, H. L. *On Washing Out the Stomach in Comatose Cases of Poisoning* Lancet 1: 962 (May 6) 1933. Menninger, W. C. *The Pupils as an Aid to the Diagnosis in States of Coma*, J. Nerv. & Ment. Dis. 65: 553, 568 (June) 1927.

4 Solomon, Philip and Aring, Charles. *The Causes of Coma in Patients entering a General Hospital*, Am. J. M. Sc. 188: 805 (Dec.) 1934.

5 Munro, Donald. *The Diagnosis and Treatment of Subdural Hematoma*, A Report of 62 Cases, New England J. Med. 210, 1145, 1158 (May 31) 1934. *The Diagnosis, Treatment and Immediate Prognosis of Cerebral Trauma*, An Introductory Study of 1,494 Cases, ibid. 210, 287, 294 (Feb. 8) 1934.

Cerebral Vascular Lesions (118 cases, 10 per cent of total cases of coma, mortality in this group 77 per cent) —The history in these cases was valuable. In 49 per cent the onset was known to be abrupt. Other helpful points in the history were onset with convulsions, previous high blood pressure or heart disease, and previous "shocks" or "strokes." The age of the patient was important. More than 90 per cent were over 40 years of age, and 75 per cent were over 50. The following signs were present on entry: complete or partial hemiplegia in 57 per cent, stiffness of the neck in 13 per cent, convulsions during the examination in 9 per cent, temperature increased in 9 per cent, temperature decreased in 31 per cent, respirations increased in 24 per cent, and abnormalities in respiratory rhythm in 30 per cent. The blood pressure was elevated in 50 per cent of the cases, the pupils were abnormal in 70 per cent. The physical examination occasionally showed abnormalities in the heart, lungs, eyegrounds, pulse, Babinski's toe sign and Kernig's leg sign. Cyanosis was not uncommon and peripheral edema was rarely present. The urine was abnormal in thirteen cases, and the Kahn test of the blood was positive in six. Of the seventy-eight patients in this group who had a lumbar puncture, forty-three had a high pressure and forty-two had grossly bloody fluid.

The clinical diagnoses, arrived at before discharge, of the 118 cases in this group were: cerebral hemorrhages 35 per cent, cerebral thrombosis 33 per cent, cerebral embolus 4 per cent, and primary subarachnoid hemorrhage 3 per cent. In 18 per cent the data in the records were not sufficient to make possible a differential diagnosis as to the type of cerebral vascular lesion. Of the five cases of cerebral embolus, four showed auricular fibrillation and one a severe rheumatic carditis. The four cases of primary subarachnoid hemorrhage gave no evidence of a focal cerebral lesion but presented a grossly bloody cerebrospinal fluid. Two of these patients had stiffness of the neck, and a history was given of an abrupt onset of headache in the other two. The differential diagnosis between the various types of cerebral vascular lesions has been discussed by Aring and Merritt⁶.

The most important points in the diagnosis of coma due to cerebral vascular lesions were the history of sudden onset of the coma, the age of the patient, the presence of a hemiplegia, and an increased blood pressure or auricular fibrillation. The lumbar puncture of a bloody fluid under an increased pressure was of great aid in the diagnosis of intracerebral or subarachnoid hemorrhage.

Poisoning (thirty-three cases, 3 per cent of total cases of coma, mortality in this group 9 per cent) —The history of attempted suicide was frequently obtained in cases of coma due to acute, nonalcoholic poisoning. In sixteen of these cases the history of ingestion of barbitol or its derivatives was obtained. Twelve patients had been exposed to carbon monoxide, deliberately or accidentally, in a garage or because a gas stove had blown out. In the five remaining cases, a history was obtained of the ingestion of one of the following drugs: bromide, potassium permanganate, nitrobenzene, compound solution of cresol, and sodium nitrite.

The physical examination and laboratory data in the patients in the barbitol group were usually normal. After these patients awoke, which usually occurred

within twenty-four to forty-eight hours, they frequently had for a few days slurred speech, nystagmus, tremor of the hands, and absent tendon reflexes. Rarely a skin rash appeared. There was one fatality in this group.

The patients with carbon monoxide poisoning were usually in light coma and had a strong odor of illuminating gas on their breath. When given a mixture of oxygen and carbon dioxide to breathe, they often recovered consciousness quickly. The face sometimes had the characteristic bright "cherry red" color. The temperature was uniformly subnormal and the pulse high. The tendon reflexes were frequently increased, Babinski's toe sign was positive, and rarely decerebrate rigidity was present. The white blood cell count was usually increased. Lumbar puncture was done in three cases. The initial pressure was 200 mm of water in one but was well within normal limits in the other two. There were no abnormalities in the spinal fluid. Spectroscopic examination of the blood gave the characteristic absorption bands of carbon monoxide in two cases and in two cases did not. There were no fatalities in this group.

The patient with bromide poisoning had an increased amount of bromide in the blood and spinal fluid. The patient with potassium permanganate poisoning had potassium permanganate in the vomitus and stomach washings. The patient with compound solution of cresol poisoning had burns of the mouth and face, and there was the characteristic odor of compound solution of cresol in the vomitus and stomach washings. This patient died. The patient who ingested sodium nitrite had an ashen gray cyanosis with purplish black lips and tongue, a high blood hemoglobin, and on spectroscopic examination the blood contained methemoglobin. The patient who took nitrobenzene died in shock.

The history was the most important point in the diagnosis of coma due to nonalcoholic poisoning. Of importance also was the odor of the breath, the odor, appearance and chemical analysis of the stomach washings, and, in carbon monoxide poisoning, the "cherry red" color of the skin and subnormal temperature.

Epilepsy (twenty-eight cases, 24 per cent of total cases of coma, mortality 0) —The history on entry of the abrupt onset of the coma preceding or accompanying a convulsion was obtained in all but one of these cases. In three, excessive alcoholism preceded the attack. In most of the cases in this group, a history of repeated seizures in the past was obtained. Thirteen of the patients had convulsions while being examined. Two patients were in status epilepticus, with high temperature and increased cardiac and respiratory rates. Fresh lacerations, frothing at the mouth, and old scars on the tongue were present in six cases. Babinski's toe sign was positive in four cases. The physical examination was otherwise not remarkable.

The diagnosis of coma following an epileptic convulsion was made on entry in almost every case on the basis of the history obtained from friends or relatives accompanying the patient. The occurrence of convulsions during the physical examination, and wounds or scars on the tongue were of assistance in establishing the diagnosis.

Diabetes (twenty cases, 17 per cent of total cases of coma, mortality in this group 55 per cent) —Diabetic coma is not yet rare. Of the twenty cases in this series, three represent the same patient on different admission. In thirteen cases a history of diabetes was

⁶ Aring, C. D. and Merritt, H. H. The Differential Diagnosis Between Cerebral Hemorrhage and Cerebral Thrombosis. Arch. Int. Med., to be published.

obtained on entry. There had been recent dietary indiscretions in four, a recent infection of the upper respiratory tract in three, and boils in three. In one case, in which diabetes had not been previously diagnosed, a history was obtained of recent polydipsia and an increased fondness for sweets.

On examination the following signs were noted: temperature elevated in four (associated with an infection) and subnormal in ten; pulse increased in seventeen, respirations increased in nine, Küssmaul breathing in eleven, shallow breathing in one, eyeballs abnormally soft in seven and normal in two, acetone on the breath in fourteen, throat inflamed in nine, dehydration in fifteen, and moist râles at the lung bases in four. The urine showed the presence of sugar in every case, the white blood cell count was increased in seven, and the red cell count was high in one case. The blood non-protein nitrogen was 102 mg per hundred cubic centimeters in one case associated with dehydration. The blood sugar was high in fifteen cases, was normal in one, and, after insulin, was low in one. A lumbar puncture was done in one case, and the initial pressure was found to be zero. (This finding of decreased intracranial pressure parallels the decreased intra-ocular pressure, both being part of the picture of dehydration.)

The diagnosis of diabetic coma was strongly suggested by the history on entry in more than half the cases in this group. Physical changes of diagnostic significance were subnormal temperature, increased pulse, Küssmaul respirations, soft eyeballs, acetone on the breath, and dehydration. Laboratory observations of diagnostic importance were glycosuria and hyperglycemia.

Meningitis (twenty cases, 17 per cent of total cases of coma, mortality in this group 100 per cent) —It is not generally realized that meningitis is as common a cause of coma among hospital entrants as diabetes. Of the cases reported here, ten were of children under 10 years of age. There was a history of injury in four. Important symptoms in the history were vomiting ten cases, convulsions nine cases, infection of the upper respiratory tract eight cases, fever seven cases, headache six cases, mental disturbance five cases, ear trouble five cases, stiff neck three cases, chills two cases, exophthalmos associated in two cases with sinus thrombosis, and in one case each abdominal pain, diplopia, and paralysis of an arm. In the past history there was tuberculosis in one patient, another was a nursing infant whose mother had active tuberculosis, one patient had recently picked a pimple on his nose, another had just been operated on for cataract.

On examination the temperature was high on entry in most of the cases, and the pulse and respirations were increased. There was acetone on the breath in one case. Choked disks were present in three cases. Although stiffness of the neck was the rule, it was absent in three cases on entry. There was redness of the throat in six cases. The Kernig leg sign was positive in eleven cases, negative in six, and not mentioned in three. The Babinski toe sign was positive in seven cases, negative in three and not mentioned in ten cases. In three cases a bulging fontanel was observed. Opisthotonos was present in one case. Roentgen studies of the chest in two cases demonstrated miliary tuberculosis, in one advanced tuberculosis and in one lobar pneumonia. The white blood cell count was high in five cases and normal in six. The blood culture was positive for pneumococci in three cases and for staphylococci in

one. Lumbar puncture gave results of paramount importance, the spinal fluid being grossly abnormal in every case in which it was examined. A lumbar puncture was not performed in four cases. The spinal fluid pressure was increased in twelve, normal in one and not recorded in three cases. Xanthochromia was present in two cases. All the fluids were purulent. The cellular content was recorded in thirteen, eight of which contained more than 1,000 white cells per cubic millimeter. Organisms were found on examination of stained smears of the sediment in seven cases. Cultures of the fluids were positive in ten cases: pneumococci in seven cases, and streptococci, staphylococci and meningococci in one case each. The spinal fluid sugar was found to be low in twelve cases, the chlorides were low in ten cases, and the protein was high in eleven cases.

In the diagnosis of meningitic coma, the age incidence was of importance, since half the patients were children under 10 years of age. Symptoms pointing to infection about the head, increased intracranial pressure or meningeal irritation were significant in the history. Valuable diagnostic physical signs were fever, stiffness of the neck, positive Kernig's leg sign and Babinski's toe sign, and a bulging fontanel in infants. The spinal fluid was grossly abnormal in every case in which it was examined. The white cells and protein in the spinal fluid were increased and the sugar and chloride decreased. In most cases organisms were found either by smear or by culture.

Pneumonia (twenty cases, 17 per cent of total cases of coma, mortality in this group 90 per cent) —Pneumonia is not mentioned in textbooks as one of the diagnoses to be considered in cases in which coma is a presenting sign. Yet pneumonia is as common as diabetes, and three times as common as uremia in this series. The majority of cases in this group appeared in the young and very old. Four patients were under 10 years of age and eleven over 50, of whom four were over 70. The onset of coma was abrupt in four cases, but in two of these it was associated with alcoholism. In two of the children a history was obtained of convulsions in the present illness. Other significant data available in the histories were cough in five cases, fever in three cases, "cold" in two cases, and sudden pain in the side, bloody sputum, chill, abdominal pain, vomiting and diarrhea in one case each. In nine cases no history was available. On examination, the temperature was elevated in fourteen cases and subnormal in two (in each of these two cases death occurred within four hours). The pulse was increased in fifteen cases, the respiration in eleven. Cyanosis was noted in twelve cases. In all cases in which the chest was examined, signs of consolidation were found. In two patients the lungs were not examined, presumably because the patients were considered alcohol addicts. In two cases, death occurred before a complete examination could be made. An acidotic breath was noted in three cases, hiccups in two, abdominal distention in two, jaundice and an enlarged liver in one, a positive Babinski's toe sign in one. A white blood cell count was done in ten cases, being increased in two and normal in eight. A red blood cell count was low in three cases, the non-protein nitrogen of the blood was normal in two cases and high, but below 100 mg per hundred cubic centimeters, in five cases. Lumbar puncture was done in six cases, but no abnormality was found.

Coma as a presenting sign due to pneumonia was more common in the young and very old and was

case In four cases, lumbar puncture was done The initial pressure was high in two cases and normal in two The nonprotein nitrogen of the spinal fluid was very high in the three cases in which it was examined, and the chlorides of the spinal fluid were high in two cases

In the cases of uremic coma, a history of previous kidney trouble, high blood pressure, convulsions or recent infections was occasionally obtained The helpful physical signs were muscular twitchings, acetone on the breath, abnormal eyegrounds, enlarged heart, increased blood pressure, and edema of the ankles Important laboratory changes were gross abnormalities in the urine, and increased nonprotein nitrogen of the blood

Eclampsia (seven cases, 0.6 per cent of total cases of coma, mortality in this group 68.4 per cent) —A history of pregnancy was obtained in every case, of convulsions in six cases of vomiting in five, of headache in three, of high blood pressure in one and of swelling of the extremities in one The women were, of course, in the child-bearing age Pregnancy was obvious by examination of the abdomen in every case Other manifestations were rapid pulse, in every case, convulsions in six, blood pressure increased in six and decreased in one (this patient succumbed within eight hours), edema of the extremities in six, and fever in three The urine was grossly abnormal in every case, the white blood cell count increased in two, the nonprotein nitrogen of the blood was slightly increased in one A lumbar puncture was done in two cases The initial pressure was increased in one and was normal in the other

In the patients entering the hospital in eclamptic coma, a history of pregnancy was always obtained In most cases a history of convulsions and vomiting was also given The diagnostic physical signs were abdominal tumor, rapid pulse, convulsions, peripheral edema and increased blood pressure The urine was grossly abnormal in every case

Miscellaneous (forty-eight cases, 4.1 per cent of total cases of coma, mortality in this group 75 per cent) — There were many uncommon causes of coma massive hemorrhage, ten cases (cause trauma four cases, spontaneous rupture of esophageal varix two cases, carcinomatous erosion in the gastro-intestinal tract two cases, ruptured aortic aneurysm one case, massive hemoptysis one case), burns four cases, erysipelas four cases, encephalitis three cases, brain tumor three cases, miliary tuberculosis two cases, carcinomatosis two cases, and one each of hypoglycemic shock, Stokes-Adams disease, immersion, syncope, hysteria, pernicious anemia, leukemia, ruptured ectopic pregnancy, intestinal obstruction, gangrene of the periurethral tissue and abdominal wall due to rupture of membranous urethra, cholemia, empyema and septicemia In seven cases the cause of the coma could not be determined One of these was a patient with Simmond's disease, and one was a patient with Friedreich's ataxia The chief significant points in the differential diagnosis of the miscellaneous cases are included in the following discussion

COMMENT

The importance of the history in the early diagnosis of coma as a presenting sign cannot be overstressed Table 1 lists the points in the history which were of special diagnostic value Table 2 lists the physical changes that were outstanding in their diagnostic value

The age of the patient was of interest, since the degenerative conditions (cerebral vascular lesions, cardiac decompensation and uremia) occurred chiefly among elderly patients, while infectious conditions (meningitis and pneumonia) were more frequent in the young The laboratory data were often the deciding points in the diagnosis Table 3 illustrates the most helpful laboratory observations

It should be noted that little emphasis has been placed on the depth of the coma, the condition of the pupils or the state of the reflexes In our cases these have not been of great practical differential value The depth of the coma may vary, no matter what the cause The pupils tend to be abnormal in the majority of the cases of coma, regardless of the cause, and there is no definite rule as to what kind of abnormality will be present in any particular case The same is, in general, true of the reflexes Gowers⁷ has pointed out that the manifestations in a patient in coma depend to a large extent on the depth of the coma, whatever the cause

TABLE 3—Laboratory Observations Helpful in the Diagnosis of Coma and the Conditions in Which They Occur

Lumbar puncture					
Pressure					
Increased	cerebral vascular lesions of the central nervous system	meningitis	trauma	syphilis	
Decreased					diabetes
Bloody fluid			cerebral vascular lesions		trauma
Purulent fluid					meningitis
Organisms by smear and culture					meningitis
Sugar					
Low					meningitis
High					diabetes
Protein high	meningitis	syphilis of the central nervous system			
Spinal fluid Wassermann positive		syphilis of the central nervous system			
Blood examination					
Sugar					
High					diabetes
Low					insulin shock
Nonprotein nitrogen high					uremia
Wassermann test positive		syphilis of the central nervous system			
Low red blood count					pernicious anemia
Abnormal smear					leukemia
Culture positive					pneumonia
Spectroscopy	carbon monoxide poisoning				methemoglobinemia
Urine examination					
Sugar					diabetes
Gross albuminuria					
Gastric lavage examination of gastric contents	eclampsia, nremia	cardiac decompensation			
Roentgenograms					poisoning
Skull fracture across middle meningeal artery					extradural hemorrhage
Lungs					pneumonia
Heart					empyema
Electrocardiograph					miliary tuberculosis
					cardiac decompensation
					heart block
					cardiac decompensation

may be This has been our experience If the coma is light, the reflexes may be preserved and may be hyperactive, perhaps because of release of the lower centers by lack of cerebral control Automatic swallowing may be preserved, and the pupils may still react to light Painful stimuli may elicit muscular movements As coma deepens, the depressed condition of the higher centers spreads to the lower Reflexes become diminished or absent, swallowing becomes impossible, the pupils fail to react to light, the body musculature becomes flaccid, and myotatic irritability may be lost The palatal muscles may share in this relaxation and, moved by the respiratory current of air, may cause the peculiar stertor that is a familiar indication of the depth of the coma Even the respiratory center may become depressed, so that respiration is decreased, shallow and irregular The lessened respiratory movements fail to clear the air passages of the secretion, which accumulates in the bronchi and finally in the trachea, causing the familiar "rattle" that is popularly and rightly recognized as a frequent harbinger of death

⁷ Gowers W R A Manual of Diseases of the Nervous System London J & A Churchill 2 99 1893

It should be pointed out that there are many other causes for coma that are not included in this discussion, for example, sunstroke, electrical shock and acute pancreatitis. These conditions are sufficiently rare, however, so that no patient entered the Boston City Hospital in coma in the year 1933 with such a diagnosis.

SUMMARY

In 1,167 cases of coma as a presenting sign, the data available on admission to the hospital, including history and physical and laboratory observations, have been analyzed with a view to determining the characteristic features of diagnostic importance in each of the various causes of the coma. The material is arranged in the order of the relative frequency of the various causes, and a summary of the most practical diagnostic characteristics is appended under each cause. In the discussion, the differential diagnosis is considered and the most significant points in the history, physical examination, and laboratory changes are tabulated. It is noted that the depth of the coma, condition of the pupils and state of the reflexes are not of great diagnostic importance.

PERIPHERAL NEURITIS CAUSED BY PROLONGED USE OF DINITROPHENOL

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The number of cases of poisoning by alpha-dinitrophenol has greatly increased in the past year. This is due to the fact that the drug is now frequently used either alone or as a constituent of certain preparations for reducing weight. Notwithstanding the considerable number of cases of poisoning that have been reported, there still remain many points for consideration in the study of this drug. For this reason it seems justifiable to report instances of poisoning in the hope that, from a larger mass of more diversified observations, facts of direct importance regarding these mooted points may be obtained.

This report deals primarily with late or delayed poisoning by dinitrophenol. The cases here detailed are believed not to be unusual but to present a condition not hitherto described, so far as the relation of the cause and its effects are concerned. As has been stressed by Quick,¹ too little emphasis has been given to the possibility that a drug such as dinitrophenol may have an indirect or latent effect. Repeated warnings have been given, particularly against its use in patients with a history of arthritis.² It has long been known that chronic intoxication by benzene,³ dinitrobenzene,⁴ dinitrotoluene⁵ and trinitrotoluene⁶ may cause neuritis.

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¹ Quick, A. J. *Dangerous Drug Reactions* J. A. M. A. 102: 1419 (April 28) 1934.

² (a) Perkins R. G. *A Study of Munitions Intoxications in France* Pub. Health Rep. 34: 2335 (Oct. 24) 1919. (b) Anderson, H. H. Reed, A. C. and Emerson, G. A. *Toxicity of Alpha Dinitrophenol* J. A. M. A. 101: 1053 (Sept. 30) 1933.

³ Angiase, A. quoted by Hamilton Alice. *Industrial Poisons in the United States* New York: Macmillan Company, 1929 p. 472.

⁴ Ross J. *Poisoning by Robarite* M. Chronicle 10: 89 (May) 1889. Cords R. *Dinitrobenzol und Selnerv* Zentralbl. f. Gewerbehyg. 7: 6 (Jan.) 1919.

⁵ Stewart, T. G. *Causation and Symptomatology of Multiple Neuritis* Brit. M. J. 2: 461 (Sept. 12) 1925.

⁶ Tainter M. L. Stockton A. B. and Cutting W. C. *Use of Dinitrophenol in Obesity and Related Conditions* J. A. M. A. 101: 1472 (Nov. 4) 1933.

It would therefore not be surprising if dinitrophenol, which is so closely chemically related to these substances, should also possess this toxic feature.

This report is based on the study of twenty-two persons who took alpha-dinitrophenol (1-2-4). Fifteen were seen in private practice and the remainder in the wards of Bellevue Hospital. Sixteen showed no deleterious effects from the use of the drug, of the remaining six cases, in three a rash developed, in one loss of taste and in two peripheral neuritis. The six patients showing toxic symptoms were taking the drug for obesity and gave a negative history for allergy, neuritis, arthritis, alcoholism, diabetes, tuberculosis, or liver or kidney disease.

The symptoms of acute poisoning with dinitrophenol are too familiar to require detailed description here, so only brief mention will be made of them. In one woman, weighing 110 Kg. and taking 0.1 Gm. of dinitrophenol a day, a markedly pruritic rash developed on the eighth day, similar to those previously described.⁷ The drug was immediately stopped and the rash disappeared in five days. She was very anxious to resume taking the drug, even though she was cautioned that the rash might return.⁷ Tainter and his associates⁶ maintain that the use of the drug may be resumed with impunity after the skin reaction has subsided. Five days later she again took 0.1 Gm. a day and in two days the rash reappeared. The drug was stopped and the condition cleared up rapidly. In another woman, weighing 69 Kg., after taking 0.1 Gm. a day for eight days a similar eruption developed, the drug was stopped and the rash cleared up in two days. In the third patient, weighing 80 Kg., taking 0.1 Gm. three times a day, a rash developed on the twenty-first day. She lost 13 pounds (5.9 Kg.) during this period. Coincident with the eruptions all these patients complained of weakness in the legs and rheumatoid pains in the arms and fingers.^{2b} These symptoms promptly disappeared after the drug was stopped.

Loss of the sense of taste as a result of intoxication by dinitrophenol has been reported by Tainter, Stockton and Cutting⁶ and by Jackson and Duvall.⁸ We had one patient in whom this developed after she had been taking the drug for thirty-six days. This loss was complete for "sweet," "sour," "salt," and the like, and she experienced a "coppery" taste in her mouth at all times. She was not anesthetic to epirritic and protopathic stimuli, i. e., to light touches, pin pricks and temperature. The sense of smell was unimpaired. The drug was not stopped and her taste gradually returned to normal in a month.

The two cases in which what we believe to be a peripheral neuritis developed following prolonged use of this drug will be reported in some detail. In presenting these cases we are fully aware of the important role played by vitamin B deficiency in the production of peripheral neuritis. These patients were on a diet containing adequate amounts of the vitamin B complex.

REPORT OF CASES

CASE 1—D. M., a white woman, aged 33, married, a housewife, with a past medical and family history which was negative for any condition that might contraindicate the use of alpha-dinitrophenol, was given a drug for the purpose of reducing weight. She was 63 inches (160 cm.) tall, weighed 87 Kg. and had a basal metabolic rate of +1 per cent. Dec. 7, 1933, she was given 0.1 Gm. once a day, and as she showed no sensitivity

⁷ Frumess G. M. *Allergic Reactions to Dinitrophenol* J. A. M. A. 102: 1219 (April 14) 1934.
⁸ Jackson Harry and Duvall A. I. *Dinitrophenol Poisoning* J. A. M. A. 102: 1844 (June 2) 1934.

to the drug after ten days it was increased to 0.1 Gm three times a day. There was no excessive sweating or other untoward symptom until March 8, 1934, at which time she stated that her toes felt numb. Her weight at this time was 78 Kg. The drug was continued. The numb feeling in her toes persisted and on March 29 (weight 75 Kg) she started to experience spontaneous tingling, "pins and needles," dulness and itching of the toes. A careful search was made for a local cause of this particular dysesthesia, whether in the skin, muscles, bones, joints or blood vessels. Pain was not due to local disease, nor was it continuous or accompanied by objective phenomena such as redness of the skin, swelling or tenderness of the tissue or rigidity of the joints and so on. The sense of position was unimpaired and there was no decrease in the vibratory sense or finer coordination of the toes. There was a slight increase of the patellar reflexes. The patient never had an elevation of temperature.

April 12 (weight 73 Kg) she complained of slight arthritic pains in the left hand, and, as she was developing marked hyperesthesia of the toes to touch, the drug was stopped. Ordinary stimuli evoked an unusual sensation, as for example a feeling of tingling when the skin was touched and a feeling of acute pain when moderate cold was applied. No local pallor as seen in the early stages of cutaneous angioneuroses, edema, or increase in sweating of the affected parts was observed. These paresthesias persisted and fleeting pains developed in various joints. April 30, in addition to the toes, the ankles, left wrist and the fingers of both hands were painful. The joints were normal on examination. The arthritic pains did not respond to salicylates and amidopyrine. By May 8 there was considerable improvement in the joint pains but exacerbations occurred with changes in the weather. At the present writing, nine months after the onset the arthritic pains have entirely disappeared but some numbness and tingling of the toes persists.

The innumerable possibilities of diagnosis were gradually reduced as the study of the symptoms proceeded, until it seemed that but one theory, namely, peripheral neuritis, could be held to explain the acroparesthesia and arthralgia.

CASE 2.—A white woman, aged 56, a housewife, who was 62 inches (157 cm) tall, weighed 80 Kg and had a basal metabolic rate of -5 per cent, had moderate arteriosclerosis, with essential hypertension of 192 systolic, 120 diastolic. She exhibited no sensitivity to the drug, so after ten days she was put on 0.1 Gm of alpha-dinitrophenol three times a day. Thirty-six days later she lost her sense of taste (previously described). Her weight at this time was 70 Kg and the blood pressure 170 systolic, 90 diastolic. The drug was continued and her taste gradually returned to normal on the seventy-third day (weight 64.5 Kg, blood pressure 178/98). Twelve days later (weight 60 Kg, blood pressure 178/98) she stated that all her toes were numb and felt dead, as if they did not belong to her. In view of the experience in the previous case the drug was immediately stopped. No local cause for the sensory disturbances could be found. The course was very similar to that in case 1 except that the patient experienced more pain in the joints of the toes and was more annoyed by the hyperesthesia.

The moderate peripheral sclerosis present in this case may have been a contributing factor. I believe that the loss of the sense of taste in this patient may be part of the neuritic picture and therefore should be considered as a form of chronic poisoning in contrast to the dermatitis. Outside of the slight discomfort in the toes, both patients feel better now than prior to taking the drug. The blood pressure in the first case was not affected, and in the second case it dropped from 192/120 to 170/90, at which level it persisted for about two months after the drug was stopped before returning to its original level.

This delayed toxic effect of dinitrophenol is not due to accumulation of the drug in the body, for it is rapidly destroyed and eliminated.^{2a} A tolerance for this drug

is rapidly established in animals.⁹ The effects noted are most likely due to the repeated attacks of therapeutic amounts of the drug in certain individuals who are unpredictably sensitive to dinitrophenol.¹⁰

SUMMARY AND CONCLUSIONS

1 Of twenty-two persons taking dinitrophenol, symptoms of poisoning developed in six in three a pruritic rash, in one loss of taste, and in two peripheral neuritis.

2 The cases of multiple peripheral neuritis showed very striking sensory symptoms but no motor or trophic disturbances. The condition starts in the toes and exhibits various disturbances of sensation, such as prickling, numbness and pain.

3 Paresthesia persists long after its original cause has been removed.

4 This delayed poisoning is due to repeated exposure to small amounts of dinitrophenol and not to an accumulation of the drug in the body.

477 First Avenue

FUNCTIONAL CHANGES IN LIVER, HEART AND MUSCLES, AND LOSS OF DEXTROSE TOLERANCE

RESULTING FROM DINITROPHENOL

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A short time after the appearance of the first clinical report on the use of dinitrophenol,¹ we began a series of studies of its effects in producing weight loss in obese patients. It seemed important to determine whether the metabolic stimulation produced by the drug was accompanied by evidence of injury to the patients.

Dinitrophenol first came to the attention of the medical profession as an industrial poison.² Although during the World War poisoning of those working with it in munitions plants was frequent,³ physicians and drug manufacturers, undeterred by the early history of the drug, have brought about a tremendous usage during the past year. One clinic has supplied to physicians, or to patients on physicians' prescriptions, over 1,200,000 capsules of 0.1 Gm each, corresponding to about 4,500 patients treated with the drug in one year. More than twenty wholesale drug firms are marketing the compound.⁴

9 Perkins² Magne, H. Mayer, A., and Plantefol, L. Etudes sur l'action du dinitrophenol 1, 2, 4 (thermol) Ann de physiol 8: 170 1932

10 Perkins² Anderson, Reed and Emerson.³ Magne, Mayer and Plantefol.⁴ Masserman, J. H. and Goldsmith, Harry. Dinitrophenol. Its Therapeutic and Toxic Actions in Certain Types of Psychobiologic Underactivity. J. A. M. A. 102: 523 (Feb 17) 1934. Poole, F. E., and Haining, R. B. Sudden Death from Dinitrophenol Poisoning. ibid 102: 1141 (April 7) 1934. Dinitrophenol Poisoning editorial. ibid 102: 1156 (April 7) 1934.

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1 Cutting, W. C., Mehrrens, H. G., and Tainter, M. L. Actions and Uses of Dinitrophenol. J. A. M. A. 101: 193 (July 15) 1933.

2 Koelsch, F. Beitrage zur Giftigkeit der aromatischen Nitroverbindungen. Das Dinitrophenol. Zentralbl. f. Gewerbehyg. 4: 261 (Aug.) 1927.

3 Magne, H., Mayer, A., and Plantefol, L. Action pharmacodynamique des phenols nitres. Ann de physiol 7: 269, 1931. Perkins, R. G. A Study of the Manifestations of Intoxications in France. Pub. Health Rep. 34: 2335 (Oct 24) 1919.

4 Tainter, M. L., Cutting, W. C., and Stockton, A. B. Use of Dinitrophenol in Nutritional Disorders. Am. J. Pub. Health 24: 1045 (Oct.) 1934.

As was to be expected, numerous reports of toxic actions have appeared. Skin reactions, consisting of maculopapular dermatitis, urticaria or angioneurotic-like swelling, usually accompanied by burning sensations and pruritus, and sometimes by desquamation, have been frequent.⁵ Evidence of renal damage has been reported in two cases.⁶ In three patients liver damage has apparently been produced.⁷ Five deaths have been reported from the use of the drug and one from the closely related compound dinitroresol. Of the six deaths, three have occurred with known overdosage.⁸ The other three occurred in patients taking amounts within the so-called therapeutic range of from 3 to 5 mg per kilogram of body weight.⁹ Two of these deaths followed the development of malignant neutropenia. Severe neutropenia with recovery has occurred in four other cases in which excessive doses were not given.¹⁰ Physicians have been encouraged to minimize these evidences of toxicity on the ground that unpredictable idiosyncrasies can account for them.⁴

Our studies reveal that dinitrophenol causes notable clinical variations in the functions of the liver, heart and muscles and a loss of dextrose tolerance in patients who have displayed no evidence of special sensitivity.

METHODS OF STUDY

Liver function was tested by the determination of the icterus index after the serum was decolorized with dilute hydrochloric acid, by the van den Bergh reaction on the serum, by the estimation of urobilinogen in the urine, by the galactose tolerance test, and by the quantitative estimation of phenoltetraiodophthalein retention after intravenous injection. The technique of the study of liver function with this dye and the results in various types of liver disease have been described by Cole, Copher and Graham.¹¹

The tests of renal function consisted of repeated examination of the urine for albumin, red cells, white cells and casts, concentration-diuresis tests with measurement of the specific gravity, phenolsulphonphthalein excretion and blood nonprotein nitrogen determinations.

- 5 Tainter M L, Stockton A B and Cutting W C. Use of Dinitrophenol in Obesity and Related Conditions, *J A M A* 101: 1472 (Nov 4) 1933. Anderson H H, Reed A C and Emerson G A. Toxicity of Alpha Dinitrophenol ibid 101: 1053 (Sept 30) 1933. Hirsch Sidney. Report of a Toxic Manifestation Due to "Dinitrophenol" ibid 102: 950 (March 24) 1934. Frumess G M. Allergic Reaction to Dinitrophenol ibid 102: 1219 (April 14) 1934. Jackson Harry and Duvall A I. Dinitrophenol Poisoning ibid 102: 1844 (June 2) 1934. Dintenfuss Henry. An Ear Complication from Dinitrophenol Medication ibid 102: 838 (March 17) 1934. Matzger Edward. Can Sensitivity to Dinitrophenol Be Determined by Skin Tests? ibid 103: 253 (July 28) 1934.
- 6 Rabinowitch I M and Fowler A F. Dinitrophenol Canad M A J 30: 128 (Feb 1) 1934. De Chatel A and Motika J. Ueber die Gefahren der therapeutischen Anwendung des Alpha Dinitrophenols. Deutsches Arch f klin Med 176: 700 (Aug 22) 1934.
- 7 Rabinowitch and Fowler A. Sidel Nathan. Dinitrophenol Poisoning Causing Jaundice. *J A M A* 103: 254 (July 28) 1934. Davidson Elizabeth N and Shapiro, Matthew. Neutropenia Following Dinitrophenol with Improvement After Pentnucleotide Therapy and Leukocyte Cream. ibid 103: 480 (Aug 18) 1934.
- 8 Tainter M L and Wood D A. A Case of Fatal Dinitrophenol Poisoning, *J A M A* 102: 1147 (April 7) 1934. Poole F E and Haining R B. Sudden Death from Dinitrophenol Poisoning ibid 102: 1141 (April 7) 1934. Death After Slimming Treatment. *Lancet* 1: 489 (March 3) 1934. Dekrysl Treatment. The Paddington Inquest, ibid 1: 652 (March 24) 1934.
- 9 Masserman, J H and Goldsmith Harry. Dinitrophenol Its Therapeutic and Toxic Actions in Certain Types of Psychobiologic Under activity. *J A M A* 102: 523 (Feb 17) 1934. Dameshek William and Gargill S L. Studies in Agranulocytosis. Report of Two Cases of Agranulocytosis Following Use of Dinitrophenol. *New England J Med* 211: 440 (Sept. 6) 1934. Silver Solomon. A New Danger in Dinitrophenol Therapy. Agranulocytosis with Fatal Outcome. *J A M A* 103: 1058 (Oct 6) 1934.
- 10 Dameshek and Gargill S. Hoffman A M, Bitt E M and Hickey N G. Neutropenia Following Amidopyrine, *J A M A* 102: 1213 (April 14) 1934. Bohn S S. Agranulocytic Angina Following Ingestion of Dinitrophenol. ibid. 103: 249 (July 28) 1934. Davidson and Shapiro.
- 11 Cole, W H, Copher G H and Graham, E A. Simultaneous Cholecystography and Determination of Hepatic Function. *J A M A* 90: 1111 (April 7) 1928.

Effects on the circulatory system were studied by frequent records of the pulse rate and blood pressure, frequent auscultation, electrocardiographic tracings, and 6-foot roentgenograms of the heart with measurement of the cardiac shadow. The respiratory rate was also counted several times a day.

Exercise tolerance tests, urinary excretion of creatine and creatinine, urinary phosphate excretion and estimation of blood lactic acid were studied as possible indexes of functional changes in the muscles.

Dextrose tolerance was estimated by giving the patients orally 0.8 Gm of dextrose per pound of body weight and determining the sugar in the capillary blood (by Somogyi's method¹²), after one-half hour, one hour, two hours and three hours.

Frequent measurements of the morning resting fasting metabolic rate were made in all cases. The type of fuel was studied by measurement of the nitrogen excretion in the urine and by determination of respiratory quotients before and after a standard test meal. The Hagedorn apparatus was employed.¹³

TABLE 1—Changes in Liver Function Tests Following Dinitrophenol

Patient	Dye Retention per Cent		Duration of Treatment, Days	Total Dose, Gm.
	Before	After		
1	10	24	7	2.1
2	12	19	7	2.1
3	14	23	14	4.2
4	10	17	21	6.3
		17	56	16.8
5	13	20	21	6.3
		18	50	16.5
		15		
6	14	21	21	6.3
7	15	15	12	3.6
8	12	15	14	4.2

* After omission of drug for period of fourteen days.

Those cases studied in Barnes Hospital were under the constant observation of the trained staff of the Turill Metabolism Ward, the diets being accurately regulated and material for chemical determinations promptly collected and measured. All patients, whether studied in the hospital or outpatient department, were observed closely and frequently to detect skin rashes. All the patients were obese women between 22 and 56 years of age. The amount given was in each case 0.1 Gm of alpha-dinitrophenol three times daily.

RESULTS

Liver Function.—Six out of eight patients showed an increased dye retention after dinitrophenol medication (table 1). Normal dye retention at the end of thirty minutes is between 10 and 15 per cent. In two patients receiving the drug for seven days there was a rise from 10 to 24 per cent and from 12 to 19 per cent respectively. In one patient receiving the drug for fourteen days, retention increased from 14 to 28 per cent. In three patients after twenty-one days of medication there were rises from 10 to 17, from 13 to 20 and from 14 to 21 per cent respectively. Two of these patients received the drug for eight weeks with retentions of 17 and 18 per cent at the end of that time. The dinitrophenol was then omitted for two weeks and the liver function tests were repeated. Fifteen per cent was retained in both cases. This is the upper limit of nor-

12 Somogyi M. Notes on Sugar Determination. *J Biol Chem* 70: 599 (Nov.) 1926.
13 Hagedorn H C. *Biochem J* 18: 1301 1924.

mal, the control readings before use of the drug having been 10 and 13 per cent. In two patients there was practically no change in the ability to excrete the dye after taking dinitrophenol.

No significant variations in the corrected icterus index, the serum van den Bergh, the urinary urobilinogen or the galactose tolerance tests were noted. This may not be surprising, since these tests are believed to measure either very extensive liver damage or obstruction to bile excretion. In the estimation of liver damage in the absence of biliary obstruction or very severe hepatic injury, dye excretion tests may be the more sensitive criteria.¹⁴

In 1918 Warthin¹⁵ reported the first pathologic study of a fatal case of dinitrophenol poisoning in this country. An acute degenerative hepatitis similar to that resulting from chloroform, arsenic, phosphorus, trinitrotoluene and acute yellow atrophy was the chief finding. One of the main effects of dinitrophenol experimentally has been the rapid depletion of liver glycogen.¹⁶ The importance of an adequate glycogen store in the liver as a protection against toxins has been much emphasized.¹⁷ Trinitrophenol (picric acid), trinitrotoluene and other compounds closely related to dinitrophenol are notorious liver poisons. It is therefore not surprising to find evidence of liver damage, even with the small doses and short periods employed in our study.

Kidney Function—No changes were noted in the urinary sediment, in the blood nonprotein nitrogen or in the kidney function tests in three patients studied in the hospital over a period of eight weeks.

Circulatory System—There were no significant alterations in the pulse rate, blood pressure, respiratory rate or cardiac auscultation in six patients, each studied in the hospital for from six to eight weeks. These observations correspond with those of others.

Three of our patients, however, showed definite alterations in their electrocardiograms. In one patient's record there occurred a marked increase in size of the T wave in the first two leads, an inversion of the T wave in lead 3, and a depression of the ST interval in lead 2. In the second case there was an increase in the size of the T waves, depression of the ST interval and moderate notching of the QRS complex. In the third, inversion of the T wave in lead 3 and left axis deviation developed. These changes in all three cases began to appear at the end of the second week and were more marked toward the end of the eight weeks of medication. Two of the patients showed persistence of the changes after the drug had been omitted for two weeks.

Somewhat similar effects in two patients and in four of six experimental animals have been reported by de Châtel and Motika.⁶ In two of the fatal human cases, fragmentation of the heart muscle has been found at postmortem examination.¹⁸ The electrocardiographic changes may be early signs of toxic damage to the heart.

Muscle—Marked fatigue is one of the most evident effects of dinitrophenol medication. Exercise tolerance tests in four patients revealed considerable loss of strength and endurance. These four patients received creatine-free diets of 1,100 calories, and daily determinations were made of the urinary creatine and creatinine.

After a control period of one week dinitrophenol medication was begun. In two, urinary phosphate and nitrogen were also determined daily. In each of the four

TABLE 2—Effect of Dinitrophenol on Creatine and Creatinine Excretion

Week	Daily Average in Grams					
	Patient 4			Patient 5		
	Creatine	Creatinine	Total Creatinine	Creatine	Creatinine	Total Creatinine
1 Control	0.188	0.786	0.974	0.132	1.166	1.298
2 First	0.264	0.852	1.106	0.226	0.746	0.972
3 Second	0.380	0.666	1.046	0.277	1.008	1.285
4 Third	0.270	0.802	1.132	0.146	0.842	0.988
5 Fourth	0.237	0.640	0.876	0.148	0.766	0.904

Week	Patient 9			Patient 10		
	Creatine	Creatinine	Total Creatinine	Creatine	Creatinine	Total Creatinine
	Creatine	Creatinine	Total Creatinine	Creatine	Creatinine	Total Creatinine
1 Control	0.082	0.930	1.002	0.000	1.098	1.098
2 First	0.126	1.007	1.133	0.160	1.057	1.217
3 Second				0.267	1.111	1.378

cases there was a rise in creatine excretion. In two the creatinine rose slightly, in one it fell and in one it was essentially unchanged. The total creatine-creatinine excretion rose in three. Urinary phosphate rose during the first week or two, then tended to return to the control level. The results are summarized in tables 2 and 3. There was a rise in the blood sugar in all four cases, and blood lactates were slightly increased in two.

TABLE 3—Effect of Dinitrophenol on Phosphorus and Nitrogen Excretion in Urine

Week	Daily Average in Grams							
	Patient 4				Patient 5			
	Phosphorus		Nitrogen		Phosphorus		Nitrogen	
	Intake	Excretion	Intake	Excretion	Intake	Excretion	Intake	Excretion
1 Control	1.017	0.676	9.75	8.82	1.034	0.714	9.23	10.44
2 First	1.033	0.930	11.06	8.82	0.964	1.094	11.26	7.92
3 Second	1.170	1.062	8.74	8.44	1.046	0.864	8.60	5.74
4 Third	0.920	0.798	9.06	7.50	0.823	0.780	8.67	7.29
5 Fourth*	0.970	0.791	8.19	8.11	0.953	0.820	8.29	8.26

* During the first three weeks the diet contained 2,200 calories. During the fourth week it contained 1,100 calories.

Creatinuria is increased whenever there is rapid atrophy of the muscles, in fasting,¹⁹ in conditions in which the ability to utilize carbohydrate is impaired,²⁰ in fever and in hyperthyroidism,²¹ and in muscular atrophies and dystrophies.²²

14 Robertson W. E., Swalm W. A., and Konzelmann F. W. Functional Capacity of the Liver. Comparative Merits of Five Most Popular Tests. *J. A. M. A.* 99:2071 (Dec. 17) 1932.

15 Warthin A. S. A Fatal Case of Toxic Jaundice Caused by Dinitrophenol. *Bull. 7 Internat. Assn. of Med. Museums* May 1918, p. 123.

16 Magne H., Mayer A., and Plantefol L. Etudes sur l'action du dinitrophenol 1,2,4 (thermol). *Ann. de physiol.* 8:70 1932. Hall V. E., Field J., Sahyun M., Cutting W. C., and Tainter M. L. Carbohydrate Metabolism, Respiration and Circulation in Animals with Basal Metabolism Heightened by Dinitrophenol. *Am. J. Physiol.* 106:432 (Nov.) 1933.

17 Graham E. A. The Resistance of Pups to Late Chloroform Poisoning in Its Relation to Liver Glycogen. *J. Exper. Med.* 21:185 (Feb.) 1915.

18 Tainter and Wood. Poole and Haining.

19 Cathcart, E. P. Ueber die Zusammensetzung des Hungerharns. *Biochem. Ztschr.* 6:109 1907. Benedict F. The Influence of Inanition upon Metabolism. Washington 1907.

20 Cathcart E. P. and Taylor R. *J. Physiol.* 41:276 1910. Rose W. C. Experimental Studies on Creatine and Creatinine. *J. Biol. Chem.* 26:331 (Sept.) 1916.

21 Shaffer P. The Excretion of Kreatinin and Kreatin in Health and Disease. *Am. J. Physiol.* 23:1 (Oct.) 1908.

22 Levene, P. A., and Krasteller, L. Factors Regulating the Creatinine Output in Man. *Am. J. Physiol.* 24:45 (April) 1909. Gibson R. B. and Martin F. T. Some Observations on Creatine Formation in a Case of Progressive Pseudohypertrophic Muscular Dystrophy. *J. Biol. Chem.* 49:319 (Dec.) 1921.

Shorr, Richardson, and Wolff,²³ in studying the muscle weakness of hyperthyroidism, found certain biochemical similarities to progressive muscular dystrophy. They concluded that the high metabolism of hyperthyroidism overtaxes the processes maintaining the integrity of the phosphocreatine mechanism and that the muscle weakness of exophthalmic goiter is of the nature of an acute muscular dystrophy. A somewhat similar

TABLE 4—Effect of Dinitrophenol on Dextrose Tolerance*

Case	Blood Sugar in Mg per 100 Cc										Dura- tion of Medi- cation, Days	Total Dose Gm
	Before					After						
	Fasting log	½ Hr	1 Hr	2 Hr	3 Hr	Fasting log	½ Hr	1 Hr	2 Hr	3 Hr		
1	86	114	138	152	112	83	147	102	187	120	7	2.1
2	91	110	146	136	101	90	119	142	118	112	7	2.1
3	94	141	129	113	96	106	192	210	164	180	14	4.2
4	104	164	164	132	104	99	200	208	124	112	14	4.2
5	90	120	140	128	109	78	139	149	127	110	14	4.2
6	94	131	145	122	70	93	128	139	127	68	14	4.2
7	153	224	313	322	202	153	266	310	408	362	14	4.2
						180	230	318	330	250†		
8	71	123	110	110	54	78	184	194	165	99	14	4.2
						70	170	182	140	110†		
9	85	162	161	100	116	104	191	255	277	122	21	6.3
10	77	114	170	110	97	106	140	177	157	131	21	6.3
11	140	200	210	244	163	145	228	264	257	245	21	6.3
12	172	259	312	348	250	196	268	312	345	280	14	4.2
						180	320	360	414	304	28	6.4

* Cases 7 and 11 were in a prediabetic state. Case 12 presented frank diabetes.

† After omission of the drug for a period of fourteen days.

disturbance of muscle metabolism would explain the marked weakness occurring after metabolic stimulation with dinitrophenol.

Experimental studies of Tainter and Cutting²⁴ showed the liver and muscles to be the chief sites of action of the drug. Recent studies of increased muscle metabolism²⁵ indicate that the oxidation of lactic acid formed from glycogen, the formation of hexosephosphate from glycogen and phosphocreatine, and the hydrolysis of phosphocreatine are the fundamental biochemical processes in the increased energy production. Recovery is accompanied by resynthesis of phosphocreatine, and resynthesis of lactic acid and hexosephosphate to the glycogen from which they were derived. When normal recovery is prevented, a marked decrease in muscle glycogen and phosphocreatine, an increase in muscle and blood lactates, and an increase in the elimination of dextrose, phosphate and creatine should be expected.

Evidence of prevention of recovery with actual loss of muscle substance as a result of dinitrophenol medication would seem to be offered by our clinical and biochemical studies and by the experimental studies of others.²⁶

Dextrose Tolerance—Blood sugar curves following dextrose tolerance tests showed a definite increase in the elevation of the curve in nine out of twelve cases.

²³ Shorr, E., Richardson, H. B., and Wolff, H. G. Endogenous Glycine Formation in Myopathies and Graves Disease. *Proc. Soc. Exper. Biol. & Med.* 31: 207 (Nov.) 1933.

²⁴ Tainter, M. L., and Cutting, W. C. Febrile, Respiratory and Some Other Actions of Dinitrophenol. *J. Pharmacol. & Exper. Therap.* 48: 410 (Aug.) 1933.

²⁵ Sacks, J., and Sacks, W. C. The Fundamental Chemical Changes in Contracting Mammalian Muscle. *Am. J. Physiol.* 105: 151 (July) 1933.

²⁶ Magne, Mayer and Plantefol.¹⁶ Hall, Field, Sahyun, Cutting and Tainter.¹⁸ Ehrenfest, E., and Ronzoni, E. Effect of Dinitrophenol on Oxidation of Tissues. *Proc. Soc. Exper. Biol. & Med.* 31: 318 (Dec.) 1933. Cahn, T., and Houget, J. Le métabolisme des glucides lipides et protéines au cours d'hyperthermie. *Compt. rend. Soc. de biol.* 113: 587 1933. Van Uytvanck, P. Recherches sur l'action hyperthermisanse du dinitro-alpha naphthol chez le pigeon. *Arch. internat. de pharmacodyn. et de therap.* 41: 160, 1931.

The loss of tolerance was evident after seven days and increased in degree with the duration of administration and with the total dose given (table 4). The type of diet had no influence on the susceptibility to this change. In cases 2, 5 and 6 the rate at which dextrose was removed from the blood was essentially unchanged. No patient showed an increased ability to utilize dextrose. There is, of course, considerable variation possible in successive blood sugar curves on the same patient. The fact that the chief factor causing such changes, namely, alterations in diet, has been eliminated makes it significant that all the differences encountered were in the direction of loss of tolerance.

One patient with diabetes showed a progressively higher curve while receiving the drug for four weeks. The impaired tolerance persisted after discontinuance of the medication, so that the insulin dosage on the same control diet had to be increased. Two patients in a prediabetic state showed loss of tolerance. In one of these tolerance had not returned to the control level after omission of dinitrophenol for two weeks. In one nondiabetic patient who had received the drug for fourteen days, tolerance had not returned to normal two weeks after it had been stopped.

Magne, Mayer and Plantefol,¹⁶ observing great decreases in muscle and liver glycogen, concluded that the increased oxidation with dinitrophenol depended chiefly on the combustion of carbohydrate. It has been suggested²⁷ that dinitrophenol might possibly be of use in increasing carbohydrate utilization in diabetes. Our

TABLE 5—Effect of Dinitrophenol on Respiratory Quotients, Fasting and Following a Test Meal

Patient		Respiratory Quotients	
		Before Dinitrophenol	While Taking Dinitrophenol
5	Fasting	0.77	0.75
	1/2 hour	0.77	0.66
	1 hour	0.87	0.70
	2 hours	0.69	0.78
	3 hours	0.70	0.68
	4 hours	0.80	0.69
	Average following meal	0.79	0.71
4	Fasting	0.82	0.75
	1/2 hour	0.71	0.71
	1 hour	0.82	0.70
	2 hours	0.84	0.74
	3 hours	0.83	0.75
	4 hours	0.82	0.71
	Average following meal	0.80	0.72
8	Fasting	0.80	0.70
	1/2 hour	0.82	0.71
	1 hour	0.79	0.79
	2 hours	0.87	0.70
	3 hours	0.94	0.78
	4 hours	0.84	0.60
	Average following meal	0.85	0.76

The standard test breakfast consisted of bread, butter and beef calculated to contain protein 27 Gm., fat 36 Gm. and carbohydrate 40 Gm.

observations fail to support this supposition, since the diabetic as well as the nondiabetic patients showed decreased sugar tolerance. We did not observe any evidences of increased toxicity in diabetic patients. Special susceptibility might have been expected, since in diabetic dogs its toxicity is greatly increased.²⁸

²⁷ Cutting, W. C., Mehrrens, H. G., and Tainter, M. L. Actions and Uses of Dinitrophenol. *J. A. M. A.* 101: 193 (July 15) 1933.
²⁸ Tainter, M. L., Boyes, J. H., and De Eds, F. Actions of Dinitrophenol in Diabetic Dogs. *Arch. internat. de pharmacodyn. et de therap.* 45: 235 (May 15) 1933.

The high metabolic rate of hyperthyroidism is frequently accompanied by diminished sugar tolerance and by a reduction of liver glycogen, attributed by some observers to a fault in glycogenesis. A similar mechanism may explain the diabetogenic action of dinitrophenol. However, the persistence of the decreased tolerance long after the drug has been discontinued and the metabolic rate has returned to normal suggests impairment of insulin production. The action of exogenous insulin was unchanged in two of our cases, indicating that the hyperglycemia was not due to any directly insulin-resistant factor²⁹ but possibly to a reduced insulin supply.

Fuel Burned—The metabolic rates rose within twenty-four hours after the first ingestion of the drug and remained at a level between plus 30 and plus 70 per cent as long as it was continued. In two patients receiving the drug over a period of four weeks there was no rise in urinary nitrogen (table 3). In three the respiratory quotients during the use of the drug were slightly lower than in the control period. This was true both of the determinations made while fasting and of those following a standard test meal containing protein, fat and carbohydrate (table 5). Accordingly, we must conclude that both carbohydrate and fat, but not protein, serve as fuel for the increased oxidation and that the principal nutrient oxidized is fat. These results are in essential agreement with those obtained by Hall and his co-workers.¹⁰

Miscellaneous Results—In all, fifteen patients were studied, six over prolonged periods in the hospital and nine in the outpatient department. No case of neutropenia occurred. Three patients had quite severe skin rashes. Five patients had gastro-intestinal disturbances with repeated vomiting. One experienced practically a complete loss of the sense of taste, lasting for several weeks after discontinuance of the drug. All the patients complained of greatly increased perspiration, loss of appetite and weakness. Fluid intake was increased and urine output greatly diminished. On diets of approximately 20 calories per kilogram of body weight, the weight loss averaged from 1½ to 2½ pounds (680 to 1,135 Gm.) per week. On diets of 11 calories per kilogram the loss increased to from 2 to 4 pounds (900 to 1,800 Gm.) weekly. In some instances the weight loss was a pound or more a day and could be demonstrated to be due chiefly to fluid loss by perspiration.

SUMMARY

Dinitrophenol in small doses caused functional changes indicative of toxicity in liver, heart and muscles in a large percentage of patients in whom no special idiosyncrasy was noted. It also produced a loss of dextrose tolerance.

Only two of the five deaths that have been reported have occurred with overdosage. Three have followed doses within the so-called therapeutic range. Six cases of severe neutropenia have occurred, two of them fatal. These and other toxic manifestations have been attributed to special susceptibility.

The fact that the majority of our patients showed somewhat alarming functional changes emphasizes the question whether the use of a drug with so great potential dangers is justified in the treatment of a relatively benign condition such as obesity.

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²⁹ MacBryde, C. M. Insulin Resistance in Diabetes Mellitus. Arch. Int. Med. 52: 932 (Dec.) 1933.

THE NATURE OF THE PRECEDING INFECTION IN ACUTE GLO- MERULONEPHRITIS

IN TWO NEW YORK HOSPITALS AND IN
FOUR SOUTHERN HOSPITALS

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A previous paper¹ has shown that the reported hospital medical admission rate for acute glomerulonephritis is similar in four latitude regions of the United States and southern Canada. In contrast, there is a diminished case frequency for scarlet fever and rheumatic fever in the South as compared with the North. Since clinical and laboratory evidence favors the hypothesis that acute glomerulonephritis is chiefly related to a preceding hemolytic streptococcus infection, it appeared peculiar that the diminution in incidence of the hemolytic streptococcus diseases scarlet fever and rheumatic fever in the southern latitudes did not also occur in the group of patients with acute nephritis. Osman,² who studied the data on deaths from acute and chronic nephritis compiled from tables in the League of Nations International Year Book for 1928, found it impossible to correlate the figures with climatic or racial factors.

In order to gain more accurate information concerning the geographic incidence of acute glomerulonephritis and the type of infection predisposing toward it, a comparative study of the hospital records of acute glomerulonephritis has been made over a period of years in the Presbyterian and Babies hospitals in New York, the Touro Infirmary, New Orleans, the John Sealy Hospital, Galveston, Texas, and the Baylor and Parkland hospitals, Dallas, Texas. The records for these hospitals have been reviewed for the following years: Presbyterian Hospital, 1917 through 1933, Babies Hospital, 1930 through 1933, Touro Infirmary, 1927 through 1932, John Sealy Hospital, 1920 through 1932, Baylor Hospital, 1927 through 1932, Parkland Hospital, 1928 through 1932.

The cases of acute glomerulonephritis have been selected in these various institutions on the basis of the clinical history, the physical examination, the laboratory data and the course of the disease. In many instances the cooperation of the physicians in the respective hospitals was the determining factor in the selection of cases with questionable diagnosis. Case histories were excluded from this group, which on study showed that the underlying condition was not acute glomerulonephritis of the type unequivocally agreed on by clinicians. Such histories were examples of disease better classified in one of the following categories: (a) postoperative renal suppression, (b) renal shutdown due to such agents as prostatic hypertrophy and

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¹ Seegal, David, Seegal, Beatrice C. and Jost, E. L. Am. J. M. Sc. to be published.
² Osman, A. A. and de Wesselow, O. L. V. S. Tr. M. Soc. London 55: 234, 1932.

malignant metastasis, (c) bacterial endocarditis, (d) poisoning by such agents as mercury and arsphenamine, (e) hypertensive cardiovascular disease, (f) nephritis due to arteriosclerosis, and (g) nephrosis

When the histories of those patients believed to have had true acute glomerulonephritis had been finally selected, it was found that, in the periods studied, there were 152 cases at the Presbyterian Hospital,

previous observations³ on this point, it is noted that about half the cases occur before the age of 11 years and 70 per cent appear before the age of 21

SEX INCIDENCE

Chart 2 shows the sex incidence in the two groups of cases studied. The values for the North and South are almost identical and illustrate that the incidence of acute glomerulonephritis is about twice as frequent in the male as in the female. Osman³ has shown that the preponderance of males over females affected by this disease is significant in every age group except that from 16 to 20 years.

SEASONAL INCIDENCE

Chart 3 shows that acute glomerulonephritis in the northern hospitals studied is chiefly a disease of the late winter and early spring, the high points being in February, March and April. In this period hemolytic streptococcus disease reaches its peak in the North. The curve for the seasonal incidence of acute nephritis in the South is much flatter than that for the northern hospitals. The high rates occur in January and February with a depression of the rate from March through July and a secondary rise in August. The explanation for the increase in the frequency in January to February may be dependent on the early onset of spring in the South.

NATURE OF THE PREVIOUS INFECTION IN ACUTE GLOMERULONEPHRITIS

A study was made of the type of preceding infection in the histories analyzed. There were a number of cases in the southern hospitals in which available data gave no information as to the presence or absence of a

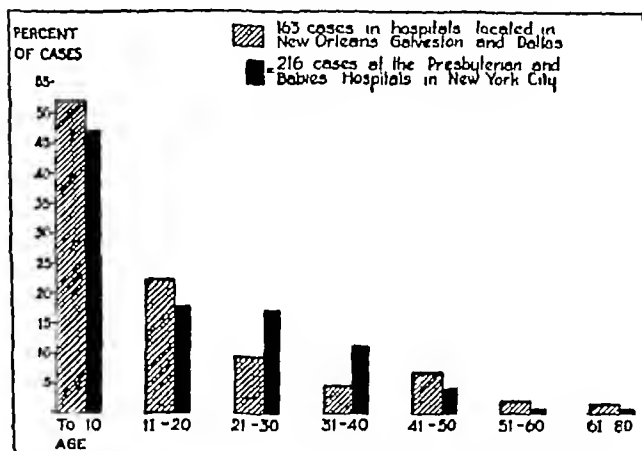


Chart 1—Age incidence in acute glomerulonephritis

sixty-six cases at the Babies Hospital and 163 cases, about equally divided, in the southern hospitals. There were, therefore, 218 cases in the New York hospitals for comparison with 163 cases in the southern hospitals.

It was possible to determine an approximate census for the medical hospital admissions in the New York hospitals as compared with those in the South, despite the difficulties related to the inclusion of a dermatologic or a neurologic unit in the medical service of one hospital, whereas another hospital might have one of these services as an independent unit. The figures for the hospital medical admissions, while not entirely accurate, showed that in the periods studied there were approximately 34,918 medical admissions in the four southern hospitals and 35,000 medical admissions in the two northern hospitals.

On the basis of the data thus collected, the incidence for acute glomerulonephritis in the northern hospitals was 0.62 per cent, that for the southern hospitals was 0.47 per cent. It was found, however, that in one of the southern hospitals it was customary each year for from seven to nine cases of frank acute glomerulonephritis to be studied in the outpatient department for blood chemistry values alone. These patients were not admitted to the hospital but were referred home for treatment by the private physician. Such histories could not be included in the records studied in this paper. Despite the elimination of these cases, the incidence of acute nephritis is very much the same in these northern and southern hospitals.

AGE INCIDENCE

Since acute nephritis is a disease chiefly of childhood and early adult life, it was felt necessary to compare the age groups in the two latitude areas studied in order that this possible source of error might be avoided.

Chart 1 shows the percentage age incidence of the northern and southern cases of acute nephritis at different age periods. It is seen from this graph that the number of cases in each age classification is approximately the same for the two groups. Confirmatory of

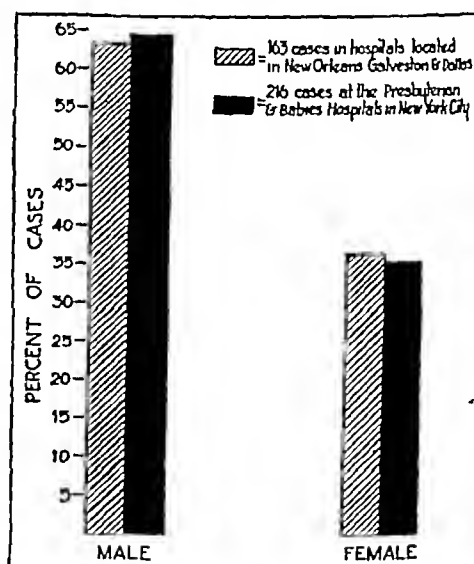


Chart 2—Sex incidence in acute glomerulonephritis.

preceding infection. There was no definite statement in this group of histories ruling out the fact in question.

Chart 4 illustrates the incidence in percentages of all the infectious prodromes in the cases of acute nephritis in the North and in the South. In many instances, individual case histories recorded multiple infections such as acute tonsillitis and acute cervical lymphadenitis. Since it is common knowledge that such infections as cervical lymphadenitis, otitis media

and acute mastoiditis are usually associated with a preceding pharyngitis, it was considered advisable to select the most significant single one of the infections noted. For example, if in a patient's history it was found that sore throat, otitis media and mastoiditis had been present, mastoiditis was selected as the chief infection preceding the onset of acute nephritis. This method was obviously inaccurate, but, since the same method was used in the study of the northern and the southern cases, it is believed that the results are comparable.

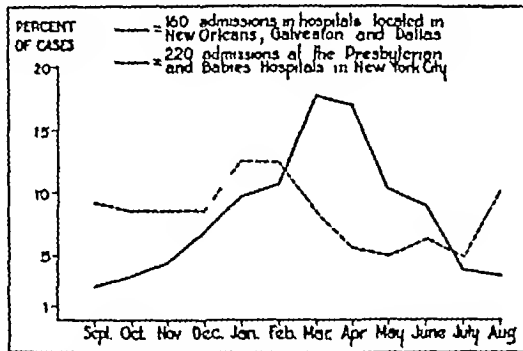


Chart 3—Monthly incidence of acute glomerulonephritis. Percentage of cases in southern and New York hospitals. (Since two of the New York patients were admitted twice for acute glomerulonephritis the figure 220 is used instead of 218.)

It would seem from chart 4 that the same type of infection precedes the onset of acute glomerulonephritis in both northern and southern patients. Every type of prodromal infection noted in the records has been included in this chart. It is probable that if more data were available in the 22 per cent of the southern cases classified as "data for preceding infection neither positive nor negative" the variations between the two comparative groups would not be as large as the chart depicts. In the northern and southern groups there are only 7.8 per cent and 6.4 per cent of cases respectively in which a preceding infection has been definitely denied.

Lohlein⁴ in 1907 stated that the vast majority of cases of acute glomerulonephritis followed a streptococcal infection. Longcope, O'Brien, McGuire, Hansen and Denny⁵ reviewed the facts on the subject collected by Volhard and Fahr, Hill and others and have reached a similar conclusion. Their bacteriologic and immunologic studies strengthen this opinion. Osman⁶ showed that infection of the upper respiratory tract was the outstanding prodromal feature in acute glomerulonephritis. In 1928 Rake⁷ stated that "99 per cent of cases of nephritis follow a streptococcal infection."

The chart shows that the type of preceding infection in both groups is for the most part that which is presumably caused by the hemolytic streptococcus. In a large number of our cases there is evidence of a deep infection by the hemolytic streptococcus. Prominent among such types of pathologic changes are cervical lymphadenitis, peritonsillar abscess, otitis media and mastoiditis.

It is surprising to note the relatively minor role played by scarlet fever in initiating acute glomerulonephritis in this series of cases. Murphy, Grill and

Moxon⁸ have recently concluded that "scarlet fever can no longer be looked upon as the chief cause of glomerular nephritis."

In addition to the series of infections presumably due to the hemolytic streptococcus, the case histories show that in a small percentage of the cases the attack of nephritis has been preceded by an inflammatory process due to the pneumococcus or staphylococcus. The studies of Neale⁹ and Blackman and Rake¹⁰ and others would lend support to the conception that the pneumococcus may initiate the syndrome of acute nephritis in children. In our series there are seven cases of acute glomerulonephritis in adults apparently related to a preceding pneumococcal infection. Evidence for a concomitant hemolytic streptococcus infection in this group is absent. A discussion of the problem is given in a previous paper.¹¹

COMMENT

A previous paper¹ contains a comparative study of the geographic distribution of rheumatic fever, scarlet fever and acute glomerulonephritis in North America. The admission rates for rheumatic fever and acute glomerulonephritis were determined in twenty-four hospitals distributed throughout the United States and southern Canada. The figures for scarlet fever were obtained from the standard public health reports, and the conclusions were based on the statistical studies of Schroeder and Longacre.¹² It was deduced from these facts that although the case frequency of scarlet fever and rheumatic fever was lower in the southern latitudes than in the northern latitudes, the yearly medical hospital admission rate for acute glomerulonephritis did not vary significantly in the four latitude regions studied.

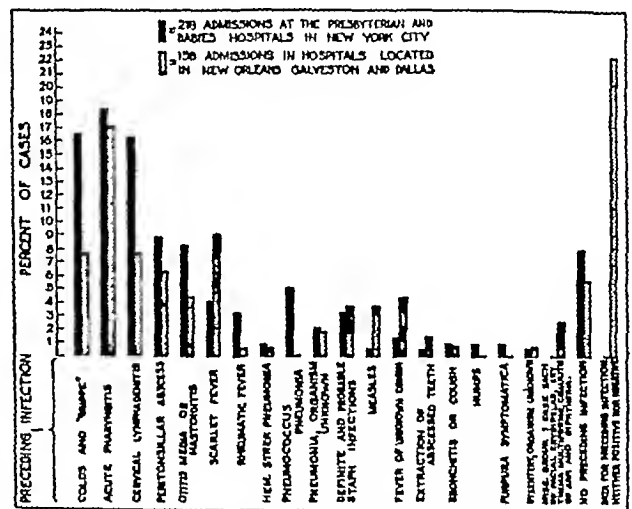


Chart 4—Type of preceding infection in acute glomerulonephritis. Percentage of cases in southern and New York hospitals. Only the single most pronounced infection is shown for each patient.

In order that the problem might be studied with more accurate data, the individual case histories of patients with acute glomerulonephritis have been reviewed in two northern and four southern hospitals. The results of this investigation have shown that the case frequency is about the same in these two groups.

⁴ Lohlein M. Ueber die entzündlichen Veränderungen der Glomeruli der menschlichen Nieren und ihre Bedeutung für die Nephritis. Leipzig S. Hirzel, 1907.

⁵ Longcope W. T., O'Brien D. P., McGuire J. M., Hansen C. C. and Denny E. R. *Tr. A. Am. Physicians* 42: 114, 1927.

⁶ Osman A. A. *Guy's Hosp. Rep.* 75: 306 (July) 1925.

⁷ Rake G. W. *Guy's Hosp. Gaz.* 42: 263 (June 16) 1928.

⁸ Murphy F. D., Grill, John and Moxon G. F. *Acute Diffuse Glomerular Nephritis*. *Arch. Int. Med.* 54: 483 (Oct.) 1929.

⁹ Neale A. V. *Brit. M. J.* 2: 891 (Nov. 17) 1928.

¹⁰ Blackman, S. S. and Rake, G. *Bull. Johns Hopkins Hosp.* 51: 217 (Oct.) 1932.

¹¹ Seegal David. *Arch. Int. Med.* to be published.

¹² Schroeder H. A., and Longacre A. B. to be published.

of hospitals. This parallelism does not depend on age or sex factors. It has been shown furthermore that the type of preceding infection is similar in the two groups of cases. The conclusions drawn in the previous paper are therefore confirmed by the more accurate data available in this study.

Despite the fact that acute glomerulonephritis appears to be as frequent in the selected group of southern hospitals as in the northern hospitals and that the preceding infection in both regions seems to be one chiefly related to the hemolytic streptococcus invasion, it has been shown that the case frequency in the South for the known hemolytic streptococcus disease scarlet fever and the probable hemolytic streptococcus disease rheumatic fever are diminished as compared with the North. This observation would suggest that, if all three diseases are related to a preceding hemolytic streptococcus infection, there must be factors other than a specific hemolytic streptococcus to account for the lack of parallelism between the geographic distribution of these three diseases.

CONCLUSIONS

1 The case histories of 216 cases of acute glomerulonephritis at the Presbyterian and Babies hospitals in New York City have been compared with 163 case histories of the same disease distributed at the John Sealy Hospital, Galveston, Texas, the Touro Infirmary, New Orleans, and the Baylor and Parkland hospitals, Dallas, Texas.

2 In the years studied there were approximately 35,000 admissions to the medical wards in the two groups of hospitals.

The medical admission rate for acute glomerulonephritis was 0.62 per cent in the northern hospitals and 0.47 per cent in the southern hospitals. Allowing for a variation in the admission rules at the various hospitals, the case frequency of the disease in the two groups of hospitals is closely parallel.

3 The age groups of the northern and southern cases are similar. About 50 per cent of the cases occurred before the age of 10 years, 70 per cent before the age of 21.

4 In both groups of cases the disease is almost twice as frequent in the male as in the female.

5 The type of infection preceding the bout of acute glomerulonephritis is much the same for the two groups. The form of the infection is that which is usually associated with tissue invasion by the hemolytic streptococcus. Many of the patients in both groups manifest a deep infection such as acute cervical lymphadenitis, peritonsillar abscess, otitis media and acute mastoiditis. Other preceding infections noted were chiefly those due to the pneumococcus and the staphylococcus.

6 The data in a previous paper¹ showed that, although the reported medical admission rate for acute glomerulonephritis was similar in twenty-four hospitals in four latitude regions, the case frequency for two other diseases chiefly of hemolytic streptococcus origin, scarlet fever and rheumatic fever, was less in the South than in the North.

The aggregate evidence suggests that, if scarlet fever, rheumatic fever and acute glomerulonephritis are incited by the hemolytic streptococcus, other factors in addition to a common specific bacterium must exist to account for the lack of parallelism between the geographical distribution of the three diseases.

620 West One Hundred and Sixty-Eighth Street.

SIMMONDS' DISEASE (PITUITARY CACHEXIA)

REPORT OF A CASE IN WHICH THE PATIENT
RESPONDED TO ANTERIOR PITUITARY-LIKE
PRINCIPLE OF PREGNANCY URINE

L. F. HAWKINSON, M.D.
BRAINERD, MINN.

Simmonds¹ originally described the entity of pituitary cachexia in 1914. More than fifty cases were reported in the German literature from 1914 to 1933. The first cases reported in the American literature were by Graham and Farquharson² in 1931.

The disorder is due to a disturbance of the anterior lobe of the pituitary. Various processes, including tumors, cysts, emboli, thrombosis, trauma, tuberculosis and syphilis, have been held responsible for the disturbance in this portion of the gland.

The common misconception still exists that pituitary disorders are due solely to tumor or some other organic disease of the gland. While in many cases previously reported the disease has been accompanied by gross pathologic changes in this organ, Engelbach³ maintained that many pituitary cachexias, as well as other forms of pituitary dysfunction, may be due to a transitory functional disorder of the anterior lobe. He thought it probable that severe deficiencies of the hypophysis occur as frequently from aneoplastic disorders as from other causes. This fact is corroborated by many writers and further by the effect of substitution therapy in a number of cases with excellent results.

The syndrome has been noted in several cases following repeated labors, especially when they are accompanied by hemorrhage. Maresch⁴ first called attention to this fact and suggested that a functional exhaustion of the anterior pituitary was a basis for the etiology in these cases. A hereditary factor has been suggested by several writers, and there is considerable evidence that this may have been a factor in a number of cases.

Clinically, these cases have been characterized by weakness, emaciation, mental lethargy, somnolence, premature aging, trophic changes in the skin, loss of pubic and axillary hair, low metabolic rate, hypotension and disturbances of sexual functions, including amenorrhea.

The onset is insidious, and the syndrome may develop in from a few months to several years. The disease is progressive and if untreated the prognosis is exceedingly grave. The course, however, may run over a considerable period. Oppenheimer⁵ has observed a patient with this disorder over a period of twenty years.

Emaciation is the most striking feature, and the cachexia usually exceeds that found in other conditions. Loss of weight is constant, and losses of from 50 to 60 pounds (23 to 27 Kg.) are common. Weakness follows the loss of weight with a concomitant loss of sexual function. In women, amenorrhea is often the first symptom noted. The recession of the secondary sex characters is a late feature. Mental symptoms are common. These may be so severe that the patient is first seen by the psychiatrist. Mental lethargy and somnolence are rather constant symptoms. The loss

From the Brainerd Clinic.

- 1 Simmonds, Morris. *Deutsche med. Wchnschr.* 40:322, 1914.
- 2 Graham, D. A. M. L. and Farquharson, R. F. *Cases of Simmonds' Disease*, abstr. J. A. M. A. 96:1987 (June 6) 1931.
- 3 Engelbach, William. *Endocrine Medicine*, Springfield, Ill., Charles C. Thomas 3:488, 1933.
- 4 Maresch, B. *Verhandl. d. deutsch. path. Gesellsch.* 17:202, 1914.
- 5 Oppenheimer, B. S. in discussion on Graham and Farquharson.

of pubic and axillary hair is a characteristic feature. Loss of eyebrows and eyelashes has also been noted by a number of writers.

The basal metabolic rate is consistently depressed and a finding of from minus 25 to minus 30 per cent is not uncommon. A case in which the basal metabolic rate was minus 40 per cent has been reported by Brougher.⁶ This finding tends to confuse the disorder with primary hypothyroid states, some of which are also attended by cachexia.

Premature aging is not an early feature but one that appears after the syndrome is well established. Hypotension is always present, and there is usually a bradycardia. Anemia is a frequent finding and the leukocyte count is often low. Eosinophilia is occasionally encountered.

Various other features have been present in many cases. The most common of these are disturbance of carbohydrate metabolism, disturbance of water balance, polyuria, polydipsia, hypothermia, headache, dizziness and fainting attacks. Dental caries has been noted by many writers and in some instances the teeth have been lost without evidence of caries.

Women appear to be more susceptible to the disease than are men in the ratio of about 5 to 1. It is most common in the fourth decade of life, though cases have been reported as early as the ninth year⁷ and as late as the sixty-ninth.⁸

DIFFERENTIAL DIAGNOSIS

The differential diagnosis is usually not difficult unless the disease is accompanied by some other disorder giving rise to extreme cachexia. Cachexia due to tuberculosis and carcinoma is not, as a rule, accompanied by a markedly depressed metabolic rate, loss of pubic and axillary hair, loss of sexual functions and a recession of secondary sex characters. Primary hypothyroid cachexia responds readily to thyroid substitution alone.

Pluriglandular sclerosis may offer some difficulty. True cases of this rare condition show the skin and facies of myxedema and a pigmentation of the skin not found in Simmonds' disease. Pluriglandular sclerosis usually affects all the endocrine glands simultaneously and presents

features in accordance with this involvement. Some cases may offer considerable difficulty in diagnosis.

Myxedema should offer no problem in differentiation. The two conditions have little in common, with the exception of the low basal metabolic rate. Thyroid therapy produces little or no beneficial effect in Simmonds' disease.

The differential diagnosis between Simmonds' disease and Addison's disease is not always easy. Some of the clinical features of Addison's disease such as asthenia, anorexia, loss of weight, dizziness and hypotension are also features of pituitary cachexia. The pigmentation in Addison's disease should aid in the differentiation. The response to the cortical hormone in Addison's disease and the response to pituitary therapy in Simmonds' should be a valuable aid in the differential diagnosis.

Simmonds' disease should be suspected in every case of marked loss of weight in which no other cause for the emaciation can be discovered. The clinical features of the disease should enable one to make the diagnosis in nearly all cases. The response to pituitary therapy is a valuable aid in early diagnosis. The fact that many cases are due to neoplastic causes should not prevent one from giving pituitary therapy a suitable trial. In Brougher's case the condition, due to an adenoma of the pituitary, responded favorably to substitution treatment.

The following case is fairly typical of Simmonds' disease. While the diagnosis remains unverified so far as pathologic changes are concerned, the response to treatment and ultimate recovery are significantly informative.

REPORT OF CASE

A school girl, aged 17 years, had lived in Minnesota during her entire life. Her father died as a result of an accident. Her mother and one sister were living and well. There had been no family tendencies and no constitutional diatheses. She had suffered from diphtheria and whooping cough in early childhood. Her menses began at the age of 15 years and had always been irregular. At the age of 15 she began to grow very rapidly and attained her present height at that age. The development of the secondary sex characters was slow. She had little interest in the opposite sex.

The chief complaints were loss of weight, weakness, amenorrhea, somnolence, mental lethargy, falling of the hair (pubic, axillary, eyebrows, eyelashes and hair on the head), premature aging and dryness of the skin.

Five and one-half months previously the patient had stopped menstruating. Following this there was a loss of appetite and a resultant loss of weight. She noticed that her school work was becoming difficult. This was unusual, for she had always been an excellent student. The condition gradually became worse, she became weak, the skin became dry, and the pubic and axillary hair began falling out.

In June, three and one-half months following the onset of the syndrome, the condition became alarming. She was losing weight rapidly, the weakness was more marked, the somnolence and mental lethargy were becoming more prominent, falling of the hair had extended to the eyebrows, eyelashes and hair on the head, and the aging was becoming more apparent.



Fig. 2—Appearance of patient March 28 1934 weight 135 pounds (61 Kg.)



Fig. 1—Appearance of patient Aug 1 1933 weight 81 pounds (36.7 Kg.)

6 Brougher J. C. *Endocrinology* 17 130 (March April) 1933
7 Simmonds Morris *Deutsche med Wchnschr* 42 190 1916
8 Meug H. *Frankfurt Ztschr f Path* 36: 650 1928.

When I first saw the patient in August, five and one-half months following the onset, anorexia was almost complete. The ingestion of food consisted of about one-half glass of milk a day. She had spent the previous two weeks at a summer camp and had lost 14 pounds (6.4 Kg) during that time. Mental lethargy and somnolence were quite marked, the hair was falling out rapidly and the premature aging was prominent. She had lost 59 pounds (26.8 Kg) in a period of five and one-half months.

A thorough search was made for a possible psychologic factor. None could be discovered. The girl was happy in spite of her condition and was willing to cooperate in every way.

Previous treatment by several physicians had consisted of desiccated thyroid, cod liver oil, rest, sun baths and tonics.

On examination, Aug. 1, 1933, the most striking features were emaciation and an aged appearance. The girl appeared much older than 17. The hair was dry and brittle and could be pulled out easily. Her height was 5 feet 7 inches (170 cm) and her weight 87 pounds (39.5 Kg). The skin was dry but showed no abnormal pigmentation. There was no wrinkling of the face and no increase in facial lines. The eyes were sunken, the pupils reacted normally to light and in accommo-



Fig. 3—Roentgenogram of sella turcica

dation, and the visual fields were normal. The fundi appeared to be normal. The nose and throat were normal. The tonsils had been cleanly removed. The lateral incisors were small; otherwise the teeth were normal and in excellent condition. Mucous membranes were of good color and appeared to be normal. The thyroid was not palpable and there was no enlargement of the cervical glands. The breasts were atrophic. The chest showed no abnormalities. The heart dulness was within normal limits, the rate 65 per minute, rhythm was regular and no murmurs were heard. The abdominal organs could not be palpated. No abnormal masses were palpable. A vaginal examination was not made. The reflexes were normal. There was no tremor. The extremities were not edematous.

The blood pressure was 85 systolic, 60 diastolic (Tyco's recording sphygmomanometer). The urine was normal at all examinations. The red blood cell count was 4,630,000, white cell count 5,100 and hemoglobin 80 per cent. The blood Wassermann reaction was negative. The basal metabolic rate was minus 27 per cent. Fasting blood sugar was 120 mg per hundred cubic centimeters. The stool examination gave negative results.

Roentgenograms were made by Dr. Daniel M. Clark. The thoracic cage was normal. The diaphragms were smooth and there was no free fluid in the pleural cavity. The hilar shadows and bronchovascular markings had a normal appearance. The lung fields were entirely free of parenchymal pathologic changes. The mediastinum was not widened or displaced. The heart was within normal limits in size, shape and position.

Lateral studies of the sella turcica showed a pituitary fossa of normal size and contour. The clinoidal processes were well formed and there was no bridging. No evidence of a neoplastic process was seen. No adventitious calcification was noted.

The conclusion was made that there was no roentgen evidence of pathologic changes in the chest or sella turcica.

The diagnosis was Simmonds' disease (pituitary cachexia), with secondary hypo activity of the thyroid, ovaries and adrenal cortices.

The patient was given intramuscular injections of anterior pituitary-like gonadotropic principle of pregnancy urine (Fol lutein, Squibb) every other day in doses of 50 rat units. Desiccated thyroid was given by mouth in doses of one-half gram (0.03 Gm) three times a day. This treatment was continued for ten days.

The patient continued to lose weight rapidly and there was no improvement. The weight had dropped to 81 pounds (36.7 Kg). The desiccated thyroid was discontinued and the gonadotropic principle of pregnancy urine was increased to 150 rat units every other day.

Four days following the increase in dosage, the patient ate her first meal in months. In a week she had begun to gain weight and was much brighter mentally, the somnolence was much improved and she felt better in every way.

The gonadotropic principle of pregnancy urine was continued in the same dosage of 150 rat units every other day until September 18. By that time the patient had gained 10 pounds (4.5 Kg), there was no somnolence, the appetite was excellent, the hair had stopped falling out and new hair was beginning to grow. In a gain she had plenty of "pep" and the skin was normal. The aged appearance was beginning to return to that of youth.

The patient returned to her home in St. Paul and through the cooperation of Dr. M. A. Shillington the gonadotropic principle of pregnancy urine was continued. The dosage, however, was decreased to 75 rat units and the intervals between injections were gradually lengthened. The last administration of the gonadotropic substance was given on December 14. During this time she had continued to improve and her condition, Jan. 1, 1934, was believed to be normal. She entered the University of Minnesota shortly after this and maintained an A average at that institution during the following quarter.

The patient received approximately 5,000 rat units of gonadotropic principle of pregnancy urine in a period of four and one-half months.

On examination, March 28, the weight was 133 pounds (60.3 Kg), a total gain of 52 pounds (23.6 Kg). The height was 5 feet 8 inches (173 cm), an increase of 1 inch (2.5 cm). The skin appeared to be normal, the cheeks were rosy, and the hair was growing rapidly and was thicker than at any time previous to the onset of the syndrome. There was a marked improvement in the secondary sex characters, the breasts were larger, the pubic hair was much more abundant, and the labia had increased in size. The blood pressure was 110 systolic and 85 diastolic. The basal metabolic rate was plus 4 per cent. No abnormalities could be found, and the girl appeared normal in every way. She stated that she could not remember ever feeling as well and that she had more energy and vitality than she had had in years. There had been a definite turn in the feeling toward the opposite sex.

On reexamination, November 30, the weight was 129 pounds (58.5 Kg) and the height 5 feet 8 inches. No abnormalities could be found, and the patient stated that she never felt better than she did at present. August 24, she had her first menstruation since the onset of the illness. The period was normal and lasted four days. Three subsequent menstrual periods were regular and normal.

During the past few years, several cases have been reported in which substitution therapy has given striking results. Among these are the cases of Calder,⁹ Striker,¹⁰ Constantini,¹¹ Hürthle,¹² McGovern¹³ and

9 Calder R. M. Pituitary Cachexia (Simmonds' Disease) Treated with Anterior Pituitary Extract. J. A. M. A. 98:314 (Jan. 23) 1932.

10 Striker Cecil A. Case of Simmonds' Disease (Cachexia Hypophysaria) with Recovery. J. A. M. A. 101:1994 (Dec. 16) 1933.

11 Constantini F. Policlinico 38 May 1931.

12 Hürthle R. Med. Klin. 28:1637 (Nov. 18) 1932.

13 McGovern B. E. Endocrinology 16:402 (July-Aug.) 1933.

Brougher⁶ In most of these cases, an extract of the whole anterior pituitary gland was used

In the case here reported, a sterile glycerin solution of anterior pituitary-like gonadotropic principle of pregnancy urine was used. As to whether the substance is of placental or hypophyseal origin has not been definitely determined. It is difficult to explain the action of the anterior pituitary-like gonadotropic substance in this case. The observations, however, would lead one to believe that it is certainly more than an activator of the sex hormone, and there is a possibility that it produces a definite stimulation of the hormone activity of the entire anterior lobe of the pituitary gland.

An anterior pituitary extract was available for use when the girl was first seen. The extract contains the growth factor together with the sex and thyrotropic complementary factors of the hypophysis. A marked increase in height within a few months was obtained in two cases in which the patient had been previously treated with this extract. The girl had already attained the height of 5 feet 7 inches at the age of 17 years, and it is obvious that the use of the extract containing the growth factor would have been objectionable in this case.

Desiccated thyroid was given in small doses in the early treatment of the patient. It is thought by some investigators that better results may be obtained in pituitary disorders when desiccated thyroid is given with pituitary therapy, especially when the basal metabolic rate is low. The results with thyroid therapy alone in the treatment of Simmonds' disease have been without beneficial effect.

When one considers the etiology of Simmonds' disease one must remember that it may be caused by transitory functional disorder of the anterior lobe. Among conditions causing such disorders may be focal infections, constitutional factors and functional exhaustion of the cells of the anterior lobe of the pituitary body. It is possible that mild cases of Simmonds' disease of this type are common and are unrecognized. Von Bergmann¹⁴ considers the most important and most frequent form of emaciation a condition that has been referred to as "hypophyseal emaciation." He is convinced that the anterior lobe of the pituitary body is an important factor in this form of emaciation and considers the extracts of the anterior lobe the most effective therapy. The condition of "hypophyseal emaciation" is similar in many respects to Simmonds' disease, and it is possible that it is a mild form of Simmonds' disease.

The etiologic factor in the case here reported was probably a functional disorder of the anterior lobe. This is suggested by the normal appearance of the sella turcica and the response to therapy.

SUMMARY

Simmonds' disease is probably more common than is generally realized.

The syndrome may be caused by transitory functional disorder of the anterior pituitary body as well as by neoplastic involvement.

In a girl, aged 17 years suffering from Simmonds' disease, the treatment consisted of injections of anterior pituitary-like gonadotropic principle of pregnancy urine for four and one-half months and small doses of desiccated thyroid for a short time. Improvement followed the increase in dosage of the gonadotropic substance.

The clinical features of the syndrome, together with more recent knowledge of the anterior hypophysis, indicate that the entire anterior hypophysis is involved in Simmonds' disease. It is possible that the hormone activity of the entire anterior lobe of the hypophysis is stimulated by gonadotropic substance.

First National Bank Building

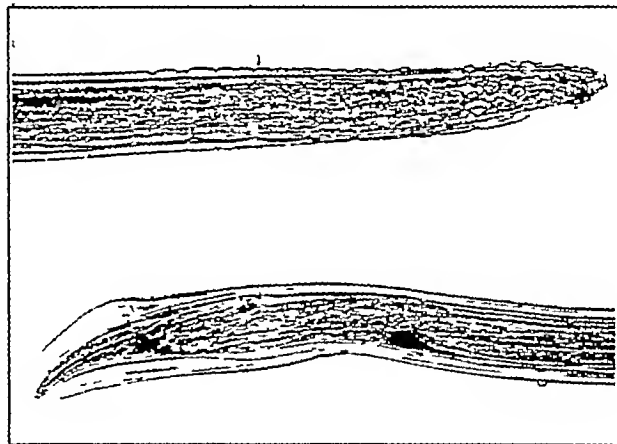
Clinical Notes, Suggestions and New Instruments

A GONGYLONEMA INFESTATION IN MAN

C H WAITE, B A AND RACHAEL GORRIE, M S, MOBILE, ALA

Gongylonema has been found in man in such rare instances that we believe that the circumstances of the isolation and identification, as well as a description, of one found by us may be of interest.

The infestation is common in ruminants, swine and other animals,¹ in which it is found in the upper portion of the digestive tract, and usually in the esophagus. Only seven cases have been found in man, the most recent by Stiles² in 1928. Pane has found one, Alessandrini one,³ Ward one,⁴ Stiles three, and Ransom one. In all human cases the worm has been found in the oral cavity, where it burrows beneath the mucosa. The patient is conscious of its migrations and it can be seen with the naked eye.



Anterior (above) and posterior (below) extremities of Gongylonema (X 75)

L. H., a white man, aged 30, brought a worm to our laboratory stating that he had withdrawn it with his fingers from the "roof of his mouth." He had suffered with a sore mouth for three months. Although the man occasionally felt an indefinite movement when the worm burrowed beneath the oral mucosa, no specific symptoms developed, and he stated that the only effect he felt was nervousness. Faust states that in one case an antiseptic mouth wash stimulated the worm to work its way out of its tunnel so that it was removed with the fingers. It is quite possible that this was true in our case, as treatment for Vincent's angina had been employed for several weeks before extraction of the worm. An examination of the man's palate was not made at the time the worm was extracted, but one week later no evidence of the tunnels or paths caused by the worm beneath the mucous surface could be seen.

From the Alabama State Board of Health Branch Laboratory
1. Faust, E. C. Human Helminthology Philadelphia Lea & Febiger 1929

2. Stiles C. W. and Baker C. E. A Fifth Case of Gongylonema Hominis in Man in the United States J. A. M. A. 91: 1891 (Dec 15) 1928. Stiles, C. W. Gongylonema Hominis in Man, Pub. Health Rep. 36: 1177 (May 27) 1921. Annual Report of the Surgeon General of the Public Health Service for 1918 p. 64.

3. Alessandrini G. Nuovo caso di parassitismo nell'uomo da Gongylonema Bull. d. r. acad. med. di Roma 40: number 4 1914.
4. Ward H. B. Gongylonema in the Role of a Human Parasite J. Parasitol. 2: 119-125 (March) 1916.

The worm is, we believe, the first male *Gongylonema* found in man and was described as follows. It was a grayish white, 32 mm long by 0.1 mm. in width, with the posterior extremity slightly curved. The mouth was small and circular, surrounded by a raised cuticular rim 15 microns in diameter. From the mouth caudad the body was embossed with eight longitudinal rows of cuticular scutes extending for 0.47 mm. These bosses or scutes are the characteristic feature of the *Gongylonema*. They are quite regular in succession and uniform in size.

The posterior end showed distinct caudal alae supported by ten pairs of pedunculated papillae. The copulatory spicules were unequal in length, one measuring 50 microns, while the other was 16.5 mm. The gubernaculum was discernible. The anus was 0.14 mm anterior to the caudal tip.

Gongylonemas isolated from man, swine and cattle are very similar, but the species have been given a variety of names by various investigators. Until definite dissimilar structures in the species are established, we are inclined to think, as do Faust and Ward, that the most appropriate name for the nematode would be *Gongylonema pulchrum* (Molin, 1857).

It is now some six weeks since L. H. brought the worm to us. His nervous symptoms are gone, his palate is normal and he has found no more worms. In all but one of the previous cases, only one worm has been found, from this evidence it seems safe to assume that the infestation in man is accidental.¹

Thursday he was a little confused and complained of a headache but was otherwise normal. He had no double vision.

Friday, the sixth day from the very first manifestation of illness and the fifth from the severe onset, found him well but for weakness and a slight headache when sitting upright. Since then he has remained perfectly well in every way.

Lowry Building

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THERAPEUTICS OF THE THYROID

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed, the series will be published in book form.—Ed

One dictionary defines therapeutics as "the practical branch of medicine dealing with the treatment of disease." In this article "therapeutics" is interpreted to include both treatment of diseases of the thyroid and treatment of any diseases by means of the gland. The treatment of hypothyroidism, for example, is substitution therapy with thyroid, but there are also certain nonthyroid disorders in which thyroid may be used as a drug for the sake of its pharmacodynamic action, just as epinephrine is used in asthma. The latter is symptomatic, not specific substitution therapy. It is treatment with a gland secretion, not treatment of a gland disease. Both will be discussed in this article.

TREATMENT OF THYROID DISEASES

The treatment of thyroid diseases or disorders resolves itself chiefly into that of excessive function of the gland, insufficient function of the gland, and local mischief caused by the gland.

In identifying methods to meet these several indications it will be well to think always in terms of known thyroid physiology, or in those of the anatomic relations of that organ.

The sole function of the thyroid, so far as is known, is the manufacture of the hormone thyroxine, but the physiologic actions of the substance are varied and have to do with metabolism, homeostasis, irritability, differentiation and growth.

For the purpose of discussion it will be convenient to consider the clinical pictures, associated with the thyroid, under the following headings:

- 1 Thyrotoxicosis—toxic goiter
- 2 Myxedema and cretinism.
- 3 Endemic goiter, sporadic colloid goiter
- 4 Nodular goiter
- 5 Malignant goiter
- 6 Inflammation of the thyroid
- 7 Anomalies of the thyroid

Of these several groups, the first two include lesions producing gross alteration in thyroid function and, therefore, constitutional manifestations both characteristic and important. The remainder include lesions for the most part of local significance. By the term "goiter" is meant enlargement of the thyroid from any cause. It is used in a purely clinical sense and has no pathologic connotation. This is consistent with common use in this country today and is justified by the fact that the

ENCEPHALITIS COMPLICATING GERMAN MEASLES

REPORT OF CASE

H. O. SKINNER, M.D., ST. PAUL

A boy, aged almost 10 years, of good physique, nutrition and general health, was sent home from school on Wednesday, Feb. 6, 1935, with the diagnosis of German measles and the information that a physician was not needed for this disease. He did not seem very sick and his rash was about gone by Friday night.

Saturday he was irritable, ate very little and slept much of the day. Sunday he awakened apparently well, had a rising bed-tussle with his 5 year old brother, made several trips downstairs and read the "funnies." About 9 o'clock in the morning, while talking with his mother, he fell unconscious to the floor. Arriving soon afterward I found him absolutely unconscious, with pupils widely dilated, equal and without reflex. Superficial reflexes were gone, the patellar was faint, and the Babinski sign was positive. The eardrums were normal in appearance. He was restless but not convulsive, and resistive but not rigid, except for his jaw. His neck particularly was not rigid and he had no meningeal symptoms. He had had involuntary evacuation of bowels and bladder but his pulse was only 72 and the temperature (rectal) 98.6 F.

He was given morphine by hypodermic at once and again that night, at which time he was still very restless, with no change in his other symptoms.

Monday morning the pupils were sluggishly reactive to light, and the Babinski sign was doubtful. Lumbar puncture gave 1 ounce of fluid under moderate pressure, it was clear, the Nonne reaction was negative, and it contained 13 cells. Urinalysis at this time showed specific gravity, 1.018, the urine was clear and acid, and negative for albumin and sugar. Microscopic examination was negative. A neurologic consultant confirmed my diagnosis of encephalitis but said that he had seen a few cases of encephalitis complicating German measles which were distinguished from the lethargic type by their very short and mild course.

The boy was given an enema of magnesium sulphate followed by retention enemas of dextrose in saline solution. On the evening of the second day of unconsciousness he ran a little fever.

Tuesday his temperature reached 103 F., but it was normal by the next morning and remained so. He was still sufficiently restless for morphine and unconscious but he did respond irritably to being moved. His rigid jaw relaxed, he yawned several times and was able to swallow.

Wednesday he looked about, asked for food but didn't eat it. Restlessness lessened and the pulse, temperature and reflexes were normal.

pathologic nature of an enlargement often cannot be identified clinically "The patient has a goiter, it is (or isn't) accompanied by hyper- (or hypo-) function," is sometimes all the physician can say with certainty as the result of his purely clinical studies. By the term "thyrotoxicosis" is meant the toxic state resulting from an excessive supply of thyroxine. It can be induced by the administration of thyroid or thyroxine but exists spontaneously only in conjunction with thyroid hyperplasia, hence the term toxic goiter. From the therapeutic side, nothing is gained by trying to split toxic goiter into two or more types. The treatment for all is the same.

1 Toxic Goiter—The indication is to abolish the hyperfunctioning of the gland. To date only two procedures are known that can accomplish this permanently: irradiation and surgical resection of the thyroid. It is to be borne in mind that the disease may subside or even disappear spontaneously in time. Also, it should be stated emphatically that iodine characteristically produces a marked amelioration in the intensity of the thyrotoxicosis, which, however, returns to its former state if the administration of iodine is stopped.

The response to iodine has come to be looked on as one of the cardinal manifestations of the disease.¹ Advantage can be taken of it not only in treatment but in diagnosis,² and probably in prognosis as well. It consists in a prompt fall in metabolic and pulse rates and improvement in the symptoms of thyrotoxicosis. It can be obtained at any time during the course of the disease but has no effect on the duration or direction of its progress. If a patient is kept continually under the influence of iodine, the course will be milder but not shorter than of one who is not. We³ believe that there is no true refractoriness to iodine. The only people who do not respond to iodine are those who are either not thyrotoxic or those who, if thyrotoxic, are already iodimized. In but 3 per cent of our cases was there a failure to respond to iodine, and these could be explained on the basis that the drug was given at a time when the disease was increasing rapidly in severity and the iodine effect was merely to hold the status constant. In the management of toxic goiter, the physician must know whether his patient is iodimized or not iodimized, just as he must know whether his cardiac patient is digitalized or not digitalized. An adequate dose of iodine,⁴ to attain full iodimization in toxic goiter, is contained in from 5 to 10 minims (0.3 to 0.6 cc) of saturated solution of potassium or sodium iodide, given once daily. There is no special virtue in compound solution of iodine or other iodine preparations. Iodine seems to serve as iodine, regardless of chemical combination or route of entry. It may be administered by mouth, vein or rectum and is equally effective by all routes.⁵

Irradiation in some cases seems to put a permanent quietus on the hyperfunctioning of the thyroid. It may be given in the form of radium or roentgen radiation. Before 1923 (the date Plummer introduced the use of

iodine), Holmes and I⁶ recommended treatment with roentgen radiation in all cases. We found that in about one third it brought about a cure, in another third it produced improvement, and in another third it was without observable effect. We have lately looked up a number of patients treated ten or more years ago. It is of interest that, for the most part, the cures have proved permanent.⁷

Operations less extensive than subtotal thyroidectomy, in our experience, have generally proved inadequate to bring about either a complete or a lasting cure.⁸ It is true that patients in the past who have had hemithyroidectomies may be entirely well after several years. This is because the surgical procedure improves the condition, and in time nature completes the cure. The thyrotoxicosis is not promptly and completely abolished, as it is in most cases in which subtotal thyroidectomy is done.

At the present time I believe that the best therapeutic program available is subtotal thyroidectomy in the fully iodimized subject. This program offers more promise of certain and prompt recovery than any other that I know. Irradiation, though sometimes effective, is unquestionably inferior. One of the strongest arguments for it in the past was that surgery was dangerous. The preoperative use of iodine has greatly diminished the risk of operation. The disease itself sometimes kills the unoperated patient. We have had six such deaths in ten years, a mortality of about 0.6 per cent.

Our routine procedure in toxic goiter is to put the patient to bed, observe the symptoms carefully and determine the basal metabolic rate every day or two until a horizontal level has been obtained. Iodine is then given for from ten to fourteen days and the effect on the symptoms and metabolic rate is noted. If a definite response to iodine is obtained, which means a drop of from fifteen to thirty points in the metabolic rate and improvement in symptoms, the patient is ready for operation. The operation is, if possible, a one stage subtotal thyroidectomy under nitrous oxide-oxygen or local anesthesia.

Patients who have not made a good response to iodine and patients who have been emotionally upset prior to operation are poor operative risks. They are more subject to postoperative toxic crisis or storm. Older persons are less good risks than young and those with cardiac complications less good than those without. In all cases, steps should be carried out preoperatively to insure a good store of glycogen in the liver. In the very toxic ones, intravenous dextrose should be given the day before and on the morning of the operation (a liter of 5 per cent), in others a high carbohydrate diet, with sugar candy, will serve. Sedation is accomplished by bromides, paraldehyde, morphine or amytal. Phenobarbital is undesirable, because thyrotoxic persons seem particularly subject to severe rashes.

Patients with gross congestive heart failure or permanent auricular fibrillation should be digitalized as well as iodimized before operation. When the metabolic rate is rising in spite of iodine, operation should be deferred. Active streptococcal throat infections or other active infections, including particularly respira-

1 Means J H, Thompson W O and Thompson Phebe K. On the Nature of the Iodine Reaction in Exophthalmic Goiter. *Tr. A. Am. Physicians* 43: 146, 1928. Means J H. Use of Iodine in Exophthalmic Goiter. *Ann. Int. Med.* 4: 117 (Aug.) 1930.

2 Means J H. Diagnostic Use of Iodine in Thyrotoxicosis. *Ann. Int. Med.* 7: 439 (Oct.) 1933.

3 Means J H and Lerman Jacob. Action of Iodine in Thyrotoxicosis with Special Reference to Refractoriness. *J. A. M. A.* 104: 969 (March 23) 1935.

4 Thompson W O, Bradley A G, Thompson Phebe K and Thorp E G. The Range of Effective Iodine Dosage in Exophthalmic Goiter. *Arch. Int. Med.* 45: 261 (Feb.) 1930.

5 Lerman Jacob and Means J H. Iodine in Exophthalmic Goiter. Comparison of Effect of Ethyl Iodide and Potassium Iodide with That of Lugol's Solution. *Am. J. M. Sc.* 181: 745 (June) 1931.

6 Means J H and Holmes G W. Further Observations on the Roentgen Ray Treatment of Toxic Goiter. *Tr. A. Am. Physicians* 37: 198, 1922.

7 Pittman, H S. End Results in Exophthalmic Goiter. Patients Treated in Preiodine Days. *New England J. Med.* 210: 912 (April 26) 1934.

8 Richardson E P and Means J H. Results of Surgery and of Surgery Combined with Roentgen Ray Treatment in Exophthalmic Goiter. *Arch. Surg.* 9: 237 (Sept.) 1924.

tory involvement and active rheumatic infection, are also indications for postponement⁹

Following operation, dextrose is again given intravenously to the patients who seem very toxic, or it may be given rectally and in conjunction with bromides. Iodine is continued until the patient is discharged from the hospital. During the immediate postoperative convalescence, inhalations of steam, flavored by compound tincture of benzoin, are very soothing to the irritated trachea. These should be given by means of a 3 foot piece of 1 inch rubber tubing, connected to the spout of a kettle containing the hot water and benzoin, which the patient places in his mouth and breathes through¹⁰. The water in the kettle, obviously, must not cover the inner opening of the spout. Paper cones and bags are unsatisfactory. Postoperative hypoparathyroidism (tetany) is treated by means of intravenous calcium chloride, in the dose of 5 cc of 10 per cent solution, and calcium lactate or gluconate by mouth, 30 grains (2 Gm) three times a day, laryngeal obstruction by means of intubation or tracheotomy, if necessary, and postoperative toxic crisis by intravenous dextrose, an oxygen tent, sedatives and cold sponging or packs.

Following discharge from the hospital, the patient is followed at gradually lengthening intervals for at least two years. This is for the purpose of detecting recurrent thyrotoxicosis, or myxedema or latent tetany.

Often mild symptoms of thyrotoxicosis persist for a few months after operation. These may be entirely controlled by small rations of iodine (potassium iodide 3 grains [0.2 Gm] once daily or less). The indication is to omit the ration from time to time, and when no rise in basal metabolic rate or no return of symptoms occurs, the patient may be considered cured. More serious persistence or recurrence of thyrotoxicosis requires more drastic treatment. Irradiation may be tried or, if marked regrowth of goiter occurs, a second or even a third operation may be necessary.

Such a program at the Massachusetts General Hospital has given, in round numbers, the following results. Four out of five patients are cured. One out of five has persistent thyrotoxicosis. One out of ten requires further operation or irradiation. One out of 100 develops permanent myxedema requiring continued substitution therapy with thyroid¹¹. Over a ten year period, the operative mortality in the public wards has been 1.1 per cent in the 97 per cent of the patients making good iodine responses, and 27.3 per cent in the 3 per cent not responding well to iodine. It was this finding that led us to conclude that a poor response to iodine is indication of poor operative risk.

The keeping of operative mortality down is more a matter of wise selection of patients and time of operation, and of preoperative and postoperative care, than it is of improving surgical skill. The operation itself is highly standardized and, in the hands of a properly qualified surgeon, easy and safe. There are unquestionably more good thyroid surgeons in the United States than in any other country, and the surgical technic here is more nearly perfected.

The experience at the Massachusetts General Hospital justifies the following conclusions. 1. If, after

subtotal thyroidectomy, the basal metabolic rate drops to and remains within standard limits, off iodine, for two months, cure can be assured. 2. A standard basal metabolic rate, on iodine, two weeks after operation does not mean that cure can be assured. 3. A basal metabolic rate of plus 15, or higher, on iodine, two weeks after operation, usually means that the disease has not been effectively abolished¹².

Of other therapeutic procedures in the management of toxic goiter, little need be said. Quinine hydrobromide has no longer any place. Quinidine may be used for fibrillation persisting after operation. Cytolytic serums and antihormonal substances have not yet impressed the profession sufficiently with their usefulness to lead to general adoption.

2. Myxedema and Cretinism.—In these states one is dealing with a loss of thyroid function. In adult myxedema the indication is to give a sufficient daily ration of thyroid to keep the patient free from symptoms. It is best to use the minimum dose that will accomplish this purpose. Nothing is gained by raising the basal metabolic rate to standard if the patient is free from symptoms (as is usually the case) at a decidedly lower level. In our experience, patients seldom have symptoms of myxedema when the basal metabolic rate is above minus 20¹³. From 1 to 2 grains (0.06 to 0.12 Gm) of thyroid U. S. P. once daily by mouth is often sufficient. Many patients will remain nearly symptom free on less. In the cases of thyroidectomized cardiac patients, in whom the indication is to get the maximum metabolic reduction possible without gross myxedema, rations as low as one-fourth or even one-eighth grain (0.016 or 0.008 Gm) may serve. Since a sensation of warmth is desirable in winter and undesirable in summer, it may be well to give a somewhat larger ration of thyroid in winter than in summer. In the dog days it is a positive advantage, to be, to a certain extent, myxedematous.

Since the strengths of commercial thyroid preparations differ, one from another, it is desirable that the physician stick to one brand and learn its effective dose. The U. S. Pharmacopeia X requirements are as follows:

Thyroid is the cleaned, dried, and powdered thyroid gland, previously deprived of connective tissue and fat. Thyroid contains not less than 0.17 and not more than 0.23 per cent of iodine in thyroid combination, and must be free from iodine in inorganic or any other form of combination than that peculiar to the thyroid gland. One part corresponds to approximately 5 parts of fresh gland.

It is worth noting that it is not an extract, though commonly so miscalled. Not all commercial brands conform to this pharmacopeial requirement, which is a pity because it makes for confusion. Armour's, Lederle's and Lilly's do, Parke, Davis's and Burroughs, Wellcome's do not. The latter, of course, is a British preparation. In our experience, the following are all equal in calorigenic effect in myxedema patients: 1½ grains (0.1 Gm) of U. S. P. (Armour, Lederle or Lilly) thyroid, 1 grain (0.065 Gm) of Parke, Davis thyroid, 5 grains (0.3 Gm) of Burroughs, Wellcome thyroid, or 0.3 mg of pure thyroxine¹³.

It should be borne in mind that as a therapeutic agent pure thyroxine has no advantage over dried thyroid, indeed, by mouth it is inferior, for in the whole gland

⁹ Means J. H. Exophthalmic Goiter and Acute Rheumatic Fever. New England J. Med. 201: 1056 1929.

¹⁰ Means J. H. and Lerman Jacob. A Convenient Technic for Steam Inhalation for Bed Patients. New England J. Med. 206: 124 (Jan. 21) 1932.

¹¹ Thompson W. O., Thompson Phebe K. and Morris A. E. The Course of Exophthalmic Goiter Following Subtotal Thyroidectomy. Western J. Surg. 38: 763 (Dec.) 1930.

¹² Means J. H. and Lerman Jacob. Symptomatology of Myxedema Its Relation to Metabolic Levels. Time Intervals and Rations of Thyroid. Arch. Int. Med. 55: 1 (Jan.) 1935.

¹³ Lerman Jacob and Salter W. T. The Calorigenic Action of Thyroid and Some of Its Active Constituents. Endocrinology 18: 317 (May-June) 1934.

the hormone is in protein linkage as iodothyroglobulin, it is more soluble, and is absorbed from the gastrointestinal tract in a quantitative manner¹⁴. Nor have other fancy and more expensive thyroid pharmaceuticals anything to recommend them. Dried thyroid by mouth is practically a perfect substitution therapy. It is the only one that need be employed in the treatment of myxedema.

The effects of giving thyroid in myxedema are prompt and striking. In a few days the patient feels warmer and less sleepy. His speech and muscular movements become faster. His sensorium becomes more alert. There is usually a striking diuresis. As fluid goes out, the bloated appearance disappears. With faster skin growth there is desquamation. Indeed, sometimes these people practically shed their skin. The hair takes on a more normal texture and grows faster. In a fortnight the status may be close to normal. The rapid disappearance of symptoms is in contrast to their slow development.

If excessive dosage is given there may be untoward manifestations. Sometimes these take the form of marked aching and even tenderness in skeletal muscles. Sometimes attacks of angina pectoris are produced. Coronaries that were adequate at the low level of myxedema become inadequate when metabolism is suddenly increased. Acute cardiac collapse, from overdosage, has been reported.¹⁵

For these reasons the physician will do well to go slowly in inaugurating substitution therapy. Indeed, there is no need to do more than start what is to be the probable permanent ration. As previously stated, this is in the neighborhood of 1 to 2 grains (0.06 to 0.12 Gm.) of U S P thyroid, once daily. If untoward symptoms arise (they seldom will on this dosage), thyroid should be stopped till they disappear, then should be resumed in smaller dosage.

Certain by-products of myxedema need mention. The anemia is often impressive. Usually it is of the so-called secondary variety,¹⁶ occasionally the picture is that of pernicious anemia.¹⁷ When the former is the case, iron in full dosage (that is, iron and ammonium citrate 30 grains, or 2 Gm., three times a day) in addition to thyroid may effect a faster restoration of blood than thyroid alone, and when the latter, liver or a potent liver extract should be given along with thyroid. Anemia is the slowest myxedema symptom to disappear under treatment with thyroid alone.

The heart in myxedema is enlarged and flabby, in fact, myxedematous, but thyroid is all the medication that is required.¹⁸ Digitalis contributes nothing, indeed is not indicated, unless some independent heart disease with congestive failure coexists.

A warning is in order regarding morphine. The tolerance to this drug is greatly lowered.¹⁹ A single quarter grain dose may put the myxedema patient into a deep lethargy, which conceivably could be fatal. The drug should not be used in the untreated patient.

In the cretin, the principles of treatment are similar to those in adult myxedema, except that sufficient

thyroid must be given to permit a normal rate of growth. The adult with acquired myxedema has been a normal person and by adequate substitution therapy can be restored to that happy status. The cretin, on the other hand, has been athyrotic since birth and, unless adequate substitution therapy is started in the first year or two of life, an irreparable stunting in mental and bodily growth will occur, which no amount of later treatment can correct. The effect of thyroid in the older cretinous imbecile is often disappointing. Sometimes it seems to make him rather irritable and peevish and little else. Suitable dosage for cretins, of U S P thyroid, is approximately as given in the accompanying table.

Suitable Dosage of Thyroid for Cretins

Age	Amount Daily
2-4 months	$\frac{1}{10}$ grain
4-8 months	$\frac{2}{10}$ grain
8-12 months	$\frac{2}{10}$ to $\frac{3}{10}$ grain
12-24 months	$\frac{3}{10}$ to $\frac{1}{2}$ grain
2-4 years	$\frac{1}{2}$ to 1 grain
4-12 years	1 to 2 grains

Acquired myxedema, supervening in childhood, occupies an intermediate position. Treatment here can give nearly as good results as in the adult, if faithfully adhered to.

3 Endemic Goiter and Sporadic Colloid Goiter—In endemic goiter the important thing is prevention, not treatment. This is discussed in the paper by Marine.

Treatment of the endemic goiter or the sporadic colloid goiter is indicated when it produces pressure or becomes the seat of pathologic changes, or for cosmetic reasons. Iodine accomplishes but little after goiter has developed. Thyroid should be given if the metabolism is low. For the most part, the treatment is surgical removal or nothing.

4 Nodular Goiter—This term is purely one of convenience. Any goiter with lumps in it can be called nodular. Only the pathologist can say with certainty what the lumps may be. Such goiters, however, constitute a fairly definite clinical grouping. Treatment is indicated for pressure, which is frequent, or for thyrotoxicosis, or for the possibility or prevention of a malignant condition or for cosmetic reasons. There is no medical treatment for nodular goiter. If the symptoms of pressure are present, operative removal should always be advised. If a state of thyrotoxicosis supervenes, the treatment is that of toxic goiter, which has already been described. Some authorities advise removal of all nodular goiters, on the ground of cancer prophylaxis. There is no question that malignant disease develops more frequently in nodular goiter than in the normal thyroid. To this extent nodular goiter may be looked on as a premalignant lesion. If one takes a somewhat more conservative attitude toward treatment, one must still advise surgical resection if growth or change in consistency of the goiter develops. Anything short of that would be negligent. The long standing, unchanging, asymptomatic, nodular goiter offers the chief opportunity for argument.

5 Malignant Goiter—An inoperable thyroid cancer is a horrible lesion. It is one's duty to prevent such a development at all possible cost. Early detection and eradication in an operable stage is the obvious course.

All degrees of malignancy are encountered from very slowly progressing forms to truly fulminating types.²⁰

¹⁴ Salter, W. T., Lerman, Jacob and Means, J. H. The Calorigenic Action of Thyroxin Polypeptide. *J. Clin. Investigation* 12: 327 (March) 1933.

¹⁵ Sturgis, C. C. and Whiting, W. B. The Treatment and Prognosis in Myxedema. *J. A. M. A.* 85: 2013 (Dec. 26) 1925.

¹⁶ Lerman, Jacob and Means, J. H. Treatment of the Anemia of Myxedema. *Endocrinology* 16: 533 (Sept. Oct.) 1932.

¹⁷ Means, J. H., Lerman, Jacob, and Castle, W. B. Coexistence of Myxedema and Pernicious Anemia. *Tr. A. Am. Physicians* 45: 363 1930.

¹⁸ Lerman, Jacob, Clarke, R. J. and Means, J. H. The Heart in Myxedema. *Ann. Int. Med.* 6: 1251 (April) 1933. Further Observations on the Heart in Myxedema. *ibid.* 8: 82 (July) 1934.

¹⁹ Lund, C. C. and Benedict, E. B. Influence of Thyroid Gland on Action of Morphine. *New England J. Med.* 201: 345 (Aug. 22) 1929.

²⁰ Clute, H. M. Clinical Aspects of Thyroid Malignancy. *New England J. Med.* 205: 1083 (Dec. 3) 1931.

The latter are practically never cured. The former often are. So long as the disease remains within the gland capsule, there is hope of successful ablation. Even when there is slight extension beyond the capsule there is still some possibility of complete removal by sacrificing the overlying muscles and other nonessential adnexa.

Surgical treatment for malignant goiter should be followed by irradiation, and inoperable growths may be treated by this method alone. Thyroid malignancy often responds well to irradiation, particularly when it is lymphosarcomatous instead of carcinomatous. Primary tumors respond better than metastases. Irradiation should not replace surgery even when only partial resection is possible. Papillary adenocarcinoma is especially amenable to treatment in these ways.

6 Inflammation of the Thyroid—Acute thyroiditis turns up now and then, either in persons with goiter or in those with normal thyroids. The indications for treatment are those of any infection: rest in bed, and so forth, together with an ice collar locally. Under this regimen most cases subside rapidly and clear up completely. Occasionally the process goes to suppuration and then there is danger of suffocation from pressure or inward pointing with rupture into the trachea or mediastinum. If suppuration is suspected an exploratory puncture may find the pus, and then anterior drainage should be done.

Chronic thyroiditis appears in several forms, of importance chiefly because they may be productive of pressure or of myxedema. The former may be relieved by operation, the latter by giving thyroid. Such glands may be intensely hard and may closely resemble a malignant growth.

7 Anomalies of the Thyroid—Aberrant thyroid tissue may be found at the back of the tongue, along the course of the thyroglossal duct, in the neck lateral to the usual thyroid, or in the mediastinum. In any of these positions, surgical removal may be indicated if any mischief is being done or is impending, i.e., pressure, malignancy or hyperfunction. Lateral aberrant thyroids are particularly likely to become the seat of papillary cyst adenoma and should always be removed for prophylaxis.

The thyroglossal duct may persist and give rise to a thyroglossal cyst. These may become infected and rupture spontaneously or require drainage. When this happens, a sinus is found that can be eradicated only by complete dissection of the cyst.

THE USE OF THE THYROID HORMONE AS A DRUG

In contrast to its use in myxedema, in which it is a direct substitute for a hormone that the body needs and cannot make for itself, thyroid may be tried in a variety of nonthyroid disorders for the sake of its drug action. The action wanted may be the calorogenic, the diuretic, the diaphoretic, the effect on other endocrines such as the female gonads, the direct effect on heart muscle, the stimulation of the vegetative nervous system with, for example, increased peristalsis and relief of constipation, or any other that it possesses.

The physician, in using the drug, should think of all its actions and give it when he would like to obtain, in his patients, such effects as it may conceivably produce. He should also remember that dried thyroid, U S P, is the form of choice, not pure thyroxine or any special pharmaceutical.

1 Hypometabolism Without Myxedema—A considerable number of persons turn up with basal metabolic rates well below standard who show no clinical evidence of thyroid disease and in all probability have no thyroid disease. The low metabolic rate is brought about in some other fashion than through lack of thyroxine. Some of these are, as far as can be discovered, perfectly healthy persons. When symptoms occur under such circumstances, they are of varied sorts. Sometimes the picture is that of mental depression, sometimes malnutrition. Or the picture may be that of arthritis, it may be Meniere's disease, it may be recurring corneal ulcer, it may be vasomotor rhinitis or some other anaphylactic manifestation, it may be constipation, or it may be any sort of neurasthenia. Given any of these pictures in association with a low metabolic rate, the empirical use of thyroid is justified. If it confers any benefit (it may or it may not), the physician and patient may both be thankful. If it does not, it should be discontinued. The reaction of the true hypothyroid individual is definite, precise and predictable, that of these nonmyxedematous patients with low metabolic rate indefinite, variable and unpredictable. One is biologic substitution therapy, the other drug therapy. Even for its drug action, it is seldom wise to give more than 3 grains (0.2 Gm.) of U S P thyroid daily, for any great length of time.

2 Obesity—Thyroid, of course, has been used for reduction purposes for years. It will reduce, but it is by producing hyperthyroidism that it does so. Symptoms of tachycardia, perhaps precordial pain, nervousness, irritability, warmth and sweating are apt to result. I have always been rather opposed to its use for such a purpose, except in the face of very special indications. However, I am bound to confess that I believe it less risky to use thyroid and produce a mild hyperthyroidism that will subside when the drug is stopped than to employ alpha-dinitrophenol or (4,6) dinitroorthocresol, now so much in vogue, of which the possible toxic effects, by no means fully known, are serious.²¹

3 Pregnancy and Sterility—Pregnant women with nontoxic goiters and slightly low metabolic rates had best be given thyroid during pregnancy. Certain sterile or habitually aborting women may become fertile and go through normal pregnancies if placed on thyroid.

4 Skin Diseases—Certain skin lesions characterized by dryness, particularly senile eczemas, ichthyosis and scleroderma, sometimes are improved by thyroid. The benefit here probably depends on the increased moisture of the skin induced by thyroid and perhaps by acceleration of skin growth.

5 Heart Block—Thyroid has been advocated as a preventive of Stokes-Adams attacks. According to Dr. P. D. White, its action in such cases depends on direct excitation of the ventricles.

6 Nephrosis—Epstein²² originally advocated thyroid in the type of nephropathy described by him. Its effect was largely diuretic. I have tried it in such cases but without brilliant results.

Other conditions in which thyroid might be helpful, by virtue of some one or more of its many actions, may present themselves, but those mentioned, in my experience, are the most important.

Massachusetts General Hospital

²¹ Dinitrophenol Not Acceptable for N. N. R. Report of Council on Pharmacy and Chemistry this issue, p. 31.
²² Epstein, A. A. Thyroid Therapy and Thyroid Tolerance in Chronic Nephrosis. J. A. M. A. 87: 913 (Sept. 18) 1926.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, MD
CHICAGO

NOTE.—In their elaboration these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—Ed

THERAPY OF PUERPERAL SEPSIS

OUTLINE BY DR. A. F. LASH

In this infection of the uterus and its surrounding structures occurring after the termination of a pregnancy, the available resources of prevention are a great deal better than the means of cure.

PROPHYLAXIS

Antepartum Care—All foci of infection in the tonsils, sinuses, cervix and external genitalia should be eliminated. By means of proper diet and good personal hygiene, one should aim to bring the expectant mother to the onset of labor in a fine physical condition with maximum resistance against the unavoidable infection, for, no matter what precautions are taken—what antiseptics are used—the vagina of every woman in labor contains micro-organisms that will have invaded the puerperal uterine cavity by the third day.

Obstetric Care—The problem is twofold: to exclude all organisms that might be pathogenic to the individual and to avoid all conditions that lower resistance.

Elimination of Exogenous Infection 1 Hemolytic streptococcus carriers must be resolutely excluded from contact with women during labor and the puerperium, for the carrier is a great menace. This includes avoidance of general visiting. This means that cultures must be taken as a routine from the noses and throats of the entire obstetric personnel: nurses, physicians and students. Individuals having positive cultures must be barred until, by appropriate treatment, two successive negative cultures have been secured. A physician, nurse or student having recently attended a case of contagious disease should not be permitted to come near an obstetric patient. Patients who are streptococcus carriers in their genital tract, even though they are free from symptoms, should be isolated from other puerperas quite as carefully as those who are actually suffering from puerperal infection, and the personnel caring for such patients should not be permitted to take care of "clean" cases.

2 Four thicknesses of gauze should cover the nose and mouth of every person who comes in contact with a woman during labor or the puerperium. This means that the mask must be worn not only during the delivery but by any one, nurse or physician, who removes the perineal dressings in the wards.

3 Vaginal examinations should be as few as possible and should be made with precautions of asepsis not only as to the wearing of mask and gloves and the sponging of the area surrounding the vaginal orifice with anti-

septic solution (2 per cent dilution of Compound Solution of Cresol) but also with full exposure of the vulva, complete separation of the labia, and direct introduction of the sterile examining finger without contact with the external parts.

4 Surgical asepsis must be observed during parturition. The details are too intricate to permit exposition here, and too well known to require it.

Prevention of the Lowering of Resistance—This is brought about by averting exhaustion during labor, avoiding all unnecessary trauma, and preventing excessive loss of blood.

1 Averting exhaustion includes consideration being given to diet, rest and sleep, the care of the bladder and bowels, and the prevention of excessively prolonged labor.

The diet should be high in carbohydrate and easily digestible, semisolid food being employed for the first day or two of the puerperium, after which the patient is placed on a full ward diet.

Rest and sleep are favored by the employment of obstetric analgesia. (a) Morphine sulphate (from 10 to 15 mg.) hypodermically may be used to give the patient a resting period of from two to four hours in a prolonged labor, and this injection may even be repeated once if a second rest period should be considered necessary, provided it is not employed within two or three hours of the termination of the labor to avoid the birth of a narcotized infant. Hence it should ordinarily not be given after the cervix is two thirds dilated in a primipara or one third dilated in a multipara. (b) Chloral hydrate (from 1.3 to 2 Gm.) may be given in starch water (120 cc.) by rectum as a synergist to the morphine, especially because it favors relaxation and dilatation of the cervix. (c) Inhalation anesthesia is preferred for the termination of the second stage. While ethylene and oxygen might be the method of choice, its expensiveness and the danger of explosion render the use of nitrous oxide and oxygen desirable, supplemented, if necessary, by small amounts of ether for terminal anesthesia. Prolonged and deep anesthesia should not be employed, for it delays labor, inviting operative intervention, and it favors postpartum hemorrhage, which lessens resistance.

Care of the Bladder The patient should be encouraged to urinate at least every two hours during labor. If she is unable to do so and distention of the bladder makes its appearance suprapubically, aseptic catheterization is required, by means of a soft rubber male catheter of about No. 10 size (English). If there is difficulty in getting the catheter into the bladder, the presenting part may possibly be pushed back by means of two fingers along the urethra. A distended bladder may cause "uterine inertia," and its evacuation will allow labor to proceed. During the puerperium there is a considerable tendency to overdistention of the bladder, which must be prevented by aseptic catheterization every eight hours until the patient is able to urinate voluntarily.

Care of the Bowels The rectum should be emptied by means of a soap suds (1 liter) enema as soon as labor actually sets in. In the second stage, and in multiparas even late in the first stage, enemas and cathartics are contraindicated. During the recovery from labor, cathartics should not be employed as a routine but only when definitely indicated and not earlier than on the third day after labor. Laxative food, which may be

started quite early after delivery, and Liquid Petrolatum or its Emulsion may suffice. If not, an enema may be resorted to. Saline laxatives and evacuants that produce liquid diarrheal stools should be avoided at all times.

2 Avoidance of unnecessary trauma requires the application of a high degree of obstetric judgment and skill. Patience and gentleness will go far toward preventing lacerations and bruises. Operative procedures should be reduced to a minimum and be carried out only under proper conditions. While low forceps delivery expertly done when indicated does not increase the incidence of infection, high forceps and mid forceps deliveries do. Hence these procedures should not be resorted to unless absolutely demanded, but when indicated they should not be postponed, as the earlier they are performed, when needed, the better. These are major surgical procedures that require a completely aseptic technic and the hands of an expert.

3 Prevention of excessive hemorrhage demands the correct treatment of premature separation of the placenta, of placenta praevia (q v) and of postpartum hemorrhage (q v). Intrapartum hemorrhage is due chiefly to unskilled obstetric intervention: forcible dilation of the cervix producing lacerations, awkward application of forceps inflicting gashes, or the use of solution of pituitary during the second or even the first stage of labor producing cervical and perineal lacerations and even rupture of the uterus. Vaginal hysterectomy or episiotomy, if not skilfully done, may be followed by serious hemorrhage.

TREATMENT

Patients suffering from puerperal sepsis (temperature above 100.5 F on two successive four hour readings) should at once be transferred to the special service and isolated there. A careful general physical examination and a blood culture should be made, the lochia examined, and a culture taken from the vaginal discharge just within the introitus. It is only if the vaginal culture is indeterminate that a culture may be taken from the cervix, with the exercise of the utmost gentleness.

1 Rest must be general as well as local. The patient must not be permitted to get up or even to sit up. She should be free from the annoyances of visitors. She should be kept in Fowler's posture. Sleep may be induced by bromide or phenobarbital (see Insomnia), reinforced by analgesics if there is pain (see Therapy of Pain).

Local rest to the pelvic structures is procured by the uncovered icebag applied to the suprapubic region and by absolute avoidance of internal vaginal or uterine douches and of enemas. Powerful cathartics are taboo. Liquid petrolatum is admissible. No pelvic examinations should be made and the uterus should not be manipulated from the abdomen, as any of these disturbances may favor extension of the infection. If the lochia are profuse and foul, the patient should be placed in the high Fowler position. Ergot and solution of pituitary are given only if bleeding occurs. Otherwise they are contraindicated, as they disturb the rest of the uterus. If the infection remains localized within the uterus (endometritis), most of the patients return to normal within a few days.

When abdominal distention and tenderness set in, the icebag is replaced by large hot stupes over the abdomen. These must not be so heavy as to make the patient

uncomfortable. A rectal tube may help in allowing gas to escape from the bowel.

The appearance of the symptoms of ileus call for the management of that condition (q v). Gastric lavage or the Levine tube are used for vomiting.

2 Therapy of fever (q v) is instituted. This consists most eminently of good nursing. Bedclothes must be changed as often as necessary because of excessive perspiration.

When the patient is seriously sick her fluid balance should be maintained by forcing liquids, particularly fruit juices by mouth, and only if this channel becomes unavailable because of the demands of absolute peritoneal rest should parenteral administration of fluid be resorted to, e g, phlebotoclysis of 2.5 per cent dextrose in half strength (0.425 per cent) Physiologic Solution of Sodium Chloride. One should aim to maintain an elimination of 1,000 cc of urine in the twenty-four hours.

The importance of maintaining the stock of sodium chloride in the patient's system must not be overlooked. When this becomes low, as indicated by absence of chloride in the urine or its presence in very small amounts (0.3 per cent or less), the administration of salt in the form of broths and of Ringer's solution by mouth or of Physiologic Solution of Sodium Chloride by hypodermoclysis is demanded, or, if the deficiency is great, by intravenous injection of hypertonic salt solution.

If acidosis is present or threatened (if the urine is persistently acid to methyl red or if acetone or diacetic acid appears in the urine), carbohydrate administration is demanded, by mouth if possible, or by phlebotoclysis of 10 per cent dextrose if necessary. Alkali should, if possible, be given by mouth in sufficient amounts to render the urine alkaline (at least to methyl red), and, if this method of administration is impossible, 5 per cent sodium bicarbonate solution or Lactate Ringer's (Hartman's) solution should be injected intravenously until this change occurs. The alkali administration must be discontinued if the urine turns thymolphthalein blue. If sugar appears in the urine when dextrose phlebotoclysis is demanded, the simultaneous administration of insulin (see Diabetes Mellitus) is indicated.

3 Immunization is produced. (a) Blood transfusion is very valuable not only if anemia is present but also as a stimulant to the immunity reactions. Usually from 300 to 350 cc of whole blood is given every three or four days. It is especially indicated in anaerobic streptococcal infection, which is the most common cause of thrombophlebitis.

(b) Specific antiserum should be resorted to at the earliest possible moment, as soon as the bacteriologic diagnosis can be made. This may demand diphtheria antiserum (see Therapy of Diphtheria) or Welch bacillus antiserum (see Therapy of Gas Bacillus Infection). Most commonly it is hemolytic streptococcus infection that in its early stages demands 40 cc of the streptococcus antiserum being given intravenously or intramuscularly, to be repeated daily for the next two days. Usually 100 or 120 cc of the serum has proved sufficient. The antisera are of no value in the late stages of any of these infections.

(c) Vaccines may be of value in the subacute and chronic stages of streptococcal infection. But they probably have no advantage over nonspecific protein therapy in its various forms. For this stage of infec-

tion heat is of great value such as that derived from hot douches or the therapeutic lamp. Diathermy may be used in the quiescent period of an infection, although the ultra-short wave current may be used earlier.

The intravenous use of various dyes has not been found of definite value. The colloidal metals are not commonly used because of their cost and their probable lack of value.

(d) Arsphenamine is indicated in rather small therapeutic dosage in the nonspecific spirochetal mixed infections. It has been claimed by some that it is a stimulant to leukocyte production.

4. Surgery has a narrow field of usefulness in the treatment of puerperal sepsis. A posterior colpotomy is indicated for pelvic abscess. Hysterectomy is occasionally indicated for abscess of the uterus wall. Drainage through the abdominal wall as well as through the vagina may be of great aid in an ascending peritonitis. The ligation of veins in thrombophlebitic processes has not been successful; the usual conservative measures having been found more effective. In the presence of puerperal sepsis, curettement is dangerous.

DISCUSSION OF PREVIOUSLY PUBLISHED ARTICLES

THERAPY OF ARTERIAL THROMBOSIS OF THE EXTREMITIES

To the Editor—In THE JOURNAL April 6, page 1229, there was an excellent discussion of the therapy of arterial thrombosis of the extremities by Dr. G. W. Scupham. One inaccuracy in the text is, I believe, of sufficient importance to be corrected. The author describes Goldflam's test for arterial circulation as consisting of "observing the color of the foot while the recumbent patient raises the extended leg rapidly." The original publication by Goldflam (*Neurol Zentralbl* 29, 2, 1910) describes the test as a flexion and extension of the feet while they are maintained in the horizontal position. The test that I described in THE JOURNAL May 11, 1929, page 1571, which has proved reliable in the opinion of many observers, consists of an observation of the plantar surfaces of the feet while the patient flexes and extends both feet with the legs maintained in the vertical position.

Plantar ischemia as elicited by my test has been found to be of considerable importance in the diagnosis of arterial obstruction in the extremities.

SAUL S. SAMUELS, M.D., New York.

[A copy of this communication was submitted to Dr. Scupham, who replies.]

To the Editor—In regard to the criticism by Dr. Saul S. Samuels of the article on the therapy of arterial thrombosis of the extremities, I wish to say that he is quite correct. It is regrettable that this escaped correction when the paper was submitted to me for approval.

Furthermore, periarterial sympathectomy should not have been included in the discussion. When it was mentioned in my lecture on which this paper was based, it was only to mention that it was anatomically incorrect.

GEORGE W. SCUPHAM, M.D., Chicago.

THERAPY OF VARICOSE VEINS AND ULCERS

To the Editor—The article on the therapy of varicose veins and ulcers from the Cook County Hospital, appearing in the February 16 issue of THE JOURNAL, is so comprehensive and clear that it seems in order to note a few points which are not in accord with current thought.

On page 560 the article reads: "No one, of course, would undertake injection treatment of veins in the presence of fresh phlebitis." Tavel in 1907 advised injection in the presence of

phlebitis to help in its healing (*Berl klin Wchnschr* 44, 181, 1907). I have injected above areas of acute phlebitis in many ambulant patients and have always noted quicker disappearance of the local inflammation.

The warnings on systemic contraindications to the sclerosing injections is in my opinion too formidable. I have recently reviewed one thousand consecutive cases of varicose veins treated at the Boston City Hospital. Out of this group there were 375 patients with serious systemic disease including diseases of the heart, lungs and kidneys. There were no mishaps attributable to the injections. As for focal infection, very few patients indeed would be treated if those with septic teeth or tonsils should be eliminated (*The Treatment of Varicose Veins. Is Systemic Disease a Contraindication?* THE JOURNAL, June 8, p. 2577).

On page 561 is the statement that the ligations should be carried out "at the junction of the upper and middle thirds of the thigh." I have recently considered this point in detail and have come to the conclusion, as have others before me, that the site of election is at the saphenofemoral junction. To operate below this point is to invite almost certain recurrence (*Surg, Gynec & Obst* 59, 916 [Dec.] 1934).

EDWARD ALLEN EDWARDS, M.D., Brookline, Mass.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
PAUL NICHOLAS LEECH, Secretary

DINITROPHENOL NOT ACCEPTABLE FOR N N R

The actions of various nitro derivatives of phenol and naphthol as accelerators of metabolism have been studied for the past fifty years. Cazeneuve and Lepine¹ in 1885 described the increase in the metabolism of dogs given dinitronaphthol. They showed that the administration of large doses was followed by vomiting, fever, hyperpnea and death. Rigor mortis set in almost immediately. A few years later Gibbs and Reichert² reported similar observations with the use of dinitrophenol. During the war many cases of dinitrophenol poisoning occurred among French munition workers. The poisoning, which was often severe and sometimes fatal, was of such common occurrence that a special pharmacologic investigation was undertaken. The results of these studies have been reported by Magne, Mayer and Plantefol³.

These workers showed that 1, 2, 4 dinitrophenol increased the oxidation in the tissues of various species of animals and man. They found that the site of the action of the drug was peripheral and that the oxygen consumption of the animal could be increased to twelve times its normal value. These changes were accompanied by hyperpnea and fever. For various species of animals the fatal dose was about 50 mg. per kilogram of body weight, regardless of the mode of administration.

The administration of the drug was followed by a rapid disappearance of glycogen from the liver and muscles, and the development of hyperglycemia. The nitrogen excretion was unaffected. In fatal cases rigor mortis developed early. Degenerative changes in the liver and kidneys were found. Heymans and Bouckaert⁴ showed that the actions of 2, 4 dinitronaphthol are similar to those of dinitrophenol. In 1933 Taunter

1. Cazeneuve, P. and Lepine, R. Sur les effets produits par l'ingestion et l'injection intraveineuse de trois colorants jaunes dérivés de la houille. *Comp. rend. Acad. d. sc.* 101:1167, 1885.

2. Gibbs, W. and Reichert, E. T. *Am. Chem. J.* 13, 289, 1891.

3. Magne, Henri, Mayer, Andre, Plantefol, Lucien, Guerbet, Maurice, Georges, J. and Vies, Fred. Etudes sur l'action du dinitrophenol 1,2,4 (Thermol). *Ann. de physiol. et de physiochem. biol.* 7, 269, 1931, S:1, 1932.

4. Heymans, C. and Bouckaert, J. J. Hyperthermic and Cardio-vascular Actions of Dinitro-naphthol in the Dog. *Arch. internat. de pharmacodyn. et de therap.* 35, 63, 1928. Heymans, C. The Influence of Some New Nitroderivatives on the Cellular Metabolism and on the Body Temperature. *J. Pharmacol. & Exper. Therap.* 51:144 (June) 1934.

and Cutting and their co-workers⁵ confirmed much of the work previously reported by the French and Belgian workers. They found, in agreement with previous investigators, that dinitrophenol can increase the oxygen consumption of animals to more than ten times the basal values. The rise in body temperature was found to be secondary to the acceleration in metabolism and was not prevented by the destruction of the brain or spinal cord, or by complete curarization. They concluded, as had Magne, Mayer and Plantefol, that the mechanism of action of dinitrophenol was peripheral. Accompanying the decrease in the liver and muscle glycogen, the concentrations of sugar and lactates in the blood and lactates in the muscle increased. The total carbohydrate disappearing accounted for less than half of the oxygen consumption. This finding, together with a decrease in the respiratory quotient, indicated that fat in addition to carbohydrate was oxidized. The increased amounts of oxygen consumed were carried to the tissues by means of an increased minute volume of circulatory blood and of a greater arteriovenous oxygen difference. Little or no change in the blood pressure and pulse rate was observed. Neither anoxemia nor acidosis was found to develop as long as the respiratory and circulatory mechanisms kept pace with the oxygen consumption. Animals were found to develop no tolerance to the drug. The fatal dose for various species of animals, regardless of the mode of administration, was about 20 to 30 mg per kilogram of body weight.

Death in experimental animals resulted from (1) direct circulatory depression, (2) hyperpyrexia, and (3) acidosis and anoxemia. No effective antidote was found. Tainter and Cutting were unable to find any significant pathologic alteration in liver or kidneys. Rigor mortis set in at once in fatal cases in animals. The actions of the drug in men resembled closely those in animals when equivalent doses were used.

Single doses of from 3 to 5 mg per kilogram of body weight increased the metabolic rate from 20 to 30 per cent in the first hour. After about twenty-four hours the metabolism gradually fell, reaching the previous normal level on the third day. No untoward effects were observed in eight patients even after the two months of daily administration. Single doses of between 5 and 10 mg per kilogram caused no changes in temperature, pulse or respiration, but the patients perspired copiously. In doses of 10 mg per kilogram, dinitrophenol increased the temperature 3 degrees C or more; the respirations were increased markedly. The authors considered the latter doses too dangerous for routine use.

Nine patients given from 3 to 5 mg of the drug per kilogram daily for prolonged periods lost weight without resort to dietary restrictions.⁶ No undesirable symptoms were observed. The authors concluded that dinitrophenol may be useful in the treatment of obesity, hypothyroidism and similar depressed metabolic states.⁷ Because of the possible dangers from the use of the drug in patients, they suggested that the drug be used only under strictly controlled conditions. Accompanying this report of Cutting, Mehrtens and Tainter in *THE JOURNAL*, warning was issued both in a report of the Council on Pharmacy and Chemistry⁷ and in editorial comment⁸ against the uncontrolled administration of the drug. Despite these warnings dinitro-

phenol has been used extensively in the treatment of obesity and not always with the necessary precautions. During the past year the Stanford Clinic supplied physicians and patients, on physicians' prescriptions, more than 1,200,000 capsules of the drug of 0.1 Gm each. It is estimated that 4,500 patients in California alone were treated in one year and that probably 100,000 persons have used the drug in this country since its introduction for the treatment of obesity.⁹ About twenty commercial concerns are furnishing dinitrophenol or mixtures in which this drug is the active principle.⁹ Some smaller concerns have sent samples of the drug unsolicited to physicians and in the accompanying literature have minimized the dangers of its use.

It is not surprising, therefore, that undesirable and even serious toxic manifestations of the drug have been reported.¹⁰ The most common of these is a maculopapular erythematous eruption of the skin reported in 7 per cent of 113 cases treated by Tainter, Stockton and Cutting.¹⁰ Skin disorders were common in the French munition workers poisoned with the drug during the war. Similar toxic manifestations have been reported by Anderson, Reed and Emerson,¹¹ Haft,¹² Dintenfass,¹³ Sidel,¹⁴ Frumess,¹⁵ Hirsch¹⁶ and Jackson and Duvall.¹⁷ Matzger¹⁸ found skin tests to be of no value in predicting skin sensitivity to dinitrophenol. The development of chronic ear infection resulting largely from vascular congestion produced by the drug has been reported.¹³ Itching, swelling of the mucous membranes and disturbances in smell and taste functions were noted by Haft and by Jackson and Duvall.

Haft and Sidel both observed evidence of liver damage following therapeutic doses of dinitrophenol.

Bohn,¹⁹ Silver,²⁰ and Hoffman, Butt and Hickey²¹ have reported cases in which agranulocytic angina developed following the ingestion of the drug.

Up to the present time six deaths following the administration of dinitrophenol have been reported.²² In two of these especially large doses were taken, but in two others the amounts administered did not exceed the dose of 5 mg per kilogram recommended by Tainter and his co-workers. In a third case the dose of the drug was 107 mg per kilogram an amount not before considered to be fatal. In most of the patients, death occurred within twenty-four hours of the onset of toxic symptoms such as dizziness, dyspnea, fatigue, pyrexia and excessive perspiration. Rigor mortis set in promptly after death. In the

9 Tainter M L Cutting W C and Stockton A B Use of Dinitrophenol in Nutritional Disorders *Am J Pub Health* 24: 1045 (Oct.) 1934

9a As this report goes to press a telegraphic communication has been received from Dr W W Boardman reporting that twelve cases of cataract have recently been noted in California occurring in patients who had been taking dinitrophenol

10 Cutting W C and Tainter M L Metabolic Actions of Dinitrophenol with the Use of Balanced and Unbalanced Diets *J A M A* 101: 2099 (Dec 30) 1933

11 Anderson H H Reed A C and Emerson G A Toxicity of Alpha Dinitrophenol Report of Case *J A M A* 101: 1053 (Sept 30) 1933

12 Haft H H Toxicity of Dinitrophenol *J A M A* 101: 1171 (Oct 7) 1933

13 Dintenfass Henry An Ear Complication from Dinitrophenol Medication *J A M A* 102: 838 (March 17) 1934

14 Sidel Nathan Dinitrophenol Poisoning Causing Jaundice Report of Case *J A M A* 103: 254 (July 28) 1934

15 Frumess G M Allergic Reaction to Dinitrophenol Report of Case *J A M A* 102: 1219 (April 14) 1934

16 Hirsch Sidney Report of a Toxic Manifestation Due to Dinitrophenol *J A M A* 102: 950 (March 24) 1934

17 Jackson Henry and Duvall A I Dinitrophenol Poisoning Report of a Case *J A M A* 102: 1844 (June 2) 1934

18 Matzger Edward Can Sensitivity to Dinitrophenol Be Determined by Skin Tests? *J A M A* 103: 253 (July 28) 1934

19 Bohn S S Agranulocytic Angina Following Ingestion of Dinitrophenol *J A M A* 103: 249 (July 28) 1934

20 Silver Solomon A New Danger in Dinitrophenol Therapy Agranulocytosis with Fatal Outcome *J A M A* 103: 1058 (Oct 6) 1934

21 Hoffman A M Butt E M and Hickey N G Neutropenia Following Amidopyrine Preliminary Report *J A M A* 102: 1713 (April 14) 1934

22 Silver²⁰ Tainter M L and Wood D A A Case of Fatal Dinitrophenol Poisoning *J A M A* 102: 1147 (April 7) 1934

Geiger J C A Death from Alpha Dinitrophenol Poisoning *ibid* 101: 1333 (Oct 21) 1933

Poole F E and Haining R B Sudden Death from Dinitrophenol Poisoning Report of a Case with Autopsy *ibid* 102: 1141 (April 7) 1934

Masserman J H and Goldsmith Harry Dinitrophenol Its Therapeutic and Toxic Actions on Certain Types of Psychobiologic Underactivity *ibid* 102: 523 (Feb 17) 1934

Medicine and the Law Death After Slimming Treatment *Lancet* 1: 489 (March 3) 1934

5 Cutting W C Mehrtens H G and Tainter M L Actions and Uses of Dinitrophenol Promising Metabolic Applications *J A M A* 101: 193 (July 15) 1933

6 Cutting W C and Tainter M L Actions of Dinitrophenol *Proc Soc Exper Biol & Med* 29: 1268 (June) 1932

7 Tainter M L and Cutting W C Febrile Respiratory and Some Other Actions of Dinitrophenol *J Pharmacol & Exper Therap* 48: 410 (Aug) 1933

8 Tainter M L and Cutting W C Low Oxygen Tensions and Temperature on Actions and Toxicity of Dinitrophenol *ibid* 51: 45 (May) 1934

9 Schulte T L and Tainter M L Chronic Toxicity of Dinitrophenol Renal Function *Proc Soc Exper Biol & Med* 31: 1163 (June) 1934

10 Hall V E Field J Sahyun M Cutting W C and Tainter M L Carbohydrate Metabolism Respiration and Circulation in Animals with Basal Metabolism Heightened by Dinitrophenol *Am J Physiol* 106: 432 (Nov) 1933

11 Tainter M L and Cutting W C Miscellaneous Actions of Dinitrophenol Repeated Administrations Antidotes Fatal Doses Antiseptic Tests and Actions of Some Isomers *J Pharmacol & Exper Therap* 49: 187 (Oct.) 1933

12 Tainter M L Stockton A B and Cutting W C Use of Dinitrophenol in Obesity and Related Conditions A Progress Report *J A M A* 101: 1472 (Nov 4) 1933

13 Cutting W C Mehrtens H G and Tainter M L Alpha Dinitrophenol Preliminary Report of the Council on Pharmacy and Chemistry *J A M A* 101: 210 (July 15) 1933

14 Dinitrophenol a Metabolic Stimulant editorial *J A M A* 101: 213 (July 15) 1933

case of Poole and Hanning,²² examined after death, degenerative changes in the liver and kidneys were found. There was segmentation and pigmentation of the cardiac muscle, the small blood vessels of the mucosa of the stomach were markedly distended and in places there were small hemorrhages. Essentially similar changes were reported by Tainter and Wood.²² De Chatel and Motike²³ recently have offered evidence of cardiac damage induced by administration of dinitrophenol in animals.

It has been indicated repeatedly in editorial comments in *THE JOURNAL*²⁴ that the sale of dinitrophenol should be restricted to physicians' prescriptions and that the widespread use of the drug in the treatment of obesity should await further study in laboratories and clinics. The use of the drug should be limited to carefully selected cases. Patients with diabetes, nephritis and diseases of the liver and heart should not be given the drug. To treat a mild chronic condition such as obesity with a toxic agent capable of inducing serious injury and death appears to be unjustified. Silver²⁵ in twenty-four carefully studied cases was unable to induce any loss in weight without restricting the diet of the patients. It would appear therefore, that if the loss in weight is employed as an index of the amounts of dinitrophenol required (as indeed it will be unless the administration is rigorously supervised by physicians aware of the dangers) many further cases of toxicity will occur. Strang and Evans²⁶ have found dinitrophenol of questionable practical value in weight reduction. In Germany an official warning regarding the danger of dinitrophenol has been issued.²⁷ According to a report in the *Canadian Medical Association Journal*²⁷ obesity has been included in the list of conditions for which remedies cannot be sold in Canada. Dinitrophenol, therefore, would be barred from sale by the Food and Drugs Act of Canada. It has been suggested, further, that dinitrophenol be put on the Poison List in England thus prohibiting the sale of the drug except on medical prescriptions.²⁸ It is suggested that similar restrictions be placed on the sale of dinitrophenol and reducing mixtures containing dinitrophenol in this country and that the use of the drug be restricted to selected patients under the observation of properly trained physicians. The use of dinitrophenol by all others should await further careful experimentation in the laboratory.

The Council voted that dinitrophenol and brands of dinitrophenol be not accepted for inclusion in New and Nonofficial Remedies and authorized the publication of the foregoing report, which explains the Council's position in this matter.

SODIUM ARSPHENAMINE AND SODIUM DIARSENOL OMITTED FROM N N R

The acceptance of Sodium Diarsenol (Diarsenol Co., Inc.), a brand of sodium arspenamine, expires with the close of 1935. When the matter came before the Council for reconsideration, the referee expressed doubt that it was in the interest of medicine to retain the preparation in New and Nonofficial Remedies any longer.

Sodium arspenamine was devised a number of years ago because of reactions due to the difficulty of proper alkalization of arspenamine. At that time it was thought that this preparation dissolved in distilled water corresponds to the alkaline solution of arspenamine. The use of sodium arspenamine has steadily declined. Not only is it not used generally by syphilologists but it is not mentioned in many of the more recent textbooks.

On the recommendation of the referee the Council deemed it advisable to send a questionnaire to a number of syphilol-

ogists asking their views as to the value of sodium arspenamine. The letter contained the following questions:

- Are you using sodium arspenamine at the present time?
- Do you consider it to be of value in present-day therapy?
- Are you of the opinion that the use of this drug is unwarranted or objectionable?

The view expressed in the replies received was practically unanimous that the drug deserves no place in present-day syphilis therapy.

The Council therefore voted to omit sodium arspenamine and the accepted brand, Sodium Diarsenol, from New and Nonofficial Remedies.

When the foregoing statement of the Council's consideration of Sodium Diarsenol was transmitted to the Diarsenol Company Incorporated, the firm replied:

"Inasmuch as the sale of Sodium Diarsenol has dropped to a negligible amount we are willing to remove all reference to Sodium Diarsenol from our future advertising matter."

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

CITY DAIRY COMPANY PASTEURIZED HOMOGENIZED MILK

Distributor—City Dairy Company, South Bend, Ind.

Description—Bottled, pasteurized, homogenized milk.

Preparation—Milk of 35 per cent minimum fat content, obtained from tuberculin tested herds under government and company inspection, is tested, pasteurized by the standard holding method (61 C for thirty minutes), homogenized under 1,500 pounds pressure, cooled and filled in bottles by the usual procedure (*THE JOURNAL*, Sept 1, 1934, p 681).

Analysis (submitted by manufacturer)—

Total solids	per cent
Fat	13 2
	4 2

Calories—0.7 per gram, 20 per ounce.

Claims of Manufacturer—The cream does not separate. The curd formed in the stomach is softer than that from unhomogenized milk.

DIADEM PATENT FLOUR

Manufacturer—Noblesville Milling Company, Noblesville, Ind.

Description—Patent flour prepared from soft winter wheat, bleached.

Manufacture—Soft winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in *THE JOURNAL*, June 18, 1932, page 2210. Chosen flour streams are blended, and bleached with a mixture of benzoyl peroxide and calcium phosphate (one-half ounce per barrel).

THIN MASTER BREAD SLICED

Manufacturer—Zinsmaster Baking Company, Minneapolis.

Description—Sliced white bread made by the sponge dough method (method described in *THE JOURNAL*, March 5, 1932, p 817), prepared from patent flour, water, sweetened condensed whole milk, sucrose, shortening, sodium chloride, yeast, corn and soya bean flours, and a yeast food containing calcium acid phosphate, ammonium sulphate, sodium chloride, potassium bromate, potassium iodate and corn starch.

²³ de Chatel A and Motike J. Ueber die Gefahren der therapeutischen Anwendung des Alpha Dinitrophenol. *Deutsch Arch f klin Med* 176:700 1934.

²⁴ The Toxicity of Dinitrophenol, Current Comment J A M A 101:1080 (Sept 30) 1933. Dinitrophenol in Obesity editorial ibid 103:1950 (Dec. 22) 1934.

²⁵ Strang J M and Evans F A. An Evaluation of Dinitrophenol as an Aid in Weight Reduction J A M A 104:1957 (June 1) 1935.

²⁶ Reichs-Gesundh BI 52:1078 1934.

²⁷ Bar Sale of Dinitrophenol in Canada. *Canada News J A M A* 103:1243 (Oct 20) 1934.

²⁸ Medicine and the Law. *Dekrysil Treatment—The Paddington Inquest Lancet* 1:652 (March 24) 1934.

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SATURDAY JULY 6 1935

LENGTHENING OF LIFE IN PERNICIOUS ANEMIA AND DIABETES

In the application of vital statistics to medical problems there are many opportunities for misinterpretation. The misuse "in certain quarters" of the mortality statistics for diabetes mellitus and pernicious anemia to disprove the claim of discovery of effective remedies has recently been pointed out by an expert statistician.¹

The opposition of certain groups to experimental research has gathered support by the citing of the relatively static mortality from these two diseases since the introduction of insulin and of liver therapy. Enlightened thinkers will scarcely accept this view, but it has remained to Stocks¹ to show the fundamental unreliability of the evidence. He points out that the remedies employed are claimed to be curative only so long as treatment is continued. Therefore every patient under treatment for either of these two diseases must eventually die of one of three groups of causes: (1) a relapse of the disease due to failure to use a reliable and potent remedy and to continue its use with the necessary regularity, (2) some infectious process or acute disease such as influenza or some general disease such as cancer, or (3) some localized disease affecting a vital organ such as the heart, lung or kidney. In the event of death falling in the first or third group, it is usually assigned to the original disease and the effect would be to postpone the age at which it occurred. The deaths classed under the second group must be relatively few compared with the others and hence would not be of great statistical importance.

In taking a hypothetical chronic disease for which a remedy of specific nature but effective only on continuous administration is discovered, the first effect would be to lower the gross mortality for a few years. For simplicity, it may be supposed that the average duration of life after diagnosis of the hypothetical disease was originally two years. The result of the new treatment was to increase this to ten years for cases arising at ages of from 15 to 25, to nine years at ages

of from 25 to 35, to eight at from 35 to 45, and so on to four years at the age of 75 or over. According to this scheme there would be no change in the total deaths, but in the period just following introduction of the new treatment there would be at first a rapid fall in total annual deaths, and during that period the number of persons suffering from the disease in the community would increase year by year until stability between incidence and deaths was reached. The deaths, after an initial fall, would begin to rise again until this condition of stability was attained. The net result, then, would be not to reduce the mortality materially but to prolong life to a later age.

When the diabetes and pernicious anemia mortality was analyzed on this basis, the total mortality and age distribution following the introduction of insulin and of liver therapy were found to follow this pattern to a remarkable degree. Thus the important result of modern treatment of these diseases has been the prolongation of life rather than absolute reduction in mortality. The improved health and usefulness accruing to patients in these groups, so treated, and the addition of several years to the working period of their lives, is a great achievement.

MUSHROOM POISONING

The often uncritical enthusiasms engendered by the approach of summer warrants the renewed reminder that not all of nature's products are beneficent friends of man. The most deadly species of mushroom, *Amanita phalloides*, which causes more than 90 per cent of the deaths from mushroom poisoning, thrives from early June until the first autumn frosts. The flavor of this mushroom is reported to be delicious.¹ The young specimens are the most poisonous and are also most apt to be mistaken for the edible forms by the inexperienced mycologist. Other persons, even less prudent, may ingest toxic varieties after trying various "tests" on them. One of the common kitchen examinations consists in placing a piece of bright silver in the utensil while the plants are cooking. If the silver is not tarnished, the mushrooms are considered safe for consumption. The efficacy of this worthless test is believed in by an astounding number of people.

Some of the fatalities observed in this country due to mushroom poisoning are caused by another variety of mushroom, *Amanita muscaria*. This species also is common in all parts of the United States. The action of the toxins from this type of mushroom is, apparently, more rapid than is that of the poisons present in the various forms of *Amanita phalloides*. Thus there are in general two types of mushroom poisoning that may be encountered: the so-called rapid type (mycetismus nervosus), due to *Amanita muscaria*, and the delayed type (mycetismus cholericiformis) caused by the

¹ Stocks, Percy. The Lengthening of Life by Modern Therapy in Pernicious Anemia and Diabetes. Brit. M. J. 1:1013 (May 18) 1935.

¹ Legal Medicine and Toxicology, edited by Peterson, Frederick Haines, W. S. and Webster, R. W. Philadelphia: W. B. Saunders Company, 1923.

various forms of *Amanita phalloides*. The rapid type of poisoning occurs within one to three hours after the ingestion of the fungi and is characterized by excessive salivation, perspiration and lacrimation. Nausea, vomiting, severe abdominal pains and diarrhea also occur. The pupils are contracted and convulsions and coma are seen in the severe cases. The mortality is low and the patients respond well to proper treatment¹. The delayed type of mycetismus results from the ingestion of mushrooms belonging to the *Amanita phalloides* group. The onset is delayed until five to sixteen hours or more after the ingestion of the fungi. Abdominal pains are severe, and nausea and vomiting may be extreme. Diarrhea is nearly always present and the patients are generally prostrated from the outset. Jaundice nearly always occurs and renal damage is frequent. Symptoms resulting from damage to the central nervous system are usually present. The mortality in this type of poisoning is at least 50 per cent.

Four cases of poisoning by *Amanita phalloides* have been recently reported². The value of this contribution is increased by the authors' presentation of complete pathologic studies in two fatal cases. Extreme degenerative changes were found in the parenchymal cells of the liver and to a lesser extent in the tubular epithelium of the kidneys. In both patients there was a severe widespread damage to the central nervous system. The brains were congested and edematous, and on microscopic section degenerative changes were observed in the cells of the cortex, hypothalamus, cerebellum and brain stem. Fat was found almost everywhere throughout the brain, and there were scattered areas of perivascular infiltration with lymphocytes. All the signs and symptoms that were observed in the two fatal cases could be explained by the pathologic changes observed. This report supplements the already extensive literature on the subject of mushroom poisoning, in addition, it serves to emphasize again the salient facts of this important subject.

THE USE OF ESTROGENIC SUBSTANCE IN TERMINATING HUMAN PREGNANCY

The rapid advances that have recently been made in the elucidation of the physiologic roles of ovarian, placental and pituitary principles have led to extensive clinical use of many endocrine products in gynecology and obstetrics. Probably the most widely employed are the estrogenic preparations, these have been tried in a variety of disorders. As is common with glandular products, the original hopes engendered by a too ready transference to human beings of effects obtained in animals have been substantiated in only small degree. Reference to the commendably conservative article by Novak¹ in the series on Glandular Physiology and

Therapy now appearing in *THE JOURNAL* reveals how limited are the actual clinical indications for estrogenic substance.

Depending on time relationships and dosage, estrogenic substance may be either supplementary or antagonistic to the corpus luteum hormone, progesterin, in the effects on uterine mucosa, it is antagonistic to progesterin (and to the gonadotropic principle of pregnancy urine also) in the effects on the irritability of the uterine musculature (Estrogenic substance augments contractility, while progesterin and the gonadotropic principle depress it). As Allen² states, "large doses of estrogenic substance may override the effects of progesterin and progesterin can inhibit the effects of estrogenic substance." In pregnancy the various endocrine factors concerned in the proper maintenance of this complex process are in an intricate equilibrium, which changes continuously from the time of maturation of the ovum until parturition. A marked imbalance in one or more of the factors concerned might conceivably terminate or prolong pregnancy.

Thus, many attempts have been made to interrupt pregnancy in animals by injection of estrogenic preparations,³ or to prolong it by administration of progesterin or the gonadotropic factor of pregnancy urine. In rats, guinea-pigs and rabbits, pregnancy (particularly early pregnancy) can readily be interrupted by estrogenic preparations or can be prolonged by progesterin or the gonad-stimulating factor. However, attempts to transfer to human beings the results obtained in animals with theelin or theelol have usually failed⁴. As Allen² has pointed out, this is not surprising in view of the large amounts of estrogenic substance known to be present in women during pregnancy. However, the questions of dosage (in view of the low potency of the estrogenic preparations available until recently) and other physiologic factors involved have remained unsolved.

The report just published by Robinson, Datnow and Jeffcoate⁵ of Liverpool is therefore of great importance. These authors investigated the effects of estrogenic preparations of high potency (10,000 and 100,000 international units per cubic centimeter) in terminating pregnancy at various stages from seven weeks to term. Estrogenic substance was used in multiple doses, either alone or followed after an interval of about 100 hours from the first dose by one or more doses of posterior pituitary extract (which has been found to be synergistic with theelin in its action on the uterine musculature) and/or quinine.

2 Allen Edgar. Glandular Physiology and Therapy. The Physiology of Estrogenic Principles. *J A M A* 104:1498 (April 27) 1935.

3 Levin Louis, Katzman P A and Doisy E A. Estrogenic Substances and Luteinizing Factor on Pregnancy in the Albino Rat. *Endocrinology* 15:207 (May June) 1931. D'Amour F E, D'Amour M C and Gustavson R G. Effects of Estrin and Other Hormones upon Pregnancy. *J Pharmacol & Exper Therap* 40:146 (Oct) 1933. 51:353 (July) 1934. Robinson Datnow and Jeffcoate⁵.

4 Witherspoon J T. Attempted Induction of Labor by Injections of Theelin. *Proc Soc Exper Biol & Med* 20:1063 (June) 1932.

5 Robinson A L, Datnow M M and Jeffcoate T N A. Induction of Abortion and Labor by Means of Oestrin. *Brit. M J* 1:749 (April 13) 1935.

2 Vander Veer J B and Farley D L. Mushroom Poisoning (Mycetismus). *Arch Int Med* 55:772 (May) 1935.

1 Novak Emil. Glandular Physiology and Therapy. The Therapeutic Use of Estrogenic Substances. *J A M A* 104:1815 (May 18) 1935.

In twelve cases of early pregnancy, from seven to fourteen weeks in duration, in which therapeutic abortion was indicated, estrogenic substance in a total dosage of from 50,000 to 6,800,000 international units, followed in all but one case by posterior pituitary extract and/or quinine, failed to produce abortion in a single instance.

In contrast to the effects in early pregnancy, in ten cases varying in duration from thirty to forty weeks, labor occurred in five after administration of total amounts of estrogenic substance of from 80,000 to 1,600,000 international units, followed in all but one of the five cases by posterior pituitary extract and/or quinine. However, as the authors point out, in two of the successful cases it appears possible that labor may have occurred spontaneously (one other case in which the patient was at term, should probably also be included among those that gave "doubtful" responses).

In one case of twins with hydramnios in the thirty-fifth week, the patient responded to 50,000 units of estrogenic substance with onset of labor ninety hours after the first injection. Another patient in preeclampsia also in the thirty-fifth week, responded to 20,000 units (the fetus in this case was anencephalic).

The most promising results were obtained in missed abortion (not, as the authors emphasize, in incomplete abortion). In ten of a group of twelve cases of intra-uterine death of the fetus, expulsion of the uterine contents occurred following total dosages of from 40,000 to 2,430,000 units. This occurred even when the dead fetus had been retained for many weeks. In six of these cases estrogenic substance was used alone, in four, posterior pituitary extract and quinine or castor oil were given in addition. This is of particular interest, as the authors point out, in that Spielman, Goldberger and Frank⁶ have noted that the amount of estrogenic substance in the blood is markedly decreased following intra-uterine death of the fetus.

In four cases of uterine inertia, administration of total amounts of from 20,000 to 1,300,000 units of estrogenic substance led to enhanced uterine contractility.

Robinson and his associates conclude from their studies that estrogenic substance, when administered near term "may or may not induce premature labour, but that it is not a reliable means of induction." They point out that "it is an especially unsuitable method for cases in which it is necessary to bring on labor immediately because of the uncertain interval (up to seven or eight days) that intervenes between the commencement of treatment and the onset of expulsive contractions." They believe that the results in missed abortion are quite encouraging.

Thus it appears that in woman, estrogenic substance is chiefly of value in enhancing the irritability of the

uterus late in pregnancy and that, at least in the dosages used and by the methods employed, it is of little value in inducing abortion during the early stage (seven to fourteen weeks) covered by the investigation of Robinson and his collaborators. It must not be overlooked, however, that the work discussed, while valuable, is only a preliminary investigation. Much more needs to be known about the physiology of human pregnancy and particularly about the complex endocrine equilibriums involved.

Current Comment

DERMAL ABSORPTION OF VITAMIN D

Several years ago, experiments¹ on rabbits and rats were reported suggesting that vitamin D was absorbed through the skin. Irradiated impure cholesterol suspended in cottonseed oil and applied to the depilated skin on the backs of the experimental animals completely protected them from rickets. Recently similar results have been obtained in rats administered viosterol by inunction. One investigator² has observed that the application of viosterol in either a liquid petrolatum or a wax base to the tail alone permitted the absorption of sufficient amounts of the antirachitic factor to prevent the development of rickets. The possibility of the oral ingestion of some of the material was precluded by carefully encasing the animal's tail in a glass tube. Further confirmatory evidence³ has been obtained on rats fed a standard rachitogenic diet and given inunctions of viosterol in an ointment base on areas of skin from which the hair had been removed by a sulphide depilatory. Both roentgenograms and "line tests" showed that the animals thus treated were completely protected from rickets, whereas controls receiving inunctions of irradiated liquid petrolatum developed the condition. The subsequent dermal administration of viosterol to the rachitic control animals promptly promoted normal bone calcification. The fact that the irradiated liquid petrolatum controls developed rickets precludes the possibility that the results obtained with viosterol were due to the absorption of the irradiated lipid solvent, which then activated ergosterol in the tissues by secondary radiation. Thus it appears probable that vitamin D itself is absorbed directly from the skin. The practical value of this method of administering vitamin D remains to be determined. It may prove useful in infants and in subjects lacking the ability to utilize lipids administered orally. From the available data it appears probable, however, that the process of dermal absorption as compared with enteral absorption may not be an economical one. Although no attempt has been made to compare quantitatively the required doses by the two methods of administration, the amount employed daily in the latter experiments just described was forty-five times the recognized effective oral dose.

1 Hume E. M., Lucas N. S. and Smith H. H. On the Absorption of Vitamin D from the Skin. *Biochem. J.* **21**: 362, 1927.
2 Amrhein F. J. Absorption of Vitamin D from the Skin. *J. Am. Pharm. A.* **23**: 182, 1934.
3 Astrowe P. S. and Morgen R. A. Dermal Absorption of Vitamin D. *Am. J. Dis. Child.* **49**: 912 (May) 1935.

6 Spielman Frank, Goldberger M. A. and Frank R. T. Hormone Diagnosis of Viable Pregnancy. *J. A. M. A.* **101**: 266 (July 22) 1933.

PROCEEDINGS OF THE ATLANTIC CITY SESSION

MINUTES OF THE EIGHTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT ATLANTIC CITY, JUNE 10 14, 1935

(Concluded from page 2372 volume 104)

MINUTES OF THE SECTIONS

SECTION ON PRACTICE OF MEDICINE

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 o'clock by Dr. Reginald Fitz, Boston, in the absence of Dr. George R. Minot, Boston. Alphonse M. Schwitalla, St. Louis, was nominated for Associate Fellowship in the American Medical Association.

Drs. Simon S. Leopold and Louis M. Lieberman, Philadelphia, presented a paper on 'Further Data on Artificial Pneumothorax in Experimental Lobar Pneumonia.'

Drs. Francis G. Blake, Marion E. Howard and Winifred S. Hull, New Haven, Conn., presented a paper on 'Artificial Pneumothorax in the Treatment of Lobar Pneumonia.'

These two papers were discussed by Drs. Alfred Stengel, Philadelphia, Jesse G. M. Bullowa, New York, and Harold Brunn, San Francisco.

Dr. W. R. Kennedy, Montreal, read a paper on 'Renal Amyloidosis.' Discussed by Drs. Henry A. Christian, Boston, Walter de M. Scriven, Montreal, and S. Edward King, New York.

Dr. Emanuel Libman, New York, presented the Frank Billings Lecture, entitled 'Some Aspects of Endocarditis with Special Reference to the Subacute Variety.'

Dr. W. F. Hamilton, Montreal, read a paper on 'Pleural Shock.' Discussed by Drs. Joseph A. Capps, Chicago, Victor S. Randolph, Phoenix, Ariz., and Jonathan C. Meakins, Montreal.

Dr. W. P. Warner, Toronto, read a paper on 'Factors Causing Bronchiectasis, Their Clinical Application to Diagnosis and Treatment.' Discussed by Drs. David T. Smith, Durham, N. C., and Harold Brunn, San Francisco.

THURSDAY, JUNE 13—AFTERNOON

Dr. James B. Collip, Montreal, read a paper on 'The Anti-hormone Theory in Relation to Anterior Pituitary Physiology.' Dr. David P. Barr, St. Louis, read a paper on 'Recent Advances in Knowledge of the Relationship of the Pituitary to Ovarian Hormones.'

These two papers were discussed by Drs. Elmer L. Sevringhaus, Madison, Wis., Archibald C. Campbell, Montreal, Joseph C. Aub, Boston, and Harold E. Simon, Birmingham, Ala.

Dr. Duncan Graham, Toronto, read the Canadian chairman's address.

Dr. Lewellys F. Barker, Baltimore, read the Osler Oration, entitled 'Osler in America.'

Dr. Lloyd F. Craver, New York, read a paper on 'A Clinical Survey of the Etiology of Cancer.'

Drs. Jacob Furth, H. W. Ferris and Paul Reznikoff, New York, presented a paper on 'Relation of Experimental Leukemia of Animals to Human Leukemia.'

Dr. W. Edward Chamberlain, Philadelphia, read a paper on 'Modern Concepts of Roentgen Therapy in Cancer.'

These three papers were discussed by Drs. G. E. Richards, Toronto, T. R. Waugh, Montreal, Louis K. Diamond, Boston, and Charles C. Lund, Boston.

FRIDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr. William J. Kerr, San Francisco; vice chairman, Dr. C. L. Andrews, Atlantic City, N. J.; secretary, Dr. Joseph T. Wear, Cleve-

land; executive committee, Dr. C. T. Stone, Galveston, Texas; Dr. George R. Minot, Boston; Dr. William J. Kerr, San Francisco.

Dr. E. B. Bradley, Lexington, Ky., read a report of the Committee on Examinations of the American College of Physicians.

Dr. Walter L. Bierring, Des Moines, Iowa, presented the following resolution:

Resolved That a committee of three, including a chairman, be appointed by the chairman of the Section on Practice of Medicine to discuss with a committee from the American College of Physicians ways and means whereby an examining board comparable to such boards already existing in certain specialties may be set up for the purpose of certification of specialists in internal medicine.

On motion of Dr. Bierring, duly seconded, the resolution was adopted.

Drs. C. A. McKinlay and Hal Downey, Minneapolis, and Joseph Stasney, Rochester, Minn., presented a paper on 'Infectious Mononucleosis.' Discussed by Drs. A. H. Gordon, Montreal, Israel Davidsohn, Chicago, and C. A. McKinlay, Minneapolis.

Dr. Walter R. Campbell, Toronto, read a paper on 'Dietary Factors in Health and Disease.' Discussed by Dr. Henry A. Christian, Boston.

Dr. R. F. Farquharson, Toronto, read a paper on 'The Importance of Rest and Liver Therapy in the Treatment of Subacute Combined Degeneration of the Cord.' Discussed by Drs. William B. Castle, Boston; H. H. Hyland, Toronto; Roy R. Grinker, Chicago; and R. F. Farquharson, Toronto.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. John L. Yates, Milwaukee.

Dr. John L. Yates read a paper on 'Therapeutic Significance of Normal and Morbid Formation and Distribution of Non-cellular (Plasma) and Cellular Constituents of Blood and of Lymph.'

Dr. William B. Castle, Boston, read a paper on 'Treatment of Anemia in Surgical Conditions, with Especial Reference to Deficiency States.'

Dr. John S. Lawrence, Rochester, N. Y., read a paper on 'Variations in the Number of Leukocytes in Normal and Morbid States.'

Dr. Charles H. Best, Toronto, read a paper on 'Regulation of Blood Sugar.'

Dr. E. C. Kendall, Rochester, Minn., read a paper on 'Thyroxine and the Hormone Elaborated by the Adrenal Cortex.'

Dr. Cecil K. Drinker, Boston, read a paper on 'The Relation of Lymph Circulation to Streptococcal Infection.'

Dr. Reuben L. Kahn, Ann Arbor, Mich., read a paper on 'Antigens and Antibodies.'

Dr. Jonathan C. Meakins, Montreal, presented a summary from an internist's point of view.

Dr. G. W. Crile, Cleveland, presented a summary from a surgeon's point of view.

These nine papers were discussed by Drs. William Dameshek, Boston, and William B. Castle, Boston.

THURSDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr William E Gallic, Toronto

The following papers were read as a symposium on "Anomalies in Blood Formation"

Dr E S Mills, Montreal "Pathology and Differential Diagnoses of Blood Dyscrasias Amenable to Treatment by Splenectomy"

Dr C A Doan, Columbus, Ohio "Hemolytopoietic Equilibrium and Emergency Splenectomy"

Dr A T Bazin, Montreal "Surgical Procedure and After-Care"

Dr William E Gallic, Toronto "End Results"

These four papers were discussed by Drs Irvin Abell, Louisville, Ky, G M Curtis, Columbus, Ohio, B K Wiseman, Columbus, Ohio, H C Thompson, New York, William Dameshek, Boston, E B Krumbhaar, Philadelphia, and C A Doan, Columbus, Ohio

The following papers were read as a symposium on "Anomalies in Blood Distribution"

Dr David D Berlin, Boston "Total Thyroidectomy for Intractable Heart Disease." Discussed by Drs John Hepburn, Toronto, and David D Berlin, Boston

Dr Max M Peet, Ann Arbor, Mich "Operative Treatment of Hypertension" Discussed by Drs George J Heuer, New York, Guza de Takats, Chicago, and Max M Peet, Ann Arbor, Mich

Dr Louis G Herrmann, Cincinnati "Nonoperative Treatment of Inadequate Peripheral Distribution of Blood" Discussed by Drs H M Elder, Montreal, N E Freeman, Boston, and Louis G Herrmann, Cincinnati

Dr E J McGrath, Cincinnati "Experimental Peripheral Gangrene" Discussed by Drs D W G Murray, Toronto, and E J McGrath, Cincinnati

FRIDAY, JUNE 14—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr John L Yates, Milwaukee

The following officers were elected chairman, Dr Howard M Clute, Boston, vice chairman, Dr William F Rieuhoff, Baltimore, secretary, Dr Henry Cave, New York, delegate Dr Fred W Rankin, Lexington, Ky, alternate, Dr Harold Brunn, San Francisco

On motion by Dr Fred W Rankin, Lexington, Ky, seconded, it was voted that the Executive Committee of the Section on Surgery, General and Abdominal, appoint a board of five members to meet with the American Surgical Association, the American College of Surgeons and the Pacific Coast Association to discuss the advisability of establishing a qualifying board in general surgery, the preliminary and special qualifications to be expected of candidates and the type of examination to be given leading to qualification

The following papers were read as a symposium on "Toxemia and Septicemia, Chronic Appendicitis, Manifestations of Cholelithiasis and Treatment of Jaundiced Patients"

Dr D T Fraser, Toronto "Staphylococcus Antitoxin and Toxoid"

Dr W S Keith, Toronto "Clinical Use of Staphylococcus Antitoxin and Toxoid"

Dr W J Merle Scott, Rochester, N Y "Principles of Treatment of Septicemia."

Dr J R Reeves, Indianapolis "Infections by Anaerobic Gas-Forming Bacilli"

These four papers were discussed by Drs George A Ramsay, London, Ont, David Tillerson Smith, Durham, N C, and D T Fraser, Toronto

Dr L C Smard, Montreal, read a paper on "Neuro-Appendicopathy" Discussed by Drs H W Cave, New York, and L C Smard, Montreal

Dr Robert M Zollinger, Boston, read a paper on "Significance of Pain and Vomiting in Cholelithiasis"

Dr E S Judd, Rochester, Minn, read a paper on "Transfusions of Blood and Intravenous Administration of Dextrose in Jaundiced Patients"

These two papers were discussed by Drs F K Boland, Atlanta, Ga, W J Merle Scott, Rochester, N Y, and E S Judd, Rochester, Minn.

SECTION ON OBSTETRICS, GYNECOLOGY
AND ABDOMINAL SURGERY

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr James R McCord, Atlanta, Ga

Drs Aaron E Kanter, Carl P Bauer and Arthur H Klawans, Chicago, presented a paper on "A New Biologic Test for Hormones in Urine as Applied to Various Clinical Problems" Discussed by Drs Fredericka F Freytag, Dayton, Ohio, Charles Mazer, Philadelphia, and Aaron E Kanter, Chicago

Drs F H Falls, Julius L Lackner and Leon Krohn, Chicago, presented a paper on "The Effect of Progestin and Estrogenic Substance on Human Uterine Contractions, and the Value of Progestin in the Prevention of Habitual and Spontaneous Abortions" Discussed by Drs Samuel R M Reynolds, Brooklyn, Emil Novak, Baltimore, J P Pratt, Detroit, and Leon Krohn, Chicago

Drs S F Haines and R D Mussey, Rochester, Minn, presented a paper on "Certain Menstrual Disturbances Associated with Low Basal Metabolic Rates" Discussed by Drs J C Litzenberg, Minneapolis, T J Williams, University, Va, and R D Mussey, Rochester, Minn

Dr John R Fraser, Montreal, read the Canadian chairman's address, entitled "Maternal Mortality and Morbidity"

Drs P Brooke Blind, Arthur First and Leopold Goldstem, Philadelphia presented a paper on "Clinical Investigation of Endocrine Sterility"

Dr Paul Titus, Pittsburgh, read a paper on "Sterility Analysis of Causes and Treatment"

These two papers were discussed by Drs N R Kretschmar, Ann Arbor, Mich, Emil Novak, Baltimore, Isidor C Rubin, New York, B R Almqvist, Pittsburgh, A D Campbell, Montreal, and Arthur First, Philadelphia

THURSDAY, JUNE 13—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr John R Fraser, Montreal

Dr James R Goodall, Montreal read a paper on "Toxemia of Pregnancy A Clinical Study" Discussed by Drs J C Janney, Boston and Katherine Kuder, New York

Dr H B Van Wyck, Toronto read a paper on "The Clinical Significance of Weight Changes in Pregnancy" Discussed by Drs Murray L Brandt, New York, G D Royston, St Louis, and A W Bingham, East Orange, N J

Dr John Mann, Toronto, read a paper on "The Mechanism of Rotation in Occiput Posterior Positions" Discussed by Drs E L King, New Orleans, W E Caldwell, New York, Joseph B De Lee, Chicago, J B Jacobs, Washington D C, and John Mann, Toronto

Dr James R McCord, Atlanta, Ga., read the chairman's address, entitled "Syphilis and Pregnancy A Clinical Study of 2,500 Cases"

Drs Harvey B Matthews and Vincent P Mazzola, Brooklyn, presented a paper on "The Intravenous Use of Hypertonic Dextrose in Obstetrics and Gynecology An Experimental and Clinical Study" Discussed by Drs James R Miller, Hartford, Conn, Joseph B De Lee, Chicago, Charles W Pavey, Columbus, Ohio, and Harvey B Matthews, Brooklyn

Dr Harold L Morris, Detroit, read a paper on "Hematuria as a Complication of Pregnancy" Discussed by Drs John M Bergland, Baltimore, and Joseph B De Lee, Chicago

FRIDAY, JUNE 14—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr James R McCord, Atlanta, Ga

The following officers were elected chairman, Dr Lyle G McNeile, Los Angeles, vice chairman, Dr W J Carrington, Atlantic City, N J

The following papers were read as a symposium on "Obstetric Anesthesia"

Drs Beatrice E Tucker and Harry B W Benaron, Chicago "Parasacral Pudendal and Local Infiltration Anesthesia in Obstetrics"

Drs S A Cosgrove, Perry O Hull and William J Gleason, Jersey City, N J "Spiritual Anesthesia, with Particular Reference to Its Use in Obstetrics"

Dr Wesley Bourne, Montreal "Vinyl Ether Obstetric Anesthesia for General Practice"

Dr Ralph T Knight, Minneapolis "Cyclopropane Anesthesia in Obstetrics"

Dr Edward W Beach, Philadelphia "Ethyl Ether, Chloroform, Nitrous Oxide and Ethylene Anesthesia in Obstetric Analgesia and Anesthesia"

Drs James T Gwathmey New York, and C O McCormick, Indianapolis "Rectal Ether and Oil"

These six papers were discussed by Drs R A Gaughan, Hazelton, Pa Lyle G McNeile, Los Angeles, Joseph B De Lee, Chicago, Carrol J Fairro Cincinnati H F Beckman, Indianapolis E Mabel H Otis, Moline, Ill, Harry B W Benaron, Chicago, S A Cosgrove, Jersey City, N J, Wesley Bourne, Montreal Ralph T Knight, Minneapolis, C O McCormick Indianapolis, and James T Gwathmey, New York

SECTION ON OPHTHALMOLOGY

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 10 by the chairman, Dr Arthur J Bedell, Albany, N Y

Dr W Gordon M Byers Montreal, Canadian chairman, presented greetings from Canada

Dr Arthur J Bedell, Albany, N Y, read the chairman's address

Mr Leslie Paton London England the guest of honor read a paper on "Papilledema and Optic Neuritis A Retrospect"

Dr Martin Cohen, New York read a paper on "Inflammatory Exophthalmos in Catarrhal Disorders of the Accessory Sinuses" Discussed by Drs H C Naffziger, San Francisco, Gilbert Horrax, Boston, Alexander E MacDonald Toronto Thomas B Holloway Philadelphia, Joseph D Kelly, New York, and Martin Cohen, New York

The following resolutions were read by Dr Frederick H Verhoeff, Boston, for the Executive Committee to be presented to the House of Delegates Thursday afternoon

WHEREAS There have been many complaints regarding the action of some ophthalmologists in giving lectures to and consulting with opticians and optometrists and

WHEREAS It is universally conceded that to care for the diseases and conditions of the human eye demands the unusual knowledge of a graduate physician who has been especially prepared and

WHEREAS The eye is an integral part of the body and

WHEREAS No one but a physician so trained should be permitted to diagnose treat or prescribe for eye conditions and

WHEREAS Lecture address or any other form of instruction to opticians and optometrists by ophthalmologists is not only a breach of the Principles of Medical Ethics which control our professional relationships but is also to the detriment of the ocular health of the public by giving it a false sense of security and

WHEREAS General health and ocular comfort depend on the best medical care therefore be it

Resolved That the Section on Ophthalmology of the American Medical Association declares that it is unethical for any member of the American Medical Association to give lectures or courses of instruction to or consult with any one not associated with the actual medical service and be it further

Resolved That the House of Delegates of the American Medical Association be asked to make a ruling to this effect

On motion of Dr Verhoeff, duly seconded and carried, the resolutions were adopted

It was voted that the section recommend to the House of Delegates, through the Judiciary Council that Mr Leslie Paton, London England be made an honorary member of the American Medical Association

Dr Frank E Burch, St Paul read a paper on "Association of Ectopia Lentis with Arachnodactyly" Discussed by Drs William Zentmayer Philadelphia Ralph I Lloyd Brooklyn M N Beigelman Los Angeles Edward Jackson, Denver, and Frank E Burch St Paul

Dr Jonas S Friedenwald Baltimore, read a paper on "The Treatment of Anisophoria" Discussed by Drs Walter B Lancaster, Boston Francis H Adler, Philadelphia, Conrad Berens, New York, and Jonas S Friedenwald, Baltimore

THURSDAY, JUNE 13—AFTERNOON

Dr Conrad Berens, New York, read a paper on "The Causes of Blindness in Children Their Relation to Preventive Ophthalmology" Discussed by Drs Albert D Frost, Columbus, Ohio, S W Newmayer, Philadelphia, Thomas B Holloway, Philadelphia, Harry S Gradle, Chicago, E V L Brown, Chicago, Mr Leslie Paton, London, England, Mr Lewis H Carris, National Association for the Prevention of Blindness, New York, Trygve Gundersen, Boston, V M Hicks, Raleigh, N C, and Conrad Berens, New York

Drs Norman P Scala, Washington, D C, and Ernest A Spiegel, Philadelphia, presented a paper on "The Pupillary Reactions in Combined Lesions of the Posterior Commissure and of the Pupillo dilator Tracts" Discussed by Drs Harry S Gradle, Chicago, C W Rutherford, Iowa City, and Ernest A Spiegel Philadelphia

Dr Alexander E MacDonald, Toronto, read a paper on "Kinetic Stereoscopes or Stereoscopic Phenomena of a Moving Observer" Discussed by Drs Frederick H Verhoeff, Boston, Alfred Cowan, Philadelphia, and Alexander E MacDonald, Toronto

Drs Phillips Thygeson and William F Mengert, Iowa City, presented a paper on "The Virus of Inclusion Conjunctivitis Further Observations" Discussed by Drs Clyde A Clapp, Baltimore, and Phillips Thygeson, Iowa City

Dr Ruby Kathryn Daniel, Rochester, Minn, read a paper on "Allergy and Cataracts Deductions Drawn from Clinical Studies" Discussed by Drs Alan C Woods, Baltimore, Derrick T Vail Jr, Cincinnati, W R Buffington, New Orleans, C Ulysses Moore, Portland, Ore, and Ruby K Daniel, Rochester, Minn

At the Demonstration Session the following were shown

Dr Frederick H Verhoeff, Boston, presented a new needle holder for ophthalmic and other delicate surgery

Dr Albert D Ruedemann, Cleveland, presented a camera for photography of the conjunctival vessels under high magnification

Dr Walter B Lancaster, Boston, presented some astigmatic charts

Dr Clifford B Walker, Los Angeles presented new equipment for the galvanic treatment of separated retina

Dr Mark J Schoenberg, New York presented an improved exophthalmometer and a biomicroscope for use in delicate surgical operations

Dr Sidney L Olsho Philadelphia, presented bifocal lenses for patients with myopia

Dr Conrad Berens, New York, presented forceps for use in surgery of the ocular muscles

Dr John Green, St Louis, presented a simplified ophthalmoscope for Dr William Henry Luedde, St Louis

Dr Harvey E Thorpe, Pittsburgh presented a forceps for removal of lead shot from the vitreous.

Dr Richard Townley Paton, New York, presented a moving picture, following adjournment of the session, entitled "Cine-fusionometer A Treatment and Diagnostic Instrument"

FRIDAY, JUNE 14—AFTERNOON

Dr Albert C Snell, Rochester, N Y, presented the report of the Committee on Compensation Tables The report was accepted and the committee continued

Dr Edward Jackson, Denver, presented the report of the American Committee on Optics and Visual Physiology The report was accepted

The report of the Committee on the Knapp Testimonial Fund was presented by the treasurer, Dr Parker Heath, Detroit The report was accepted

Dr G P Guibor, Chicago, gave a short report of his work on squint

The Committee on Awarding the Knapp Medal reported that it was unanimously decided not to make any recommendation this year The report was accepted

The report of the Committee on the American Board of Ophthalmology was read by Dr Walter B Lancaster, Boston. The report was accepted

The report of the Committee on National Museum of Ophthalmic Pathology was presented by Dr Jonas S Friedenwald, Baltimore. The report was accepted.

The report of the Committee from the Section to Cooperate with the National Committee for the Prevention of Blindness was presented by Dr Thomas B Holloway, Philadelphia. The report was accepted.

The report of the Committee on Scientific Exhibit from the Section was presented by Dr Georgiana Dvorak Theobald, Oak Park, Ill. The report was accepted.

The Report of the Committee to Confer with the National Conference on Nomenclature of Disease was presented by Dr Walter B Lancaster, Boston. It was voted that Dr Lancaster be delegated to receive future inquiries on nomenclature but that the committee be discharged with thanks.

Dr Emory Hill, Richmond, Va., reported as delegate to the House of Delegates.

The report of the Committee on Museum of Ophthalmic History was read by Dr Parker Heath, Detroit.

The report of the Committee on Ophthalmic Standards was presented by Sanford R Gifford, Chicago. It was voted that the report be accepted and the committee continued.

The following officers were elected: chairman, Dr John Green, St. Louis; vice chairman, Dr Albert C Snell, Rochester, N. Y.

Dr Clifford B Walker, Los Angeles, was appointed as member of the American Board of Ophthalmology for four years and Dr John Green to serve for one year.

Dr William Henry Luedde, St. Louis, was reappointed to fill the vacancy on the American Committee on Optics and Visual Physiology.

The following were appointed to serve on the Committee on Scientific Exhibit: Dr Georgiana Dvorak Theobald, Oak Park, Ill.; chairman, Dr Albert N B Leinoine, Kansas City, Mo.; and Dr Parker Heath, Detroit.

The Ophthalmic Research Medal of the American Medical Association was awarded by Dr Frederick Verhoeff, Boston, to Dr Jonas S Friedenwald, Baltimore.

The following members were elected to serve as the Knapp Medal Award Committee: Dr George E de Schweinitz, Philadelphia; Dr William E Shahan, St. Louis; and Dr F Plumizy Calhoun, Atlanta, Ga.

The members stood in silence in tribute to the memory of those who passed away during the year and particularly to the memory of Dr William Campbell Posey.

Dr Edward Jackson, Denver, read a paper on 'The Control of Myopia.' Discussed by Drs Albert C. Snell, Rochester, N. Y.; F. T. Tooke, Montreal; S. W. Newmayer, Philadelphia; Meyer Wiener, St. Louis; Joseph I. Pascal, New York; Walter B. Lancaster, Boston; and Edward Jackson, Denver.

Dr Francois Badeaux, Montreal, read a paper on "Herpes Ophthalmicus. I. Radiotherapy in Herpes Zoster Ophthalmicus and Herpetic Keratitis." Discussed by Drs Eugene P. Pendergrass, Philadelphia; Laura A. Lane, Ann Arbor, Mich.; and Francois Badeaux, Montreal.

Dr Trygve Gundersen, Boston, read a paper on 'Herpes Ophthalmicus. II. Herpes Corneae with Special Reference to Its Treatment with Tincture of Iodine.' Discussed by Drs Everett L. Goar, Houston, Texas; Jonas S. Friedenwald, Baltimore; and Trygve Gundersen, Boston.

Drs S. J. Beach and William R. McAdams, Portland, Maine, presented a paper on "Intracapsular Extraction in the Average Practice: Report of One Hundred Cases." Discussed by Drs Walter R. Parker, Detroit; John Green, St. Louis; J. W. Millette, Dayton, Ohio; Frederick H. Verhoeff, Boston; and William R. McAdams, Portland, Maine.

Dr Arthur M. Culler, Dayton, Ohio, read a paper on 'Artificial Fever Therapy of Ocular Syphilis.' Discussed by Drs William L. Benedict, Rochester, Minn.; Elmer L. Whitney, Detroit; and Arthur M. Culler, Dayton, Ohio.

Dr Melvorton E. Trainor, Los Angeles, read a paper on "Trainor Operation for Lid Ptosis." Discussed by Drs Arnold Knapp, New York; E. C. Ellett, Memphis, Tenn.; and Melvorton E. Trainor, Los Angeles.

SECTION ON LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9:05 by the chairman, Dr John J. Shea, Memphis, Tenn.

The chairman announced the death of Dr John W. Carmack, Dr William V. Mullin and Dr D. Campbell Smyth during the past year and the members arose in tribute to their memory.

Dr Joseph Beck, Chicago, of the Board of Examiners, reported that the board had examined 162 candidates during the past year. Two extra examinations were held. Dr Beck called attention to the report from the Board of Examiners to the Advisory Board of the Medical Specialties.

On motion by Dr Horace Newhart, duly seconded, it was voted that the following resolution be presented to the House of Delegates Thursday afternoon:

WHEREAS Certain agents and contributors of electric hearing devices have offered to physicians a commission or bonus for referring to them hard of hearing persons to whom they effect a sale, therefore be it

Resolved By the Section on Laryngology, Otolaryngology and Rhinology of the American Medical Association that it condemns as unethical and unfair to the purchaser the practice on the part of any agent or distributor of a hearing device who offers to pay to a physician or any one not an authorized agent any commission or bonus for referring a person to whom he makes a successful sale. The acceptance of such commission by a physician is interpreted as a violation of the principles of ethical practice and be it further

Resolved That it is the sense of this section that the use of audiometers in the hands of persons other than regularly qualified physicians be restricted to the measuring of hearing acuity for the purpose of detecting hearing loss and for selecting or constructing hearing aids best suited to the special needs of the individual hard of hearing person.

It was moved by Dr Joseph Beck, Chicago, duly seconded and carried that David J. Goodfriend, DDS, Philadelphia, and Oscar Koenig, DDS, Newark, N. J., be recommended to Associate Fellowship.

Dr D. E. S. Wishart, Toronto, read the address of Dr W. J. McNally, Montreal, Canadian chairman, entitled "Milestones in the Recent Development of Our Knowledge of Hearing and Balancing."

Mr Norman Patterson, London, England, read a paper on 'Carcinoma of the Larynx. A Plea for Conservative Surgery in Certain Cases in Which Laryngectomy Might Be Considered Necessary.' Discussed by Drs H. B. Orton, Newark, N. J.; Louis H. Clerf, Philadelphia; and Mr Norman Patterson, London, England.

Dr David L. Thomson, Montreal, read a paper on "Aspects of Mineral Metabolism." Discussed by Drs Ralph A. Fenton, Portland, Ore.; J. A. Babbitt, Philadelphia; and David L. Thomson, Montreal.

Dr John B. McMurray, Washington, Pa., read a paper on "A Study of Clinical Cases with Vertigo as a Cardinal Symptom." Discussed by Drs K. A. MacKenzie, Halifax, N. S.; D. E. S. Wishart, Toronto; H. R. Slack, Jr., Baltimore; George E. Shambaugh, Jr., Chicago; and John B. McMurray, Washington, Pa.

Dr Leroy A. Schall, Boston, read a paper on "Neoplasms Involving the Middle Ear." Discussed by Drs B. H. Shuster, Philadelphia; Joseph Beck, Chicago; George M. Coates, Philadelphia; Frank R. Spencer, Boulder, Colo.; and Leroy A. Schall, Boston.

THURSDAY, JUNE 13—MORNING

Dr John J. Shea, Memphis, Tenn., read the chairman's address, entitled "The Clinical Consideration of the Morphology of the Sinuses."

Dr Edward Clay Mitchell, Memphis, Tenn., read a paper on "The Pediatric View of Otolaryngology." Discussed by Drs Percy Wright, Montreal; H. Marshall Taylor, Jacksonville, Fla.; Simon L. Ruskin, New York; and Edward Clay Mitchell, Memphis, Tenn.

Dr Hector Mortimer, Montreal, read a paper on "The Hormone Factors Involved in the Evolution, Development and Growth of the Paranasal Sinuses." Discussed by Drs James B. Collip, Montreal; Charles W. Dunn, Philadelphia; and Hector Mortimer, Montreal.

Dr Gregor W. McGregor, Toronto, read a paper on "Bone Proliferation in Accessory Sinuses. A Pathologic Study." Dis-

cussed by Drs Ralph A Fenton, Portland Ore, S R Skillern Jr, Philadelphia H Z Samcnov, Los Angeles, K M Houser, Philadelphia, and Gregor W McGregor, Toronto

The section went into executive session. The following resolution was read by Dr Burt R Shurly, Detroit, delegate, and adopted

WHEREAS The medical profession has an interest in public safety and in the preservation of life and the preventing of injury and

WHEREAS, The motor vehicle has been responsible for an ever increasing loss of life and limb and

WHEREAS The damage to humanity may be curtailed by careful physical examination of motor vehicle drivers including stringent test of color blindness sight and hearing as well as other physical and mental qualifications therefore be it

Resolved That the Section on Laryngology Otology and Rhinology request the House of Delegates to appoint a special committee to study such legislation as may be required to regulate and prescribe appropriate tests for the licensing of all drivers of motor vehicles and recommend such uniform legislation in the several states

Dr George E Hodge Montreal read a paper on "The Relationship of Bronchiectasis to Paranasal Sinus Infection" Discussed by Drs E G Gill, Roanoke, Va Herman J Moersch, Rochester, Minn. Frank R. Spencer Boulder, Colo, Myron Metzenbaum, Cleveland and George E Hodge, Montreal

Dr Frederick M Law, New York read a paper on "Errors in Interpretation of Roentgenograms in Otolaryngology" Discussed by Drs W E Chamberlain Philadelphia, S R Skillern Jr, Philadelphia, and Frederick M Law, New York

FRIDAY JUNE 14—MORNING

The following officers were elected chairman Dr Ralph A Fenton, Portland Ore vice chairman, Dr E M Seydell, Wichita, Kan secretary, Dr Gordon B New Rochester Minn.

Dr Chevalier Jackson, Philadelphia reported for the Committee on Lye Legislation that a model lye bill had been passed in New York. The committee is now at work in states that lack legislation for proper labeling of caustics. It was voted that the report be accepted and a vote of thanks be sent Mr B R Richards, Department of Health, New York.

Dr William P Wherry Omaha read the report of the Committee on the Otorhinologic Hygiene of Swimming for the chairman H Marshall Taylor Jacksonville Fla. It was recommended that children subject to nasal or aural disease who belong to certain organizations such as the Boy Scouts, which require proficiency in swimming in order that the child may retain his membership should be permitted to substitute other physical attainments, on the recommendation of the attending otolaryngologist. The recommendation was adopted. It was voted that thanks be extended to the committee and that the committee be continued.

Dr Gabriel Tucker Philadelphia, presented a new method of removal of foreign bodies from the stomach.

Dr Walter A Wells, Washington, D C., presented a new audiometer.

Dr Horace Newhart Minneapolis called attention to an effective sound testing room on exhibit outside.

Dr Claude C Cody, Houston Texas read a paper on "Brucellosis in Otolaryngology" Discussed by Drs Redvers Thompson Ste Anne de Bellevue Que Walter M Simpson, Dayton, Ohio, Caesar Hirsch, New York and Claude C Cody, Houston, Texas

Drs Chevalier Jackson and Chevalier L Jackson Philadelphia, presented a paper on "Contact Ulcer of the Larynx." Discussed by Drs H S Birkett Montreal, and Gabriel Tucker, Philadelphia

Dr Samuel J Kopetzky New York read a paper on "The Diagnosis and Differential Diagnostic Data of Specific Types of Suppuration in the Petrosal Pyramid" Discussed by Drs J A Sullivan Toronto, Henry K. Taylor New York, Ralph Almour New York Simon L Ruskin, New York and Samuel J Kopetzky, New York

Dr Ernest E Scharfe Montreal read a paper on "The Value of Speech Training in Cleft Palate and Other Mouth Conditions" Discussed by Drs R. R Fitzgerald Montreal V H Kazanjian Boston G M Dorrance, Philadelphia and Ernest E Scharfe, Montreal

Dr M C Myerson, New York, read a paper on "Tuberculosis of the Larynx Requiring Tracheotomy" Discussed by Drs Frank R Spencer, Boulder, Colo, George B Wood, Philadelphia, Gabriel Tucker Philadelphia, Joseph I Kemler, Baltimore, and M C Myerson, New York

SECTION ON PEDIATRICS

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9 15 by the chairman, Dr A Graeme Mitchell, Cincinnati

Dr A Graeme Mitchell, Cincinnati read the chairman's address, entitled "Critical Interpretation of Clinical Observations"

Dr R. G Hoskins, Boston, read a paper on "Progress and Problems in Endocrinology"

Dr Henry F Helmholtz, Rochester, Minn, read a paper on "Therapeutic Results with the Ketogenic Diet in Urinary Infections" Discussed by Dr Edward L Bauer, Philadelphia

Dr Gladys L Boyd, Toronto, read a paper on "Pulmonary Collapse in Children" Discussed by Drs Joseph Stokes Jr, Philadelphia, Joseph S Wall, Washington, D C., and William E Anspach, Chicago

The chairman appointed Drs Clifford Sweet Oakland Calif, and Horton Casparis, Nashville, Tenn, as a resolutions committee

Dr Pearl F Summerfeldt, Toronto, read a paper on "Iron and Its Availability in Foods" Discussed by Dr C. Ulysses Moore, Portland, Ore.

Drs Alan G Brown and Edward A. Morgan, Toronto, presented a paper on "Cyanosis of the New-Born" Discussed by Drs Ethel C Dunham, New Haven Conn, John D Donnelly, Bala-Cynwyd, Pa., and Clifford Sweet, Oakland, Calif

THURSDAY, JUNE 13—MORNING

Dr Franklin P Gengenbach, Denver, read a paper on "When Pediatricians Take Inventory" Discussed by Dr Borden S Veeder, St Louis

Dr Alan G Brown, Toronto, Canadian chairman, addressed the session

Dr Bret Ratner, New York, read a paper on "Milk Allergy and Its Basic Treatment." Discussed by Drs Charles G Kerley, New York, Samuel Goldberg, Philadelphia, Albert H Rowe, Oakland, Calif George Piness, Los Angeles, and Franklin P Gengenbach, Denver

Dr Henry P Wright, Montreal, read a paper on "Allergy and Immunity in Childhood Tuberculosis" Discussed by Drs J C Gittings, Philadelphia, M James Fine, Newark, N J, and A Graeme Mitchell, Cincinnati

Dr George L Waldbott, Detroit, read a paper on "The Allergic Theory of So Called Thymus Death" Discussed by Drs B S Kline, Cleveland, and A Graeme Mitchell, Cincinnati

Dr Frederick F Tisdall Toronto, read a paper on "Inadequacy of Present Dietary Standards" Discussed by Drs Walter B Stewart, Atlantic City, N J, Harry H Donnelly, Washington, D C, Clifford Sweet, Oakland, Calif, and Herbert L Elias, Rockville Centre, N Y

Dr Lawrence T Royster, University, Va, read a paper on "Body Type in Negro Children" Discussed by Drs Howard C Carpenter Philadelphia, Frank Lee Bivings Atlanta, Ga. Harold C Stuart, Boston, and Emil Bogen, Olive View, Calif

FRIDAY, JUNE 14—MORNING

The following officers were elected chairman Dr Horton Casparis, Nashville, Tenn, vice chairman, Dr Hugh Dwyer, Kansas City, Kans, secretary, Dr Ralph M Tyson, Philadelphia, delegate, Dr William Weston, Columbia, S C, alternate, Dr A Graeme Mitchell, Cincinnati representative on Scientific Exhibit, Dr F Thomas Mitchell, Memphis, Tenn

On motion of Dr A H Parmelee, Oak Park, Ill., seconded and carried, thanks were extended to Dr Isaac A Abt for his term of service as delegate

Dr F Thomas Mitchell Memphis Tenn, presented the report of the Committee on Scientific Exhibit.

Dr Isaac A Abt Chicago, presented the report of the delegate to the House of Delegates. The report was adopted.

Dr Frank C Neff of Kansas City presented the Report of the Committee on the Jacoby Fund. On motion regularly made and seconded, it was voted that the report be adopted.

Drs Arthur Hawley Parmelee, Oak Park, Ill., and Louis J Halpern, Chicago, presented a paper on "The Diagnosis of Congenital Syphilis." Discussed by Drs Joseph Yampolsky, Atlanta, Ga., Henry H Perlman, Philadelphia, and Arthur Hawley Parmelee, Oak Park, Ill.

Dr Fred W Schlutz, Chicago, read a paper on "Systemic Thrush Infection." Discussed by Drs Isaac A Abt, Chicago, and F W Schlutz, Chicago.

Dr J Norman Henry, Philadelphia, read a paper on "A Study of Immunization Against Scarlet Fever in Charitable Institutions and Public Schools of Philadelphia." Discussed by Drs John A Toomey, Cleveland, P F Lucchesi, Philadelphia, Theodore Melnick, Philadelphia, and J Norman Henry, Philadelphia.

Dr George M Retan, Syracuse, N Y, read a paper on "The Development of the Therapeutic Use of Forced Perivascular (Spinal) Drainage." Discussed by Drs Temple S Fay, Philadelphia, Harry Lowenburg, Philadelphia, Tracy J Putnam, Boston, and George M Retan, Syracuse, N Y.

Drs Maurice Brodie and William H Park, New York, presented a paper on "Active Immunization Against Poliomyelitis Experimental and Human Studies." Discussed by Drs John A Kolmer, Philadelphia, Alton Goldbloom, Montreal, and Maurice Brodie, New York.

Dr Josephine B Neal, New York, read a paper on "Meningococcal Meningitis in Children." Discussed by Drs Bronson Crothers, Boston, Emily P Bacon, Philadelphia, and Josephine B Neal, New York.

SECTION ON PHARMACOLOGY AND THERAPEUTICS

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 10 by the chairman, Dr Carl H Greene, New York.

Dr V E Henderson, Toronto, read the Canadian chairman's address, following which he took the chair and presided throughout the afternoon session.

Drs C W Chapman and C A Morrell, Ottawa, Ont., presented a paper on "Standardization and Potency of Digitalis Preparations."

Drs H E Rykert and John Hepburn, Toronto, presented a paper on "The Intravenous Use of Strophanthin in the Treatment of Auricular Fibrillation."

Dr Charles W Greene, Columbia, Mo., read a paper on "Response of Coronary Vessels to Various Organic Drugs."

These three papers were discussed by Drs E E Nelson, Washington, D C, E Fullerton Cook, Philadelphia, Harry Gold, New York, Tasker Howard, Brooklyn, William D Stroud, Philadelphia, V A Lapenta, Indianapolis, F G Atwood, New Haven, Conn., Louis F Bishop Jr, New York, and Benjamin Jablons, New York.

Dr E M Watson, London, Ont., read a paper on "Clinical Experiences with Wheat Germ Oil (Vitamin E)." Discussed by Drs E D Plass, Iowa City, Paul Titus, Pittsburgh, and C W Chapman, Ottawa, Ont.

THURSDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2 05 by the chairman, Dr Carl H Greene, New York. Dr V E Henderson, Toronto, Canadian chairman, presided during part of the session.

On motion by Dr Leonard G Rowntree, Philadelphia, duly seconded and carried, the following were nominated for Associate Fellowship in the American Medical Association: William C MacTavish, New York, Clarence W Muehlberger, Chicago, and Marie Severac, Philadelphia.

Dr Carl H Greene, New York, read the chairman's address, entitled "The Personal Element in Therapeutics."

Dr Herman O Mosenthal, New York, read a paper on "Hyperglycemia: Evaluation in the Treatment of Diabetes Mellitus." Discussed by Drs Elhott P Joslin, Boston, Edwin J Kepler, Rochester, Minn., W S Collins, Brooklyn, Charles T Maxwell, Sioux City, Iowa, and A A Herold, Shreveport, La.

Drs Arthur Grollman and W M Firor, Baltimore, presented a paper entitled "Experimental Studies on Replacement Therapy in Adrenal Insufficiency." Discussed by Drs Edwin J Kepler, Rochester, Minn., R G Hoskins, Boston, and Leonard G Rowntree, Philadelphia.

Drs Leonard G Rowntree and J H Clark, Philadelphia, and A M Hanson, Faribault, Minn., presented a paper on "The Biologic Effects Following the Continuous Administration of Pineal Extract to Successive Generations." Discussed by Dr R G Hoskins, Boston.

Dr D Roy McCullagh, Cleveland, read a paper on "The Pharmacology of Testicular Hormones." Discussed by Drs William E Lower, Cleveland, R G Hoskins, Boston, and James B Collip, Montreal.

Drs Maurice L Tainter, Windsor C Cutting, Andrew B Stockton and E Hines, San Francisco, presented a paper on "The Metabolic and Anobesity Actions of Dinitrophenol." Discussed by Drs Maurice Bruger, New York, and Frank A Evans, Pittsburgh.

Dr Tom D Spies, Cleveland, read a paper on "The Treatment of Pellagra." Discussed by Drs Henry L Bockus, Philadelphia, W H Sebrell Jr, Washington, D C, L K Riggs, New Brunswick, N J, A A Herold, Shreveport, La., and Russell L Haden, Cleveland.

FRIDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr C D Leake, San Francisco, vice chairman, Dr N C Gilbert, Chicago, secretary, Dr Russell L Haden, Cleveland, delegate, Dr Cary Eggleston, New York, alternate, Dr N M Keith, Rochester, Minn., executive committee, Dr C D Leake, San Francisco, Dr Carl H Greene, New York, and Dr John H Musser, New Orleans.

Dr Clark W Heath, Boston, read a paper on "The Clinical Significance of Problems of Absorption in the Human Gastro-Intestinal Tract." Discussed by Drs Thomas T Mackie, New York, T Grier Miller, Philadelphia, Samuel Goldschmidt, Philadelphia, and Harold S Connamacher, Newark, N J.

Dr Kenneth I Melville, Montreal, read a paper on "Comparative Effects of Pressor and Oxytocic Fractions of Posterior Pituitary Extract on Blood Pressure and Intestinal Activity." Discussed by Dr D Roy McCullagh, Cleveland, and Kenneth I Melville, Montreal.

Dr Franklin A Weigand, Philadelphia, read a paper on "The Diuretic Action of Intravenous Sodium Dehydrocholate." Discussed by Drs B B Vincent Lyon, Philadelphia, Abraham Cantarow, Philadelphia, and Franklin A Weigand, Philadelphia.

Drs Norman M Keith and Melvin W Binger, Rochester, Minn., presented a paper on "The Diuretic Action of Potassium Salts." Discussed by Drs M Herbert Barker, Chicago, Carl H Greene, New York, and Melvin W Binger, Rochester, Minn.

Drs Joseph Kovacs, Irving S Wright and Leslie Saylor, New York, presented a paper on "A Pharmacologic and Therapeutic Study of Certain Choline Derivatives." Discussed by Drs V E Henderson, Toronto, and Isaac Starr, Philadelphia.

Dr Fred E Angle, Kansas City, Kan., read a paper on "Treatment of Acute and Chronic Brucellosis." Discussed by Dr Harold J Harris, Westport, N Y.

SECTION ON PATHOLOGY AND PHYSIOLOGY

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9 20 by the chairman, Dr Elias P Lyon, Minneapolis, who introduced Dr Ludvig Hektoen, honorary chairman, to preside during the remainder of the session.

The following papers were read as an anniversary program by founders of the section:

Dr Ludvig Hektoen, Chicago, "The Specificity of Streptococci" (honorary chairman's address).

Dr Walter L Biering, Des Moines, Iowa, "Development of Pathology Since 1900."

Dr George H Simmons, of Miami, Fla., one of the founders of the section, made a brief address.

Dr James B Herrick, Chicago "Internal Medicine Since 1900"

Dr George Blumer, New Haven Conn "Relationship of Pathologic Training to Clinical Medicine"

THURSDAY, JUNE 13—MORNING

The following were appointed by the chair as a nominating committee Drs Eugene R Whitmore, Washington D C, A C Ivy, Chicago, and H J Corper, Denver

The following were nominated to Associate Membership in the Association Dr Paul R Cannon, professor of pathology University of Chicago Paul L Day Ph D professor of biologic chemistry, University of Arkansas Fayetteville Ark. Frank A Hartman, Ph D professor of physiology Ohio State University, Columbus Ohio, and Dr William H Woglom experimental pathologist New York

Dr Elias P Lyon, Minneapolis read the chairman's address entitled "I Am Automatic"

The following papers were read as a symposium on 'The Autonomic Nervous System'

Dr Albert Kuntz, St Louis 'Essential Anatomy'

Dr Anton J Carlson, Chicago 'Essential Physiology'

Dr D E Jackson, Cincinnati 'Essential Pharmacology'

Drs Loyal Davis and Lewis J Pollock, Chicago 'The Role of the Autonomic Nervous System in the Causation of Pain'

Dr George E Brown Rochester Minn 'Clinical Tests of the Functions of the Sympathetic Nervous System'

Dr Alfred W Adson Rochester Minn "Indications for Surgery on the Sympathetic Nervous System"

These six papers were discussed by Drs W J Merle Scott, Rochester, N Y Irving S Wright, New York, James C White, Boston, Emmett Lee Jones Cumberland, Md Albert Kuntz St Louis, Anton J Carlson Chicago and Alfred W Adson Rochester, Minn

FRIDAY, JUNE 14—MORNING

The following officers were elected chairman Dr Henry C Swamy, Chicago, vice chairman Dr W L Garrey Nashville, Tenn secretary, Dr J J Moore Chicago delegate Dr David J Davis, Chicago, alternate Dr J J Moore Chicago

The secretary read the following report The committee appointed to consider the possibilities of forming a qualifying board for pathologists in conformity with the desires of the Advisory Board of Medical Specialties of the American Medical Association met at a meeting in Atlantic City, June 7, 1935 They are agreed that such a qualifying board should be formed at this time and recommend that a committee of three or more be appointed to meet with similar committees from the allied societies with power to act in the immediate formation of a Specialty Board in Pathology

J J MOORE, Chicago

E B KRUMBHAAR, Philadelphia

FRANK W HARTMAN Detroit

On the motion of Dr Anton J Carlson Chicago, seconded and carried, the report was approved

Dr William Boyd, Winnipeg, Man it read the Canadian chairman's address, entitled "The Relation of Pathology to Medicine"

Dr E Perry McCullough, Cleveland read a paper on "Post-tive Friedman Tests in Nonpregnant Individuals"

Dr R H Freyberg and L H Newburgh Ann Arbor Mich presented a paper on 'The Choice and Interpretation of Tests of Renal Efficiency' Discussed by Dr Herman O Mosenthal, New York

Dr John A Kolmer, Philadelphia, read a paper on 'Susceptibility and Immunity in Relation to Vaccination in Acute Anterior Poliomyelitis' Discussed by Drs William H Park New York H T Kramer Brooklyn, and John A Kolmer, Philadelphia

Dr Jesse G M Bullowa New York read a paper on 'Reliability of Sputum Typing in the Pneumoniae' Discussed by Drs William H Park, New York S W Sappington, Bryn Mawr Pa, and Jesse G M Bullowa, New York

Dr Charles C Macklin London, Ont, read a paper on "Alveolar Pores and Their Significance in the Human Lung"

Discussed by Drs William Boyd, Winnipeg, Man it, E B Krumbhaar, Philadelphia and Charles C Macklin London, Ont Dr B K Wiseman, Columbus, Ohio, read a paper on "The Nature and Importance of the Reciprocal Cellular Equilibrium That Exists Between Lymphatic and Myeloid Tissues as Revealed by Experimental and Clinical Studies" Discussed by Drs E B Krumbhaar, Philadelphia, and B K Wiseman, Columbus Ohio

Dr Emil Novak Baltimore read a paper on "Sex Determination Sex Differentiation and Intersexuality, with Report of Unusual Case" Discussed by Drs Elias P Lyon, Minneapolis, P M Menlowe McKeesport Pa, Jacob Auslander, New York, and Emil Novak Baltimore

SECTION ON NERVOUS AND MENTAL DISEASES

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 10 by the chairman, Dr H Douglas Singer Chicago

On motion of Dr Walter Freeman, Washington, D C, unanimously carried, Dr C M Hincks New York, and Dr E A Spiegel Temple University Medical School, Philadelphia, were nominated for election to Associate Fellowship in the American Medical Association

Drs Walter Freeman H H Schoenfeld and Claude Moore, Washington D C presented a paper on "Ventriculography with Colloidal Thorium Dioxide" Discussed by Drs Temple S Fay, Philadelphia, R Glen Spurling, Louisville, Ky, Tracy J Putnam, Boston, Hans Reese, Madison Wis, H H Schoenfeld Washington, D C, Claude Moore, Washington D C, and Walter Freeman, Washington, D C

Drs S P Goodhart, B H Balser and Irving Bieber New York presented a paper on "Encephalographic Studies in Extrapyramidal Disease" Discussed by Drs A J Bendick, New York Charles Davison, New York, Tracy J Putnam Boston, and S P Goodhart, New York

Dr Carlo J Tripoli, New Orleans read a paper on "Meningitis A Comparative Study of Various Therapeutic Measures" Discussed by Drs John H Musser New Orleans Josephine B Neal, New York R Glen Spurling Louisville, Ky Peter Bassoe Chicago Alfred Gordon, Philadelphia and Carlo J Tripoli New Orleans

Dr Tracy J Putnam, Boston, read a paper on "Etiologic Factors in Multiple Sclerosis" Discussed by Drs Armando Ferraro, New York, L H Cornwall New York, Roy Grinker, Chicago, and Tracy J Putnam, Boston

Drs William deG Mahoney New Haven, Conn and Donal Sheehan, Manchester England, presented a paper on "Experimental Ptosis in Monkeys and Chimpanzees The Synergic Action of Third Nerve and Cervical Sympathetic" Discussed by Dr R Glen Spurling Louisville, Ky

Dr J A Hannah, Toronto, read a paper entitled "Report of a Case of Alzheimer's Disease with Neuropathologic Observations" Discussed by Drs R P MacKay Chicago Mary B Baughman, Richmond, Va Peter Bassoe Chicago, Hans Wassing Paterson N J, and J A Hannah, Toronto

Dr George W Hall Chicago, read a paper on "Post-Traumatic Narcolepsy" Discussed by Drs Henry W Woltman Rochester Minn., John B Doyle, Los Angeles, and George W Hall, Chicago

THURSDAY, JUNE 13—AFTERNOON

Dr H Douglas Singer read the chairman's address, entitled 'Research in Psychiatry'

Dr Earl D Bond Philadelphia, read a paper on "The Onset in Postencephalitic and Traumatic Behavior Cases" Discussed by Drs Bernard J Alpers, Philadelphia, Bronson Crothers, Boston James P Leake, Washington, D C, and Earl D Bond, Philadelphia

Drs Lloyd H Ziegler and Arthur Knudson, Albany, N Y, presented a paper entitled "A Study of Activity After Recovery from Rickets An Experimental Study" Discussed by Drs Leo Kanner, Baltimore, Frederick F Tisdall, Toronto, Le Roy M A Maeder, Philadelphia, Bronson Crothers, Boston, and Lloyd H Ziegler, Albany, N Y

Dr A T Mathers, Winnipeg, Manlt, read the Canadian chairman's address, entitled "Medicolegal Relationships"

Dr George B Hassin, Chicago, Dr Henry W Woltman, Rochester, Minn, and Dr H Douglas Singer were appointed to act as a committee to nominate officers for the section for the ensuing year

Dr Walter Freeman, Washington, D C, made the following report, as representative of the Section on the American Board of Psychiatry and Neurology

"The American Board of Psychiatry and Neurology was finally organized after the session last year in Cleveland and held two or three meetings during the winter. The Section on Nervous and Mental Diseases is being represented by four members and the American Psychiatric Association and the American Neurological Association each by four members

"During the winter, plans for the certification of specialists were made and the first examination was held June 7 and 8 in Philadelphia. At this time thirty-one candidates were examined. These men all graduated between the years of 1919 and 1929 and were therefore in group 2, which it was decided should be examined. Of those thirty-one candidates, twenty-one were passed, four were conditioned, and six failed

"According to the by-laws of the board, those who are conditioned and those who fail may take subsequent examinations to make up their deficiencies. If this is done within three years, a small fee is charged. If the delay is too long, the application for renewed examination is treated as an original application

"The board plans to hold further examinations this year, one at Christmas time in New York, at the time of the meeting of the Association for Research in Nervous and Mental Diseases, and possibly another in some other city, either before or after that

"In addition to the thirty-one candidates who were examined for the certificate of the board, about forty candidates for certification on the record were acted on at the meeting of the board held in Philadelphia. These men represented those who graduated up to and including 1919, and it was decided that in those individuals no examination was necessary"

Dr Niels L Anthonisen, Belmont, Mass, read a paper on "Depression as a Part of a Life Experience. A Study of Forty Consecutive Cases". Discussed by Drs Earl D Bond, Philadelphia, Lloyd H Ziegler, Albany, N Y, and Niels L Anthonisen, Belmont, Mass

Drs Theophil Klingmann, Ann Arbor, Mich, and William H Everts, New York, presented a paper on "The Intensive Treatment of Morphine Addiction". Discussed by Drs Edwin G Zabriskie, New York, Mieczyslaw Openchowski, Newark, N J, and Theophil Klingmann, Ann Arbor, Mich

Drs C C Burlingame and Carl P Wagner, Hartford, Conn, presented a paper on "The Psychiatric Hospital as an Institution of Learning". Discussed by Drs Edwin G Zabriskie, New York, Lloyd J Thompson, New Haven Conn, and Carl P Wagner, Hartford, Conn

Dr Tom B Throckmorton, Des Moines, Iowa, delegate, made his report

FRIDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr Hans Reese, Madison, Wis, vice chairman, Dr Percival Bailey, Chicago, secretary, Dr Henry R Viets, Boston, delegate, Dr Tom B Throckmorton, Des Moines, Iowa, alternate, Dr Edward Delehanty, Denver

Dr George W Hall, Chicago, was chosen as a member of the American Board of Psychiatry and Neurology

Drs Samuel Brock, Aaron Bell and Charles Davison, New York, presented a paper on "A Clinical Study of Seven Cases of Nervous Complications Following Spinal Anesthesia. Tissue Study in One Instance". Discussed by Drs E D Friedman, New York, G H Hyslop, New York, C C Nash, Dallas, Texas, and Samuel Brock, New York

Drs Paul C Bucy and Douglas N Buchanan, Chicago, presented a paper on "The Simulation of Intracranial Neoplasm by Lead Encephalopathy in Children". Discussed by Drs Tracy J Putnam, Boston, Hans Reese, Madison, Wis, Roy Grinker, Chicago, L H Loeser, Newark, N J, and Paul C Bucy, Chicago

Drs William Cone and Wilder Penfield, Montreal, presented a paper on "Subtemporal and Suboccipital Myoplastic Crani-

otomy". Discussed by Drs Francis C Grant, Philadelphia, W James Gardner, Cleveland, Max M Peet, Ann Arbor, Mich, and William Cone, Montreal

Dr Francis Grant, Philadelphia, read a paper on "Clinical Aspects and Treatment of Chronic Subdural Hemorrhage." Discussed by Dr Tracy J Putnam, Boston, W James Gardner, Cleveland, Peter Bassoe, Chicago, Walter Freeman, Washington, D C, James W Watts, Philadelphia, C C Nash, Dallas, Texas, A M Kraut, Jersey City, N J, Max M Peet, Ann Arbor, Mich, Edgar A Kahn, Ann Arbor, Mich, and Francis C Grant, Philadelphia

Dr T C Erickson, Montreal, read a paper on "Paroxysmal Neuralgia of the Tympanic Nerve (Jacobson's Nerve)". Discussed by Dr Francis C Grant, Philadelphia

Dr Chalmers H Moore, Birmingham, Ala, read a paper on "Cranio-cerebral Trauma. Pathologic and Clinical Classification". Discussed by Dr Francis C Grant, Philadelphia

SECTION ON DERMATOLOGY AND SYPHILOLOGY

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr Jeffrey C Michael, Houston, Texas

The chairman introduced Dr J F Burgess and Dr Paul Poirier, Montreal, chairman and secretary respectively of the Dermatological Section of the Canadian Medical Association. Dr Burgess and Dr Michael presided jointly during the meetings

Dr Howard Fox, New York, reported for the Committee on the International Dermatological Congress

Dr Jeffrey C Michael, Houston, Texas, read the chairman's address, entitled "Consideration of the More Important Questions of the Etiology and Therapy of Acne Vulgaris"

Drs A M Davidson and P H Gregory, Winnipeg, Manlt, presented a paper on "The So-Called Mosaic Fungus as an Intercellular Deposit of Cholesterol Crystals". Discussed by Drs John Godwin Downing, Boston, S William Becker, Chicago, M F Engman Jr., St Louis, and A M Davidson, Winnipeg, Manlt

Drs Hermann Feit, Elizabeth Ann Laszlo and Frank Vero, New York, presented a paper on "Rosacea Interpreted as a Bacterid from Focal Infection". Discussed by Drs Samuel Ayres Jr, Los Angeles, Myer Solis-Cohen, Philadelphia, John H Stokes, Philadelphia, and Hermann Feit, New York

Dr D E H Cleveland, Vancouver, B C, read a paper on "Lichen Simplex Chronicus"

Drs J M Van de Erve, Charleston, S C, and S William Becker, Chicago, presented a paper on "Functional Studies in Patients with the Neurodermatoses"

These two papers were discussed by Drs Paul A O'Leary, Rochester, Minn, Samuel M Peck, New York, John H Stokes, Philadelphia, Samuel Goldblatt, Cincinnati, Theodore Cornbleet, Chicago, W U Rutledge, Louisville, Ky, Eugene T Bernstein, New York, D E H Cleveland, Vancouver, B C, and S William Becker, Chicago

Dr John H Stokes, Philadelphia, read a paper on "An 'Office' Technic of Treating Functional Neuroses as Complications of Organic Disease, with Special Reference to the Dermatoneuroses". Discussed by Drs Earl D Bond, Philadelphia, S William Becker, Chicago, Elmore B Tauber, Cincinnati, and John H Stokes, Philadelphia

Drs Paul D Foster, Los Angeles, and George M MacKee, New York, presented a paper on "Histogenesis of Aberrant Lesions of Psoriasis". Discussed by Drs Clark W Finnerud, Chicago, Fred Wise, New York, Hermann Feit, New York, George C Andrews, New York, David Bloom, New York, Adolph B Loveman, Louisville, Ky, Marion Z Sulzberger, New York, and Paul D Foster, Los Angeles

THURSDAY, JUNE 13—AFTERNOON

Dr Frank D Weidman, Philadelphia, gave the report of the Scientific Exhibits Committee, stating that there was a balance of \$233 on hand, and as the expenses would not be more than \$50 or \$60 per annum, this would be enough for three or four years, after which time the funds appropriated by the American

Medical Association would be sufficient to cover expenses. Dr Weidman tendered his resignation as chairman of the Scientific Exhibit.

The chairman appointed an auditing committee consisting of Dr Howard Morrow, San Francisco, and Dr Otto H Foerster, Milwaukee, to audit the accounts of the chairman of the Scientific Exhibit.

Dr C Guy Lane, Boston, read the report of the American Board of Dermatology and Syphilology.

Dr J F Burgess, Montreal, read the Canadian chairman's address, entitled "Chronic Gladders in Man."

Dr Frank R Smith Jr, Baltimore, read a paper on "The Treatment of Early and Late Congenital Syphilis in Children. The Results of Treatment in 521 Cases." Discussed by Drs E J Trow, Toronto, Adolph Rostenberg, New York, and Frank R Smith Jr, Baltimore.

Drs Duncan O Poth, Burton F Barney and Udo J Wile, Ann Arbor, Mich., presented a paper on "A Study of Dementia Paralytica and Tabes with Reference to Precocious Development." Discussed by Drs A Benson Cannon, New York, Udo J Wile, Ann Arbor, Mich., S B Hadden, Philadelphia, and Duncan O Poth, Ann Arbor, Mich.

Dr Walter M Simpson, Dayton, Ohio, read a paper on "Artificial Fever Therapy of Syphilis." Discussed by Drs Frank R Menagh, Detroit, Clarence A Neymann Chicago, Albert N B Lemoine, Kansas City, Mo., M F Engman Jr, St Louis, John H Stokes, Philadelphia, Paul A O'Leary, Rochester, Minn., and Walter M Simpson, Dayton, Ohio.

Drs A Benson Cannon and Joycelin H Robertson, New York, presented a paper on "A Study of the Comparative Value of Bismuth and Mercury Compounds in the Treatment of Early Syphilis." Discussed by Drs Harold N Cole, Cleveland, and Samuel Goldblatt, Cincinnati.

Drs Harold N Cole and E A Levin Cleveland, presented a paper on "Intradermal Test for Chancroids with Sterilized Pus from Chancroidal Buboec." Discussed by Drs Eugene F Traub, New York, David Bloom, New York, James L Pipkin, San Antonio, Texas, and Harold N Cole, Cleveland.

Dr John F Madden, St Paul, read a paper on "The Balamitides." Discussed by Drs P H Poirier, Montreal, Joseph V Klauder, Philadelphia, Samuel Ayres Jr, Los Angeles, and John F Madden, St Paul.

FRIDAY, JUNE 14—AFTERNOON

The report of the auditing committee, which found the accounts correct, was received.

Dr Marion B Sulzberger, New York, offered the following motion: That the chairman of this section appoint a committee on which he is to act ex officio, this committee to consist of members of this section to study and report on the ways and means by which American dermatology can most effectively organize in the study and treatment of occupational dermatoses, and how this section can best cooperate with the Section on Industrial and Preventive Medicine and Public Health and with the United States Public Health Service in the formation of a central institute for the cooperative approach to the problems of industrial skin diseases. The motion was seconded and carried, and the chairman announced that the incoming chairman would appoint the committee.

The following officers were elected: chairman, Dr Harry R. Foerster, Milwaukee; vice chairman, Dr John Godwin Downing, Boston; secretary, Dr Jesse Bedford Shelmire, Dallas, Texas; chairman Scientific Exhibit Committee, Dr Clark W Finnerud, Chicago; executive committee: Dr C Guy Lane, Boston, Dr Jeffrey C Michael, Houston, Texas, and Dr Harry R. Foerster, Milwaukee.

Dr M F Engman Jr, St Louis, read a paper on "Congenital Atrophy of the Skin with Reticular Pigmentation." Discussed by Drs H A Dixon, Toronto, S William Becker, Chicago, Harold N Cole, Cleveland, Fred D Weidman, Philadelphia, Charles F Pabst, Brooklyn, and M F Engman Jr, St Louis.

Dr Joseph V Klauder, Philadelphia, read a paper on "Fever Therapy of Mycosis Fungoides." Discussed by Drs W R Jaffrey, Hamilton, Ont., Paul A O'Leary, Rochester, Minn., Edward F Corson, Philadelphia, C Guy Lane, Boston, and Joseph V Klauder, Philadelphia.

Drs J L Pipkin and C F Lehmann, San Antonio, Texas, presented a paper on "Coccidioidal Granuloma. Report of Two Cases of a Chronic Hypertrophic Type." Discussed by Drs Charles C Tomlinson, Omaha, Howard Morrow, San Francisco, Fred D Weidman, Philadelphia, Donald M Pillsbury, Philadelphia, Joseph Gardner Hopkins, New York, and J L Pipkin, San Antonio, Texas.

Dr Norman M Wrong, Toronto, read a paper on "Hodgkin's Disease of the Scalp." Discussed by Dr Richard W Fowlkes, Richmond, Va.

Drs George C Andrews and Carl B Braestrup, New York, presented a paper on "Depth Dose Measurements for Dermatologic Roentgen Therapy." Discussed by Drs Anthony C Cipolario, New York, and Carl B Braestrup, New York.

Drs M H Goodman and Lloyd W Ketron, Baltimore, presented a paper on "Granuloma Annulare. Report of Unusual Cases, with Remarks on the Histology of This Condition." Discussed by Drs G S Williamson, Ottawa, Ont., Arthur W. Stillians, Chicago, Jeffrey C Michael, Houston, Texas, and Lloyd W Ketron, Baltimore.

Drs Walter O Teichman and Frank J Eichenlaub, Washington, D C., presented a paper on "The Relation of the Endocrine System to Dermatology." Discussed by Drs Barney Usher, Montreal, Hermann Feit, New York, and Frank J Eichenlaub, Washington, D C.

Dr Harold N Cole, Cleveland, moved and Dr Howard Morrow, San Francisco, seconded the motion, that it be the sense of the section that the motion passed at a previous meeting in regard to participants remaining throughout the session be strictly enforced in the future. As to the means of enforcement, it was suggested by Dr Eichenlaub that if a man did not remain through the session he be not invited to participate in the program again. Dr Cole's motion was seconded and carried.

The chairman, Dr Michael, expressed to the Canadian delegates the appreciation of the section for their part in making the meeting successful.

The chairman expressed the appreciation of the section for the work of Dr Fred D Weidman as chairman of the Committee on Scientific Exhibit.

SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9 15 by the chairman, Dr Robert H Riley, Baltimore.

The chairman appointed the following as the nominating committee: Dr A J Chesley, St. Paul, Dr J N Baker, Montgomery, Ala., and Dr A J Lanza, New York.

On motion of Dr John Sundwall, Ann Arbor, Mich., seconded by Dr W W Peter, Albuquerque, N M., it was voted to nominate Dr Victor G Heiser, New York, and Dr Stuart Fordyce Kitchen, Tallahassee, Fla., for Associate Fellowship.

Dr Robert H Riley, Baltimore, read the chairman's address.

Dr A Grant Fleming, Montreal, in the absence of Dr W J P MacMillan, Charlottetown, P E. I., read the Canadian chairman's address.

Dr Albert S Gray, Hartford, Conn., read a paper on "Importance of Industrial Hygiene and How It Can Best Be Handled by State Departments of Health." Discussed by Drs C O Sappington, Chicago, R. R. Sayers, Washington, D C., Huntington Williams, Baltimore, L D Bristol, New York, and Albert S Gray, Hartford, Conn.

Dr Fred J Wampler, Richmond, Va., read a paper on "Some Observations on a Physical Survey of 47,000 CWA Employees in the State of Virginia." Discussed by Drs L D Bristol, New York, I C Riggins, Richmond, Va., John Sundwall, Ann Arbor, Mich., W W Peter, Albuquerque, N M., Oscar O Miller, Louisville, Ky., Fred J Wampler, Richmond, Va., and R R Sayers, Washington, D C.

THURSDAY, JUNE 13—MORNING

Dr N E McKinnon, Downsview, Ont., read a paper on "The Reduction of Diphtheria in Children Immunized with Toxoid." Discussed by Drs M P Ravenel, Columbia, Mo.,

D T Fraser, Toronto, J N Baker, Montgomery, Ala., and N E McKinnon, Downsview, Ont.

Dr James G Cumming, Washington, D C., read a paper on "Tuberculosis The Interval of Supervisory Treatment and Prophylactic Control" Discussed by Dr S Adolphus Knopf, New York

Dr John L Rice, New York, read a paper on "Health Problems in New York City"

Dr S E Gould, Eloise, Mich., read a paper on "Age Distribution and Longevity of the Syphilitic."

Dr Julius Levy, Newark, N J., read a paper on "Child Health Survey of Preschool Children, Conducted as CWA Project." Discussed by Dr LeRoy A Wilkes, Trenton, N J

Drs Clarence L Hyde and Carl R Steinke, Akron, Ohio, presented a paper on "The Importance of the Closure of Pulmonary Cavities in the Prevention of Tuberculosis"

Dr W T B Mitchell, Montreal read a paper on "Mental Hygiene in Its Relationship to Public Health and Preventive Medicine"

Louis I Dublin, New York, read a paper on "Trends of Cancer Incidence, Mortality and Curability"

Dr A J Lanza, New York, read a paper on "Asbestosis"

Dr R Vance Ward, Montreal, read a paper on "Tuberculosis in Industry"

FRIDAY, JUNE 14—MORNING

Drs Howard B Sprague and Paul D White Boston presented a paper on "The Etiology of Heart Disease, with Special Reference to the Present Status of the Prevention of Heart Disease."

Dr George E Fahr, Minneapolis, read a paper on "The Heart in Hypertension"

Dr Alfred C Cohn, New York, read a paper on "An Analysis of the Apparent Increase in Heart Disease"

Dr William D Stroud, Philadelphia, read a paper on "The Rehabilitation and Placement in Industry of Those Handicapped with Cardiovascular Disease"

Dr O F Hedley, Philadelphia, read a paper on "A Critical Analysis of Heart Disease Mortality"

These five papers were discussed by Drs Haven Emerson, New York, Harold E. B Pardee, New York Timothy Leary, Boston, S Adolphus Knopf, New York, Samuel Friedman New York, Harold B Wood, Harrisburg, Pa Howard B Sprague, Boston, George E Fahr, Minneapolis, and O F Hedley, Philadelphia

The following officers were elected chairman, Dr R R Sayers, Washington, D C., vice chairman, Dr J Lynn Mahaffey, Trenton, N J., secretary, Dr Henry Hanson, Jacksonville, Fla., delegate, Dr Stanley H Osborn Hartford, Conn Executive Committee, Dr Wilson G Smilie, Boston, Dr Robert H Riley, Baltimore, and Dr R. R. Sayers, Washington, D C

SECTION ON UROLOGY

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9 15 by the chairman, Dr Stanley R Woodruff, Jersey City, N J

The following papers were read as a symposium on "Genito-Urinary Anomalies and Their Treatment"

Dr Robert Gutierrez, New York "The Role of Anomalies of the Kidney and Ureter in the Causation of Surgical Conditions"

Dr Allen B Hawthorne, Montreal "The Embryologic and Clinical Aspects of Double Ureter"

Dr Gilbert J Thomas, Minneapolis "The Ectopic Pelvic Kidney"

Dr Meredith F Campbell, New York "The Surgical Treatment of Anomalies of the Upper Urinary Tract in Children"

These four papers were discussed by Drs Vincent J O'Connor, Chicago, William P Herbst, Washington, D C., Moses Swick, New York, Louis H Segar Indianapolis Reed M Nesbit, Ann Arbor, Mich., C H deT Shivers Atlantic City, N J., George R Livermore, Memphis Tenn John K. Ormond, Detroit, Robert Gutierrez New York, Allen B Hawthorne, Montreal, Gilbert J Thomas, Minneapolis, and Meredith F Campbell, New York

Drs Charles M McKenna and E E Ewert Chicago presented a paper on "The Operative Treatment for Undescended Testicle." Discussed by Drs R H Jenkins New Haven, Conn., A I Dodson, Richmond, Va H W E Walther, New Orleans and Charles M McKenna, Chicago

Dr William E Stevens, San Francisco, read a paper on "Congenital Obstructions of the Female Urethra" Discussed by Dr Francis P Twinem, New York

Dr Frank S Patch, Montreal read a paper on "Cystitis Cystica" Discussed by Drs Monroe E Greenberger New York George H Ewell, Madison, Wis., and Frank S Patch, Montreal

Dr Clyde W Collings, New York, presented a new instrument for transurethral surgery

THURSDAY, JUNE 13—MORNING

Drs David W MacKenzie, Montreal, and Stanley R. Woodruff, Jersey City, N J presided as co-chairmen

Dr David W MacKenzie, Montreal, read the Canadian chairman's address, entitled "Experimental Studies of Lymphatic Absorption from the Pelvic Organs, with Special Reference to the Question of Renal Infections"

Drs Lloyd G Lewis and Orthello R Langworthy, Baltimore, presented a paper on "New Methods of Diagnosis in Neurogenic Lesions of the Bladder and Vesical Neck" Discussed by Drs John Duff New York, Maurice Muschat Philadelphia, Irving Simons New York, William Bisher, New York, and Lloyd G Lewis Baltimore

On motion made by Dr George R. Livermore, Memphis, Tenn., and regularly seconded and carried, the section went into executive session during the reading of the following three papers

Drs James F McCahey, Lorenz P Hansen and David Soloway, Philadelphia "The Anterior Pituitary-Testis Endocrine Relation in the Human Being"

Dr William E Lower, Cleveland "A Preliminary Clinical Report on the Treatment of Benign Prostatic Hypertrophy by Nonoperative Methods"

These two papers were discussed by Drs William J Ezickson, Philadelphia Richard Chute Boston R J A McComb Toronto, R H Jenkins New Haven, Conn. V D Lespinasse, Chicago D Roy McCullagh, Cleveland James F McCahey, Philadelphia, and William E. Lower, Cleveland.

Dr O S Lowsley, New York "Experimental Studies on Impotence in Man" Discussed by Dr A L Wolbarst, New York.

Drs S W Moore and Roy B Henline, New York, presented a paper on "Experimental Study in Renal Arteriography"

Dr Dorrin F Rudnick, Chicago read a paper on "A Study of the Changes in the Trigon Following Resection"

These two papers were discussed by Drs A J Scholl, Los Angeles and R W Barnes, Los Angeles

Dr John B Lowmes Philadelphia read a paper on "The Indication for Nephropexy, with an Analysis of Results" Discussed by Dr Joseph A Hyams, New York

The chairman appointed Drs Russell S Ferguson New York, and Vincent J O'Connor, Chicago, temporary members of the executive committee in the absence of Drs N G Alcock, Iowa City, and Harry Culver, Chicago

FRIDAY, JUNE 14—MORNING

The following officers were elected chairman Dr J H Morrissey, New York vice chairman, Dr C H deT Shivers, Atlantic City, N J., secretary, Dr W P Herbst, Washington, D C, delegate, Dr H C Bumpus Jr Pasadena, Calif alternate, Dr John B Lowmes, Philadelphia

Dr Stanley R Woodruff, Jersey City N J., read the chairman's address, entitled "Tumors of the Ureter A Consideration of the Various Types Primary and Secondary, with a Report of Two Cases of True Metastases" Discussed by Dr Howard S Jeck, New York A. E. Bothe Philadelphia F C Herrick, Cleveland and Stanley R. Woodruff, Jersey City, N J

Dr William F Braasch Rochester Minn., read a paper on "The Prognosis with Renal Neoplasm and Clinical Data Affecting It" Discussed by Dr H W E Walther, New Orleans Wilham C Quinby Boston Edwin Beer, New York, and William F Braasch, Rochester, Minn

Dr Robin Pearse, Toronto, read a paper on "Choice of Treatment in Carcinoma of the Bladder"

Dr Russell S Ferguson, New York, read a paper on 'Etiology and Pathogenesis of Multiple Tumors of the Genito-Urinary Tract'

These two papers were discussed by Drs N F Ockerblad, Kansas City, Mo, I G Harrison, Philadelphia, A E Bothe, Philadelphia, George E Pfahler, Philadelphia, and Victor D Washburn, Wilmington, Del

Dr Reed M Nesbit, Ann Arbor, Mich, read a paper on 'Total Cystectomy and Urethral Transplantations in Malignant Conditions of the Bladder, with a Description of a New Operative Procedure' Discussed by Drs Edwin Beer New York, Jerome M Lynch, New York C C Higgins, Cleveland Harry O Lepsky, Cincinnati, and William C Quinby, Boston

Dr Ralph M LeComte, Washington D C, read a paper on "The Management of Tumors of the Kidney, Including Cysts and Polycystic Disease."

Dr Ernest M Watson, Buffalo, read a paper on "Carcinoma of the Female Urethra"

Dr Archie L Dean Jr, New York, read a paper on "Teratoid Tumors of the Testes"

These three papers were discussed by Drs Lawrence R Wharton, Baltimore, Henry Singree Philadelphia, George C Prather, Boston, Benjamin S Barringer, New York, Ralph M LeComte, Washington, D C., and Ernest M Watson, Buffalo

SECTION ON ORTHOPEDIC SURGERY

WEDNESDAY, JUNE 12—MORNING

The meeting was called to order at 9 10 by the chairman, Dr Robert D Schrock Omaha

The chairman introduced Dr R I Harris, Toronto, who presided jointly

Dr G E Haggart, Boston, read a paper on "Comminuted Colles' Fracture in Elderly Patients Method of Treatment and the End Results in Thirty Cases" Discussed by Drs William B Owen, Louisville, Ky Willis C Campbell Memphis Tenn, Robert H Kennedy, New York, and Roland Hammond, Providence, R I

Drs Walter G Stern and Louis E Papurt Cleveland presented a paper on 'Healing of the Newer Bumper Fractures of the Tibia' Discussed by Drs W E Gallic, Toronto, Paul B Magnuson, Chicago, and H Earle Conwell Fairfield, Ala

Drs John C. Wilson and Pierre J Walker Los Angeles, presented a paper on 'Acute Anterior Poliomyelitis A Study of the 1934 Epidemic in Southern California' Discussed by Drs William H Park, New York, Philip Lewin, Chicago J P Leake, Washington, D C., Maurice Brodie, New York, and John C Wilson, Los Angeles

Dr Henry W Meyerding Rochester Minn, read a paper on "Dupuytren's Contracture." Discussed by Drs Sumner L Koch, Chicago, G O Eaton, Baltimore, and A Bruce Gill, Philadelphia

Dr Armitage Whitman, New York, read a paper on 'The Treatment of Scoliosis End Results in the Study of One Hundred Postoperative Cases' Discussed by Drs A B Ferguson, New York and Mathier Cleveland New York

Dr Clarence H Heyman Cleveland read a paper on 'Late Results of Treatment of Congenital Dislocation of the Hip' Discussed by Drs A Bruce Gill Philadelphia, Samuel Kleinberg, New York Joseph A Freiberg, Cincinnati, and Paul C Colonna, New York

THURSDAY, JUNE 13—MORNING

Dr J M Murray Ottawa, Ont, read a paper on 'Traumatic Flail Elbow' Discussed by Drs Edwin W Ryerson, Chicago, G I Bauman, Cleveland, and J M Murray, Ottawa, Ont

Dr George W Armstrong, Ottawa, Ont read a paper on 'Acute Septic Arthritis' Discussed by Drs Robert W Johnson Jr, Baltimore, G A Ramsay, London Ont, Mr Harry Clarke, Royal Infirmary, Manchester, England, R I Harris, Toronto, Willis C Campbell, Memphis, Tenn, Frank R Ober, Boston, and George W Armstrong, Ottawa, Ont

Dr R I Harris, Toronto, read the Canadian chairman's address, entitled 'Fat Embolism A Dangerous Complication of Orthopedic Operations'

Dr Fremont A Chandler, Chicago, secretary, discussed the formation of the Board of Orthopedic Surgery

Dr E. C Janes, Hamilton, Ont, read a paper on "Experiences in Leg Lengthening" Discussed by Drs Paul N Jepson, Philadelphia, James A Dickson, Cleveland, Paul B Magnuson, Chicago, George Anopol, New York, and E C Janes, Hamilton, Ont

Dr D W Gordon Murray, Toronto, read a paper on "Fractures of the Carpal Scaphoid" Discussed by Dr Clay Ray Murray, New York

Dr Fraser B Gurd, Montreal, read a paper on "Post-Traumatic Acute Bone Atrophy A Clinical Entity" Discussed by Drs E W Ryerson, Chicago, Robert V Funsten, University, Va, Ralph G Carothers, Cincinnati, Philip Lewin, Chicago, and Fraser B Gurd, Montreal

FRIDAY, JUNE 14—MORNING

The following officers were elected chairman, Dr Arthur T Legg, Boston, vice chairman, Dr Fremont A Chandler, Chicago secretary, Dr Robert V Funsten, University, Va, delegate, Henry W Meyerding, Rochester, Minn, executive committee Drs James S Speed, Memphis, Tenn, Robert D Schrock, Omaha, and Arthur T Legg, Boston

Dr Henry W Meyerding, Rochester, Minn, presented the report of the delegate to the House of Delegates

Dr Earl D McBride, Oklahoma City, read a paper on "The Conservative Operation for Bunions End Results and Refinements of Technic" Discussed by Drs Paul W Lapidus, New York, and Earl D McBride, Oklahoma City

Dr Willis C Campbell, Memphis, Tenn, read a paper on "An Analysis of Living Cases of Primary Malignant Bone Tumors" Discussed by Drs Henry W Meyerding, Rochester, Minn Bradley L Coley, New York, and Dr Willis C. Campbell, Memphis, Tenn

Dr R I Harris Toronto, extended the thanks of the members of the Canadian Medical Association for the kind and courteous treatment they had received and invited the section and the American Medical Association to meet in Toronto in 1940, when the Canadian Medical Association is meeting jointly with the British Medical Association

Dr Robert D Schrock, Omaha, read the chairman's address, entitled 'Difficulties of Diagnosis of Bone Tumors'

Dr William T Green, Boston, read a paper on "Osteomyelitis in Infancy" Discussed by Drs Frank R Ober, Boston, H Winnett Orr, Lincoln, Neb, and William T Green, Boston

Dr Edward L Compere, Chicago, read a paper on 'Growth Arrest in the Long Bones as a Result of Fractures That Include the Epiphysis'

Dr R A Y Johnston, London, Ont, read a paper on "The Effect of Inflammation on Epiphysis and Slipped Epiphyses"

These two papers were discussed by Drs F C Kidner, Detroit, J Dewey Bisgard, Omaha, Dr Edward L Compere, Chicago, and Dr R A Y Johnston, London, Ont

SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr Walter A Fansler, Minneapolis

Drs N B Taylor and C B Weld, Toronto, presented a paper on 'Intestinal Obstruction An Experimental Study' Discussed by Drs A C Ivy, Chicago, and C B Weld, Toronto

Dr N B Dreyer, Halifax, N S, read a paper on "Some Effects of Barbituric Acid Derivatives on Gastro-Intestinal Motility and Absorption in the Cat" Discussed by Drs J A Barga, Rochester, Minn, W J Quigley, Cleveland, and N B Dreyer, Halifax, N S

Drs Martin G Vorhaus, Robert R Williams and Robert E Waterman, New York, presented a paper on "Studies on Crystalline Vitamin B₁ Experimental and Clinical Observations" Discussed by Drs Frederick F Tisdale, Toronto, and Martin G Vorhaus, New York City

Dr Russell L Haden Cleveland, read a paper on 'Multiple Nutritional Deficiency Disease' Discussed by Drs R F

Farquaharson, Toronto, Michael G Wohl, Philadelphia, and Russell L Haden, Cleveland

Drs Burrill B Crohn and Bernard D Rosenak, New York, presented a paper on "Combined Forms of Ileitis and Colitis" Discussed by Drs A A Berg New York Joseph Felsen, Mount Vernon, N Y, Anthony Bassler, New York, and Burrill B Crohn, New York

Drs Lathan A Crandall, George M Roberts and Lowell D Snorf, Chicago, presented a paper on "The Use of Chondroitin in Idiopathic Headache" Discussed by Drs August A Thomen, New York, A F R Andresen, Brooklyn, and Lathan A Crandall, Chicago

Dr Walter A Bastedo, New York, read a paper on "The Value of Belladonna in Stomach Disorders A Summary of Laboratory and Clinical Observations" Discussed by Drs Bruce C Lockwood, Detroit, and Walter A Bastedo, New York.

THURSDAY, JUNE 13—AFTERNOON

Dr Walter A Fansler, Minneapolis read the chairman's address, entitled "The Diagnosis and Prognosis of Epithelial Tumors of the Large Bowel"

Dr R H M Hardisty, Montreal, read the Canadian chairman's address

Dr Curtice Rosser, Dallas, Texas, read a paper on "Diagnostic Criteria of Colonic Cancer" Discussed by Drs Neil John Maclean, Winnipeg, Manit, Sara M Jordan, Boston, Julius Friedenwald, Baltimore, and Curtice Rosser, Dallas, Texas

Dr Neil John Maclean, Winnipeg Manit, read a paper on "Endometriosis of the Large Bowel" Discussed by Drs James D Schofield, Philadelphia, and Neil John Maclean, Winnipeg, Manit

Drs E L Walsh, G H Laing H L Sippy and A C Ivy Chicago, presented a paper on "Behavior of the Average Human Colon" Discussed by Drs Malcolm J Wilson Toronto, N B Dreyer Halifax N S, and A C Ivy Chicago

Dr Philip W Brown, Rochester Minn, read a paper on "Clinical Experience of the Mayo Clinic in the Treatment of Amebiasis" Discussed by Drs Moses Paulson, Baltimore, Sidney K. Simon, New Orleans, and Philip W Brown, Rochester Minn

Drs Herbert T Hayes, Harry B Burr and J Wade Harris, Houston, Texas presented a paper on "Lymphogranuloma Inguinale" Discussed by Drs William H Daniel, Los Angeles, and Harry B Burr, Houston, Texas

Dr Frank C Yeomans New York, read a paper on "Proctologic Conditions in Children" Discussed by Drs Descum C McKenney, Buffalo, and Frank C Yeomans, New York

Dr F B Bowman, Hamilton Ont, read a paper on "Villous Papilloma of the Rectum" Discussed by Drs Edward G Martin, Detroit, and F B Bowman, Hamilton, Ont

FRIDAY, JUNE 14—AFTERNOON

The following officers were elected chairman, Dr Ernest H Gauthier, Baltimore, vice chairman, Dr Louis A. Buie, Rochester, Minn, secretary, Dr A H Aaron, Buffalo, delegate, Dr Curtice Rosser, Dallas, Texas, Executive Committee, Dr A F R Andresen, Brooklyn, Dr Walter A Fansler Minneapolis, and Dr Ernest H Gauthier, Baltimore

Dr Martin E. Refuss, Philadelphia, read the report of the Committee on Dietary Faddism On motion made by Dr Walter A. Fansler, Minneapolis, seconded by Dr Anthony Bassler, New York, the following resolution was adopted

Resolved That the Committee on Dietary Faddism be given the power to combat actively dietary faddism food cults and dietary misinformation by every means in its power subject to the discretion of the Board of Trustees of the American Medical Association

Dr A F R. Andresen, Brooklyn presented the report of the committee appointed to join with a similar committee of the American Gastro-Enterological Association in the formation of an American Board of Gastroenterology On motion made by Dr Henry A Rafsky, New York, seconded by Dr Sara M. Jordan Boston, the report was accepted and approved

Dr Malcolm J Wilson, Toronto, read a paper on "The Function of the Pyloric Sphincter" Discussed by Drs J Earl Thomas, Philadelphia, and Malcolm J Wilson, Toronto

Drs Charles M Wilhelmj and Frederick C. Hill, Omaha presented a paper on "The Regulation of Gastric Acidity"

Discussed by Drs F W Rolph, Toronto, Frank Gorham, St. Louis, and Frederick C Hill Omaha

Drs Samuel J Fogelson and Richmond K. Anderson, Chicago, presented a paper on "The Secretion of Gastric Mucin in Man A Comparative Study in the Normal Subject and Peptic Ulcer Patient in Response to an Alcohol Test Meal" Discussed by Drs B P Babkin, Montreal, and Samuel J Fogelson, Chicago

Drs John Euman and Walter G Karr, Philadelphia, presented a paper on "Relation of Nonprotein Nitrogen Retention to Dehydration and Hypochloremia." Discussed by Drs Simon L Ruskin, New York, Henry A Rafsky, New York Michael G Wohl, Philadelphia, and Walter G Karr, Philadelphia

Dr B P Babkin, Montreal, read a paper on "Blood Sugar Concentration and the External Secretion of the Pancreatic Gland" Discussed by Drs A H Aaron, Buffalo, and B P Babkin, Montreal

Dr Joseph T Beardwood Jr, Philadelphia, read a paper on "Abdominal Symptomatology of Diabetic Acidosis"

Drs Robert W Mathews and Truman G Schnabel, Philadelphia, presented a paper on "Esophageal Carcinoma, with Especial Reference to a Nonstenosing Variety" Discussed by Drs Gabriel Tucker, Philadelphia, and Truman G Schnabel, Philadelphia

Drs James F Weir and Albert M Snell, Rochester, Minn, presented a paper on "Some Sequelae of Cholecystectomy" Discussed by Drs Colin G Sutherland, Montreal, and Henry A Rafsky New York

SECTION ON RADIOLOGY

WEDNESDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 10 by the chairman, Dr John W Pierson, Baltimore

The chairman introduced Dr W A Jones, Kingston, Ont., the Canadian chairman, who assumed the chair

Dr W A Jones, Kingston, Ont, read the Canadian chairman's address, entitled "The Role of Anatomy in the Radiologic Study of the Spine"

Dr Albert Soland Los Angeles, presented his report on the resolutions adopted by the section last year, which were presented to the House of Delegates, and Dr C S Gorsline, Battle Creek, Mich, discussed the matter briefly

Drs B R Kirklin and T W Blake, Rochester, Minn, presented a paper on 'A Comparison of the Clinical and Cholecystographic Manifestations of Cholelithiasis' Discussed by Dr I S Ravdin, Philadelphia

Dr A C Singleton, Toronto, read a paper on "Radiologic Observations in Prepyloric Lesions" Discussed by Dr Lewis Gregory Cole, New York

Dr Sherwood Moore, St. Louis, read a paper on "Metabolic Cranioptathy A Clinical Syndrome with Radiographic Lesions in the Cranial Bones" Discussed by Drs Bede J M Harrison Vancouver, B C, M C Sosman, Boston, and E H Skinner, Kansas City, Mo

Drs Karl Kornblum and Philip J Hodes, Philadelphia, presented a paper on "The Roentgenologic Aspects of Osteomyelitis of the Skull" Discussed by Dr E. L Rypins, Iowa City

Dr E H Shannon, Toronto, read a paper on "Observations on the Radiographic Examination of the Accessory Nasal Sinuses" Discussed by Dr Frederick M Law New York

THURSDAY, JUNE 13—AFTERNOON

Dr John W Pierson, Baltimore, read the chairman's address, entitled "Some Roentgenologic Studies in the Dynamics of the Thorax"

Dr John T Farrell Jr, Philadelphia, presented a paper on "Importance of Early Diagnosis in Bronchiectasis A Clinical and Roentgenographic Study of One Hundred Cases" No discussion.

Dr Robert E Cumming, Detroit, read a paper on "Intravenous and Retrograde Urography A Comparative Study" Discussed by Drs Moses Swick, New York, and Robert E Cumming, Detroit

Dr A. H Pirie, Montreal, read a paper on "Clinical Applications of the Method for Reading with Closed Eyes" Discussed by Drs Robert B Taft, Charleston, S C., George W Grier, Pittsburgh, and A H Pirie, Montreal

Drs Max Ritvo Patrick F Butler and Eugene E O Neil, Boston, presented a paper on "X-Ray Diagnosis of Tumors of the Breast" Discussed by Drs L A Pomeroy, Cleveland, John J Gilbride, Philadelphia, and Max Ritvo Boston

Dr E L Shepley, Saskatoon, Sask read a paper on "Cancer An Adequate Offensive Attack" Discussed by Drs Francis Carter Wood, New York

FRIDAY, JUNE 14—AFTERNOON

The following officers were elected chairman Dr Edward Jenkinson, Chicago, vice chairman Dr Ross Golden New York, secretary, Dr John T Murphy, Toledo, Ohio executive committee, Dr A U Desjardins, Rochester, Minn, Dr John W Pierson, Baltimore, and Dr Edward Jenkinson, Chicago

Drs Howard P Doub and Frank W Hartman, Detroit, presented a paper on "X-Rays in Diagnosis and Treatment of Mycogenous Neoplasms" No discussion

Dr Bede J M Harrison Vancouver B C, read a paper on "A New Method of Orientation Applicable to the Body and the Roentgen-Ray Beam" Discussed by Drs W E Chamberlain, Philadelphia, A H Pirie Montreal, and Bede J M Harrison, Vancouver B C

Dr Benjamin S Barringer, New York, read a paper on "Inguinal Gland Metastases in Carcinoma of the Penis" Discussed by Drs George L Pfahler, Philadelphia, and Benjamin S Barringer, New York

Dr U V Portmann Cleveland read a paper on "Roentgen Therapy for Mediastinal Tuberculous Lymphadenitis" Discussed by Drs John S Derr Frederick Md William Snow, New York and U V Portmann Cleveland

Dr M C Morrison, London, Ont, read a paper on "Hodgkin's Disease of Bone" Discussed by Drs W H McGuffin, Calgary, Alta A H Pirie Montreal, W E Chamberlain, Philadelphia U V Portmann, Cleveland M J Tobias, New York Gordon Richards Toronto George E Pfahler, Philadelphia, and M C Morrison London Ont

Drs G Allen Robinson and R Franklin Carter, New York, presented a paper on "Differential Diagnosis and Treatment of Tumors in Children" Discussed by Drs Ralph S Bromer, Bryn Mawr Pa George W Grier, Pittsburgh Eugene P Pendergrass, Philadelphia George L Pfahler Philadelphia, and A H Pirie, Montreal

SECTION ON MISCELLANEOUS TOPICS

Session on Anesthesia

WEDNESDAY JUNE 12—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr John S Lundy Rochester, Minn., who expressed pleasure at the opportunity of welcoming the Canadian Association members and introduced the chairman of the Canadian section Dr Wesley Bourne of Montreal, who took the chair and presided.

Sir Francis E Shipway London England read a paper on "Tribrom-Ethanol An Analysis of 1600 Administrations" Discussed by Drs Albert H Miller, Providence, R I, Walter L Muir Halifax, N S Russell F Sheldon, Boston, C N Chipman, Washington, D C and Sir Francis E Shipway, London England

Dr Paul M Wood, New York read a paper on "Clinical Use of Cyclopropane and Tribrom-Ethanol" Discussed by Drs Harold R Griffith Montreal Henry S Ruth, Philadelphia, Sir Francis E Shipway, London, England Thomas Drysdale Buchanan New York, Philip D Woodbridge, Boston, and Paul M Wood New York

Drs Simon Dworkin and Bernard B Raginsky, Montreal, presented a paper on "The Effect of Anesthetics, Sedatives and Hypnotics on Conditioned Motor Reflexes" Discussed by Drs Wesley Bourne, Montreal, Howard S Liddell, Ithaca, N Y, and Bernard B Raginsky, Montreal

Dr John S Lundy, Rochester, Minn, read the chairman's address, entitled "The Clinical Use of Anesthetic Agents and Methods," following which he took the chair and presided during the remainder of the session

Dr Lincoln F Sise, Boston read a paper on "Anesthesia for Thyrocardiac Patients" Discussed by Drs Ansel M Caine,

New Orleans, Milton J Raisbeck, New York, S C Wiggins, Newton, Mass., and Lincoln F Sise, Boston

Drs Chester M Kurtz, J H Bennett and H H Shapiro, Madison, Wis., presented a paper on "Electrocardiographic Studies During Surgical Anesthesia" Discussed by Drs E A Rovenstine, New York, Lewis M Hurxthal, Boston, Milton J Raisbeck, New York, and Chester M Kurtz, Madison, Wis

Dr Frank W CoTui, New York, read a paper on "Spinal Anesthesia The Experimental Basis of Some Prevailing Clinical Practices" Discussed by Drs Meyer Saklad, Providence R I Philip D Woodbridge, Boston, and Frank W CoTui, New York

Session on History of Medicine

THURSDAY, JUNE 13—MORNING

The meeting was called to order at 9 15 by the chairman, Dr James B Herrick, Chicago

Chairman Herrick introduced the secretary of the Canadian section, Dr H E MacDermot, Montreal, who represented the Canadian chairman, Dr W W Francis, Montreal, who was unable to attend

Dr Herrick read his introductory remarks

Dr David Riesman, Philadelphia read a paper on "Deceased Diseases" Discussed by Drs James B Herrick Chicago, and Philip G Corliss, Somerton, Ariz

Dr H E MacDermot, Montreal, read a paper by Dr Leo E Pariseau, Montreal, on "Jacques Cartier (A D 1535) and the History of Scurvy" Discussed by Drs Richmond C Holcomb, Highland Park, Pa, and H E MacDermot, Montreal

Dr F L Reichert, San Francisco read a paper on "Anatomy in the Making" Discussed by Dr David Riesman Philadelphia

Dr H E MacDermot read a paper by Dr W B Howell, Montreal, on "Walter Henry, Army Surgeon in the Early Nineteenth Century" Discussed by Dr Jabez H Elliott, Toronto

Dr Roland Hammond, Providence R I, read a paper on "Medicine in the Time of the Crusades"

On motion by Dr Richmond C Holcomb, Highland Park, Pa seconded and carried the loss of Fielding Garrison an outstanding, scholarly, medical historian, was deplored, an international loss

The secretary, Dr Major G Seelig St. Louis read a letter from Dr J Oscar Thompson, of Upper Darby, Pa on a letter-head of the Canton Hospital, Canton, China regarding the celebration on Nov 4 1935, of the centenary of the introduction of modern medicine into China and the founding of Canton Hospital by Dr Peter Parker, a graduate of Yale, and the fiftieth anniversary of Dr Sun Yat-Sen's beginning to study medicine at Canton Hospital

It was moved by Dr Isaac A. Abt, Chicago seconded and carried, that the matter be referred to the secretary, with a request that the House of Delegates of the American Medical Association send felicitations of this joint meeting of the session Dr Abt volunteered to present the matter to the House of Delegates at the afternoon session

Dr O H Leber, New York, made a motion, which was duly seconded and carried, that a petition be sent to the House of Delegates that a session on historical medicine be held every year

Session on Military Medicine

FRIDAY, JUNE 14—MORNING

The meeting was called to order at 9 25 by Dr Holman Taylor, Fort Worth, Texas, secretary of the section, who introduced Dr W H Delaney, Quebec, the Canadian secretary, to preside in the absence of the chairman.

Dr George W Rice, Washington, D C, read a paper on "Peace-Time Medical Department Reserve Training" Discussed by Drs E A Meyerding, St Paul, Ernest Fulton Risdon, Toronto, Holman Taylor, Fort Worth, Texas, and John B Klopp, Chester, Pa

Dr Ernest Fulton Risdon, Toronto, read a paper on "Surgical Care of the Facially Wounded." Discussed by Dr Robert H Ivy, Philadelphia

Dr M C Stayer, Carlisle, Pa, read a paper on "The Relationship of the Medical Officer to the Combat Officer" Discussed by Drs Holman Taylor, Fort Worth, Texas, and James H Huddleson, New York.

Dr P R Bolus, Ottawa, Ont, read a paper on "Shell Shock in Past and Future Wars" Discussed by Drs James H Hudson, New York, and P R. Bolus, Ottawa, Ont

Dr Charles H Frazier, Philadelphia, read a paper on "The Modern Treatment of Surgical Shock" Discussed by Drs Charles C Lund, Boston, and Norman E. Freeman, Boston

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the Atlantic City session occupied the largest amount of floor space in the history of the Association, covering more than 45,000 square feet. There were more than 200 exhibits of a purely scientific nature. All fifteen sections of the Scientific Assembly participated through special section exhibit committees appointed for the purpose, while the exhibits were correlated closely with the papers read in the Scientific Assembly.

There were four special exhibits authorized by the Board of Trustees. The exhibit on diabetes, under the direction of a committee headed by Dr E P Joslin of Boston, covered all aspects of diabetes and its treatment. The other members of the committee were F G Banting, co-chairman, Toronto, C H Best, Toronto, H F Root, Boston, R M Wilder, Rochester, Minn, and R T Woodyatt, Chicago. This committee was assisted by a corps of demonstrators, as follows: F M Allen, New York, C J Barborka, Chicago, J T Beardwood, Philadelphia, C F Bolduan, New York, B D Bowen, Buffalo, Gladys L. Boyd, Toronto, W R Campbell, Toronto, C D Christie, Cleveland, L I Dublin, New York, Reginald Fitz, Boston, H R Geyelin, New York, Henry J John, Cleveland, W R Jordan, Richmond, Va, E P Joslin, Boston, C F Kemper, Denver, H L Lombard, Boston, Alexander Marble, Boston, E H Mason, Montreal, H O Mosenthal, New York, J E Paullin Jr, Atlanta, Ga, Elaine Ralli, New York, E L Sevringhaus, Madison, Wis, H J Spencer, New York, T P Sharkey, Dayton, Ohio, Shields Warren, Boston, Priscilla White, Boston, and J W Williams, Rochester, N Y.

The exhibit on the prevention of asphyxial deaths was presented under the direction of a committee headed by C L Jackson, Philadelphia, assisted by a committee composed of Harrison S Martland, Newark, N J, and R R Sayers, Washington, D C. This committee was assisted by a corps of demonstrators, as follows: Alvan L Barach, New York, Charles L Bossert, Atlantic City, N J, C W Buckmaster,

Yonkers, N Y, Jesse G M Bullowa, New York, P J Flagg, New York, Wheaton Fregeau, New York, John F McGrath, New York, A Harry Neffson, New York, Lawrence W Smith, New York, and Warren T Vaughan, Richmond, Va. Each of the three members of the committee had fine exhibits in this group. Special commendation is given to the Atlantic City life guards for the excellent demonstration which they gave in connection with this exhibit.

The exhibit on vaccines and serums was a cooperative undertaking by the Committee on Scientific Exhibit and the United States Public Health Service. The committee in charge consisted of R C. Williams, chairman, Washington, D C., James P Leake, Washington, D C., and W G Workman, Washington, D C., this committee was assisted by the following demonstrators: C F McKhann, Boston, S S Cook, Washington, D C., W T Harrison, Washington, D C., and R H Miller, Washington, D C.

The special exhibit on nutrition was presented by a committee composed of Reginald Fitz, chairman, Boston, Walter C Alvarez, Rochester, Minn., and L H Newburgh, Ann Arbor, Mich.

Among the section exhibits there were several special features. The Section on Dermatology and Syphilology had a special symposium on syphilis, and the Section on Preventive and Industrial Medicine and Public Health had a symposium on tuberculosis. There were so many exhibits on cancer that they were grouped together to form a symposium on cancer. There were several motion picture programs sponsored by sections, including the Section on Orthopedic Surgery, the Section on Obstetrics, Gynecology and Abdominal Surgery, the Section on Nervous and Mental Diseases and the Section on Ophthalmology.

There were 205 exhibits open to awards, including eighteen educational exhibits. The four special exhibits and the awards of the American Medical Association are not open to awards.

REPORT OF THE COMMITTEE ON AWARDS

The Committee on Awards made the following report:

CLASS I

[Awards in Class I are made for exhibits of individual investigations, which are judged on the basis of originality and excellence of presentation.]

The gold medal to F L Adair and M Edward Davis, Department of Obstetrics and Gynecology, University of Chicago, Chicago, for original investigations in the development of ergot as a therapeutic agent and especially of a new active principle isolated in crystalline state from ergot, together with its pharmacologic and medicinal properties.

The silver medal to L G Rowntree, J H Clark and Arthur Steimberg, Philadelphia Institute of Medical Research, Philadelphia General Hospital, Philadelphia, and A M Hanson, Faribault, Minn, for original investigations on the biologic effects of thymus and pineal extracts.

The bronze medal to Jane Sands Robb, J G Fred Hiss and R C Robb, Syracuse University School of Medicine, Syracuse, N Y, for original investigations on cardiac muscle-bundle physiology and experimental coronary lesions.

Certificates of Merit, Class I are awarded to the following (alphabetically arranged):

Bede J Harrison, Vancouver General Hospital, Vancouver, B C, for exhibit illustrating a new method of orientation applicable to the body and the x-ray beam.

Aaron E Kanter, Carl P Bauer and Arthur H Klawans, Rush Medical College of the University of Chicago, Chicago, for exhibit illustrating a new biologic test for hormones in pregnancy urine.

Isaac Schour and A G Brodie, University of Illinois College of Dentistry, Chicago, for exhibit illustrating the effect of metabolic disturbances on teeth.

CLASS II

[Awards in Class II are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of excellence of presentation.]

The gold medal to Stuart Harrington and Willis S Lemon, Mayo Foundation for Medical Education and Research, Rochester, Minn, for excellence of presentation of exhibit illustrating the surgical treatment and clinical manifestations of various types of diaphragmatic hernia and intrathoracic tumors.

The silver medal to David W MacKenzie and Alexander B Wallace, urologic department, Royal Victoria Hospital, Montreal, for excellence of presentation of exhibit on lymphatic studies, particularly relation of lower urinary and genital tracts to renal infections.

The bronze medal to James Harold Mendel, Philadelphia, for excellence of presentation of exhibit on ear drums and their interpretation.

Certificates of merit, Class II, are awarded to the following (alphabetically arranged):

T G H Drake, Hospital for Sick Children, Toronto, for excellence of presentation of exhibit illustrating infant care and feeding in ancient times.

Jacob Gershon-Cohen and Albert Strickler, Philadelphia Skin and Cancer Hospital, Philadelphia, for excellence of presentation of exhibit illustrating roentgenographic studies of the normal female breast.

C C Higgins, Cleveland Clinic, Cleveland, for excellence of presentation of exhibit illustrating transplantation of ureters
Dudley C. Smith, W A Brumfield Jr and E C Barksdale, University of Virginia Charlottesville, Va for excellence of presentation of exhibit illustrating practical epidemiology of syphilis

HONORABLE MENTION

In addition, the following exhibits are deemed worthy of honorable mention (alphabetically arranged)

That of Maude E Abbott, McGill University, Montreal, illustrating the clinical classification of congenital heart disease

That of K. K. Chen, Charles L Rose and G H A Clowes, Lilly Research Laboratories, Indianapolis on cyanide poisoning

That of Theodore Cornbleet and E R. Pace University of Illinois College of Medicine, Chicago, on the physiologic and biologic studies of sweat with clinical implications

That of M S Dooley and J Solon Mordell University Hospital and College of Medicine, Syracuse University, Syracuse, N Y, on rational drug therapy in hospitals

That of Earl W Florsdorf and Stuart Mudd, University of Pennsylvania School of Medicine, Philadelphia on the preservation of serum and other biologicals by desiccation in vacuo from the frozen state

That of Frank W Hartman, R. D McClure and C I Allen, Henry Ford Hospital, Detroit, on the pathology and treatment of burns

That of Sherwood Moore, the Edward Mallinckrodt Institute of Radiology, Washington University School of Medicine St Louis, on a new metabolic disorder and its pathognomonic radiology signs in the skull

That of Norman Treves, Memorial Hospital New York, on inflammatory carcinoma of the female breast

That of S A Weisman, University of Minnesota Medical School, Minneapolis, on the normal development of the human chest.

GROUP EXHIBITS

A special certificate of merit is awarded to each of the following group exhibits

Group exhibit from Temple University School of Medicine, Philadelphia, on the correlation of clinical results obtained in various branches of medicine by regulation of the cerebral hydrodynamics and the methods of treatment involved. The following individuals were responsible for this work Temple Fay, W E Chamberlain, J O Arnold John Royal Moore, J Garrett Hickey, Nicholas Gotten and John H Taefner

Group exhibit from the University of Pennsylvania School of Medicine, Philadelphia on the small intestine. The following individuals were responsible for this work T Grier Miller, W Osler Abbott Katherine OS Elson William G Karr P J Morrison, I S Ravdin, Charles G Johnson Wright Wilson, F A Cajori, Edwin J DeBeer Henry K. Pancoast, Eugene P Pendergrass, Philip J Hodes and J Robert Andrews

Group exhibit from Columbia University and the Hospital for Joint Diseases, New York, aided by Carnegie Institution of Washington, D C, on studies on crystalline vitamin B₁. The following individuals were responsible for this work Robert E Waterman, John C Keresztesy H T Clarke Samuel Gurin, Edwin R. Buchan, A E Ruehle, Oscar Wintersteiner, Martin G Vorhaus, Sidney Berkowitz, and Robert R Williams and Marion Ammerman

Group exhibit from the Lahey Clinic on Surgical Treatment of Thyroid Diseases, exploration of common duct and abdominal perineal resection of the rectum Frank H Lahey and Richard B Cattell were responsible for this work.

EDUCATIONAL CLASSIFICATION

A special certificate of merit is awarded to the American Heart Association, New York for its exhibit illustrating heart disease as a sudden cause of death and cardiac disability associated with thyrotoxicosis

SPECIAL EXHIBITS

The Committee on Awards wishes particularly to commend the special exhibits sponsored by the American Medical Association and feels that a special debt of gratitude is owed to

Dr E P Joslin and his committee for the splendid exhibit on diabetes to Dr C L Jackson and his committee for the splendid exhibit on the prevention of asphyxial death, with a special vote of thanks to the Atlantic City life guards for their demonstrations, to the United States Public Health Service for its cooperation in the exhibit on vaccines and serums, and to Dr Reginald Fitz and his committee for the nutrition exhibit.

SPECIAL COMMENDATIONS

The Committee on Awards desires to commend especially the following exhibits

Those exhibits illustrating the symposium on syphilis by the Section on Dermatology and Syphilology and the symposium on tuberculosis by the Section on Preventive and Industrial Medicine and Public Health

Those of the various councils and bureaus of the American Medical Association

The Committee on Awards wishes to express its appreciation as well as that of the Committee on Scientific Exhibit of the Board of Trustees for the splendid cooperation of the Canadian Medical Association in sending so many outstanding exhibits to this meeting

Special commendation is given to the exhibit on the Dionne quintuplets by Dr Allan Roy Dafoe, Callander, Ont., and Dr William A Dafoe, Toronto

RECOMMENDATIONS

The Committee on Awards wishes to draw attention to the larger number of exhibits this year illustrating experimental investigations of direct clinical interest. The committee realizes fully the fundamental value of accurate observations in medicine and recognizes that the physician in general practice must ever be kept in mind in the presentation of exhibits, yet it wishes to emphasize also that exhibits showing the most recent advances in experimental medical investigations must be encouraged

The Committee on Awards believes that the policy of correlating the Scientific Exhibit with the Scientific Assembly by the appointment of section exhibit committees is advantageous and it is noted with satisfaction that all the sections have again appointed such committees. The attention of the section officers is respectfully directed to the fact, however, that the section exhibit committees must be chosen with great care so that the most noteworthy research in the various specialties may be represented in the Scientific Exhibit. The Committee on Awards suggests that perhaps the time has come when the committees should consider a selective limitation of section exhibits to be included in the Scientific Exhibit in order better to control its size and at the same time secure exhibits of the most important work in the different fields of medicine

The Committee on Awards wishes to commend especially the large number of individual exhibitors who have developed their exhibits entirely from their own resources and without outside financial aid

The Committee on Awards believes that the members and Fellows of the American Medical Association owe a debt of gratitude to the Committee on Scientific Exhibit of the Board of Trustees to the Advisory Committee and to Dr Thomas G Hull executive in charge of the arrangements of the Scientific Exhibit

The Committee on Awards feels that it cannot commend too highly the appropriate arrangements general and special, the excellent management, the instructiveness and the scientific as well as the practical value of the exhibit. Many physicians and investigators, often at great personal sacrifice have presented exhibits dealing with various aspects of medicine, prepared by means of modern methods and devices for the visualization of the most recent advances. The committee also desires to praise the efforts by many exhibitors to increase the attractiveness of their exhibits

LUDVIG HEKTOEN, Chairman, Chicago
D CHESTER BROWN, Danbury, Conn
EBEN J CAREY, Milwaukee
D SCLATER LEWIS, Montreal
THOMAS G ORR, Kansas City, Mo
RALPH M TYSON, Philadelphia

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bill Passed—H 300 has passed the house, proposing to prohibit the sale or distribution of barbital, sulphonethylmethane (trional), sulphonmethane (sulphonol), diethylsulphon diethylmethane (tetronal), paraldehyde and chloral or chloral hydrate and any derivatives, compounds or mixtures of any of these drugs possessing hypnotic properties or effects, except on the written prescription of a licensed physician.

ARKANSAS

Personal—Dr John H Weaver has been appointed health officer of Hope and Dr Andrew S Gregg health officer of Fayetteville.

Society News—Dr Bryce Cummins, Little Rock, among others, addressed the Southeast Arkansas Medical Society recently on control of acute infectious disease with the latest vaccines and serums.—Speakers before the Lawrence County Medical Society at a recent meeting were Drs Horace R. McCarroll, Walnut Ridge, on "Puerperal Eclampsia," and Thomas C Guthrie, Smithville, "Vomiting of Pregnancy."—The Mississippi County Medical Society was addressed recently by Drs Duane M Carr on surgery in diseases of the chest, Conley H Sanford, treatment of pneumonia, and Thomas D Moore, Memphis, Tenn, conservative treatment of surgical lesions of the kidney.—A symposium on diabetes constituted the program of the Garland and Sebastian county medical societies recently. Speakers were Drs Arthur F Hoge, Everett C Moulton and James W Anis, Fort Smith. At a meeting of the Sebastian County Medical Society, May 13, Dr Clarence B Billingsley, Fort Smith discussed enuresis and Dr Ira F Jones, Fort Smith, pyelitis in childhood.

CALIFORNIA

Exhibit of Rare Books—The University of California Medical School Library announces an exhibition of rare books recently presented to the medical school by Mrs Myrtle Crummer Ingram, in memory of her late husband, Dr Leroy Crummer. Included in the collection are the 1651 edition of Harvey's work on generation, a Latin edition of Rosslin's "de Partu Hominis" the Renaissance work on obstetrics, Phrysius's "Spiegel der Artzney", the 1628 edition of Aselli's "De Lactibus" and the famous poem by Alexander Pope "An Epistle to Dr Arbuthnot."

State Association Cooperates with Medical Schools—The house of delegates of the California Medical Association recently decided to sponsor a series of state-wide graduate courses in cooperation with the medical schools of the state. A series of courses was recently concluded in the districts about Santa Rosa, Sacramento, San Jose and Fresno, in collaboration with local groups of practicing physicians under the auspices of the University of California Medical School. The data developed from this series were turned over to the state medical association, which appointed a committee to work out the details of the future meetings and clinics.

Society News—The Los Angeles Society of Neurology and Psychiatry was addressed, June 19, by Dr George Creswell Burns among others, on 'Psychoses Due to Bromide Intoxication'.—Dr Leon J Menville, New Orleans, discussed visualization of the lymphatic system before the radiologic section of the Los Angeles County Medical Association, May 8.—A symposium on tuberculosis was presented before the San Diego County Medical Society, June 11, by Drs Bryant R. Simpson, Rudolph H Sundberg and Einar H Christopherson.—The Los Angeles Surgical Society was addressed, May 10, among others, by Dr James F Percy on "Cautery Excision and Protein Absorption in the Treatment of Accessible Cancer."

Reunion of Past Presidents—At the recent meeting of the California Medical Association, the first annual reunion of past presidents was held at an informal breakfast, May 14. Of the eleven past presidents in attendance at the session nine were present: Drs George H Kress, Los Angeles, 1917, Cornelius Van Zwaluwenburg, Riverside 1919, John H Graves, San Francisco 1922, Edward N Ewer, Oakland, 1926, William H Kiger, Los Angeles, 1927, Morton R Gibbons, San Francisco,

1929, Lyell C Kinney, San Diego, 1930, Junius B Harris, Sacramento, 1931, and George G Reinle, Oakland, 1933. Dr Robert A Peers, Colfax, president-elect, presided. Speakers included Drs James S McLester, Birmingham, then President-Elect, American Medical Association, and Clarence G Toland, Los Angeles, then president of the state association.

CONNECTICUT

Portrait of Dr Winternitz—An oil portrait of Dr Milton C Winternitz, dean, Yale University School of Medicine, was presented to the school by the student body, June 17, at the annual meeting of the Association of Yale Alumni in Medicine in the Sterling Hall of Medicine. Dr Winternitz retires from the deanship this year after fifteen years' service. Dr Stanhope Bayne-Jones, who will succeed Dr Winternitz as dean, accepted the portrait in behalf of the school and university. Charles-Edward A Winslow, Dr P H, was among the speakers. Dr George Blumer, New Haven, was chosen president of the alumni association for the coming year.

Changes in Health Officers—Dr Edward J Finn has been appointed to succeed Dr Francis I Nettleton as health officer of Shelton and Dr John D Milburn to succeed the late Dr Frederick T Fitch as health officer of East Hampton. Dr Thomas O Murry is health officer of Beacon Falls, succeeding Dr David H Bluestone, who now lives in Naugatuck. Dr Charles E. Kaufman West Haven, is completing the unexpired term of the late Dr Charles A Bevan. Dr Matthew Griswold will complete the unexpired term of the late Dr Roger M Griswold as health officer of the town of Berlin. Dr John J Gaffney has been appointed town health officer of Danbury, succeeding Dr Felix F Tomaino, who was recently named health officer of the city of Danbury.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 2939 has been reported to the Senate, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr Ronald A Cox (S Rept No 940).

GEORGIA

Increase in Rabies—There were 1,104 heads of animals examined for rabies in the laboratory division of the state department of health during 1934, as compared with 951 during 1933. Between 40 and 50 per cent of these examinations showed positive results, it was stated. During the first four months of 1934 a total of 177 heads were found positive and a total of 1,105 human treatments administered while for the same period of 1935 a total of 247 positive heads were found, with a total of 1,226 human treatments.

ILLINOIS

Bill Passed—H 44 has passed the house and senate, proposing to repeal the laws regulating the distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

Modification of Quarantine Regulations—The Illinois State Department of Health has announced changes in the quarantine regulations effective at once. Patients with epidemic encephalitis will be isolated for two instead of three weeks and the quarantine period for measles is reduced to five instead of seven days from the date of appearance of the rash, provided the catarrhal symptoms have cleared up. Hospital patients with communicable disease may not be removed or discharged without the consent of the local or state health authorities. Common carriers are forbidden to transport birds of the parrot family without a certificate signed by the state health authority indicating freedom from psittacosis. Quarantine of patients with whooping cough is made more stringent requiring isolation of all patients for three weeks after the onset of the paroxysmal cough. The modified quarantine which permitted these patients, identified by special arm bands the freedom of the home premises, has been rescinded. Scarlet fever patients must always be isolated for a minimum period of three weeks and longer if necessary on account of complications. Release by laboratory tests of specimens has been abandoned as impracticable. Ophthalmia neonatorum must be reported within six hours after detection, according to the new rules.

Chicago

Catalogue of Medical Literature at Crerar Library—The Institute of Medicine of Chicago announces that the union catalogue of medical literature in the city is now open to the medical public for reference. Installed on the twelfth floor of the John Crerar Library the catalogue represents the holdings in the libraries of the colleges of medicine and dentistry of

Northwestern University, of the colleges of medicine, dentistry and pharmacy of the University of Illinois, most of the holdings in the biomedical libraries of the University of Chicago, and much of those in the John Crerar Library and in the library of Rush Medical College. The card index is up to date, the medical libraries each month send in cards for their new acquisitions, it is hoped to include soon the important material in the smaller medical libraries of the city. The initial fund for the establishment of the catalogue was made available two years ago by the Institute of Medicine. The organization work was entrusted to a committee on coordination of medical libraries in Chicago, which had been appointed the previous year. The first aim of the committee was to bring about closer integration of effort among the major medicobiologic libraries of the city, to obviate unnecessary duplication of special literature, and to divert the economies achieved to a fuller representation of the world's medical literature in Chicago. The second aim was the creation of a union card index centrally placed, so that investigators in medical problems may locate reference volumes with the least expenditure of time and energy.

INDIANA

Hospital News—Funds to provide a three story annex to the Ball Memorial Hospital Muncie have been made available by the Ball family, the new addition is expected to cost \$200,000.—St Joseph Hospital, Mishawaka celebrated its twenty fifth anniversary, April 22.

Personal—Dr Benjamin J Teaford, Jonesville has been appointed health commissioner of Bartholomew County.—Dr Dudley A Pfaff, Indianapolis has been named a member of the newly created merit commission for the police and fire departments, according to the Indianapolis Star.

IOWA

Society News—Dr Cora Beale Williams Choate, Marshalltown, was elected president of the Society of Iowa Medical Women at its recent annual meeting.—A special joint meeting of the Butler and Mitchell County medical societies was recently addressed at Greene by Drs George E Krepelka, Stacyville, on 'Resection of the Small Bowel,' and Theodore E Blong, Stacyville 'Diabetes Mellitus.' Dr John O Eiel, Osage, reported a case of pancreatic cyst.—A symposium on gall-bladder diseases was presented before the Cerro Gordo County Medical Society recently by Drs Charles and Joseph G Mayo and Claude F Dixon all of Rochester, Minn.—Speakers before a joint meeting of the Johnson Cedar Muscatine, Louisa, Washington and Iowa county medical societies May 1, in Iowa City, included Drs Arthur C Pattison and Frederic E Hambrecht, on 'The Factor of Age in the Mortality of Acute Appendicitis' and Russell's Traction in Fractures of the Femoral Shaft respectively.—Dr George H Bissett, Sac City, addressed the Sac County Medical Society in Odebolt recently on 'Arteriosclerosis and Hypertension.'

LOUISIANA

Personal—Dr Asahel J Hockett since 1931 chief resident physician at State of Wisconsin General Hospital, Madison, Wis., has been appointed superintendent of the Touro Infirmary, New Orleans, succeeding Dr Basil C MacLean.

Society News—At a meeting of the Orleans Parish Medical Society, June 24, Harold Hinman, Ph D and Dr Rudolph H Kampmeier discussed 'Trichiniasis in Louisiana' and 'Clinical Aspects of Trichiniasis' respectively. Dr Sydney Jacobs spoke on 'Pituitary Infantilism'.—Dr George A Mayer was chosen president of the New Orleans Gynecological and Obstetrical Society at a recent meeting.

MARYLAND

Personal—Drs William Allen Deckert, John M Haws and Isadore A Siegel have been appointed health officers in the division of maternity hygiene of the Baltimore Health Department.

Society News—Dr Wilder Graves Penfield, director, Montreal Neurological Institute among others addressed the Johns Hopkins Medical Society, Baltimore, April 8, on 'Head Pain'.—Dr John A Kolmer, Philadelphia, discussed vaccine used in the prevention of infantile paralysis before the Washington County Medical Society recently, in Hagerstown.

In Memory of Dr Welch—A bronze plaque was unveiled and dedicated at the Happy Hills Convalescent Home for Children, Baltimore, June 5, in honor of the late Dr William H Welch one of the founders and first president of the institution. The tablet was unveiled by Dr Henry Barton Jacobs, also one of the founders and present vice president of

the home. Addresses were made by Dr Edwards A Park and by Mr Alfred Jenkins Shriver, a friend of Dr Welch. The home contains accommodations for sixty children and offers convalescent care without charge to those who are unable to receive proper treatment in their homes. Dr Benjamin Tappan is medical director.

MASSACHUSETTS

Health Service Plan for Employees—The New England Health Center, comprising the Boston Floating Hospital, Boston Dispensary and Tufts College Medical School, has adopted a health service plan by which a standard of health supervision will be maintained for its employees. The plan, which covers routine physical examination, the keeping of records, and treatment, will be under the direction of Dr Katherine S Andrews of the department of medicine.

Personal—Dr Walter B Cannon, George Higginson professor of physiology, Harvard Medical School, Boston, was elected an honorary member of the National Academy of Medicine of Spain at the recent celebration of the two hundredth anniversary of its founding, *Science* reports.—Dr Abraham Myerson was recently appointed clinical professor of psychiatry at Harvard Medical School, Boston.—Dr Charles Sidney Burwell, dean elect and research professor of clinical medicine, Harvard Medical School, Boston, has been appointed to the staff of Peter Bent Brigham Hospital, where he will continue clinical investigations of heart disease.

State Medical Meeting and Election—Dr Charles E Moigan, Somerville, was chosen president of the Massachusetts Medical Society at its recent annual meeting in Boston, June 3-5. Dr Channing Frothingham, Boston, was named vice president, and Dr Alexander S Begg, Boston, secretary. Dr Begg has been acting secretary since the death of Dr Walter L Burrage. The next annual session will be held in Springfield. The Shattuck Lecture was delivered Monday evening by Dr William E Gallic, professor of surgery, University of Toronto Faculty of Medicine, on 'Sprains and Dislocations.' Speakers from outside the state included:

Dr Carl Henry Davis, Milwaukee, 'Diagnosis and Treatment of Lesions of the Cervix Uteri.'
Dr William Bierman, New York, 'Fever and Short Wave Radiations.'
Dr John R Carty, New York, 'Diagnostic Possibilities in Soft Tissue Radiography.'
Dr John P Peters, New Haven, Conn., 'Factors in Etiology of Bright's Disease.'

At this meeting, Dr David Cheever, surgeon at the Peter Bent Brigham Hospital, was designated official press representative of the association, the first time the society has filled this position. The society plans to make a survey next September to determine whether there are adequate medical and hospital facilities in the state.

MICHIGAN

Personal—Dr James L McCartney, director of mental hygiene at Battle Creek Sanitarium, has resigned to become chief psychiatrist at the New York State Vocational Institution on the Hudson River at West Coxsackie, N Y, a correctional institute operated by the state department of correction for boys between the ages of 10 and 16.—Dr Linda Gage Roth, dean of women at Battle Creek College, was elected president of the Michigan Student Health Association at a meeting, May 4.—Wayne University conferred the honorary degree of doctor of science in education on Dr William M Donald, Detroit, at its recent commencement.—Dr Thomas R. Ponton has been named acting superintendent of Hurley Hospital, Flint.

Society News—Dr Henry J Pyle, Grand Rapids, was elected president of the Michigan Association of Industrial Physicians and Surgeons at its recent annual meeting.—Dr Paul S Barker, Ann Arbor, conducted a clinic and talked on 'Heart Disease in Children' before the Barry County Medical Society recently in Hastings.—At a meeting of the Shiawassee County Medical Society in May Drs Lloyd E Verity and Russell L Mustard, Battle Creek, discussed peptic ulcer.—Dr Myron William Clift, Flint, spoke on 'Common Pathologic Changes in the Spine with Especial Reference to the Mechanical Forces Involved' before the St Clair County Medical Society in Port Huron, May 21. Dr George J Curry, Flint, reported a series of six cases of musculospiral palsy.

MISSISSIPPI

Meeting Dedicated to State President-Elect—The Central Medical Society dedicated its meeting in Jackson, June 4 to Dr Harvey F Garrison, Jackson, president-elect of the Mississippi State Medical Association, the first member of the society to be named for this position since 1904. In that year Dr Thomas J Mitchell, Jackson, was elected.

MISSOURI

Class Reunion—A reunion of the class of 1895 of the Missouri Medical College was held, June 15-16 at Wildwood Springs Hotel, Steelville. Dr Robert J Terry, St Louis, acted as toastmaster. Dr Robert E Schlueter, St Louis, gave a history of the class, Dr John Zahorsky, St Louis, read a poem entitled "Forty Years Ago," and Dr Marcellus George Gorin, St Louis, presented reminiscences.

Personal—Dr Ralf Hanks, Fulton, has been named superintendent of state hospital number one at Fulton to succeed Dr Raymond C Fagley, resigned.—Dr Henry J Ulrich has been appointed superintendent of the City Isolation Hospital, St. Louis, succeeding Dr John Eschenbrenner, who resigned, May 1, to enter private practice in Ardmore, Okla. Dr Ulrich has been a resident physician at the hospital since 1929.—Dr Hugh P Muir has been named health commissioner of Columbia to succeed the late Dr Wilford A Norris.

Annual Fall Conference—The thirteenth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the President Hotel, Kansas City, October 7-10. A tentative program includes the following physicians:

John Alexander Ann Arbor	Harry S Gradle Chicago
Fred H Albee, New York	Francis E LeJeune New Orleans
William Wayne Babcock Philadel	William S Middleton, Madison
phia	Myrie G Peterman Milwaukee
Harlow Brooks, New York	Edward A Schumann Philadelphia
Arthur C Christie Washington	Albert Soiland Los Angeles
D C	Cyrus C Sturges Ann Arbor
Alfred I Folsom Dallas	

Society News—Dr Oliver C Wenger of the U S Public Health Service, Hot Springs National Park, addressed a meeting of the St Louis Medical Society recently under the auspices of the Missouri Social Hygiene Association. His subject was "Venereal Disease as a Public Health Problem." Speakers before the Society recently were Drs Joseph Edgar Stewart on "Treatment of Fracture of the Neck of the Femur", Arthur M Alden, "Value of Ionization in the Treatment of Certain Forms of Allergy," and Sherwood Moore, "Metabolic Craniopathy".—Dr Jacob Kulowski, St Joseph among others spoke before the Jackson County Medical Society recently on "Osteomyelitis of the Spine and Pelvis."

MONTANA

Society News—At a meeting of the Mount Powell Medical Society at the Montana Hotel, Anaconda May 18 Dr Henry E Michelson, professor of dermatology University of Minnesota Medical School, spoke on "Diagnosis and Treatment of Diseases of the Skin." A clinic was held during the session.

Railway Surgeons' Meeting—The Great Northern Railway Surgeons' Association held its annual meeting in Glacier Park, July 1-2, with the following physicians on the program:

Charles L Scudder Boston Emergency Treatment of Fractures
Loyal Davis Chicago Treatment of Spinal Cord Injuries
Francis J Savage St Paul Fracture of the Surgical Neck of the Humerus
Sumner L S Koch Chicago Treatment of Injuries of the Hand
Archibald E Cardie Minneapolis Management of the Diabetic Railway Employee
Berton J Branton Willmar Minn Malpractice Suits
Leslie J Stauffer Priest River Idaho Alleged Sacro-Iliac Strains
Charles N Spratt, Minneapolis Traumatic Detachment of the Retina
Russell B Richardson Great Falls Dislocations of the Knee Joint
John G Cunningham Spokane Wash Septic Arthritis of the Knee Joint
Arthur N Collins, Duluth Minn Trauma and the Malignant Testis

NEW JERSEY

Society News—Dr Ralph L. Barrett, New York, discussed "Electrosurgical Treatment of Common Cervical Lesions" before the Middlesex County Medical Society recently.—At a meeting of the Morris County Medical Society, May 16 Dr George G Ornstein New York, spoke on "The Clinical Classification of Tuberculosis."

A New Neuropsychiatric Society—The New Jersey Neuropsychiatric Association was recently organized at a meeting at the Academy of Medicine of Northern New Jersey, Newark, with forty-six members. Officers elected were Drs Christopher C Beling Newark, president, Marcus A. Curry, Greystone Park, vice president and Lewis H Loeser, Newark, secretary. The purposes are "to promote the science and practice of neuropsychiatry and to maintain high professional standards in that field."

NEW MEXICO

State Medical Election—Dr Mallory B Culpepper Carlsbad, was chosen president-elect of the New Mexico Medical Society at the annual meeting in Albuquerque, May 24, Dr Leo

B Cohenour, Albuquerque, was reelected secretary and Dr Charles W Gerber Las Cruces, was installed as president. The 1936 meeting will be held in Carlsbad.

NEW YORK

Annual Alumni Meeting—The Medical Alumni Association of Syracuse University held its annual meeting at the University, June 3-4. Clinics, demonstrations and case reports were presented by members of the staffs of University, St Joseph's and Syracuse Memorial hospitals. Following are the guest speakers:

Dr Leon H Cornwall New York Pathogenesis of Multiple Sclerosis
Dr Emmett A Dooly New York Fracture of the Femoral Neck.—the Technic and Evaluation of the Newer Methods of Treatment
Dr Lewis C Ecker, Washington D C, Tuberculous Atelectatic Cirrhosis
Dr Robert S Dinmore Jr Cleveland Practical Aspects of Gall bladder Disease
Dr Harris A Houghton New York The Coefficient of Correlation Between Ambard's Renal Salt Threshold and the Systolic Arterial Pressure

At the annual banquet at the Hotel Syracuse Monday evening, June 3, Dr Harlow Brooks, New York, made an address on "The Contribution of the American Indian to Modern Life."

New York City

Directory of Social Agencies—The forty-first edition of the Directory of Social Agencies in New York has just been issued by the Welfare Council. Previous editions were published by the Charity Organization Society. In the present volume 1377 agencies are listed, of which 169 are national organizations with headquarters in New York. Child welfare receives the greatest emphasis with 386 agencies listed in this field. The handicapped are helped through forty-three agencies, health education is administered through thirty-three.

Hospital News—Dr Sigismund S Goldwater commissioner of hospitals, gave an address at the annual meeting of the Hospital for Joint Diseases recently on "The City's Hospitals in Theory and Practice".—The new Queens General Hospital, Jamaica, L I will be opened between September 1 and Jan 1 1936. It will have a capacity of 600 beds and be operated by the department of hospitals.—Bellevue Hospital reported a daily per capita cost of food for patients, staff and nurses of 27 cents in 1934, expenditures for the year totaled \$2,862,000.

Academy Desires Relics for Museum—For years the New York Academy of Medicine has been building up a museum of the history of medicine. Believing that persons who possess old medical instruments or other objects of historical interest wish to see them carefully preserved and placed on exhibition the curator of the museum asks that such persons write describing briefly objects they care to present. The museum has a number of duplicates which it will gladly exchange for articles that it does not possess. Letters should be addressed to The Curator, Museum of the History of Medicine New York Academy of Medicine, 2 East One Hundred and Third Street, New York.

Diagnostic Service in Parasitology—The increase in tropical diseases and parasitic infestations, brought about by the influx of people from Puerto Rico and other tropical countries, prompted the city department of health to establish diagnostic services in parasitology at several places throughout the city. The new service is intended for patients referred by private physicians and for patients seeking diagnosis. A survey to determine the prevalence of these tropical conditions is the main objective of the service. Stations are now operating at Meinhard Memorial Health Center which serves as a substation for the East Harlem Health Center, the Post-Graduate Hospital and Long Island College Hospital.

Personal—Dr William Seaman Bainbridge was appointed to represent the United States at the eighth International Congress of Military Medicine, Surgery and Pharmacy in Brussels, June 27 to July 3.—Dr Oswald T Avery of the Rockefeller Institute for Medical Research received an honorary degree of doctor of laws from McGill University, May 30.—E H Lewinski-Corwin Ph.D. was made honorary president of the International Hospital Association after he had presented his resignation as secretary at the congress of the association in Rome May 19-26. Mr Sydney Lamb, Liverpool England was appointed secretary.—Dr Morris L Rakieten New Haven Conn., has been appointed assistant professor of bacteriology at Long Island College of Medicine, Brooklyn.

Death of Dean Miller—Adam M Miller M A dean of Long Island College of Medicine, died suddenly of heart disease at his home in Mountain Lakes, N J, May 28. Dean Miller

was a graduate of Princeton University. From 1903 to 1912 he was instructor in the department of histology and embryology at the College of Physicians and Surgeons of Columbia University and from 1912 to 1914 assistant professor of anatomy. In the latter year he went to the Medical College of the Long Island College Hospital as professor of anatomy, retaining that position until his death. He was made associate dean of the medical school in 1920 and dean two years later. He played a leading part in the reorganization of the school into the present Long Island College of Medicine. He was co author of a textbook on embryology.

NORTH DAKOTA

Society News—Dr Trygve Oftedal, Fargo, was elected president of the North Dakota Academy of Ophthalmology and Otolaryngology at its seventeenth annual session in Minot, recently. The guest speaker was Dr Oscar B Nugent, Chicago. He spoke on 'Ulcers of the Cornea and Their Treatment'.

State Medical Election—Dr William A Gerrish, Jamestown, was chosen president-elect of the North Dakota State Medical Association at its annual meeting in Minot May 28. Drs Edwin L Goss, Carrington, and William H Long, Fargo, vice presidents. Dr Archibald D McCannell, Minot, was installed as president and Dr Albert W Skelsey, Fargo, reelected secretary. Next year's meeting will be in Jamestown.

OHIO

Personal—Oscar A Turner, sophomore medical student at Western Reserve University School of Medicine, Cleveland, received the Steiner Prize in Anatomy for 1935 the university announces, for studies of the growth of adenoids and of anatomy of the brain.

Faculty Changes at Western Reserve—The following promotions in the faculty of Western Reserve University School of Medicine, Cleveland, were recently announced:

Dr Harry Goldblatt to be professor of experimental pathology
Edward Muntwyler, Ph.D. associate professor of biochemistry
John P Quigley, Ph.D. associate professor of physiology
Dr Theodore T Zuck, assistant professor of anatomy
Dr Clyde L Cummer, assistant clinical professor of dermatology and syphilology
Dr John W Holloway, assistant clinical professor of surgery
Dr Arthur J Horech, assistant clinical professor of pediatrics
Dr Fred C Oldenburg, assistant clinical professor of medicine

Dr Gaus E. Harmon, associate professor of hygiene and vital statistics, has resigned to become chief of the bureau of epidemiology of the Chicago Board of Health.

Society News—Drs Arthur J Skeel and Scott C Runnels, Cleveland, addressed the Toledo Academy of Medicine, June 7, on 'Postpartum Hemorrhage and Maternal and Fetal Mortality' respectively.—Dr J Isfred Hofbauer, Cincinnati, addressed the Butler County Medical Society recently on 'Newer Aspects of the Diagnosis and Etiology of Uterine Carcinoma'.—Dr Ray W Kissane, Columbus, addressed the Clark County Medical Society Springfield, recently, on 'Traumatic Heart Disease'.—At a meeting of the Morrow County Medical Society recently in Mount Gilead, Drs Sylvester J Goodman and Eugene F McCampbell, Columbus, discussed 'Toxemias of Pregnancy' and 'Newer Developments in Medicine' respectively.—Dr Louis J Karnosh, Cleveland, discussed 'Psychoses of Great Men' June 7 at a meeting of the Montgomery County Medical Society in Dayton.

OKLAHOMA

Personal—Dr William C Wait, McAlester, has been appointed superintendent of the Western Oklahoma Tuberculosis Sanatorium, Clinton.

Society News—Drs Howard E Snyder, Winfield, Kan., and Charles T Moran, Arkansas City, Kan., addressed the Garfield County Medical Society, Enid, May 30 on 'Postoperative Pulmonary Atelectasis' and 'Relationship Between Sinusitis and Chest Complications', respectively.—Dr Julian Feild, Enid, was elected president of the Oklahoma Pediatric Society at the annual meeting in Oklahoma City in May.

Medical Examiners Reorganize—Five new members were recently appointed to the state board of medical examiners. Drs Thomas McElroy, Ponca City, Calvin E Bradley, Tulsa, James D Osborn Jr, Frederick, Galvin L Johnson, Pauls Valley, and William W Osgood, Muskogee. Drs William T Ray, Gould, and Lewis E Emanuel, Chickasha, were reappointed. At a reorganization meeting Dr McElroy was elected president, Dr Bradley vice president, and Dr Osborn secretary of the board.

OREGON

Society News—At the forty-fourth annual meeting of the Southern Oregon Medical Society in Ashland recently, speakers were Drs Karl H Martzloff, Portland, on 'Recognition of Cancer of the Cervix', John D Humber, San Francisco, 'Surgical Treatment of Angina Pectoris', Warren C Hunter, Portland, 'Some Aspects of Coronary Arterial Disease' and John M Blackford, Seattle, 'Medical Treatment and Follow Up of Gallbladder Disease'.—Papers were presented before the Multnomah County Medical Society recently by Drs John H Fitzgibbon and Charles H Manlove, Portland, on 'Treatment of Cardiospasm' and 'Clinical and Pathological Aspects of Venous Thrombosis', respectively.

PENNSYLVANIA

Society News—Dr John F Erdmann, New York, addressed the Lehigh County Medical Society, Allentown, recently, on 'Cholecystitis and Cholangitis'.—Dr Jesse C Arnold, Philadelphia, addressed the Washington County Medical Society, Washington, recently, on 'therapeutic fever'.

Personal—Brig Gen Matthew A Delaney, commandant of Medical Field Service School U S Army, Carlisle Barracks, received the honorary degree of doctor of science at the annual commencement of Dickinson College, Carlisle, June 10.—Dr Royal H McCutcheon, medical director of the state tuberculosis sanatorium at South Mountain, has resigned to engage in private practice at Bethlehem. Dr Charles C Custer, assistant director, was appointed to succeed Dr McCutcheon.

Philadelphia

Outbreak of Typhoid Follows Picnic—Twenty-seven persons who attended a picnic given by the Gross Post of the American Legion Memorial Day have developed typhoid. The New York Times reported June 27. The health department has undertaken to immunize the remainder of the 400 persons who are said to have attended the picnic. The source of the infection as yet has not been determined.

RHODE ISLAND

Society News—The Providence Medical Association met with the New England Pediatric Society in Providence recently. Speakers were Drs Dennett L Richardson, on immunization against measles, Maurice Adelman, purpura as a complication of scarlet fever, and Murray S Danforth, Legg-Calve-Perthes' disease in children from 4 to 8 years old. Dr Francis M Rackemann, Boston, addressed the Providence Medical Association June 3 on 'Recent Advances in the Management of Asthma and Eczema'.

SOUTH CAROLINA

State Medical Election—Dr Robert C Bruce, Greenville, was named president-elect of the South Carolina Medical Association at the annual session in April, and Dr Edgar A Hines, Seneca, was reelected secretary for the twenty-sixth year. Dr Samuel E Harmon, Columbia, assumed the presidency for this year. The next annual session will be at Greenville.

SOUTH DAKOTA

Society News—At the annual meeting of the South Dakota Academy of Ophthalmology and Otolaryngology in Pierre recently, Dr Ray A Kelly, Mitchell, was chosen president, Dr Anders E Johnson, Watertown, vice president, and Dr Howard L Saylor, Huron, secretary.

TEXAS

State Medical Election—Dr Howard R Dudgeon, Waco, was chosen president-elect of the Texas State Medical Association at the annual meeting in Dallas recently. Dr John H Burleson, San Antonio, was installed as president and Dr Holman Taylor, Fort Worth, was reelected secretary. Next year's meeting will be held in Houston.

Special Societies Elect Officers—Dr Thomas B Bass, Abilene, was elected president of the Texas Neurological Society at its annual meeting in Dallas in conjunction with the Texas State Medical Association in May. Dr Ross B Trigg, Fort Worth, was elected president of the Texas Railway Surgeons Association. Dr Harry G Walcott, Dallas, of the Texas Society of Gastro-Enterologists, Dr Truman C Terrell, Fort Worth, of the Texas State Pathological Society, Dr Edward H Schwab, Galveston, of the Texas State Heart Association, Dr Jeffrey C Michael, Houston, of the Texas Dermatological Society, and Dr Caleb O Terrell, Fort Worth, of the Texas Pediatric Society.

VIRGINIA

University News—Dr Harvey B Stone, Baltimore, delivered the William W Root Memorial Lecture of Alpha Omega Alpha at the University of Virginia Department of Medicine, Charlottesville, recently, on "Transplantation of Endocrine Gland Tissue in Mammals"

Officers of Specialty Society—Dr Emory Hill, Richmond, was elected president of the Virginia Society of Otolaryngology and Ophthalmology at its sixteenth annual meeting, in Fredericksburg recently. Other officers are Drs Joseph Minor Holloway, Fredericksburg, vice president, and George G Hankins, Newport News, secretary, reelected. The next meeting will be held in Richmond in May 1936.

Personal—Dr Albert B McCreary, who has been a member of the staff of the health department of Memphis for several years, has been appointed to take charge of a district health unit in Virginia, with headquarters at Eastville.—The physicians of Martinsville and Henry County recently presented a cane to Dr John W Simmons, Martinsville, in honor of his completion of fifty years of medical practice. Dr Simmons has been coroner of Henry County for many years.

WISCONSIN

Bill Passed—A 733 has passed the assembly, proposing to authorize the state medical society of Wisconsin, or any county medical society, in a manner approved by the state society, to undertake and coordinate all sickness care of indigents and low income groups, through contracts with public officials, and with physicians and others, and by the use of contributions, cooperative funds and other means, provided only that free choice of physician within such contracts shall be retained and that responsibility of physician to patient and all other contract and tort relationships with patient shall remain as though the dealings were direct between physician and patient."

Society News—Drs Ernest M Hammes, St Paul, and Walter A Fansler, Minneapolis, were guest speakers at the spring meeting of the Tenth District Medical Society at Rice Lake recently on "Differential Diagnosis Between Functional and Organic Neurologic Diseases" and "Injection Treatment of Hemorrhoids," respectively.—Dr George H Ewell, Madison, was elected president of the Wisconsin Urological Society at its spring meeting in Stevens Point recently. Speakers included Drs Walter G Sexton, Marshfield, on "Use of Concentrated Sodium Chloride Solution in the Control of Bleeding in Prostatic Resection", Walter M Kearns, Milwaukee, "Comparison of Results in Fifty Transurethral and Fifty Suprapubic Prostatectomies", and Erwin W Ewley, Minneapolis, "Replacement Lipomatosis of the Kidneys".—Dr Jacob L Bressler, Chicago, discussed "Orthoptic Treatment of Strabismus" before the Central Wisconsin Ophthalmological and Otolaryngological Society at Sheboygan, June 3.

GENERAL

Examinations in Obstetrics and Gynecology—Of 113 candidates examined by the American Board of Obstetrics and Gynecology in Atlantic City, June 10-11, eighty-nine were approved for certification, twenty-two failed and two did not finish the examination.

Special Examination in Ophthalmology—The American Board of Ophthalmology will hold an examination for certification in Cincinnati, September 17. Applications must be filed before July 15 with the secretary, Dr William H Wilder, 122 South Michigan Avenue, Chicago.

Hospital Association to Publish Journal—The board of trustees of the American Hospital Association at its May meeting approved a plan to publish a monthly journal to be called *American Hospitals* which will replace the present official *Bulletin* of the association. The first issue will appear January 1.

Society News—Dr Paluel J Flagg, New York, was elected president of the Society for Prevention of Asphyxial Death at the annual meeting in Atlantic City, June 12, and Dr Robert A Wilson, Brooklyn, secretary.—The third Pan-American Red Cross Conference will be held in Rio de Janeiro, September 15-26, it was originally planned for October 20-31.—The next meeting of the Pacific Coast Society of Obstetrics and Gynecology will be held in Los Angeles, November 6-9.

Public Health Campaign—A nation-wide campaign was launched, June 12, by the National Health Council to stimulate interest in community health on the part of the citizens and taxpayers, the *New York Times* announces. At the close of the

drive in October, open town meetings will be held throughout the United States to discuss public health. It was stated that the campaign is an attempt "to promote such special objectives in these communities as the local health and social agencies might think most desirable" and to coordinate all health and social agencies.

Dr Loeb Awarded the Phillips Prize—Dr Leo Loeb, since 1924 professor of pathology, Washington University School of Medicine, St. Louis, received the John Phillips Memorial Medal of the American College of Physicians at its annual session in Philadelphia, May 1. Dr Loeb delivered the convocation oration on "The Thyroid-Stimulating Hormone of the Anterior Pituitary Gland." The medal, established in 1930 in honor of Dr John Phillips, who lost his life in the Cleveland Clinic disaster in 1929, was awarded for the first time in 1932 to Dr Oswald T Avery of the Rockefeller Foundation and subsequently to Dr William B Castle of Harvard Medical School. The medals were presented to these men at the Philadelphia meeting. Officers elected are Drs Ernest B Bradley, Lexington, Ky., president-elect, Arthur R. Ellhott, Chicago, David P Barr, St. Louis, and Egerton L Crispin, Los Angeles, vice presidents. Dr James Alexander Miller, New York, was installed as president.

Medical Bills in Congress—Changes in Status S 883 has been reported to the House, with amendment, directing the retirement of acting assistant surgeons of the United States Navy at the age of sixty-four years (House Rept No 1388). *Bills Introduced* S 3152, introduced by Senator Wagner New York, proposes to provide compensation for disability or death resulting from injury to employees of interstate carriers. The bill provides that employers shall furnish employees medical surgical, hospital service, etc for accidental injuries arising out of and in the course of employment the employers being given the right to choose the physician who renders treatment. The bill further provides that no claim for any service rendered to a claimant in respect of any claim or award of compensation shall be valid against the claimant unless approved by the deputy commissioner. S 3153, introduced by Senator McNary, Oregon, proposes to provide pensions to veterans who served ninety days, in foreign service, under the jurisdiction of the Quartermaster General, Surgeon General of the United States Army the Secretary of the Navy, or Marine Corps, during the Spanish American War, including the Philippine Insurrection and the Chinese Boxer Rebellion. H R 8292 introduced by Representative Dorsey, Pennsylvania, proposes to establish certain rules for transporting dead human bodies in interstate commerce. The President is to be authorized to cause the Secretary of the Treasury to promulgate the rules and regulations set forth in the bill or to amend or change them as in his judgment may be in the interest of public health and welfare.

FOREIGN

Personal—The Medical Society of London presented the Gothergillian Gold Medal to Sir George Newman at its annual meeting, May 13. Sir George retired in March as chief officer of the British Ministry of Health and of the board of education. The medal is awarded by the society every three years.—Dr Wallace Ruddell Aykroyd, Dublin, has been appointed by the governing body of the Indian Research Fund Association director of nutritional research.

Lister Medal to Sir Robert Muir—The Lister Medal for 1936 has been granted to Sir Robert Muir, professor of pathology, University of Glasgow in recognition of distinguished contributions to surgical science. Sir Robert will deliver the Lister Memorial Lecture in 1936 at the Royal College of Surgeons of England. This is the fifth presentation of the award. A committee representing the Royal Society, the Royal College of Surgeons of England the Royal College of Surgeons in Ireland, the University of Edinburgh and the University of Glasgow makes the selection.

Society News—The International Society of Medical Hydrology will hold its annual meeting in Brussels Belgium, October 12-17.—The International Union for the Scientific Investigation of Population Problems will meet in Berlin, August 26-September 1. The general secretary of the union is Capt G H L F Pitt Rivers, London School of Economics, Houghton Street, London, W C 2.—The annual session of the Therapeutic Union, an international association founded in 1934, will take place October 9 at the University of Paris Faculty of Medicine. Among the subjects to be discussed are present knowledge of male hormones, surgery in arterial hypertension, and antimony compounds in therapeutics. Applications for membership may be sent to Dr G Leven, secretary, 24, rue Teheran, Paris (8).

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 8, 1935

Laboratory Examinations for Insured Persons

A defect of the national health insurance system is the failure to provide specialist services. Dr S C Dyke, honorary secretary to the Association of Clinical Pathologists, has addressed a memorandum to the *British Medical Journal* on laboratory examinations. He states that until comparatively recently medicine was practiced as an art but that it is now developing into a science, largely as the result of laboratory work, and specific treatment is available for a number of diseases. Examples are the uses of insulin, the antianemic principle of liver, and antitoxins. For the diagnosis of the diseases amenable to specific treatment, laboratory examinations are necessary, as in the diagnosis of pernicious from other forms of anemia. For lack of laboratory examination many cases of anemia not of the pernicious type are now uselessly treated with the antianemic principle, while others of that type are not diagnosed and do not get this treatment. Moreover laboratory examination is necessary for correct dosage of the antianemic principle.

The insurance system makes no provision for any form of laboratory examination. The panel physician may prescribe whatever he thinks necessary, but he is given no facilities for ascertaining, in the first instance, whether his diagnosis is correct and, in the second, the response of his patient to treatment. Representations have from time to time been made to the government by the British Medical Association and other bodies urging that modern methods of diagnosis and treatment made available by the laboratory should be at the disposal of the insurance system but so far without avail. In certain districts they have been made available by means of loopholes in the insurance acts, and for the reason that unallocated funds were available. In other districts 'the more active and intelligent practitioners' send patients to the voluntary hospitals for laboratory investigations, for which the hospitals receive no remuneration. The Association of Clinical Pathologists has for some years been urging the inclusion of laboratory examinations as a benefit under the insurance acts. It has drawn up a schedule of charges at which these can be performed without loss to the laboratories and this schedule has been adopted by the British Medical Association. The Association of Clinical Pathologists holds that clinical pathology can be properly carried out only in laboratories by pathologists attached to general hospitals. The hospital laboratories are the obvious centers for this work.

Precautions as to the Sale of Poisons

More stringent precautions in regard to poisons are urged in the report of the Poisons Board, just issued. Many fatalities, it is said, would be avoided if greater precautions were taken by the public in the keeping of poisons, particularly if it became the practice in every home for articles labeled "Poison" or "Caution" to be kept together in one place preferably under lock and key, away from other articles and out of the reach of children. A liquid poison should never be kept in an ordinary bottle, as it frequently is, but only in the bottle in which it has been bought. Poisons should always be labeled with an appropriate warning. The board proposes that the labeling provisions of the Poisons Act should be applied at every stage of distribution from the manufacturer downward. A type of bottle fluted vertically is suggested for liquid poisons other than those for internal use. In the case of particularly dangerous poisons no person, whether wholesaler or retailer, should be permitted to sell poisons to persons not known to him to be those to whom the poisons may properly be sold. The fact that the purchaser says that he requires a poison to sell again or for the purpose

of his trade or business is not sufficient to justify the sale to him with "no questions asked." In regard to drugs that can be sold only on a physician's prescription, the board recommends that the prescription should not be dispensed more than once unless the prescriber specially authorizes it.

"Broken Bones and Wasted Money"

In a previous letter (*THE JOURNAL*, March 16, p 934) the report of an expert committee appointed by the British Medical Association to report on the treatment of fractures was reviewed. The committee found that in consequence of want of organization the results were bad and the period of disability much prolonged. At a meeting of the National Safety First Congress, Mr E W Hey Groves, emeritus professor of surgery in the University of Bristol, read a paper on "Broken Bones and Wasted Money" in which he enforced the same lesson and advocated the organized treatment of fractures. He said that more than 150,000 cases of fracture occurred every year and that of these 100,000 were not treated in any organized clinic. To avoid all the muddle and inefficiency it was not necessary to provide a large special hospital devoted to accidents. There were three principles to be followed: unity of control, continuity of treatment and an efficient follow up. All the fractures that came to a hospital should be under the control of a fracture service having at least three surgeons. This team would involve the payment of salaries between \$1,250 and \$5,000 in addition to those paid to house surgeons at present. It would be a perfectly just arrangement if the insurance companies paid for the entire cost of the treatment of accidents. If they did, it was obviously in their interest to bring about such organization in the treatment of fractures as would involve unnecessary waste.

The Prevention of Automobile Accidents

The minister of transport stated in the House of Commons that in London, where the safety measures had been chiefly concentrated, there had been a reduction of 31 per cent in the number of killed and of 16 per cent in the number of injured during the last eleven weeks as compared with the corresponding period of last year. The corresponding reductions for the country as a whole were 16 and 11.5 per cent. Of 3,517 pedestrians killed on the roads in 1933 no fewer than 1,171, or one third, were children under the age of 15 years. Many of the accidents were due to the lack of playing grounds. He had decided on the immediate closing of certain London streets to automobile traffic except when proceeding to premises in those streets. The intensity of the campaign for road safety had not in any way checked the rapid extension of automobile traffic. At the end of February there were 224,000 more vehicles licensed than at the corresponding date in 1934 and 441,000 more than at the same period in 1931. Considerable progress had been made in the provision of nonskid surfaces. Much experimental work was being done in the attempt to produce a surface material that would remain nonskid for at least five years.

A Health Club for the Family

In Peckham, a district of South London, there has been established a medicosocial institution, which is of a quite new type even in this age of so much health organization. Three years ago, operations were begun by inviting families in the neighborhood to join a family club at a subscription of 12 cents a week per family. They were offered in return a periodic medical examination but no treatment. If and when necessary a note with the diagnosis was given the member for the family physician or for hospital treatment. In addition, members had the use of the club daily from 2 to 10 p.m. for social purposes. The experiment was so successful that it has been transferred to a much larger building, standing in a large area of grounds, designed for the purpose. This is neither a commercial venture

nor a charitable institution. It is in charge of two physicians who have made a special study of family health and who will be aided by voluntary workers.

The subscription is now 24 cents a week for each family, but much more is offered than the periodic examination—a swimming pool, gymnasium, boxing and dancing halls, cafeteria and library. There will also be a crèche, with room for perambulators, sewing machine room, a social club for mothers, garden space for games, infant solarium, lecture rooms and reading cubicles. The building has been designed for 2,000 families, and with a calculated revenue of \$50,000 it is thought that the cost of the building will be paid in thirty-five years. It is claimed that a periodic examination by the same physician results in a saving of 90 per cent of the serious cases among his patients. The unit of membership is the family as a whole, for it is held as a fundamental principle that physicians can only thus hope to acquire a full knowledge of the health of the individual.

Center of British Ophthalmology

The Royal London Ophthalmic Hospital—better known by its former name of Moorfields Hospital—is the largest eye hospital in the world and has long been famous as the center of British ophthalmology. The influence of its postgraduate teaching is world wide, and the great ophthalmic hospitals of India have been founded by men trained in it. Patients are attracted to it from all parts of the world. The hospital deals annually with 3,000 inpatients and more than 50,000 outpatients for which the working space became insufficient. A new outpatient department, which covers three-fourths acre has been added and is equipped in the most modern way. There is an orthoptic department for the treatment of squint by nonoperative methods and a physical therapeutic department for treatment with ultraviolet rays. In the pathologic department is a valuable museum and an ophthalmologic library of 5,000 volumes, the most complete in the world.

PARIS

(From Our Regular Correspondent)

May 25, 1935

The New Cancer Institute of Paris

The striking feature about the new center for the treatment of malignant neoplasms is that there has been no effort made to avoid using the term "cancer" in designating the function of the new institute just opened in a suburb of Paris. The director is the pathologist Prof. Gustave Roussy. To all those familiar with his work this wise selection means efficiency in the full sense of the term.

The chief object was to concentrate, in close proximity to one another and under a single director, all activities pertaining to the diagnosis, treatment and research problems of neoplasms.

The buildings are in two groups, the laboratory under the supervision of the pathology department of the medical school, of which Professor Roussy is the head and also dean of the school. The second group is a series of hospital wards and private rooms, containing a total of 156 beds. In the main building, recently opened, are large consulting rooms for the outpatient service, treatment rooms for high voltage roentgen therapy and for curietherapy. The apparatus for the former method of treatment has a capacity of 300,000 volts and is in charge of Dr. M. J. Belot. The installation complies with all the requirements of modern technique. The service of curietherapy is under the direction of Mme. Simone Laborde, assisted by Y. L. Wickham and Mme. Liberson and has at its disposal 7 Gm of radium.

The six laboratories for diagnosis and research are in charge of competent cancerologists. Every known resource can be employed in this new cancer institute to combat the diseases for which it was founded.

Congenital Tuberculosis

At the meeting of the Pediatric Society, Nov. 30, 1934, an apparently authentic case of congenital tuberculosis was reported by Grenet and his associates. A woman, aged 36, in the eighth month of pregnancy who was admitted to the hospital, complained of severe headache. Soon afterward the clinical picture was that of a tuberculous meningitis.

A vaginal cesarean operation was performed and a living child weighing 2,600 Gm. was delivered. The mother died ten days after admission to the hospital.

The autopsy revealed a tuberculous meningitis and a bilateral pulmonary tuberculosis.

The infant was separated from the mother immediately after its birth and given by mouth the BCG vaccine, on the second, fifth and seventh days after birth. Sulpharsphenamine was also given, beginning the seventeenth day, because there was a history of maternal and paternal syphilis. Symptoms of enterocolitis appeared seven weeks after birth and rales over both lungs, a large liver and spleen were found. The child died at the age of 2 months.

The autopsy revealed a generalized tuberculosis and many typical tubercle bacilli were found in the lesions. The lungs, spleen, liver and kidneys presented a large number of milary nodules, which showed on microscopic examination typical tubercles with giant cells. Guinea-pig inoculations from the mesenteric lymph nodes and spleen were positive. The organism found was the human type of tubercle bacillus. The placenta was not examined, but the authors believe that there can be no question that infection of the fetus took place through the placental circulation.

A Report on Arteriography

At the April 10 meeting of the Société de chirurgie, dos Santos reported his experiences with 852 cases during the six years ended January 1935. Of these injections of an opaque medium 431 were made into the aorta and 421 into the arteries of the extremities. His paper was limited to the latter. The only accident in a total of 1,500 injections into peripheral arteries occurred in 1928 during an injection of the femoral artery with sodium iodide. On account of a hematoma, which increased constantly in size it became necessary to ligate the vessel. Recovery without gangrene took place. Puncture of an artery may be followed by vascular spasm especially in the upper extremity in younger individuals. It is necessary to avoid injecting the opaque medium into the tissues around the artery, to avoid gangrene of the periarterial structures. The injection should never be made with any force because it is this excess of pressure which entails vasomotor spasm. In the case of the arteries of the upper extremities it is advisable to expose them before injecting. In 129 arteriographies with iodine preparations an increased degree of gangrene was seen in six cases. In 300 arteriographies in which thorium dioxide sol was used, no local accident has been seen even in cases of gangrene, arteritis or aneurysm. Generalized symptoms large hematoma in the anal region, hematemesis, marked anemia and delayed coagulation time were observed in one case but recovery followed after injection of calcium and blood transfusion.

There have been no deaths in any of the cases in which arteriography of the extremities was done.

He quoted other authors (American and European) whose experience, added to his own constitutes a total of 1,300 arteriographies without any mortality. Arteriography is especially indicated before operations for arterial or arteriovenous aneurysms and for aneurysms of the peripheral vessels. In spite of the unfortunate accident reported by Leveuf of gangrene following arteriography in a case of Volkmann's contracture, dos Santos used the method successfully in five such cases. In four of these the information yielded by the method in Volkmann's contracture was of great value.

Legal versus Illegal Abortions

At the request of the minister of public health, a committee, of which Professor Brindeau was chairman, has been appointed by the Academy of Medicine, and the committee has just submitted its report. Illegal abortion should be discouraged because it plays an important part in depopulating a country. The majority of abortions in France are not seen by medical men. Patients are sent to hospitals when there is a complication, so that the number observed there are only a small portion of the total number. Professional secrecy plays a role because it prevents notice being given to the authorities. In a report made by a number of Russian gynecologists in 1927 covering a period of six and a half years, it was stated that the number of illegal abortions had increased in spite of legalizing abortion in that country.

Discussion of the report of Professor Brindeau took place at the academy April 2. Bar pointed out that it had been stated that the underlying motive of the Russian law legalizing abortion had been to combat secret operations. He thought that such a motive was secondary, whereas the primary one was to find an excuse to check the abnormally high birth rate, furthermore to give a woman the right to decide whether pregnancy was desired, and finally the rights of the state to determine whether or not more children were wanted. The only condition under which the prospective mother would be likely to wish to terminate the pregnancy would be on account of economic conditions. A commission of three had been appointed in Russia to determine whether pregnancy in the individual case should be interrupted or not. One member was a woman physician, a second a representative of the ministry of public health and the third an official who looked into the economic conditions of the case. The enormous increase in the number of legalized abortions in Russia shows that the commissions have not been very severe in considering the reasons presented by women to terminate the pregnancies. Even if the commission decides against a legalized abortion, the applicant has recourse to appeal. In order to diminish the risks of a legalized abortion, a limit of three months of pregnancy was adopted. The number of legalized abortions has risen from about 8,000 in 1922 to nearly 32,000 in 1926 in Moscow alone. Bar believes that Brindeau's report, which pointed out the dangers of abortion and advised against the adoption of legalized abortion in France, was to be endorsed in every particular.

Damage Suit for Death Following Arteriography

The active discussion that has been taking place at the Société de chirurgie regarding the merits and dangers of arteriography has been frequently referred to. The method was first proposed by dos Santos of Lisbon, Portugal, and consists in injecting a radiopaque solution directly into an artery to determine changes in the vessel wall and the level of blocking of the lumen in cases of thrombo angustis obliterans, arteriosclerosis and similar conditions. A recent decision in one of the courts of Paris awarding damages of 100,000 francs (about \$7,000) has called attention to the dangers of arteriography and the possible liability incurred by public hospitals and their staffs when an accident occurs in using such a diagnostic procedure. Prof. Camille Lian, a Paris internist, had under observation an ambulatory patient in his clinic, an elderly man suffering from intermittent claudication of the left leg for a year preceding the arteriography. To determine more accurately the vessel changes in this patient, Professor Lian sent for him in order to employ arteriography. The opaque medium used in this case contained thorium salts in colloidal solution. Immediately after the injection into the right femoral artery, the patient experienced such severe pain in the right limb that hospitalization was necessary. The following day, marked pallor of the right foot and a bluish discoloration of the calf of the limb were noted. Gangrene occurred five days later so that amputation of the right limb

below the knee became unavoidable. The patient died twenty-three days after the right arteriography.

The necropsy revealed a marked narrowing of the femoral artery of the left side, the injection having been made into the femoral artery of the right limb. At the point of narrowing of this left femoral artery, the lumen was still permeable. At the site of injection into the right femoral artery, the vessel was occluded by a thrombus. Professor Lian's defense against the damages claimed by the relatives of the patient was that the gangrene was not due to the injection but was the result of the arteritis for which relief had been sought a year before. The court stated that an untried diagnostic method had been employed, the potential dangers of which had not been sufficiently explained to the patient. In asking the latter to come back to the outpatient department, no mention had been made that arteriography was to be employed, only a radiography had been referred to in the letter to the patient. Although the injection had been made by two assistants who had a relatively large experience in arteriography, the court held that Professor Lian was the only one responsible for the death following the arteriography and must pay the entire damages to the family.

International Congress of Legal and Social Medicine

The twentieth annual meeting of the International Congress of Legal and Social Medicine will be held in Brussels from the 17th to the 20th of July. The subjects to be discussed include conflicting medical testimony, characteristics of wounds made during life or after death, postoperative complications of amputations, traumatic necroses, traumatic psychoses, and the relation of legal and social medicine. Information may be obtained from M. de Laet, 115 Boulevard de Waterloo, Brussels.

Seventh International Congress of Industrial Medicine

The seventh International Congress of Industrial Medicine will be held in Brussels, July 20 to 26. The subjects to be discussed will be end results of skull fractures, injuries of the hand, effects of dust in industrial occupations, pathologic action of gases escaping in coal mines, and lesions due to electricity.

Eighth International Congress of Military Medicine and Pharmacy

The following questions assigned for study at the seventh Congress of Military Medicine and Pharmacy, held in Madrid, will be taken up at the eighth congress at the Brussels meeting, to be held June 27 to July 3: principles of organization and functioning of medical services in mountainous countries, determination of aptitude of soldiers for various service branches, end results of abdominal injuries, standardization of methods of analysis of foods for soldiers, and distribution of various health services.

Death of Professor Morax

The ophthalmologist Professor Morax died in May. Although born in Switzerland, he began his medical studies in France, becoming early in his career an assistant at the Pasteur Institute, where his research work was done on the diplobacillus of subacute conjunctivitis (bacillus of Morax). Up to the time of his retirement from active practice, he continued to direct laboratory work at the Pasteur Institute.

Morax was the first to be appointed in charge of a special eye service, in the Hôpital Lariboisière, one of the free hospitals, where he worked for twenty-five years up to the time of his retirement in 1929. His courses in English have been attended by many Americans. During the World War his service became the ophthalmologic center for the French army. His contributions to the literature of his specialty have been recognized as of the highest merit. He was regarded as one of the greatest authorities on infections of the eye and of the conjunctiva. In 1923 he founded a society to study the prevention of trachoma, a disease in which he was particularly interested.

Bone Production from Transplanted Bladder Mucosa

Professor Gosset reported the experimental work of two of his associates, G Loewy and I Bertrand, at the meeting, Dec 5, 1934, of the Societe de chirurgie. Forty-two transplants of various tissues were carried out on twenty-two dogs. In thirteen autotransplants of the epithelial lining of the bladder, the ureter or the renal pelvis, bone formation occurred in all the experiments. In seven experiments, homotransplants (from dog to dog) were used. The grafts were not composed of living tissue, having been placed in 60 per cent alcohol. No bone formation followed in any of the seven dogs. In eight experiments, living tissue of the urinary tract was transplanted from dog to dog without any resulting bone formation. Eight autotransplants of living epithelial lining of the gallbladder also failed to develop bone. The same was true of living autografts taken from the epithelial lining of the stomach and small intestine, as well as autografts taken from the liver, pancreas and spleen.

These experiments explain the relative frequency of bone formation in the scars following cystotomy.

BERLIN

(From Our Regular Correspondent)

April 29, 1935

Measures to Combat Tuberculosis

The campaign against tuberculosis had until recently been left to the *krankenkassen*, the social insurance carriers, and the welfare bureaus—and, in addition, to the tuberculosis relief centers, which are designed to ferret out all open cases of tuberculosis. Now the Nationalsozialistische Volkswohlfahrt, commonly called the NSV, has turned its attention to tuberculosis influenced by the observation that the number of tuberculosis patients is so great that the aforementioned organizations are unable to care for all of them. It is estimated that 2 per cent of the population of Germany—about 1,320,000 persons—are affected with unarrested tuberculosis and that from 0.5 to 0.7 per cent, or about 400,000 persons, have open tuberculosis.

In Germany's previous organization for the combating of tuberculosis there were many defects. There are numerous small industrialists, artisans, farmers and representatives of the liberal professions who are not insured and who have not sufficient means to pay for an adequate course of treatment. Then, too the insurance carriers frequently refuse to grant funds for a course of treatment if there is no prospect of the patient becoming able to earn his living. After treatment and restoration of earning capacity, a patient often returns to an environment in which he very soon falls a prey to a new infection.

The NSV seeks not only to effect a cure of the individual patient but endeavors to eliminate also the sources of infection, that is, it attempts to ferret out those cases which are not likely to be discovered by any other agency and cases in which funds are not granted by the insurance carriers. If another welfare organization has refused to sponsor a course of treatment, it will make an investigation and, if conditions warrant, will endeavor to induce the organization to reconsider its decision, offering at times to share the cost of treatment. The NSV will usually arrange for treatment in a sanatorium if the patient has any prospect of recovering. The organization not only interests itself in the patient himself but also in his family. If the patient must travel to a more distant place for treatment, it will, if necessary, provide clothing and traveling necessities. During the patient's absence, the NSV looks after his family. Along with this aid of a pecuniary nature, there will be an extensive educational program, accompanied by lectures. It is hoped that, by the end of the year, all the German districts may be reached.

Likewise the federal league of German officials—the RDB—has created a welfare department for the aid of tuberculous

persons, which is managed in the following manner. The confidential secretaries of the local and district groups of the RDB are under obligations to introduce all colleagues in whose families there is tuberculous disease or a suspicion of tuberculosis to the relief center for tuberculous patients or to a specialist for tuberculosis. The organization of prophylactic curative or protective measures rests exclusively with the relief center or the tuberculosis specialist. The confidential secretary must see to it that the physician's orders are carried out. If difficulties arise, he must inform the social worker concerning the matter. If the prophylactic, curative and protective measures require an outlay of money, the confidential secretary will do his utmost to procure for his colleague the funds from the *krankenkassen* or other organization. Not until all these possibilities have been exhausted is the question to be raised as to whether and to what extent an allocation of aid by the RDB is desirable and feasible.

The Need of Midwives

According to recent statistics, of 956,000 births occurring in Germany in 1933 about 800,000 were in charge of midwives. For the year 1934 the number of births in charge of midwives is placed at 850,000. If one figures an average of fifty confinements a year for each midwife, there must have been about 17,000 midwives in active practice in Germany in 1934. These are merely estimates, the distribution of midwives in Germany is not uniform. There are regions with from eighty to 100 confinements to each midwife, as compared with others in which every village with no more than ten births a year has a trained midwife. Assuming that the average period of active service for a midwife is thirty-five years, it may be estimated, on the basis of the figures for 1934 that about 500 midwives should be graduated every year. Taking this estimate as a basis, from 7,000 to 8,000 more midwives than are needed have been trained. The situation is further clarified by the fact that in 1934, 1,180 midwives were newly registered while 1,150 more were pursuing a course of training. Hence, demands for the application of government control measures to this profession as well are being heard. The minister of the interior has, therefore, limited the number of pupils in the midwifery training schools to from 300 to 400. This number is considered adequate in view of the existing total of approximately 25,000 midwives.

The Notifiable Diseases in 1934

The trend of the notifiable diseases in the German reich in 1934 was not uniform. While not a single case of such diseases as typhus fever, leprosy, smallpox or relapsing fever was reported, the official statistics reveal an increase of infectious diseases of children. Diphtheria showed the greatest increase for the first time since the war, more than 100,000 cases having been notified in one year. Scarlet fever presented so many cases (particularly during the last quarter) that great anxiety has been felt. Epidemic poliomyelitis was kept fairly within normal limits, with a total of 1,700 cases. Typhoid presented a low morbidity in 1933 and 1934. The total number of cases of diphtheria in 1934 was 113,936, as compared with 74,559 in 1933 (*THE JOURNAL*, May 12 1934, p 1625). The number of deaths increased from 3,628 in 1933 to 4,799 in 1934. The morbidity from scarlet fever rose from 76,749 cases, with 546 deaths in 1933, to 110,706 cases with 789 deaths, in 1934. The case mortality remained in 1934 at the low level established in 1933 (0.71 per cent). The total number of cases of epidemic meningitis was 1,015, which is the highest record for any year since the war. The total number of deaths was 423 (42 per cent mortality), as compared with a mortality of 47 per cent in 1933. Poliomyelitis was represented by 1,700 cases as against 1,249 cases in 1933 and 3,733 cases in 1932. The mortality for 1934 was comparatively favorable (8.9 per cent, 10.5 per cent

in 1933) No estimate of the possible favorable effects of serotherapy can be made from the figures There were 128 lute injuries inflicted supposedly by animals suffering from hydrophobia There was one death, which is not essentially different from the mortality of recent years Anthrax declined further in 1934 (seventy six cases as against eighty-three in 1933), although the mortality was higher (fourteen deaths, ten in 1933) The cases of puerperal fever rose from 4,826 in 1933 to 5,886 in 1934 It must be considered, however, that there was a marked increase in the birth rate The increase in the number of births was proportionately greater than the increase in the number of cases of puerperal fever, the former increase being doubtless due to the decrease in the number of criminal abortions The new cases of trachoma declined from 866 in 1933 to 728 in 1934

Importance attaches to the statistics on pulmonary tuberculosis In 1934 Prussia reported 41 579 new cases and 21,298 deaths A comparison with the averages for the past ten years reveals a steady improvement Epidemiologic developments in the morbidity of tuberculosis of the respiratory organs are especially pleasing, because tuberculosis demands annually more victims than all the other infectious diseases taken together

Government Aid to Married Couples

According to recently published figures, the German reich had made, up to 1934 a total of 366,178 loans to newly married couples (*THE JOURNAL*, April 21 1934, p 1315) During the same period, a total of 143 571 living children were born to couples who received loans with which to finance their marriage.

In the second half of 1934 the number of marriages was 131,000 greater than in the second half of 1932, although for the former period only 89 680 loans were made. At least one third of the increase in marriages during the period mentioned was due to the stabilization of political and economic conditions In the fourth quarter of 1933 more than half (52.9 per cent) received marriage loans in the fourth quarter of 1934 only a fifth (20.3 per cent) In the first quarter of 1934 the number of children resulting from marriages made possible by the aid of federal loans amounted to 86.5 per cent of the whole birth increase, in the second quarter only 59.5 per cent, and in the fourth quarter about half These facts point to an increased interest in marriage and a greater willingness to have children, which are manifest independent of marriage loans

NETHERLANDS

(From Our Regular Correspondent)

May 7, 1935

Reeducation of Handicapped Persons

An interesting article by J Kastelein, special agent of the Rijkverzekeringsbank gives a detailed account of what can be accomplished through reeducation of handicapped persons The four chief factors to be taken into account are (1) the nature and the extent of the infirmity (2) the occupation, (3) the patient's age, degree of intelligence and attitude toward work, and (4) the chances of finding in his new employment adequate means of subsistence.

Of the 307 requests received twenty were withdrawn and 126 were refused One hundred and sixty-one or 52.5 per cent, of the petitions were granted Thirty-seven cases of reeducation were abandoned, four at the request of the patients and nine for other reasons Something more than half of the 52.5 per cent of the accepted cases or about 25 per cent of the total number of requests for instruction, were crowned with success Most of the cases abandoned by the management were due to lack of interest on the part of the candidates, to insufficient progress or to bad conduct Some wounded or injured workmen have no desire to learn a new trade others cannot accustom themselves to a new environment. The average duration of the reeducation process (after the injury) is three years and six months One fifth of the persons were able to resume their

usual occupation after completed reeducation The author gives the distribution of the cases among the provinces of the Netherlands The largest number of cases of reeducation were found in the province of Overijssel whereas in the province of Utrecht not a single case turned out satisfactorily

The Population of the Dutch East Indies

The European group of the population of the Dutch East Indies numbers 240,417 or about 0.4 per cent of the total population The favorable economic conditions in the Indies have enabled Europeans to marry and to bring their wives to their new home Hence the number of women residing permanently in the Indies has increased Fifty-four per cent of the Europeans live in the cities in spite of the increasing number of industrial and agricultural enterprises established in the country Seventy per cent of the Europeans residing in the Indies were born there. Twenty-one per cent were born in the Netherlands The percentages from various other countries are small About 8,000 European children born in the Indies are sent to Europe to complete their education

Leaving the army out of the count, there were scarcely 2,000 Europeans in Java and Madoera in 1814, in 1823, about 6,000, in 1836, 11,345, in 1845, 16,270 The population doubled between 1860 and 1900 Between 1900 and 1930 it increased two and one-half times During the past ten years the number of marriages has likewise increased. The number of births is small 163 per thousand households Two per cent of adult European males and 7 per cent of the women are illiterate The principal cause is the fact that school attendance (or private instruction) is not compulsory As to the religious beliefs of the population, there are 1,000 Jews, 1,400 Mohammedans 120,000 Protestants, 77,000 Catholics, 8,500 Asiatics (many of them Buddhists), 17,000 with no religion, and 18,000 whose religion is unknown

Ultraviolet Rays in the Treatment of Leprosy

About four years ago Dr Denis Mulder director of a radiologic institute in the Dutch East Indies, after effecting in three years the cure of a leprosy person with the aid of ultraviolet rays, called attention to this mode of treatment Following his report, funds raised through the generosity of private donors were devoted to the application of the method on a large scale (in the colony of Pelantoengan), but the scientific control of the trials was not sufficient to justify the formation of any final opinion on the value of the method Later, the government of the Dutch East Indies commissioned Dr P H J Lampe to render a report on the subject which has now been published The report merely recalls the first evidences of success and emphasizes the impossibility of drawing any final conclusions as yet. Further trials have been undertaken in various leprosariums under the direction of the public health service

BCG Vaccination

Mr Heynsius van der Berg, the director of the Netherlands society for the combating of tuberculosis, has given an account of the results of BCG vaccination in the Netherlands He incorporated his account in his course on tuberculosis, delivered at the University of Amsterdam Excerpts from his survey follow

Over a period of eight and a half years, the BCG vaccine has been administered to 1,100 infants No harmful effects have been observed The vaccine is applied soon after the birth of the child During the first ten days a dose of 10 mg of vaccine, corresponding to 400 million living tubercle bacilli is ingested by the digestive tract, fasting The mortality from tuberculosis in children under 1 year of age ranges between 27 and 8 per cent for unvaccinated children and between 11 and 22 per cent for BCG children During the first two years the mortality rates for the unvaccinated and the vaccinated were from 38 to 18 per cent for the former and from 13

to 27 per cent for the latter. The general result is very satisfactory, but he points out that, in spite of vaccination, a number of BCG children become affected with tuberculosis, of slow evolution, but if it is malignant the children die. The prognosis for the first year for unvaccinated infected children appears to be bad, from 54 to 51.5 per cent died from tuberculosis. The mortality among the BCG children ranged between 28 and 58 per cent. This great difference of from 88 to 457 per cent indicates that the BCG children have a greater resistance to infection with virulent tuberculosis bacilli than the unvaccinated children.

The statistics of the Netherlands tuberculosis service took account of the danger of contagion to which the children are exposed after vaccination. This factor is often neglected in the statistics of other services published heretofore, although important for purposes of comparison.

ITALY

(From Our Regular Correspondent)

April 15, 1935

Sunlight and Skin Reactions to Tuberculin

Luzzatti of Novara has made an extensive study of the influence exerted by sunlight on skin reactions to tuberculin. On the basis of results secured by the Società di cultura medica of Novara and tuberculin skin tests performed on children who were in a colony for heliotherapy, he affirms that the life in the open air and the prudent exposure to the sun's rays increase the skin reaction to tuberculin and may render exudative the proliferative reaction. The positive skin reaction is more frequent in females (37.5 per cent) than in males (17.9 per cent). Positive reactions are often found in subjects with a positive familial anamnesis. Tuberculous allergy results from factors external to the individual and is increased by a sojourn in a colony for heliotherapy. In such colonies, skin tests applied to children may indicate the limits for the exposure to climatic stimuli. Colonies in which the amount of stimulation is not such as to produce anergy but rather a highly allergic state is brought about in children may be regarded as exerting a specific influence in the crusade against tuberculosis.

The Medical Association of Trieste

The Medical Association of Trieste met recently under the chairmanship of Professor Ravasini. Professor Nasso, director of the pediatric clinic of the University of Milan, spoke on the clinical observations and results of research on diphtheria. Since 1926 in almost all the countries of Europe there has been a reduction of the morbidity and mortality from diphtheria. The speaker sought to explain the causes of this reduction and called attention to the importance of predisposing factors of a climatic and meteorological nature, the influence of which on the epidemiology of diphtheria is becoming more evident. Professor Nasso refuted the statements of those who cast doubts on the efficacy of serotherapy because of the therapeutic failures recently observed in specially malignant cases. He emphasized the need of more widespread prophylactic vaccinations with anatoxin to reduce to a minimum the receptivity to the disease.

Marcovich explained a new method of research in diseases of the peripheral arteries. Although the speaker affirmed the great sensitiveness of thermo-oscillometry, which enables one to detect lesions in limbs apparently sound, he denied the assertion that this means of research made it possible to distinguish between the various disorders, and he emphasized particularly that it has no value in differentiating prevaricating nervous lesions of the limbs.

Macchioro reported the results of his research on patients with diabetes mellitus to determine the possible relationships between the external and internal secretions of the pancreas.

In twelve patients he studied the behavior of the glycemic curve and of the diastase content of the blood and the urine, using substances with a pharmacodynamic action and also other substances, such as hydrochloric acid and dextrose administered by the oral and the intravenous routes. He affirmed that the existence of a true and proper correlation between the esocrine and the endocrine secretion of the pancreas cannot be asserted.

Diphtheric Paralysis

Prof. Cesare Cocchi, pediatrician of the University of Florence, has presented to the Accademia medico-fisica of Florence a hypothesis, supported by anatomic and physiologic data, that would explain why, in all persons affected with diphtheric paralysis, and particularly in children, paralysis of accommodation is present. According to Cocchi, a selectivity of the toxin for the nucleus of the oculomotor nerve is not involved but rather a mechanism of different action. The function of accommodation is associated with two antagonistic systems, one neuromuscular and the other connective-elastic, and since the diphtheric toxin acts in a selective manner on the neuromuscular system, the speaker holds that the evidences of involvement of the nervous system are seen primarily and with greater frequency in the accommodation system, in which only one of the antagonistic systems is neuromuscular. When, however, there are two systems with opposite action but both neuromuscular, the toxin acts in equal measure on both and the external clinical effects are wanting or are revealed with minor intensity, for, although there is paralysis, the functional equilibrium will not be lacking.

Prof. Gaetano Corrado

The death of Prof. Gaetano Corrado, emeritus professor of legal medicine at the University of Naples and one of the prime movers in restoring forensic medicine to its former place of dignity and importance, is announced. His researches concern examination of the sternum for the determination of the age of the fetus and the new-born, the principal nuclei of ossification that may be found at the time of birth, the spectroscopy of living and dead tissues and its application to the study of certain forms of poisoning, also the examination of the nerve cells in death due to electricity, mummification, and various matters in the field of teratology. He was twice president of the faculty of medicine of Naples and had served as president of the Academy of Medico-surgical Sciences. He founded a museum of legal medicine, which contains various collections and some specimens of exceptional importance.

Marriages

ROBERT SHERMAN BALDWIN, Marshfield, Wis., to DR. ELIZABETH ALICE REDDEMAN of Milwaukee, June 1.

MYER J. GROSSMAN, Goshen, N. H., to Miss Charlotte Zeltzman of Dorchester, Mass., June 16.

STILES DEAN EZELL, Middletown, N. Y., to Miss Jane Manewal of Bessemer, Pa., June 18.

WILLIAM HARVEY HANKS, Greenwood, Del., to Miss Kathryn Phillips of Georgetown, April 13.

ZEPH J. R. HOLLENBECK, Columbus, Ohio, to Miss Elizabeth R. Jones of Jackson, June 15.

A. BROMLEY YORK, to Miss Bertha Hutchinson, both of Huntington, W. Va., May 2.

GUY SYDNEY McCLELLAN, to Miss Lucy Dell Leathers, both of Nashville, Tenn., June 4.

JOHN R. SWAN, to Miss Mary Esther Hughes, both of Indianapolis, June 15.

WILMOT BROWN ALLEN, to Mrs. Mary Fant Williams, both of New York, June 19.

JOSEPH E. MOTT, to Miss Eileen C. McManus, both of Pater-son N. J., June 5.

Deaths

Charles Russell Bardeen * Madison, Wis. Johns Hopkins University School of Medicine, Baltimore, 1897, since 1904 professor of anatomy and since 1907 dean, University of Wisconsin Medical School, where he developed the preceptor system assistant in anatomy 1897-1899, associate 1899-1901 and associate professor 1901-1904, at his alma mater member of the Committee on Central Scientific Exhibit of the American Medical Association since 1927 member of the American Association of Anatomists and the Wisconsin Academy of Science, a frequent contributor to anatomic journals aged 64, died, June 12 of carcinoma

Clifton Brooks Willmott * Louisville Ky., Kentucky University Medical Department, Louisville 1904 associate clinical professor of dermatology and syphilology University of Louisville School of Medicine, served during the World War on the staffs of the City Hospital, Children's Free Hospital, SS Mary and Elizabeth Hospital and the Kosair Crippled Children Hospital, aged 55, died May 18, in St. Anthony's Hospital, of intestinal hemorrhage

Frederick Epplen * Seattle Rush Medical College, Chicago, 1906, fellow of the American College of Physicians, member of the House of Delegates of the American Medical Association, 1923-1924 and 1928-1929 formerly secretary of the Pacific Northwest Medical Association at one time chief of the pathology department of the King County Hospital Seattle, aged 55, died May 25, of angina pectoris and arteriosclerosis

George Paul Sandrock * Major M. C., U. S. Army, Carlisle Pa. Chicago College of Medicine and Surgery 1916 served during the World War entered the medical corps of the U. S. Army in 1920, was promoted to captain in 1922 and in 1931 to major, aged 45, died, June 2, in the Walter Reed General Hospital Washington, D. C. of embolism, following an operation for perforated duodenal ulcer

Robert Paine * Memphis Tenn. Jefferson Medical College of Philadelphia, 1917 member of the Radiological Society of North America, instructor in roentgenology, University of Tennessee College of Medicine served during the World War, aged 42 on the staffs of the Memphis General Hospital and the Methodist Hospital, where he died May 26, of lobar pneumonia

John Gabriel O'Malley, Chicago, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1912, member of the Illinois State Medical Society served during the World War on the staff of the Columbus Hospital aged 46, was found dead in bed, May 24, of coronary thrombosis and diabetes mellitus

Henry Charles Babcock * Miami, Fla., Louisville (Ky.) Medical College, 1896, Kansas City (Mo.) Hahnemann Medical College 1913, Eclectic Medical University, Kansas City, Mo., 1914, Kansas City (Mo.) College of Medicine and Surgery, 1916 aged 61, died, May 26, in a local hospital, of a self-inflicted bullet wound

Ross D. A. Gunn * Oberlin, Ohio, Western Reserve University Medical Department Cleveland 1887 past president of the Lorain County Medical Society, formerly on the staff of the Allen Hospital, Oberlin College, aged 76, died, June 7, of coronary heart disease.

David John Marshall, Columbus Ind. University of Louisville (Ky.) Medical Department, 1891 member of the Indiana State Medical Association past president of the Bartholomew County Medical Society aged 70, died, May 10 of carcinoma of the gallbladder

Julian C. Baum, Poplar Branch N. C. College of Physicians and Surgeons, Baltimore 1894, member of the county board of education aged 64, died May 12, in the Hospital of St. Vincent de Paul Norfolk Va. of cerebral and gastric hemorrhage.

Bartholomew Lefkovicz, New York, Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa, Budapest Hungary 1886 member of the Medical Society of the State of New York aged 71 died May 19, of coronary thrombosis

David Russell Brown, Concord N. H. University of Vermont College of Medicine Burlington 1903 served during the World War aged 55, on the associate staff of the Margaret Pillsbury Hospital, where he died May 5 of uremia and nephritis

John Joseph Dorsey, Kansas City Mo. Columbia University College of Physicians and Surgeons New York 1907

member of the Missouri State Medical Association, aged 49, died, May 1, in St. Mary's Hospital, of tuberculosis of the lungs

Herman Winford Bundy * Kankakee, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, on the staff of St. Mary Hospital, aged 55, was killed, May 19, in an automobile accident

Thomas Johns Robinson * Taunton, Mass., Harvard University Medical School, Boston, 1891, formerly member of the board of health, on the honorary consulting staff of the Morton Hospital, aged 69, died, May 5, of arteriosclerosis

George F. Converse, New Haven Conn., Yale University School of Medicine, New Haven, 1887 member of the Connecticut State Medical Society, aged 72, died, June 4 in the New Haven Hospital of carcinoma of the stomach and liver

William Wallace McRae * Corinth, Miss. Memphis (Tenn.) Hospital Medical College, 1894 aged 70, medical superintendent of a hospital bearing his name, where he died, May 5, of a head injury received in an automobile accident

Harrell Hardy * Poteau, Okla., Louisville (Ky.) Medical College, 1907 secretary and past president of the Lelore County Medical Society, aged 53, died May 22, in St. Edwards Mercy Hospital, Fort Smith, Ark., of acute appendicitis

Sylvan H. Likes * Baltimore College of Physicians and Surgeons, Baltimore, 1893, member of the American Urological Association, fellow of the American College of Surgeons, aged 64, died, June 5, of chronic nephritis

Edgar Savidge, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1896, aged 62, died June 7, in the Graduate Hospital of the University of Pennsylvania, of acute yellow atrophy of the liver

Louis Kunz, New York Bellevue Hospital Medical College, New York, 1898, member of the Medical Society of the State of New York, aged 61, died, May 11, in the Lenox Hill Hospital, of peritoneal carcinomatosis

Henry M. Fitzgibbon, Omaha John A. Creighton Medical College, Omaha 1908, member of the Nebraska State Medical Association, served during the World War, aged 56, died, May 9, in St. Joseph Hospital, of heart disease

William F. Beyer, Punxsutawney, Pa., Jefferson Medical College of Philadelphia, 1879, member of the Medical Society of the State of Pennsylvania, aged 84, died, May 24 in the Adrian Hospital, of perivesical abscess

Francesco Cannito, Providence R. I., Georgetown University School of Medicine, Washington D. C. 1934, aged 27, intern at St. Mary of Nazareth Hospital, Chicago, where he died April 3, of cerebral embolism

Bartlett Kniffin Menefee, Covington, Ky., Louisville Medical College, 1893 member of the Kentucky State Medical Association, served during the World War, aged 70 died, May 20, of a self-inflicted bullet wound

Luther Addison Robertson * Danville, Va., University College of Medicine, Richmond, 1900, on the staff of the Memorial Hospital, aged 60, died, May 16, in St. Luke's Hospital, Richmond, of embolism

Thomas G. Smith, Brownsburg, Ind. Central College of Physicians and Surgeons, Indianapolis, 1897 member of the Indiana State Medical Association, aged 71, died, May 26, of cardiovascular renal disease

Frederick Chipman Hemeon, Boston Jefferson Medical College of Philadelphia 1897 member of the Massachusetts Medical Society, aged 66 died May 26, of chronic myocarditis and arteriosclerosis

Delno E. Kercher * Philadelphia, University of Pennsylvania Department of Medicine Philadelphia 1895 on the surgical staff of the Methodist Episcopal Hospital, aged 66, was found dead, May 6

James Michael Reilly, New Haven Conn. Yale College Medical Department New Haven, 1878 member of the Connecticut State Medical Society, aged 79, died May 26, of chronic nephritis

Benjamin Franklin Uran, Kankakee Ill., Bellevue Hospital Medical College, New York 1872 member of the Illinois State Medical Society aged 87 died, June 10, in St. Mary Hospital of myocarditis

William Joseph Hosford, Santa Cruz Calif. Colorado School of Medicine Boulder 1890 veteran of the Spanish-American and World wars, aged 67, died May 3 of carcinoma of the stomach

William Elliott Brown, Indianapolis University of Michigan Department of Medicine and Surgery Ann Arbor 1895, aged 71 died May 16 of dilatation of the heart and cirrhosis of the liver

William Henry Guilfooy, New York, Bellevue Hospital Medical College, New York, 1889, for many years registrar of records of the city department of health, aged 75, died, May 23, of pneumonia

Alexander Marcus ♂ Newark, N J, University of Buffalo School of Medicine, 1929, aged 33, died, May 27, in the Newark Beth Israel Hospital of lobar pneumonia, empyema and endocarditis

David Telesphore Berube, Augusta, Maine, Maryland Medical College, Baltimore, 1912 on the staff of the Augusta General Hospital, aged 47, died, April 21, of coronary thrombosis

Charles D Gardiner, Grand Tower, Ill, Hospital College of Medicine, Louisville, Ky, 1877 aged 81, died, May 15, in a hospital at Murphysboro, of injuries received in an automobile accident

James Henry Kitchens, Jonesboro, Ark Missouri Medical College, St Louis, 1877, aged 83, died April 27, in the Baptist Memorial Hospital, Memphis, Tenn, of cerebral hemorrhage

David Morton Seymour, Bushnell, Fla, University of the South Medical Department, Sevanee, Tenn, 1909, formerly mayor of Bushnell, aged 53, died, April 21, of pneumonia

George W Jones ♂ Lawrence, Kan, Bellevue Hospital Medical College, New York, 1890, medical director of the Lawrence Hospital aged 75, died, May 1, of carcinoma

John Calvin Huckins, Plymouth, N H, Baltimore Medical College, 1904, member of the New Hampshire Medical Society, aged 56, died, April 29, of a self inflicted bullet wound

Eldorado C Briggs, Wilmington, Ohio, Medical College of Ohio, Cincinnati, 1881, member of the Ohio State Medical Association, aged 81, died, May 27, of heart disease

McClure W Cowan, Parsons, Kan, New York Homeopathic Medical College 1880 member of the Kansas Medical Society, aged 79, died, May 21, of diabetes mellitus

Isaac Clark Soule, Kansas City Mo, Hahnemann Medical College and Hospital, Chicago, 1890, aged 75, died, May 4, of valvular heart disease and cerebral hemorrhage

William R Lincoln, Cleveland Heights, Ohio University of Pennsylvania Department of Medicine, Philadelphia, 1888, aged 73, died, May 24, of coronary thrombosis

Moses Katz, New York, Illinois Medical College, Chicago, 1899, aged 61, died, May 17, in the New York Post Graduate Hospital, of carcinoma of the larynx

John Waldo Snoke, Palo Alto, Calif Cooper Medical College, San Francisco, 1905, aged 57, died, April 12, of arteriosclerosis and cerebral thrombosis

John N Bartlett, Clarksville, Mo, College of Physicians and Surgeons Keokuk, Iowa, 1887, aged 72, died, April 27, in Jefferson City, of carcinoma

Elmer E Glover, Franklin, Ind. Indiana Medical College, Indianapolis, 1878 aged 81, died, May 10, of chronic valvular heart disease and influenza

Clement Bruce George, San Jose Calif, College of Medical Evangelists, Los Angeles, 1933, aged 26, died, May 12, of a fractured cervical vertebra

Grace Alfaretta Rowley Bradley, Bradenton, Fla, Hahnemann Medical College and Hospital, Chicago, 1894, aged 77, died, May 30, of carcinoma

Reuben Milton Biggs, Palmersville Tenn, Vanderbilt University School of Medicine, Nashville, 1877, aged 83 died, May 6, of angina pectoris

Helen Hughes Hiescher, Mankato, Minn, University of Minnesota Medical School, Minneapolis, 1896, aged 72, died, May 31, of meningitis

Horace Irwin Slater, Port Chester, N Y Cornell University Medical College, New York, 1933, aged 28, died, May 2, of Hodgkin's disease.

George Benjamin Haggart ♂ Alliance, Ohio, Homeopathic Hospital College Cleveland, 1892, aged 66, died, May 10, of cerebral hemorrhage

Elizabeth Cassidy, Denver, Northwestern University Woman's Medical School, Chicago, 1897, aged 64, died May 10, of arteriosclerosis

Daniel Stephen Neuman, Napa, Calif. Gross Medical College, Denver, 1895, aged 66, died, April 28, of chronic myocarditis

Clarence Loeb, Winnetka, Ill, Marion-Sims College of Medicine St Louis, 1899, aged 59 died, May 26, of dilatation of the heart.

Bureau of Investigation

THE RITHOLZ FRAUDS

The Post Office Finally Debars Some Crude Swindles from the Mails

Ten years ago the Ritholz mail-order quackery was dealt with at some length in this department of THE JOURNAL, July 25, 1925. A similar article, written for the public, appeared in *Hygeia* for August of the same year. At that time it was brought out that the National Watch and Jewelry Company run by four persons by the name of Ritholz was operating spectacle-fitting-by-mail concerns going under various names, such as "Ritholz Spectacle Company," "Chicago Spectacle House," "U S Spectacle Company," "Fitwell Spectacle Company," etc, etc. At that time the National Watch and Jewelry Company had the following personnel: Juda D Ritholz, President, Samuel J Ritholz, Vice-President, Morris Ritholz, Treasurer, Benjamin D Ritholz, Secretary and Manager.

Since that time some of the Ritholz family have continued to operate fraudulent concerns under such trade names as:

U S Spectacle Co	Dr Ritholz Optical Co
International Spectacle Co	Dr S J Ritholz Spectacle Co
International Spectacle House	Dr Ritholz Optical Co Inc
Dr Ritholz & Sons	Ritholz Spectacle Co
Ritholz Optical Co	Physicians & Surgeons Optical Co
Self Test Optical Co	Consumers Spectacle Co
World Optical Corp	Nn Way Optical Co
Shur Fit Optical Co	Capitol Spectacle Co
Clear Sight Spectacle Co	Nu Sight Spectacle Co

In November 1934 these variously-named companies were called on by the postal authorities to show cause by Dec. 10, 1934, why a fraud order should not be issued against them. The hearing was postponed from time to time, but was finally held Feb 20, 1935, at which time Benjamin D Ritholz appeared, accompanied by his attorneys. The hearing occupied nine days, and the transcript of the testimony comprises more than 1,600 typewritten pages. After all the evidence was in the Hon. Karl A Crowley Solicitor for the Post Office Department, declared that the evidence showed that the scheme operated under these various names was one for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and Mr Crowley, in a memorandum to the Postmaster General, recommended that a fraud order be issued against the various names listed above and, in addition, against the names of B Mack, Manager, and J G Kite, Sales Manager. On May 3, 1935, the Postmaster General issued the order closing the mails to these frauds.

HISTORY OF THE SCHEME

The Solicitor's memorandum to the Postmaster General detailing the evidence in this case is one of the longest that has even been brought to the attention of the Bureau of Investigation, covering 70 typewritten pages. While it is much too long to give here in its entirety, some of the facts brought out therein are of interest in showing how large-scale quacks (more than a million dollars a year) can for years operate through the United States mails and defraud the public. We give briefly Solicitor Crowley's details of the history of the scheme. It was started in December, 1919, under the name "Chicago Spectacle House," which sold, through the mails, spectacles and other articles, including watches.

1921—The first move on the part of the postal authorities to curb these swindles was in October 1921, when the Post Office Department charged the Chicago Spectacle House with making false representations in the conduct of its business. A month later Benjamin D Ritholz executed the first of several worthless affidavits in behalf of the Chicago Spectacle House. In it Ritholz stipulated that the practices complained of by the postal authorities would be abandoned and never resumed at any time in the future. The evidence shows that the Ritholz concern did not abandon the practices complained of.

1922—The second move by the Post Office Department was in December 1922 when Juda Ritholz, Samuel Ritholz, Morris Ritholz and Benjamin Ritholz were charged with the fraudulent

use of the mails. A month later Juda Ritholz and Benjamin Ritholz executed another of the famous affidavits. In this they stipulated that they would cancel all advertising under the names they were then using and promised to reorganize the business in corporate form that would definitely fix responsibility. They also promised to discontinue the use of more than one name. They apparently did neither.

1925—The third effort on the part of the postal authorities took place in September 1925, when they charged Juda Ritholz, Morris Ritholz, Samuel Ritholz and Benjamin D. Ritholz once again with fraudulent use of the mails under the names of no fewer than thirteen companies. On motion of the Ritholz attorneys the charges were dropped without a hearing, but a month later the Ritholz attorneys were advised by the Post Office Department that the advertising of the Ritholz outfit was violating the postal fraud statutes.

1928—Effort Number 4 of the Post Office Department was put forth May 4, 1928, when Benjamin Ritholz and his associates of the innumerable named companies under which they did business were charged again with misuse of the mails. Not to be outdone, Benjamin D. Ritholz was on hand with another affidavit stipulating a discontinuance of the objectionable practices. This stipulation seems to have been just as worthless as the previous ones.

1932—Post Office Effort 5 came in 1932 and once more Benjamin D. Ritholz and his associates were furnished with a memorandum charging fraudulent use of the mails. At the hearing the postal authorities produced thousands of complaints from dissatisfied customers who had failed to obtain the promised refunds from the Ritholz companies. By June 1933, Benjamin D. Ritholz had disgorged another affidavit, in which he promised to make refunds and proper adjustments to more than 1,200 complainants. As one might have expected from what has already been written, the Solicitor's memorandum states that "this promise on the part of B. D. Ritholz and his associates was not faithfully executed in accordance with its terms."

1934—The sixth effort on the part of the Post Office brings us down to the charge of November 1934 finally heard toward the end of February 1935. Benjamin D. Ritholz and his associates were charged in the operation of their mail-order spectacle-selling scheme with having violated both in letter and in spirit the sworn stipulations which from time to time they were permitted by the Post Office Department to file to avoid the issuance of fraud orders.

THE PRESENT BUSINESS

The Solicitor's memorandum also deals at some length with the present business and states that the evidence shows that Benjamin D. Ritholz together with his brothers Samuel Ritholz and Morris Ritholz, and his mother Ante Ritholz (the last-named taking no active part in the business but having a financial interest therein), operate not only a mail-order spectacle-fitting business but also some thirty-five optical stores and also a mail-order dental business!

The Postmaster at Chicago reported in November 1934, that the various Ritholz mail-order outfits were receiving on an average over 400 letters daily. The Solicitor of the Post Office Department then describes in detail the fraudulent methods used by these various named concerns in selling spectacles on the mail-order plan. The evidence demonstrated that in more than 80 per cent of the test cases the Ritholz companies failed to furnish the proper lenses even according to the alleged policy and practice of the Ritholz concerns. Only in a few of the simplest cases, where the lens-strengths for each eye for both reading and distance were the same, did the Ritholz concerns furnish the proper lenses. Yet the Ritholzes have claimed that

95 per cent of their customers are satisfied and received the proper glasses. Not only this, but where several test orders contained the *same measurements* for reading and for distance, the Ritholz companies filled such orders with spectacles containing *different lenses in each case*, the variations ranging as high as three to five diopters.

Reputable ophthalmologists called by the postal authorities to testify in the case of course proved conclusively that it is quite impossible to fit spectacles satisfactorily on the mail-order plan. The Ritholzes were said to have produced two witnesses as experts, one of whom claimed to be a consultant of the Ritholz concerns. The "consultant" was Everett R. Brown, M.D. who, according to the records of the American Medical Association, was born in 1891, holds a diploma from Loyola University School of Medicine, Chicago, 1916, and an Illinois license of the same year. Brown had the effrontery in December 1934 to send out letters to physicians on the stationery of the Physicians Optical Service at 1148 West Chicago Avenue, Chicago. This is the address of the Ritholz quackeries. Brown in his letters stated that the Physicians Optical Service would furnish physicians with a "new patented eye-testing instrument, test charts samples of glasses, etc." with "full explanation of their



Greatly reduced photographic reproductions of some of the numerous advertisements of the Ritholz concerns

use." Brown emphasized in the letter that "Testing of Eyes Belong to Physicians" and stated that "Opticians Do Great Harm."

Everett R. Brown according to the government's report, "discredited himself upon the stand, not only by his unwillingness to answer simple questions which he pretended not to understand but by continual evasion of questions and also by his ignorance of simple fundamental anatomical and physiological facts pertaining to the eye, and of other matters in which he claims to specialize." This same alleged expert also is said in the memorandum to have shown himself ignorant of the functions of the optic nerve, erroneously asserting that it furnishes the nerve supply for the various muscles of the eye. He was even unable to state on cross-examination the characteristics of compound astigmatism, which constitutes between 40 and 50 per cent of errors of refraction, saying that he never saw a case! In various other ways, it appears from the evidence submitted in the Solicitor's memorandum, he demonstrated his ignorance. Such ignorance, of course, might be expected of a physician who would act as expert for such quacks as the Ritholz concerns.

SUMMARY

The Solicitor, in summarizing the voluminous evidence, stated that the Ritholz concerns solicited and obtained remittances of money through the mails by fraudulently representing that they, the Ritholz concerns, took all the risk, when, as a matter of

fact, the customer took the risk. The evidence showed, further, that the so-called "Scientific Self-Tester" that the Ritholz people sent to prospective victims was neither scientific nor based on sound principles. The evidence also showed that although the Ritholz concerns claimed to have "perfected a system of fitting glasses by mail," yet Benjamin Ritholz himself conceded at the hearing that glasses cannot be fitted by mail. While the Ritholz companies claimed that there was "no guesswork to their system," the facts were the entire system was based on guesswork.

It was further brought out that the lenses furnished by the Ritholz concerns were (1) inaccurately and poorly ground, (2) were not of a proper strength, (3) were incorrectly placed in the frames, (4) in some instances were chipped, cracked, splintered and decentered, (5) that many of the "bifocals" were made by simply pasting or gluing an additional slip of glass on the lower segment of the lens, with the result that in some instances the glue was opaque and in others it was spotty, and in still others the segments or slips became detached. It was shown, also, that the claim that a "trained specialist" checked the lenses after the spectacles were assembled was false, the so-called checking actually being done by untrained office girls. Many other fraudulent elements in the scheme were dealt with at length in the memorandum.

The principal contention of the Ritholzes in the case was that their customers got exactly what they ordered. The postal authorities, on the other hand, stated that the evidence shows that this was false, the fact being that the customers did not get either what they had been led to believe they would get or what they ordered. Hence the fraud order debarring this pertinacious and impudent fraud from the use of the United States mails.

The story is a sorry one. How many millions of dollars the Ritholz concerns have taken out of the pockets of ignorant but hopeful people is not of record. From the public's point of view, the tragic situation is that closing the mails to the eighteen company names and to the manager, Mack, and the sales manager, Kite, is a rather feeble punishment to the Ritholz fakers, who, individually, can still use the United States mails. It would seem that if ever there was a case which called for criminal prosecution, this is it. It is to be hoped that the postal authorities will bring to a good finish a job that has extended over fourteen years, by attempting to put in the federal penitentiary those members of the Ritholz family who have been guilty of the swindles here set forth.

During the past year or two the Ritholz concern, in addition to its mail-order quackeries, has opened a number of retail stores. There are more than a dozen such stores in Chicago alone. Thanks to the energetic action on the part of the Chicago Better Business Bureau, all Chicago newspapers and radio stations have barred their columns and facilities to the advertising of the Ritholz stores. The street cars of Chicago are not so particular, they still carry blatant advertisements of the Ritholz retail establishments.

The Giant Irishman.—John Hunter, the eighteenth century leader of English surgery, anatomy and physiology, spent most of his fortune and energy in collecting the famous Hunterian Museum, which is now housed in the College of Surgeons, London. One of its most remarkable specimens is the great 7 foot 7 inch skeleton of the giant Irishman O'Brien, who died in London in 1783. The undertaker was bribed by Hunter with £500, and, while the escort was drinking at a certain stage on the march seaward, the coffin was locked in a barn. There, some men concealed by the accomplice speedily substituted an equivalent weight of paving stones for the body, which was at night forwarded to Hunter. He took it in his own carriage to his home in Earl's Court, where in order to avoid the risk of discovery it was immediately immersed in boiling acid, after suitable division, to obtain the bones. This accounts for the brown color of the bones today. Hunter prized this specimen above all others, and in his famous portrait by Sir Joshua Reynolds, part of the skeleton is prominently placed in the background.—Guttmacher, A. F. *Bootlegging Bodies. A History of Body-Snatching.* *Bull. Soc. M. Hist. Chicago* 4:353 (Jan.) 1935.

Correspondence

EXPRESSION OF APPRECIATION BY THE CANADIAN MEDICAL ASSOCIATION

To the Editor—It would be greatly appreciated by the members and friends of the Canadian Medical Association who were privileged to attend the joint meeting in Atlantic City if you would be kind enough to publish this letter in the columns of THE JOURNAL in order that an opportunity may be afforded us to express our very sincere appreciation and thanks to the American Medical Association, the Medical Society of the State of New Jersey, the Medical Society of Atlantic County, the Women's Auxiliary of the American Medical Association, and that great host of individuals, both men and women, who so graciously received and hospitably entertained Canadians during the course of the convention. Those of us who had the good fortune to be present realize fully the efforts that were put forth to make the meeting the great success it proved to be, and to each and every one to whom we are indebted we desire to say Thank You.

T. C. ROUTLEY, M.D., Toronto
General Secretary, Canadian Medical Association.

GRANULOPOIETIC EFFECT OF LIVER EXTRACT

To the Editor—In Queries and Minor Notes in THE JOURNAL, May 25, page 1928, in a discussion on leukopenia, it is stated that "liver extract and yellow bone marrow are reported to have stimulated granulopoiesis in a limited number of patients, but the rationale of this therapy is not yet clear" and, in another sentence, "leukopenia secondary to megaloblastic hyperplasia, as in pernicious anemia, is, of course, automatically relieved by liver following the restoration of normal erythroblastic marrow, but this is not due to any direct defect on granulopoiesis."

I want to call your attention to two papers that, I believe, established without a question of doubt the granulopoietic stimulating effect of liver extract administered parenterally. I doubt very much that animal experimentation can establish the stimulating effect of any substance in this respect more clearly than these papers do. The references are Powers, J. H., and Murphy, W. P. *Leukocytosis Following the Intramuscular Injection of Liver Extract*, *J. Clin. Investigation* 12:713 (July) 1933, and Myer, O. O., Middleton, W. S., and Thewlis, Ethel M., *Am. J. M. Sc.* 188:49 (July) 1934.

WILLIAM P. MURPHY, M.D., Boston

ETHYLENE ANESTHESIA

To the Editor—One of the most regrettable incidents relating to surgery in the United States is the discarding of the most successful of all inhalation anesthetics by the majority of hospitals because of explosions in its use. I refer to ethylene. There is practically no danger if the anesthetic is properly safeguarded from static ignition, and this is too easily done to sacrifice the benefits of this wonderful agent. Complicated apparatus with tubes and compartments that cannot be reached by the humidity from rebreathing and thus eliminate or dissipate all static has brought about these explosions. Hence the type of apparatus used was inherently the danger, as this gas has been used by other methods so extensively without ignitions that the statement may be made that this fact is well proved. In Baylor University Hospital, ethylene has entered into from 95 to 98 per cent of all general anesthetics since October 1923, with use of the simplest possible device, consisting only of a rebreathing bag and attached face piece. Nitrous oxide-oxygen

is started with and the ethylene is added after consciousness is lost. The relative humidity in the apparatus is 100 per cent after the first five or six breaths are exhaled into the bag. As from 55 to 65 per cent relative humidity positively dispels static electricity, this method removes all possible danger. This simplified type of apparatus can be used with perfect safety. Let the people have the advantages and safety of this superb anesthetic, which is far superior to nitrous oxide oxygen with ether added, as is now so widely used since ethylene has been so unnecessarily discarded. About 200 other hospitals in Texas are using ethylene gas in the same manner.

JAMES G. POE, M.D.,
Baylor University Hospital,
Dallas, Texas

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

TREATMENT OF UNDERSIZED CHILD

To the Editor—A boy, aged 14 years was brought to my office for examination and treatment because of his small size and lack of weight. He is 55½ inches (140 cm) tall and weighs 59½ pounds (27 Kg) with his shoes, pants, socks and undershirt on. His mother and father both are of normal height but are noticeably thin. One brother and one sister are of normal height and weight for their age groups. The father was rejected for service in the army because of his weight; he weighed 110 pounds (50 Kg) at 21 years; his height is not known. The boy's past history is essentially negative. His birth weight is not recalled. He has had chickenpox and measles. The tonsils and adenoids were removed at 10 years for adenoid obstruction with relief. He always has seemed healthy though small. He has no complaints at present except for occasional styes on each eye. The cardiorespiratory, gastrointestinal and genito-urinary systems are normal. He sleeps well. He is in the first year of high school and obtains better than average grades. He has no unusual dietary habits and eats with relish a dietary that is obviously adequate for an older sister and a younger brother. Physical examination yields little except for the obvious small size. He is thin; the ribs stand out and can be counted with ease. The eyes, ears, nose, mouth, throat, lungs, heart and abdomen are normal. There is no pubic hair but the genitals are only slightly less than the average size for his age group. There is copious hair on his arms. Examination of the urine shows no albumin or sugar. The sediment is negative except for urate crystals. Hemoglobin is 75 per cent, red blood cells number 4,880,000, white blood cells 8,700. Smear shows 70 per cent polymorphonuclears, 25 per cent lymphocytes, 4 per cent large mononuclears, 1 per cent myelocytes. The red blood cells and platelets appear normal. Is there any reason to think that the child is suffering from some endocrine disorder? Is he necessarily abnormal or merely one of the extremes of the normal? 2. Can he be made to gain weight and, if so how? Please omit name.

M.D. Massachusetts

ANSWER—The 14 year old boy in question, whose height is given as 55½ inches (140 cm), should have an ideal weight of 75 pounds (34 Kg) for this height according to the Baldwin tables. The average height for a 14 year old boy is 59½ inches (151 cm) and the ideal weight for this height is 90 pounds (41 Kg). The child is therefore short for his age group and underweight for his actual height and age. His father weighed 110 pounds (50 Kg) at 21 years of age, which is very light for this age and presupposes a slight bony frame. The mother is also said to be thin. With this available information it would be permissible to conclude that the boy is small and slight and follows the general body configuration of his parents. If this is accepted, in the absence of any confirmatory information one would see no reason to think that the child is suffering from an endocrine disorder.

2. It is noted that he has normal dietary habits and eats amounts equivalent to those of his sister and brother. If he should be put to bed, with absolute rest, and given a very high fat and carbohydrate diet, he could probably be made to gain some weight. However, as he seems to be in good health and leading an active normal life, it hardly appears justifiable to put him through a fattening process.

Recently extract of the pituitary gland has been employed, containing the growth hormone. Engelbach and Schaefer (*THE JOURNAL*, Aug 18, 1934 p. 464) report the use of this in the treatment of seven cases of dwarfism. The patients were from 7 to 18 years of age. They reported growth in the children

treated. Such studies are not very convincing, because it is well known that growth in height may normally take place during some seasons of the year and may be absent or retarded in others.

PAIN AFTER FUSION OPERATION ON SACRO ILIAC JOINT

To the Editor—An unmarried woman, aged 47 was operated on by a very competent and well known orthopedic surgeon of Atlanta about three years and three months ago for a chronic sacro-iliac subluxation and a fusion was done. Since the operation there has been constant aching pain in the lumbar region and the buttocks. The latter are so tender that she finds it impossible to make trips of any distance in her car. Roentgenograms of the vertebral column, both anteroposterior and lateral, by a good roentgenologist show good results from the operation and no signs of arthritis or anything else. Can you possibly give me any information as to what is causing all this pain? Fourteen months ago spurs were removed from the os calcis of each foot by another orthopedic surgery of the same city. Since the operation there has been swelling of both ankles and aching pain in the arches and dorsa and heels of both feet. The patient also complains of cramping of both feet especially the big toe of the right foot when the shoe is off. Recent roentgenograms have demonstrated the return of the spur on the left os calcis. What percentage of spurs recur after operation? Is it common or uncommon for them to recur? Can the condition be attended to medically by giving a diet low in calcium-containing foods to prevent further growth of the spur or is diet necessary at all to prevent this? Please omit name and address.

M.D., Florida

ANSWER—Taking it for granted that the fusion operation was performed on one sacro-iliac joint, there is in some cases considerable strain thrown on the other sacro-iliac joint and the lumbosacral joints.

It is also possible to have arthritis without positive roentgen signs. The cause of the pain in the lumbar region and buttocks and tenderness while sitting in an automobile may be due to local or referred causes.

Local conditions that should be considered are gluteal bursitis, myositis and postural disturbances, the referred conditions are arthritis of the lower lumbar, lumbosacral joints with sciatic nerve radiation, part of which may be superior gluteal nerve pain.

Concerning the feet, there is undoubtedly some circulatory disturbance of the feet and ankles and mechanical disturbances in the arches and plantar fascia. There may be a mechanical disturbance of the transverse arches.

In reference to the recurrence of spurs following operation we know of no figures of a series sufficiently large to justify a percentage basis. It is fairly common that recurrence of the spur may take place. There is no doubt that in many cases there is a metatarsal disturbance, and without the correction of this the operation is often unsuccessful.

EFFECTS OF BELLADONNA ON CHILD

To the Editor—Will you discuss the probable effect of the following prescription which was given to a baby aged 4 months weighing 10 pounds (4.5 Kg). The baby was suffering from a cough and cold and had no fever. Tincture of belladonna 3 drachms, elixir lactated pepsin sufficient to make 4 ounces. One teaspoonful every six hours. Please omit name.

M.D. Virginia

ANSWER—The dose of 6 minims of tincture of belladonna for a baby aged 4 months is excessive and may result in symptoms of atropinism, such as dilatation of the pupil, dry red throat and skin, rapid pulse and rapid respiration, with possibly fever and even delirium, a clinical picture that sometimes resembles scarlet fever.

PAIN AFTER CHOLECYSTECTOMY

To the Editor—Is there anything that can be done to help patients permanently who continue to have severe attacks of pain in the right upper quadrant from one to fourteen years after cholecystectomy? Is there any surgical intervention that would give much chance of success as cutting nerves or the sphincter of Oddi? I have tried such medical measures as weight reduction, high fat diet, low fat diet, normal diet, atropine, belladonna, bile salts, epsom salt, hot and cold water and olive oil without preventing the attacks. What combination works the best or is there anything new I could try? Please omit name and address.

M.D. Montana

ANSWER—In most instances of severe right upper quadrant attacks following cholecystectomy, if no stones have been found, the pains are due to a spasm or partial obstruction in the sphincter of Oddi and are usually cured by common duct drainage ranging from four to seven weeks. If stones were found in the gallbladder at the time of the cholecystectomy it is quite possible that some small stones have been overlooked in the

common duct, which was probably not opened and then, of course, the patient could suffer with repeated attacks of right upper quadrant pain without jaundice. This sometimes can be determined by examining the urine for bile immediately after the attack. Probably the best way to relieve such pains is to administer atropine sulphate. The patient will in all probability never be well until a thorough exploration is made of the common duct or drainage or common duct anastomosis is done.

POISONING FROM LEAD IN STORAGE BATTERIES

To the Editor—A man in his early forties, proprietor of a tire and battery shop, complains that the fumes from batteries charging and repairing, irritate the upper respiratory tract and he feels that they are important in the causation of a chronic bronchitis these symptoms are much exaggerated during the winter months when ventilation in the shop is inadequate. The shop is not equipped with hoods or other means of carrying the fumes away. The patient is underweight and there is a moderate secondary anemia. He complains of easy fatigue, flatulence and restless sleep. According to certain authorities men engaged in such work may suffer from lead poisoning. While admitting that part of the respiratory tract irritation is probably due to acid fumes and so on, can one consider that this man is suffering from lead poisoning on the basis of the evidence submitted? There is no lead line on the gums nor does the patient present other definite diagnostic criteria such as lead colic or wrist drop. An examination for stippled cells has not been made. The patient has been advised to wear a respirator while working over the storage batteries. If this is proper, what special type of respirator should be used? Please omit name. M D Ohio

ANSWER—In the largest of storage battery manufacturing plants, in the departments where batteries are charged, lead poisoning is unknown. Likewise the usual duties involved in the small type of battery shop ordinarily do not result in lead poisoning. The sulphuric acid employed in batteries does not readily evaporate, but acid vapors in small amount do find their way into the atmosphere, chiefly as a result of chemical ebullition, the breaking of countless bubbles at the surface of the liquid thrusting small quantities of the acid into the atmosphere. This acid in the atmosphere is irritating, may affect the teeth, may lead to irritation of the respiratory tract, and when swallowed with saliva may lead to gastric disturbances. From a practical point of view this occupational disorder is apparently not very important among the many hundreds of workers engaged in this phase of storage battery manufacture. In the building of storage batteries the hazard to lead poisoning is great but in ordinary repair work in small shops exposure is on a much lower plane. For this reason no justification exists for believing solely on the basis of the evidence submitted in the query that this worker is suffering from lead poisoning. Greater significance should be attached to the presence of acid vapors. The presence or absence of stippled cells in the blood is coming to be associated with lesser diagnostic importance than heretofore. The presence of reticulocytes or basophilic aggregation in excess of 1 or 1.5 per cent may be of more significance than the presence of a few stippled cells. The hazards under discussion are believed to be of such low magnitude that the wearing of a respirator may not be warranted. General exhaust systems are at this time regarded with greater favor for this particular kind of work.

EXPULSION OF MECONIUM IN BREECH PRESENTATION

To the Editor—In a recent case in which there was a breech presentation of the fetus, the bag of waters ruptured the meconium exuded from the vagina and small clots of blood came for ten days before the baby was finally delivered by cesarean section. When the meconium first appeared the heart tones were quite weak. I attempted to induce labor in this case since it was at full term at two different times with quinine, castor oil and solutions of pituitary but was unsuccessful. I then had consultation and a specialist suggested that I insert a bag and attempt to induce labor. This also was unsuccessful in starting contractions for more than a few hours. Finally a low cervical section was done the baby was born alive and the mother recovered well. The baby had a marked desquamation of the skin at the time of birth, large plaques of skin peeling off intact. The baby has gained and is doing fine at the present time. What I want to know is whether meconium could produce maceration of the skin or was some other factor the cause of this peculiar condition? Could you give me the chemistry of meconium and is it not unusual for a baby to pass meconium for ten days and still be alive? Kindly omit name. M D Washington

ANSWER—The passage of meconium in this case has no significance and was to be expected, because the baby presented by the breech and the membranes were ruptured. The expulsion of meconium in a breech presentation is not a cause for alarm, because it is almost always due to pressure on the fetal abdomen, which results in mechanical expulsion of the meconium. When meconium is passed in the presence of a cephalic

presentation, it usually signifies fetal distress. In such a case the fetal heart tones are nearly always irregular in rhythm or unusually rapid or slow. In cases in which the heart tones remain regular in the presence of meconium, there is generally no immediate danger to the child, but the fetal heart tones should be carefully controlled until the baby is born.

In cephalic presentations the expulsion of meconium is due to stimulation of the sympathetic nervous system, especially the celiac ganglion, which leads to excessive peristalsis of the intestine. This stimulation of the sympathetic nerves is due to an abnormal mixture of gases and hence it is a disturbance in the respiratory mechanism of the fetus. The sympathetic nervous system is stimulated by an abnormal gas mixture sooner than the vagus center. This explains why meconium usually is expelled before alterations in the heart tones appear.

Meconium may be found in a fetus from the fourth month on. It consists of epithelium from the intestinal tract, mucus, bile, bilirubin, fat, cholesterol crystals, lanugo hairs, vernix caseosa, skin epithelium and the digestive juices of the stomach, pancreas and intestine, but 80 per cent of meconium is water.

It is hardly likely that the meconium produced the extensive desquamation of the skin in this case, chiefly because most of the meconium was expelled directly from the anus through the cervix into the vagina. If most of the meconium had remained in the uterine cavity and had come into intimate contact with the baby's skin, it could have had deleterious effects on the skin. The desquamation is more likely due to the absence of liquor amni and to a mild infection. The latter was most likely present because of the long delay after the rupture of the membranes and because of the bag induction.

JUTE DERMATITIS

To the Editor—Is there such a thing as poisoning from the oil used in softening sisal in the manufacture of jute or even in the jute or sisal itself which would give what workmen in such plants call 'oil poisoning'? I have a patient who has had a reddened, scaly itching chronic, recurrent, pustular unibilicated dermatitis for more than a year. It cleared up with injections of boiled milk, but I should like to know if there is any connection with the oil or if it is mere coincidence. Please omit name.

M D Kentucky

ANSWER—Sisal or jute dermatitis is a fairly well known industrial disease entity. The action is attributable partly to the soaps, fish and mineral oils employed in the manipulation of the vegetable fiber and partly to the mechanical action of the fibers themselves. Also allergy may play some part in the causation of this condition. From an International Labor Office publication (1930), *Encyclopedia of Pathology, Hygiene and Social Welfare*, brochure 212, the following is taken:

'Skin affections, characterized by irritation of the skin, redness and swelling, dry eczema, papillary hypertrophy and inflammation, advancing even to suppuration, have been reported in people handling jute where the thread was impregnated with a solution of yellow soap, impure fish oil and mineral oil.'

"The coloring matters and oils handled in manipulating jute are the cause of the folliculitis observed, notably in India. The lesion is nonsuppurative in character brought on by mechanical obliteration of the orifice of the sebaceous glands by debris from the corneal layer, the exfoliation of which is obstructed by the presence of the oil on the skin. The accumulation of this debris is frequent among the natives, who do not use detergent soap sufficiently, water alone being insufficient in these cases."

The entry of mycotic organisms frequently prolongs the duration of this type of industrial dermatitis.

HYPERPYREXIA IN NEW BORN

To the Editor—I recently saw a baby 24 hours old with a rectal temperature of 109 F. The only other abnormality was the presence of many coarse rales in the bronchial tubes. Will you please explain hyperpyrexia in new born babies? Please omit name.

M D Iowa

ANSWER—The history of this case is unusual. A temperature of 109 F. in a new-born baby has not been frequently reported. The elevation of temperature occurred earlier than is usually observed. Generally the temperature in the so-called transitory fever of the new-born is from 100.5 to 102 F., though it may be higher. The fever is usually observed on the third or fourth day, and the earliest is usually at the end of the second, though it may not occur until the fifth day. It may last only a few hours or continue for two or three days. E. L. Holt observed that the highest temperature usually coincided with the time when the loss in weight was greatest. As a rule, fever disappears as the weight increases, though this is not invariably the case, because the temperature may return to normal without increase in weight and without increase in

the amount of water ingested. There are several explanations for this so-called transitory fever. Some have thought it due to intestinal infection or intoxication. It has been suggested that it might be due to fever-producing substances in the colostrum. It has been learned from experience with older infants that an insufficient supply of fluids may produce fever. Consequently it has been thought that most of the transitory fevers of the new-born period are thirst fevers, although it is possible that the febrile reactions may be due in part, at least, to the breaking down of the blood cells or other body proteins, giving rise to the so called protein fever. It should be remembered that the new-born baby's temperature regulating mechanism is characterized by extreme lability. An excessively hot bath, an overheated water bag or the application of external heat of any kind may cause a decided febrile reaction. Meningeal or intracranial hemorrhages or malformations of the brain may also cause high fever. Septic processes, especially localized umbilical infection, may cause temperature fluctuations, though one would hardly expect a febrile reaction from such a cause to occur as early as the first day of life.

Without more definite details it is not possible to interpret the coarse rales in the bronchial tubes, though it should be remembered that new-born and young infants may develop pneumonia as the result of aspiration of amniotic fluid during labor, or to the rare antenatal or postnatal pulmonary infections.

NUMBNESS OF FINGERS

To the Editor—In Queries and Minor Notes in THE JOURNAL May 25 page 1929 your reply states that numbness of the middle three fingers does not correspond to the distribution of the peripheral nerves. It is true that the numbness of the middle three fingers does not correspond to the distribution of any named peripheral nerve but it does correspond exactly to the distribution of the seventh cervical root according to figures 90 and 91 on pages 359 and 360 of the ninth edition of Surgical Applied Anatomy by Sir Frederick Treves revised by C. C. Choyce in 1934. Therefore it is possible that the pressure on the seventh cervical nerve by a cervical rib or something else may cause the numbness of the middle three fingers.

K S CHOUKE M D Denver

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, March 2.

Hospitals Approved for Intern Training

St. Mary's Hospital Pueblo, Colo
St. Mary's Hospital Huntington W Va

Hospitals Approved for Residencies in Specialties

Employees Hospital of the Tennessee Coal Iron and Railroad Company
Fairfield Ala. Medicine and surgery
Maryland Tuberculosis Sanatorium, State Sanatorium Md Tuberculosis
Plymouth County Hospital South Hanson Mass Tuberculosis
Worcester State Hospital Worcester Mass Psychiatry
University Hospitals Columbia Mo Orthopedics
Hudson County Tuberculosis Hospital and Sanatorium Secaucus N J Tuberculosis
Municipal Sanatorium Otisville N Y Tuberculosis
St. Thomas Hospital Akron Ohio Surgery and mixed residencies
Youngstown Hospital Youngstown Ohio Mixed residencies
Willis C Campbell Clinic Memphis Tenn Orthopedics
Galveston State Psychopathic Hospital, Galveston Texas Psychiatry
Salt Lake General Hospital Salt Lake City Mixed residency
Norfolk Protestant Hospital Norfolk Va Medicine and surgery

Hospitals Approved for Additional Residencies

Garfield Memorial Hospital Washington D C Pathology
James M Jackson Memorial Hospital Miami Fla Mixed residencies
Charity Hospital New Orleans Orthopedics and pathology
Boston City Hospital Boston Ophthalmology-otolaryngology
Minneapolis General Hospital Minneapolis Psychiatry
Albany Hospital Albany N Y Tuberculosis
Long Island College Hospital Brooklyn Pathology
Lenox Hill Hospital New York City Pathology and neurology
Morrisania City Hospital New York City Obstetrics
Duke Hospital Durham N C Urology orthopedics and psychiatry
St. Luke's Hospital Cleveland Pathology
State University Hospital Oklahoma City Anesthesia and obstetrics
Presbyterian Hospital Philadelphia Mixed residency
Baroness Erlanger Hospital Chattanooga, Tenn Mixed residency

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY Cincinnati Sept 17 Application must be filed before July 15 Sec. Dr William H Wilder 122 S Michigan Ave. Chicago
American Board of Otolaryngology Cincinnati Sept 14 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS Seattle, Aug 8 Philadelphia Oct 10 and St Louis Nov 10 Sec Dr C A Aldrich 723 Elm St Winnetka Ill
AMERICAN BOARD OF RADIOLOGY Detroit, Dec 12 Sec, Dr Byrl R Kirklin Mayo Clinic Rochester, Minn
CALIFORNIA San Francisco July 8 11 and Los Angeles July 22 25 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento
CONNECTICUT Hartford July 9 10 Endorsement Hartford July 23 Sec Medical Examining Board, Dr Thomas P Murdock 147 W Main St Meriden
DISTRICT OF COLUMBIA Washington July 8-9 Sec, Commission on Licensure Dr George C Ruhland 203 District Bldg Washington
HAWAII Honolulu July 8 11 Sec Dr James A Morgan 48 Young Bldg Honolulu
MASSACHUSETTS Boston, July 9 11 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 State House Boston
NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination Sept 16-18 Ex Sec., Mr Everett S Elwood, 225 S 15th St Philadelphia
NEVADA Reno Aug 5 Sec. Dr Edward E Hamer Carson City
OREGON Basic Science Corvallis July 27 Sec. Basic Science Examining Committee Mr Charles D Byrne University of Oregon Eugene
PENNSYLVANIA Written Philadelphia and Pittsburgh July 9 11 Bedside Philadelphia July 12 13 Dir, Bureau of Professional Licensure Mr W M Denison 400 Education Bldg Harrisburg
SOUTH DAKOTA Rapid City, July 16-17 Dir, Division of Medical Licensure Dr Park B Jenkins Pierre
UTAH Salt Lake City July 8 10 Dir Department of Registration Mr S W Golding 326 State Capitol Bldg Salt Lake City
WASHINGTON Basic Science Seattle July 11 12 Medical Seattle July 15 17 Dir Department of Licensure Mr Harry C Huse Olympia
WEST VIRGINIA Clarksburg July 8 State Health Commissioner Dr Arthur E. McClue Charleston

Maine March Report

Dr Adam P Leighton Jr, secretary, Maine Board of Registration of Medicine, reports the written examination held in Portland, March 12-13, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eleven candidates were examined, all of whom passed. One physician was licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1933)	84
Tufts College Medical School	(1931) 84 (1933) 85	(1934)	83, 85
Cornell University Medical College		(1934)	82
Hahnemann Med College and Hosp of Philadelphia		(1896)	77
University of Vermont College of Medicine		(1933)	83
Queen's University Faculty of Medicine		(1928)	86
McGill University Faculty of Medicine		(1907)	76
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1932)*	77

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1924)	Illinois

* Verification of graduation in process

New Hampshire March Report

Dr Charles Duncan secretary, New Hampshire State Board of Registration in Medicine, reports the oral, written and practical examination held in Concord March 14-15, 1935. The examination covered 13 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined both of whom passed. Seven physicians were licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Tufts College Medical School		(1934)	80 80
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Tufts College Medical School		(1932)	Mass
University of Michigan Medical School		(1927)	New York
Columbia Univ College of Physicians and Surgeons		(1928)	Vermont
University of Vermont College of Medicine	(1929)	(1932)	Vermont
University of Toronto Faculty of Medicine		(1927)	Michigan
McGill University Faculty of Medicine		(1932)	Vermont
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1927)	N B M Ex
University of Nebraska College of Medicine		(1926)	N B M Ex

Book Notices

Hugh Owen Thomas A Personal Study By Frederick Watson Cloth Price \$4.25 Pp 94 with 8 illustrations New York & London Oxford University Press 1934

This little book contains interesting reading concerning one of the unique figures in medicine and surgery. It is a personal study of Hugh Owen Thomas by Frederick Watson, who also wrote the life of Sir Robert Jones, who was Hugh Owen Thomas's nephew. The author is well qualified to make the study. The book will be followed by a companion book on the principles and practice of Hugh Owen Thomas, written by Mr McCrae Aitken.

Born of a family of unqualified but highly respected "bone setters," Hugh Owen Thomas made a name that will probably live forever. Realizing the handicap of "unqualification," his father sent five sons—including the leading character of this book—to the Edinburgh Medical School. All five sons graduated in medicine and surgery and proceeded to London, following which each in turn became the assistant of Dr Owen Roberts. The Thomas family lived generation after generation in the district of Wales least accessible to modern progress and ideas. It was the country of the druids, whose descendants the bards, still expressed the sentiments of the people. The history of the Anglesea bone-setters provides an impressive picture of a family devoted to the art of healing throughout eight consecutive generations and inspired largely by a sense of divine guidance and a faith in an inherited faculty for handling dislocations. As well-to-do yeoman farmers, the Thomases could afford to attend their neighbors without fee. The paternal great-grandfather of Hugh Owen Thomas was one of the most celebrated and skilful of this family of bonesetters. His name was Evan Thomas. There is evidence of the important place of the family in North Wales, whose descendants a generation after the death of Evan Thomas included no less than twenty-one doctors or bone setters of both sexes. Evan Thomas was until his death overwhelmed by patients drawn from the seafaring communities and from the docks. His immense general practice provided a greater variety and number of cases than any other in the world. It was estimated that he saw between thirty and sixty patients a day. Doubtless a percentage of these came to his son Hugh Owen Thomas, but the bulk of his work consisted of the medical supervision of shipwrights, iron workers, boilermakers, seamen, dock gatemens and industrial concerns. This varied field served him in place of a hospital appointment, which an outraged medical community in Liverpool resolutely refused him to the end of his life.

Physically Thomas was a diminutive man, and intellectually not a little alarming to the conventional environment of a Welsh home. But of his high character and courage there could never have been any question. And even his eccentricities were not without a tender and romantic glamor. He wore a peaked cap, to protect an injured eye, and smoked cigarets continually. Thomas was a man of indomitable courage and a fine sense of a physician's moral duty. During his engagement to the beautiful Elizabeth the great cholera epidemic broke out in Liverpool. Without a moment's hesitation he flung himself into the heart of the ghastly slums where it was raging. Night and day he labored for the unfortunate uncared for class on whom his great reputation was destined to be established. His escape from infection was miraculous, and the explanation given by Thomas himself was the precaution he took of smoking. Thomas was a tremendous worker in a sense and to a degree quite outside the capacities of ordinary men. He did not work for money or to secure success. He worked because he loved his calling and found the greatest and most enduring happiness in it. He was obsessed by a sleepless search for truth. It drove him on from dawn to dusk. To most men the consolations for work lie in prestige, money or power. To Thomas the only reward was knowledge through progress. His watchword 'On' describes his physical and spiritual impulses. The sacrifice of everything for knowledge made him so eager and determined in argument that he created more enemies at the end of his pen than many men could have done at the point of

a sword. Nor was he a man who could relax. Even in his occasional hours of leisure late at night he was occupied with his lathes or practicing the flute. He was considered an original, entrancing, heroic husband. If one should attempt to analyze Thomas's special aptitudes, one would say that they consisted in an original mind not in the least tainted with reverence for authority as authority, whatever its source.

Dr John Ridlon said "During my fourteen days with Thomas I saw more injured and diseased shoulders than ever before or since. Why? Because he was the surgeon for twenty-eight labor organizations along the Liverpool docks." Ridlon's opening statement to Thomas was "Mr Thomas, I have read your book on the hip, knee and ankle and I have come three thousand miles to find out whether I am a fool or you a liar." Ridlon has said that "the greatest thing Robert Jones ever did was to make the main principles of Thomas acceptable to the profession."

Thomas realized that if a working man does not miss more than a few hours from his work because of an injury, it never occurs to him to choose compensation and idleness instead of the full pay that his work brings him. Treated in their own home, most workmen are anxious to get back to their work. Cared for in the sunny ward of a clean hospital by an attractive nurse it is quite different. Why worry about getting back to work? Hugh Owen Thomas had his home, office and brace shop at 11 Nelson street, Liverpool, which is a byword in orthopedic surgery and considered the birthplace of modern orthopedics in Great Britain.

The book contains several interesting illustrations, especially the one showing Thomas wearing a cap and smoking a cigaret while reducing a dislocation of the shoulder, with the future Sir Robert Jones assisting.

Die ansteckenden Krankheiten ihre Epidemiologie Bekämpfung und spezifische Therapie Herausgegeben von Prof. Dr. med. et phil. Max Gundel Institut Robert Koch Berlin. Unter Mitarbeit von E. Boecker et al. Paper Price 35 marks Pp 641 with 25 illustrations Leipzig Georg Thieme 1935

This book is written by twenty-two German medical scientists who are especially well qualified for their respective tasks by reason of training and function. The main part is devoted to the control and treatment of the individual infectious diseases, which include bacterial spirochetal and protozoan infections as well as the virus diseases of unknown etiology, fungous diseases and the diseases caused by worms. There are also much shorter parts dealing with governmental regulations for communicable diseases, the general principles of infectious pathogenesis and immunity, the production and use of antisera and vaccines, serum disease, the examination of infectious materials and the role of disinfection and sterilization. The purpose of the book is to tell physicians in private as well as official positions what they should know about communicable diseases, their causes, modes of spreading, diagnosis, prevention and treatment in order to fulfil adequately their responsibilities in such matters. The book meets this purpose well. It gives in concise and well balanced form the best scientific and practical knowledge about communicable diseases of the day.

A Text Book on Pharmacognosy By George Edward Trease B. Pharm. Ph.C. Lecturer on Pharmacognosy in the University College of Nottingham. With contributions by H. H. Barber B.Sc. Ph.D. F.I.C. W. H. Heading B.Sc. Ph.C. A.I.C. H. M. Hirst M.P.S. and A. H. Ware Ph.C. Cloth Price \$6 Pp 653 with 187 illustrations Baltimore William Wood & Company 1935

This book aims to cover the requirements for examinations in pharmacognosy in most English speaking countries. It is of interest especially to pharmacists. It has, however, a cultural atmosphere, which related sciences and medicine must admire. In part I, chapter I gives a short historical introduction and shows the importance pharmacognosy has had in world affairs. Chapter II gives some interesting and instructive facts about the cultivation of medicinal plants in England. Chapter III discusses enzymes succinctly. Chapter IV gives a brief outline of vitamins. In chapter V the subject of hormones is equally brief but down to date. Chapter VII deals with the process of collection, drying and storage of plants. Chapter VIII discusses historically London commerce in crude drugs. Chapter

IX deals with plant principles and their extraction Chapter X gives tests for plant phenols as an aid in drug identification, and chapter XI is concerned with the microscope as an aid to drug identification Chapter XII deals with ultraviolet rays as an aid to drug identification Part II (chapters XIII-XX) deals with drugs of vegetable origin and comprises the greater part of the book Classification and its variations by different authorities is discussed Part III deals with drugs of animal origin and includes hirudo, cantharis, mei, cerae, coccus, lacca, os sepiae, oleum morrhuae, cetaceum, adeps sebum, adeps lanae, gelatinum, moschus and extractum felis bovis A glossary of Latin terms is appended While the book is primarily intended for students of pharmacy, it is of a sufficiently scholarly nature to be valuable to those medical men who wish a brief, readable, accurate book on pharmacognosy Such subjects, however, as enzymes vitamins, hormones, ergot and digitalis are treated in too brief a fashion to be of value to those wishing more than factual statements Practically no references to original work are given

Handbuch der experimentellen Pharmakologie Begründet von A. Heffter Ergänzungswerk Herausgegeben von W. Heubner Professor der Pharmakologie an der Universität Berlin und J. Schüller Professor der Pharmakologie an der Universität Köln Band I. Enthaltend Beiträge von H. H. Meyer und L. Lendle Paper Price 32 marks Pp 265 with 37 illustrations Berlin Julius Springer 1935

The editors plan to publish a new series of volumes on experimental pharmacology, supplementing Heffter's handbuch This, the first supplemental volume, is concerned with the digitalis bodies and related glucosides and is written by Lendle of Leipzig A ten page introduction on the nature and objects of experimental pharmacology is written by the dean of European pharmacologists Hans Horst Meyer of Vienna Part of Heffter's first volume appeared in 1919, and the final volume has not yet appeared The chapter on digitalis, written by Straub of Munich, contained the literature up to 1914, but it was not published until later From the subsequent twenty years, Lendle quotes about 1400 authors and perhaps 3000 or more articles This massive, nebulous, cumulus cloud of research fog must be condensed and refined before it is of much value to the ordinary doctor and also to many who are not ordinary This refining process, however, is not the task of the immediate editor His work is to collect and present the data in a form useful to other research workers, who will do the refining The preparation of the work has required unlimited patience and perseverance, and it is well done It is a source book a work not only pro patria but pro mundo The work includes every phase of the digitalis problem, including the most recent chemistry, standardization, the action of the related glucosides, conditions modifying its activity, actions on the various tissues or extracardial actions, absorption, fate and elimination One may find how digitalis action is influenced by acetylcholine histamine the barometer fever or high altitude, and the effective doses for various animals The volume is primarily of interest to research workers who must have it, but physicians interested in the basic facts of pharmacology and the source of therapeutic procedures in the use of digitalis will find it a mine of information

Nutrition By Margaret S. Chaney Ph.D. Professor of Home Economics Connecticut College and Margaret Ahlborn M.S. Professor of Food Economics and Nutrition Kansas State College of Agriculture and Applied Science Cloth. Price \$3 Pp 436 with 55 illustrations Boston Houghton Mifflin Company 1934

The usefulness of this excellent textbook on nutrition, planned for home economics courses in colleges and normal schools, extends to all interested in the relation of nutrition to health, from which point of view the book has been developed The subject matter is interestingly and simply presented requiring only a minimum background of organic chemistry and physiology for thorough understanding The interest of the reader is sustained and stimulated throughout The role of each principal food essential in good nutrition is successively discussed in separate chapters There are chapters devoted to food energy, basal metabolism protein minerals vitamins, hygiene of the digestive tract nutrition during the reproductive period optimal nutrition during infancy and childhood and the selection of an adequate dietary Suitable references are listed at the end of each chapter The appendix including the more important

useful data, is particularly comprehensive and practical The methods of animal experimentation applicable to vitamin testing are outlined The book splendidly prepares the adult to care intelligently for his own nutritional needs as well as those of the entire family group A better understanding of nutrition and a better state of nutrition should result from the publication of this exceptional work

Thrombose und Embolie Kritische Betrachtungen und Untersuchungen zur Frage der Thrombose und Embolie unter besonderer Berücksichtigung der sogenannten "bilden Fernthrombose" und tödlichen Lungenembolie. Von Dr. med. Rudolf Gelseandörfer Assistentarzt der Chir. Univ. Klinik Breslau Mit einem Geleitwort von Prof. Dr. R. Stüch. Boards Price 9 marks Pp 159 Leipzig Johann Ambrosius Barth 1935

This monograph embodies the results of a critical consideration of the thrombosis embolism question as discussed in recent German literature, more particularly progressive bland or aseptic thrombosis and pulmonary embolism The author discusses all aspects of the supposed increase in fatal pulmonary embolism some years after the war When all the factors concerned are considered and analyzed, especially the ages of the patients in the various statistics of thrombosis and embolism, the conclusion seems warranted that at the most the alleged increase is small indeed, if there has been any at all There are chapters on the relations between the blood current, the blood chemistry and the endothelium in thrombosis, on the diagnosis and treatment of thrombosis, and of massive pulmonary embolism as well as their prophylaxis The monograph will interest those who wish to follow the growth of a better understanding of the problems of thrombosis and embolism

Diseases of the Skin By Richard L. Sutton M.D. Sc.D. LL.D. Professor of Dermatology University of Kansas School of Medicine and Richard L. Sutton Jr. A.M. M.D. L.R.C.P. Assistant in Dermatology University of Kansas School of Medicine Ninth edition Cloth Price \$12.50 Pp 1433 with 1,321 illustrations St. Louis C.V. Mosby Company 1935

In this edition Sutton, with the aid of his son, has followed the general plan of the previous editions The excellence of the work is revealed by a careful examination of its contents Twenty-eight cutaneous entities not included in the previous editions are described Although many of the descriptions of conditions in the text are brief, the information is ample to give a good idea of the basic points necessary to identify the entity and there is a profuse number of excellent reproductions of photographs to aid in the visualization of the disease There are also numerous excellent photomicrographs to amplify many of the histologic descriptions presented Each description is followed by a list of references and the authors have made a sincere effort to make this list complete, thus making it possible for one desiring more detailed information on a particular condition to have pertinent references at hand

Kønshormonerne Betydning for fysiologiske og patologiske Tilstande i Corpus Mammæ En klinisk og eksperimentel Studie Af E. Dahl Iversen Dr. med. To Forelæsninger udarbejdet til en Konkurrence om et Professorat i Kirurgi ved Københavns Universitet. [Significance of sex hormones for physiology and pathology of breast Clinical and experimental study] Paper Pp 55 with 22 illustrations Copenhagen J. Jørgensen & Co 1934

Here are two lectures prepared for and delivered in a competition for a professorship in surgery at the University of Copenhagen The sex hormones of the hypophysis and ovary are discussed competently in relation to physiologic and pathologic conditions of the mammary gland Earlier work and the author's own experiments on the action of the ovarian hormone on the mamma are described and the resulting changes in animals compared with conditions in so called chronic cystic human mastitis Whether cancer develops more frequently in women with cystic mastitis than under other conditions cannot be answered on the basis of the information obtained, according to the author

Mouth Infection Clinical Histories By Oliver T. Osborne M.A. M.D. F.A.C.P. Cloth Price \$2 Pp 119 New Haven Conn. The Author 1934

Dr. Osborne has been for a good many years convinced that infections of the teeth and gums are of the greatest importance in relationship to various general conditions affecting the human body This is essentially the same conception as that of focal infection. The present book is planned to emphasize his point

of view and to support it by the presentation of a considerable number of case reports. These are presented in two or three lines each and, frankly, because of this simple presentation are not especially convincing. The second portion of the book concerns tonsillar infection, and the third portion Vincent's infection or trench mouth. There are also brief essays on the adenoids, the tongue and the tooth brush. The volume is suggestive and exceedingly well written. Even discounting its overemphasis on the mouth as a source of general danger to the body, its value cannot be gainsaid.

Medicolegal

Malpractice Sponge Left in Pelvic Cavity—The physician-defendant operated to remove a tumor from the plaintiff's pelvic cavity. He walled off the bowels by "retractor pads" on which were sewed pieces of tape about 14 inches long, the ends of which hung outside the patient's body, attached to surgical instruments. To arrest capillary hemorrhage in the operative area he "wadded up" other gauze pads and placed them against the bleeding tissue, but he "wadded up" with the gauze the tape attached to the pads or sponges so used, so that the ends did not protrude outside the body. The patient had been on the operating table about one hour and thirty-five minutes when the anesthetist reported that the patient was showing signs of shock and advised that the operation be completed as soon as possible. The peritoneum had already been completely sutured when a nurse reported that one sponge was missing. Immediately the peritoneal sutures were removed and for about five minutes a search was made for the missing sponge, but it could not be found. About ten weeks after the operation the patient passed through her rectum a sponge similar to those used to arrest bleeding. She sued her physician, and a judgment was rendered in her favor. Her physician then appealed to the district court of appeals, fourth district, California.

The appellate court called attention to the fact that, in the absence of an express contract, a physician does not warrant a cure. He represents only that he has the ordinary training and skill possessed by physicians practicing in the same or similar communities and that he will employ such training, skill and care in the treatment of his patient. A physician who holds himself out as a specialist in the treatment of a certain organ, injury or disease is bound to bring to the aid of a patient employing him that degree of skill and knowledge which is ordinarily possessed by those who devote special study and attention to that particular organ, injury or disease in the same general locality, having regard to the state of scientific knowledge at the time. The evidence, said the appellate court, indicates that the physician defendant was a specialist in abdominal operations.

On behalf of the patient-plaintiff, a physician testified that good practice in the locality where the operation was done required a physician to retain manual control of sponges used to arrest bleeding in operations such as the one here involved or else to bring the end of a tape attached to each sponge to the outside of the patient's body and to have it attached there to a metal ring or a surgical instrument. It is admitted, said the court, that the defendant did not use this method in operating; that of itself is sufficient to support the trial court's finding of negligence. It is evidence that the physician-defendant did not use the care and skill used by physicians performing similar operations in the same or similar communities. But the number of witnesses who testified for the defendant exceeded the number who testified for the plaintiff and the defendant insisted that the evidence as to the correctness of the methods employed by him so greatly preponderated in his favor as to overcome completely the evidence offered on this question on behalf of the plaintiff. The district court of appeals pointed out, however, that a case cannot be decided in an appellate court on the numerical strength of witnesses. Conflicts of evidence are settled in the trial court and a judgment cannot be reversed where there is competent and material evidence in the record to support it.

The appellate court was not impressed by a suggestion made on behalf of the plaintiff that her evidence disclosed numerous

things that could have been done, but that were not done, to relieve the operative shock and to permit a prolongation of the search for the lost sponge until it was found and removed. The physician-defendant was confronted with a great emergency. His patient was in a very serious condition, her life was in danger, and the element of time was most important. Under such circumstances, the physician had to rely on his own skill, knowledge and best judgment in choosing the course to pursue. Nevertheless, the judgment of the trial court in favor of the patient-plaintiff was supported by the evidence concerning the manner in which the physician-defendant used sponges to arrest bleeding, and the judgment was accordingly affirmed.—*McLeman v Holder (Calif.)*, 36 P (2d) 448.

Evidence Roentgenograms as Public Records, Admissibility—In September 1929 the defendant insurance company issued a policy of insurance on the life of Mattie E. Suggs. She died, April 13, 1930, in the state tuberculosis sanatorium at Clinton, Okla. The insurer denied liability, and her beneficiary brought suit. From a judgment for the beneficiary, the insurer appealed to the Supreme Court of Oklahoma.

Because of the Oklahoma statute relating to privileged communications, the trial court refused to permit a physician who had attended the insured to testify that he had treated her for tuberculosis in July, prior to her application for insurance. In that application she had denied that she had ever had tuberculosis and asserted that she had received no medical attention within the five years preceding it. The refusal of the trial court to admit this testimony, said the Supreme Court, constituted reversible error. The insured, in her application for insurance, expressly waived all provisions of law prohibiting a physician from disclosing in court information acquired in examining or attending his patient. This waiver was binding on the beneficiary of the deceased, the plaintiff in this case, and the testimony of this physician should have been admitted.

In the course of the trial, the insurance company offered in evidence the record and history of the insured as made and kept by the nursing bureau of the Oklahoma City health department. The record included roentgenograms of the lungs, made before the deceased applied for insurance. To prove its authenticity the superintendent of the nursing bureau testified that it was a public record. She testified, however, that the record was not made by her but by other nurses in the department. The insurance company contended that the record, as a public record, was admissible. The trial court, however, refused to admit it. This refusal, the Supreme Court held, was proper. The preliminary facts necessary to be shown in order to admit roentgenograms in evidence had already been stated by the court, the court said, in *Barllesville Zinc Co v Fisher*, 60 Okla 139, 159 P 476.

The admission of x-ray plates in evidence rests fundamentally on the theory that they are the pictorial communication of a qualified witness who uses this method of conveying to the jury a reproduction of the object of which he is testifying, this being true the x-ray plates must be made a part of some qualified witness testimony and the witness should qualify himself by showing that the process is known to himself to give correct representations and that it is a true representation of such object.

No such showing was made with respect to the roentgenograms proffered in this case.

For the reasons stated the judgment of the trial court in favor of the beneficiary was reversed and the cause was remanded for a new trial.—*National Life & Accident Ins Co v Roberson (Okla.)*, 36 P (2d) 479.

Society Proceedings

COMING MEETINGS

National Medical Association New Orleans Aug 11-17 Dr C A Landon 431 Green Street South Brownsville, Pennsylvania Secretary
Northern Minnesota Medical Association Duluth Aug 12-13 Dr Oscar O Larsen Detroit Lakes Secretary
North Pacific Pediatric Society Seattle August 9-10 Dr F H Douglass 509 Olive Street Seattle Secretary
Washington State Medical Association Everett Aug 12-14 Dr Curtis H Thomson 1305 Fourth Avenue Seattle Secretary
Wyoming State Medical Society Lander Aug 12-13 Dr Earl Whedon 50 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

4: 373-408 (May) 1935

- Diagnosis, Treatment and Prevention of Tuberculosis J A Myers, Minneapolis—p 373
Surgical Treatment of Duodenal Ulcer with Especial Reference to Acute Perforation J M Donald Birmingham—p 384
Simultaneous Infection with Typhoid and Malaria C Thorington, Montgomery—p 389
Heart Disease R O Russell Birmingham—p 390
The Doctor in Some of His Relations to Life Insurance C Lull Birmingham—p 392

American Journal of Cancer, New York

24: 1 254 (May) 1935

- *Histogenesis of Lymphosarcomatosis J C Ehrlich and I E Gerber, New York—p 1
Neoplasm Studies I Cells of Melanoma in Tissue Culture C G Grand R Chambers and Gladys Cameron New York—p 36
Primary Carcinoma of Liver with Hypoglycemia D N Beers and J J Morton, Rochester N Y—p 51
Pulmonary Asbestosis III Carcinoma of Lung in Asbestosilicosis A M Lynch and W A Smith Charleston S C—p 56
Lymphosarcoma with Ovarian Involvement in a Child R B Wright Baltimore—p 65
Bilateral Carcinoma of the Breast Report of Two Cases O N Meland, Los Angeles—p 69
Primary Carcinoma of Jejunum Case Report F Proescher and J Muir San Jose, Calif—p 72
Primary Carcinoma of Adrenal Report of Case S W Donaldson and S C Howard Ann Arbor Mich—p 75
Carcinoma of Pancreas in Sows Pine Snake Pituophis Sayi H L Ratcliffe, Philadelphia—p 78
Effect of Methylene Blue on Oxygen Consumption and Respiratory Quotient of Normal and Tumor Tissue J J Jares, Rochester, N Y—p 80
Tumors of the Jaws C F Geschickter Baltimore—p 90

Histogenesis of Lymphosarcomatosis—Ehrlich and Gerber found that studies of material from eighteen cases of lymphosarcomatosis revealed varied histologic pictures, which could be grouped into three main types on the basis of the morphologic characteristics of the predominating cell type in each case. There were found, first, cases in which large, pale cells in reticular arrangement predominated. Then there occurred a group composed of mixed cells, partly reticular, as in the former group and partly free. The morphology of these free cells resembled that of immature large lymphocytic cells. Finally, cases were encountered in which the lymphosarcomatous tissues were composed predominantly of free cells, either of the immature or mature lymphocytic type. These three types were termed, for descriptive purposes, reticular, intermediate and lymphocytic, respectively. These types were found to correspond in their essential morphologic features to the immature, intermediate and mature cells resulting from normal differentiation of the cytoplasmic reticulum along lymphopoietic lines. This similarity indicated that the histogenesis of this disease consists of progressive lymphopoietic differentiation of the cytoplasmic reticulum. This process is confined chiefly to the cytoplasmic reticulum of lymphatic tissues. Lymphopoiesis, as it occurs in lymphosarcomatosis, manifests blastomatous characteristics. These are indicated by the unrestricted growth of the tumor masses and the atypism of the cells. Lymphosarcomatosis arises in a region of lymph nodes, from which it extends to other regions of lymphatic tissue and other organs in progressive fashion. This spread occurs by direct local extension and by metastasis by way of the lymphatics and the blood stream. In addition, there occurs autochthonous formation of lymphosarcomatous foci in many centers of lymphatic tissue. This autochthonous origin is evi-

dent in partially involved nodes, in which intermediate stages in the formation of these foci from local reticulum cells may be observed, and in the diffuse involvement of the malpighian follicles of the spleen in two cases. As a result of these modes of spread, many cases of lymphosarcomatosis show, in their late stages, a widespread involvement of the lymphatic tissues (with the exception of the spleen) and of other organs. The origin of lymphosarcomatosis simultaneously in various lymph nodes in one region, the autochthonous mode of spread and the tendency toward restriction to one type of tissue separate this disease from the true sarcomas. Lymphosarcomatosis bears certain resemblances to lymphadenosis, such as identical histogenesis, restriction to lymphatic tissue and systematization. Nevertheless, the focal origin of the former, the more aggressive character of its growth, the focal involvement of lymph nodes and the limited systematization serve to characterize lymphosarcomatosis as a blastomatous disease of lymphatic tissue, in contrast to the hyperplastic character of lymphadenosis. From an oncologic point of view, lymphosarcomatosis may be classified as a blastomatous disease in the group of hemoblastoses.

American Journal of Public Health, New York

25: 531-680 (May) 1935

- Reaction of Familial Contacts to Scarlet Fever Infection J E Gordon G F Badger G B Darling and Sarah S Schooten Detroit—p 531
Specific Expenditures and Personnel of Official Health Agencies in Certain Cities J W Mountain Washington D C—p 545
Trend in Public Health Nursing Pearl McIver Washington, D C—p 551
Laboratory Examinations of Milk Handlers E K Borman D Evelyn West and F L Mickle Hartford Conn—p 557
Recent Studies on Psittacosis K F Meyer, B Eddie and I M Stevens San Francisco—p 571
*Studies of Correlated Human and Bovine Brucelliasis, Statistical and Serologic R V Stone and E Bogen Los Angeles—p 580
Effectiveness of Radio in Health Education C E Turner Vivian V Drenckhahn and Maria W Bates Cambridge, Mass—p 589
Use of Convalescent Measles Serum to Control Measles in a Preparatory School J R Gallagher Pottstown Pa—p 595
Sanitation of Mountain Playgrounds with Respect to Contamination of Streams C G Gillespie, Berkeley Calif—p 599
Public Health Education Techniques of Special Experiences Newspapers W F Higby San Francisco—p 605
*Virulence Tests for Typhoid Bacilli and Antibody Relationships in Antityphoid Serums J F Norton and J H Dingle Kalamazoo Mich—p 609
Semiautomatic Bacteriologic Dilution Bottle Filler P S Prickett Evansville Ind—p 618
Use of Toxoid Unprecipitated Toxoid Precipitated and Toxin Antitoxin Flocculi W H Park New York—p 620
Diphtheria Studies II Use of Intradermal Injections of Toxin Toxoid Mixtures in Diphtheria Immunization W E Bunnay, Lansing Mich—p 623

Studies of Correlated Human and Bovine Brucelliasis—Stone and Bogen show that the ingestion of raw milk obtained from cows infected with contagious abortion and showing positive tests for agglutinins to *Brucella abortus* in their blood is responsible for the development of similar agglutinins in the blood of some consumers. This has been found to occur in about 8 per cent of those continuously exposed to the ingestion of heavily infected raw milk but varies with the duration of exposure, the amount of infection in the herd and the amount of the raw milk so consumed. No particular sex or age susceptibility to this infection has been found. No effect of tuberculosis or other disease on the development of such agglutinins is apparent, except insofar as they affect the amount of exposure to the infected milk. The development of such agglutinins has not been found to exercise any marked effect on the course of the tuberculosis. More than half of the patients developing agglutinins to *Brucella abortus* give no other manifestation of the infection and, therefore, come well within the groups described as subclinical asymptomatic or purely serologic brucelliasis. About one eleventh of them manifest clinical symptoms warranting a diagnosis of undulant fever, and an additional group present other symptoms that might be attributed to the same cause. The disease manifestations are, however, comparatively mild, conforming, therefore, to the bovine type of infection, as described by Theobald Smith, rather than to the more virulent types that are frequently described from caprine or porcine sources. It constitutes, however, a definite disease entity and cannot be disregarded.

Virulence Tests for Typhoid Bacilli—Norton and Dingle place particular emphasis on the measurement of the protective action of the antiserums in an attempt to determine whether there is a correlation of such activity with some known and easily determined property of the antiserums and whether this property may be correlated with antigenic components of the organisms being studied. Methods for determination of virulence of typhoid bacilli and for measurement of protective action of antityphoid serums are presented, together with preliminary data obtained by these methods. Intracerebral injection into mice is recommended for measurement of the relative virulence of strains of the typhoid bacillus. This method of injection has given more satisfactory results than the intraperitoneal route. Intracerebral injection of organisms combined with intraperitoneal injection of antiserums is suggested as a method for measuring the protective value of these serums against typhoid bacilli. The data so far obtained do not justify definite conclusions but serve to indicate the feasibility of the technique and a possible correlation between virulence, H and O agglutinins and protective activity of the antityphoid serums.

American Review of Tuberculosis, New York

31: 499 600 (May) 1935

- Modern Concepts on Collapse Therapy of Tuberculous Pulmonary Cavities B P Potter Secaucus N J—p 499
- Artificial Pneumothorax in Treatment of Progressive Minimal Pulmonary Tuberculosis J A Myers and Ida Levine Minneapolis—p 518
- Decomposition of Tuberculoprotein Starch and Gelatin by Dry Grinding C H Boissevain Colorado Springs Colo—p 542
- *Comparison of Antigenic Properties of Defatted Tubercle Bacilli and Their Derived Proteins C H Boissevain Colorado Springs Colo—p 547
- *Intracutaneous (Mantoux) Tuberculin Reaction Comparative Study of Positive and Negative Reactors M Paretzky Los Angeles—p 553
- Local Skin Reactions in Measles and Scarlet Fever in Relation to Intracutaneous Tuberculin Reaction J D Pulcher Cleveland—p 568
- Tuberculosis Among University Women Ruby L Cunningham, Berkeley Calif—p 576
- Administrative Problems in the Case Finding of Tuberculosis Routine Tuberculin Testing of School Children with X Rays of Positive Reactors Ethel D Owen Fresno Calif—p 584
- How to Determine the Emphasis of a Community Tuberculosis Program. B Marquette Cincinnati—p 591

Antigenic Properties of Defatted Tubercle Bacilli—Boissevain tested the activity of decomposition products of the tubercle bacillus in producing hypersensitiveness in guinea-pigs to find the exact stage at which this activity disappears. Varying quantities of all the antigens examined were injected into a series of guinea-pigs to determine the minimal amount necessary to cause the appearance of hypersensitiveness to tuberculin. After three weeks the guinea-pigs were tested with different dilutions of water-soluble tubercle protein to determine the degree of hypersensitiveness that had been established. It was found that water-soluble protein obtained from ground bacilli, from hydrolyzed bacilli or from filtered culture mediums, all have the same tuberculin activity. Doses of from 1 to 40 mg of defatted tubercle bacilli make guinea-pigs hypersensitive to 0.1 cc. of a 0.01 per cent solution of tuberculoprotein. The same doses of the insoluble residue obtained by grinding make guinea-pigs hypersensitive to 0.1 cc. of a 1 per cent solution. It was not possible to make guinea-pigs hypersensitive to a solution of 1 per cent tuberculoprotein by the injection of from 10 to 100 mg of any water-soluble or alkali-soluble protein or peptone derived from the tubercle bacillus.

Intracutaneous (Mantoux) Tuberculin Reaction.—Paretzky found that a comparison of numerically almost equal groups of positive and negative tuberculin reactors who belonged to the same families showed that both diagnosis and prognosis were considerably more unfavorable for the negative group. The "dosage" of the infection and the length of exposure were found to be factors of great importance which had influenced the developments among the negative reactors who later showed evidences of tuberculous disease. The negative reactors who remained nontuberculous were either removed from the source of the infection or had acquired a positive tuberculin reaction. In accordance with these observations the author practices in his work, as a prophylactic measure, early interruption of exposure as much as possible, in all cases (with all kinds of con-

tacts, positive and negative) and especially in cases of massive infection. Special attention is paid to negative reactors if for some reason they remain exposed to infection, they are frequently reexamined and are otherwise closely watched.

Annals of Surgery, Philadelphia

101: 1139 1298 (May) 1935

- Malignancy of Gallbladder J F Erdmann New York—p 1139
- Cystic Disease of Breast P Klingenstein New York—p 1144
- Brachial Plexus Block Anesthesia T B Rhone, Orange Calif—p 1153
- *Lugol's Solution in Acute Secondary Parotitis D J Leithauser and M O Cantor Detroit—p 1171
- Treatment of Salivary Fistula by Irradiation U V Portmann Cleveland—p 1175
- Hyperthyroidism in the Aged H M Clute and N W Swinton Boston—p 1181
- Malignant Neoplasm of Thyroid T A Shallow, W T Lemmon and E Saleeby Philadelphia—p 1190
- End Results of Thyroid Surgery C H Frazier and J Johnson Philadelphia—p 1195
- *Operability of Carcinoma of the Stomach V C Hunt Los Angeles—p 1200
- *Sarcoma of the Stomach Report of Nine Cases G T Pack and G McNeer New York—p 1206
- Primary Perforated Jejunal Ulcer B C Smith, New York—p 1225
- Acute Intestinal Obstruction F H Amendola New York—p 1250
- Diascasic Perforation of Normal Cecum Resulting from Obstruction of Colon D V Saelzer and G K Rhodes San Francisco—p 1257
- Herniorrhaphy Using a Living Fascial Flap R P Wadhams and V Carabba New York—p 1264
- Appendix Found as Contents of Femoral Hernia H K. Shawan and R Altman Detroit—p 1270

Compound Solution of Iodine in Acute Parotitis—Leithauser and Cantor administered compound solution of iodine orally in ten cases of acute secondary parotitis. The drug is well tolerated and may be given in large and repeated doses for days. In the more serious cases compound solution of iodine was also administered by hypodermoclysis in saline solution. Three cases followed spinal anesthesia, two followed ether, two followed gas, and one followed a local anesthetic. The fact that three cases followed spinal and one local anesthesia tends to disprove the contention that pressure over Stensen's duct is responsible for this complication. In every case in which a culture was made from Stensen's duct, either a *Staphylococcus aureus* or *albus* was recovered, except one which was a *diplococcus*. One case was bilateral, *Staphylococcus aureus* was recovered from the left Stensen's duct and *Staphylococcus albus* from the right. There were no signs or symptoms of iodism in any of the cases treated. Two cases went to abscess formation. There were no deaths.

Operability of Carcinoma of Stomach—Hunt states that, even though the diagnosis of carcinoma of the stomach has reached a high degree of accuracy with roentgen examination, the operability of malignant lesions remains very low. In the author's 149 patients operated on during the last ten years, the operability in terms of resection was 36.2 per cent of the patients explored. The operability has varied but slightly. The operability in terms of the curative procedure of resection or partial gastrectomy in patients with cancer of the stomach has varied from 48 to 33 per cent. Operability in terms of resection has in recent years increased materially in the hands of those particularly interested in the surgical treatment of carcinoma of the stomach. The employment of methods in recent years for the rehabilitation of patients with carcinoma of the stomach previous to surgical exploration has contributed to reduction of the risk of gastric resection. Repeated gastric lavage for gastric retention, the intensive administration of dextrose and of physiologic solution of sodium chloride to combat dehydration and restore the normal balance in the chemistry of the blood and the preoperative treatment of secondary anemia by blood transfusion are most important in the improvement of the general condition of the patient before operation and in the reduction of the risk of surgical procedure. Partial gastrectomy for malignant disease can be accomplished within a mortality rate of 10 per cent if not extended beyond what may reasonably be accepted as operable lesions. Total removal of the stomach with anastomosis has been successfully accomplished in a number of instances. The mortality rate of the procedure will of necessity always be high, but the risk at times may be justifiable. Total removal of the stomach for cancer is justified only in those cases in which the stomach

can be sufficiently mobilized to provide access to the esophagus so that an accurate anastomosis can be made between the esophagus and the jejunum. Palliative surgical procedures are seldom warranted when clinical manifestations of metastasis or inoperability exist. On exploration the determination of inoperability should preclude palliative operations unless the reasonably anticipated palliation justifies the risk. Prognosis following gastric resection depends on whether or not the resection has been sufficiently wide to include not only the primary lesion but any and all involved regional lymph nodes and on whether undetectable metastatic lesions are present elsewhere at the time of operation. Only through investigation of the significance of digestive symptoms in the adult patient by competent roentgen examination may the future operability of carcinoma of the stomach be increased. An opportunity exists to increase the curability of this disease, and it is probable that this will come about through its earlier recognition and not through extension of operability through higher gastric resection or total gastrectomy. There is a justifiable mortality for gastric resection for malignant disease which will vary with the individual surgeon, but as a general working rule this should seldom exceed the percentage prospect of cure.

Sarcoma of the Stomach—Pack and McNeer report nine cases of sarcoma of the stomach, consisting of four cases of myosarcoma, three of primary gastric lymphosarcoma and two of generalized lymphosarcomatosis with secondary involvement of the stomach. Sarcomas comprise 1 per cent of all gastric tumors. The sexes are equally involved. The average age of the patients is 46 years. Some of the tumors are symptomless. The greater number of patients present an upper abdominal tumor without definite gastric distress. Obstructive symptoms are infrequent. Pain occurs only in the presence of ulceration of the mucosa. The average duration of symptoms is nine and a half months. Sarcomas of the stomach are difficult to distinguish from carcinomas by roentgen studies, although horizontal filling defects and the persistence of gastric peristalsis in the presence of a definite lesion are suggestive. Partial gastrectomy is the procedure of choice for the localized tumors and is especially successful in exogastric sarcomas. The gastric lymphosarcomas are extremely radiosensitive and respond favorably to carefully planned radiation therapy.

Archives of Pathology, Chicago

19: 611-768 (May) 1935

- *Endocardial Tuberculosis. R D Baker Durham N C—p 611
Renal Changes Following Biliary Obstruction Decompression and Operation on Biliary Tract. M M Lieber and H L Stewart, Philadelphia—p 636
*Histologic Studies on Spleen in Cases of Leukemia. R H Jaffe Chicago—p 647
Vital Staining of Microglia. L S King, Boston—p 656
Relation of Allergy and Lesions in Animals Vaccinated with BCG. B J Clawson Minneapolis—p 673
Absence of Chemotaxis in Lymphocytes. H M Dixon and M McCutcheon Philadelphia—p 679

Endocardial Tuberculosis—Baker states that endocardial tuberculosis is most frequently encountered at necropsy as a part of generalized miliary or disseminated tuberculosis. Scattered tubercles ranging from microscopic size to a diameter of 3 or 4 mm may occur in any part of the endocardium including the valves. They probably arise by implantation through the coronary arteries and directly from the blood of the heart. Rarely, they may be polypoid or pedunculated. Endocardial tuberculosis may also develop from the extension inward of pericardial and myocardial caseous masses, which may ulcerate and produce generalized tuberculosis. With staining for elastic tissue it can be shown that a myocardial tuberculous process bulging into the cavity of the heart but apparently covered with a smooth endocardial surface is in some cases really invading the endocardium. Tuberculous endocarditis as a diffuse process, somewhat analogous to rheumatic and pyogenic endocarditis, has no especial affinity for the line of closure of the valves and does not produce thrombotic vegetations. Endocardial tuberculosis may interfere with cardiac function in the rare instances in which caseous nodules involve the valves. Sclerosis of the endocardium and healed fibrous or calcified valvular lesions noted at necropsy were not shown to be due to the toxic action of a tuberculous process elsewhere in the body.

Histologic Studies on Spleen in Leukemia—Jaffe observed that in cases of leukemia the trabeculae of the spleen and the inner layer of the capsule are often involved by the leukemic process. In the larger trabeculae the leukemic tissue develops underneath the endothelium of the veins and, less frequently, in the adventitia of the arteries. In the smaller trabeculae the peripheral portions are gradually incorporated into the pulp, and nests of leukemic cells appear also in the center of the trabeculae. The cells in the center seem to originate locally from the fibrocytes. The changes have been observed in cases of acute stem cell leukemia, acute, subacute and chronic myelosis, acute and chronic lymphadenosis, monocytic leukemia and giant cell leukemia.

Arch of Physical Therapy, X-Ray, Radium, Chicago

16 257-320 (May) 1935

- Radiotherapy Combined with Diathermy and Galvanization in Infantile Paralysis (Bordier Method). H Bordier, Lyon, France—p 263
Thermal Changes Produced in Tissues by Local Applications of Radiotherapy. Carol B Pratt and C Sheard Rochester, Minn—p 268
Penetrative and Selective Heat Effects of Short and Ultrashort Waves. Experimental Study with Unicellular Organisms and with Electrolytes. C A Gale New York—p 271
Short Wave Therapy. W J Turrell Oxford, England—p 278
Prognosis in Cancer, with Especial Reference to Visible Neoplasms. E N Kime Indianapolis—p 282
Roentgen and Radium Therapy in Thyrotoxicosis. J T Stevens New York and Montclair, N J—p 287
Underwater Therapy in Arthritis. J D Currence New York—p 291
Indications for Hydrokinesotherapy. Underwater Therapeutic Exercise. A B Olsen, Battle Creek Mich—p 295

Archives of Surgery, Chicago

30 731-910 (May) 1935

- Cancer of the Cheek (Buccal Mucosa). Study of Ninety Nine Cases with Results of Treatment at the End of Five Years. H E Martin, New York, and O H Pfueger San Francisco—p 731
*Osteogenesis. Experimental Study. J D Bisgard Omaha—p 748
Fabella (Sesamoid in Lateral Head of Gastrocnemius). C J Sutor M M Pomeranz and S M Simon New York—p 777
*Epilepsy Secondary to Head Injury. M A Glaser and F P Shafer, Los Angeles—p 783
Injuries to the Crucial Ligaments. H Milch New York—p 805
Lymphogranuloma Inguinale. Its Relation to Stricture of the Rectum. W Rainey and W H Cole, St Louis—p 820
Combined and Separate Effects of Bile, Pancreatic Secretion and Trauma in Experimental Peptic Ulcer. A M Graves San Antonio, Texas—p 833
*Chronic Ulcerative Colitis with Associated Carcinoma. Progress in Management. J A Barger and C F Dixon Rochester Minn—p 854
Hepatic Function. III. Effect of Cholecystectomy on Hepatic Function. A Cantarow E Gartman and G Ricchini Philadelphia—p 865
Effect of Jejunal Feeding on Gastric Acidity. A A Appell, Toronto—p 875
Effect of Enemas on Intestinal Motility. H E Carlson St Paul and T G Orr Kansas City Mo—p 881
Review of Urologic Surgery. A J Scholl Los Angeles E S Judd Rochester Minn J Verbrugge Antwerp Belgium A B Hepler Seattle R Gutierrez New York, and V J O'Connor Chicago—p 884

Osteogenesis—In his experiments on dogs, Bisgard found no new bone in the periosteal beds which had been treated thoroughly with Zenker's solution. Regeneration progressed normally from the periosteum when only the ends of the rib were treated with the solution, but there was definite retardation of absorption of old bone and of proliferation of new bone at the ends of the costal stumps. Transplanted treated costal segments had the appearance of encapsulated foreign bodies. They were entirely necrotic and formed no new bone but were considerably invaded by granulation tissue. In contrast, the untreated transplants, also necrotic, were extensively invaded by granulation tissue, were rapidly undergoing absorption and had given rise to some new bone. Much more new bone was present in the grafts covered with periosteum and on the cortical surfaces, which presumably had a covering of periosteum.

Epilepsy Secondary to Head Injury—A statistical study of cases of head injury reveals a wide discrepancy in the percentage of incidence of generalized epilepsy following trauma of the head. Glaser and Shafer observed that the most likely incidence is in the neighborhood of 2.5 per cent in the cases

of more severe head injury. Epilepsy does not develop after minor, but follows only severe, head injury and generally occurs only in cases in which there has been fracture of the skull. Generalized epilepsy may develop within the first ten days after head injury, provided the injury is of excessive severity. Post-traumatic epilepsy occurs most frequently from six months to two years after the injury, less frequently from two to seven years afterward and infrequently from seven to twenty years afterward. In attributing the epilepsy to trauma, all extraneous factors must be ruled out, particularly a history of convulsions prior to the trauma. Thorough physical and neurologic examinations should be made in order to establish that there is no organic, physical or neurologic disease and no mental condition other than the effects of the trauma causing the convulsions. In cases in which the first convulsion occurs at the time of the injury, a detailed history is necessary to make certain that the injury did not happen because of the onset of an attack of idiopathic epilepsy. Convulsive seizures developing in the first six months after minor head injuries should be considered psychoneurotic in origin, and every effort should be made to rule out such an etiology before the condition is diagnosed as true epilepsy. The authors know of no method of preventing the occurrence of generalized epilepsy following head trauma other than the utilization of the accepted methods of treatment of the original injury. Unless there is some special contraindication, they believe that encephalograms should be made in every case of posttraumatic epilepsy, both because they may have definite therapeutic value and because they may give further information of marked value in outlining advisable steps for treatment, in some cases they have shown evidence that open operation should be performed.

Chronic Ulcerative Colitis with Associated Carcinoma—Bargen and Dixon discuss twenty-five cases of carcinoma and two of lymphosarcoma proved at pathologic examination, in which the tumor developed in the course of severe chronic ulcerative colitis. The ages of the patients at the time of discovery of the carcinoma ranged from 21 to 69 years. Many of the younger patients had presented clinical and pathologic evidence of colitis for years. A sudden change of symptoms with unusual bleeding and local pain in patients who had been under repeated observation was considered to be indicative of the onset of carcinoma. For localized relatively early carcinoma of grades 1 and 2, in cases in which colitis is under fair control, radical extirpation of the diseased colon with the carcinoma offers the patient a good chance of recovery. In two cases polypoid excrescences in the rectum were fulgurated when the colitis was under control, and this treatment alone has been adequate so far, since the small carcinomas have not recurred. This suggests the importance of prompt proctoscopic observation with any change in symptoms and the importance of grading specimens removed for biopsy. In rapidly developing carcinoma among younger patients, it is more likely that the disease will be of the fulminating type and the carcinoma multiple and of a high grade of malignancy. An attempt to resect the growth locally when active or even quiescent colitis is present seems futile. It seems best to resect the entire section of the colon involved by colitis and containing one or more carcinomas. The authors believe that it is more than accidental that their five surviving patients had adequate treatment with specific antibody solution (concentrated serum) or vaccine prepared from the diplostreptococci of chronic ulcerative colitis, or both, prior to any attempted surgical procedure and that in each case the active stage of colitis was under control when surgical intervention was undertaken. Contrasted with this, only seven of the twenty-two patients who died were given serum or vaccine, and only three of them to the point of control of symptoms. In these three cases as healing took place the factor responsible for the healing lost control and the mucosa grew wildly as new hyperplastic tissue.

Florida Medical Association Journal, Jacksonville

21 421-468 (April) 1935

- Tuberculin in Treatment of Arteriosclerosis W. H. Spiers Orlando —p 431
Laryngofissure for Cancer of the Larynx Report of Two Cases. W. Patterson Tampa —p 434
Torsion of the Mesentery D. McEwan Orlando —p 437

Journal of Allergy, St. Louis

6 311-414 (May) 1935

- Clinical and Serologic Study of Relationship of Giant (*Ambrosia trifida*) and Low (*Ambrosia Artemisiifolia*) Ragweed Pollen. R. A. Cooke, A. Stull, S. Hebard and J. H. Barnard New York.—p 311
Studies on Active Substance of Grass Pollen. I. Activation of Small Molecular Weight Active Group Through Colloidal Substances C. E. Benjamins, H. A. E. v. Disboeck and J. L. M. German Groningen Holland —p 335
Skin Exciting Activity of a Timothy Pollen Extract as Measured by Its Content of Three Nitrogen Fractions H. Osgood and R. S. Hubbard, Buffalo —p 349
*Treatment of Ragweed Hay Fever with Ultrafiltered Extract. Preliminary Report W. C. Spain and Florence E. Sammis New York.—p 357
Intradermal Antiserum Tests. Bacterial Specific Response Not Dependent on Serum Sensitization But Often Confused with It. L. Fosbay, Cincinnati —p 360
*Analysis of Allergic Factor in Recurrent Paroxysmal Headaches W. T. Vaughan Richmond, Va.—p 365
Significance of Tobacco Reactions in Allergic Children R. Chobot, New York —p 383
Hypersensitiveness to Insulin. Florence E. Sammis New York.—p 387
Cottonseed Allergy and Gm. H. Stevens, Washington D. C.—p 393
Asthma Produced by Susceptibility to Unusual Allergens. Linseed, Insects Tobacco and Chicory C. Jimenez Diaz and B. S. Coenra, Madrid Spain —p 397
Studies on Relation of Adrenal Glands to Allergic Phenomena. II. Therapeutic Effect of Strychnine Stimulation of Adrenal Medulla in Asthma M. B. Cohen and J. A. Rudolph Cleveland —p 404
New Tourniquet and an Improved Testing Needle H. Markow Brooklyn —p 406

Treatment of Ragweed Hay Fever with Ultrafiltered Extract—Spain and Sammis made an attempt to determine clinically the value of ultrafiltered ragweed extract in the treatment of ragweed hay fever patients. In nineteen ragweed hay fever cases the comparisons, by the intracutaneous test, of the activity of residue and filtrate dilutions with the dilutions of the standard extracts as controls yielded results similar to those previously reported. The residue solutions showed a degree of activity quite comparable with those of the standard dilutions, while the filtrate was active only in its most concentrated or in its slightly diluted (1:5) form. From the results obtained in their series of nineteen cases it would seem that on ultrafiltration of the ragweed pollen extract the immunizing and constitutional producing capacity is retained in the residue fraction. Further study of its use in hay fever is being made.

Allergic Factor in Recurrent Paroxysmal Headaches—Vaughan states that true migraine is often due to food allergy. Upward of 70 per cent of recurrent paroxysmal headaches without organic pathologic conditions are associated with allergy. At least 7 per cent of a homogeneous community were found to have suffered at one time or another from recurrent headaches due to specific food idiosyncrasy. Such headaches appear to be more frequent in allergic persons than in the population at large. Factors that appear to influence results obtained in the treatment of allergic migraine are the period of supervision, the cooperation of the patient, the occurrence of headaches with the catamenia and a proper utilization of the available diagnostic measures (skin test, the food diary and the leukopenic index). The evidence would indicate that with the allergic diagnostic and therapeutic methods now available, properly employed, treatment should be successful in at least 70 per cent of migraine cases.

Journal of Bacteriology, Baltimore

20 437-562 (May) 1935

- Crystal Violet Agar as Differential Medium for Staphylococci G. H. Chapman and C. Berens New York.—p 437
Chitnovorous Bacteria. Preliminary Survey Anne G. Benton Poughkeepsie N. Y.—p 449
Studies on Small Colony Variants of *Staphylococcus aureus* Edith Louise Swingle Chicago —p 467
Investigation of *Bacillus Pasteuri* Group. III. Systematic Relationships of Group T Gibson Edinburgh Scotland —p 491
Morphology of Mycobacteria Janet McCarter and E. G. Hastings, Madison Wis.—p 503
Studies on Cultural Requirements of Bacteria V. *Diphtheria* *Bacillus* J. H. Mandler Boston.—p 515
Decomposition of Organic Matter in Sea Water by Bacteria. I. Bacterial Multiplication in Stored Sea Water S. A. Waksman and Cornelia L. Carey New Brunswick, N. J.—p 531
Id. II. Influence of Addition of Organic Substances on Bacterial Activities S. A. Waksman and Cornelia L. Carey New Brunswick N. J.—p 545

Journal of Clinical Investigation, New York

14: 293-372 (May) 1935

- *Optimal Diet in Promoting Nitrogen Gain in Nephrosis Shih-Hao Liu and Hsien-I Chu Peiping China—p 293
- Effect of Venesection on Arterial, Spinal Fluid and Venous Pressures, with Especial Reference to Failure of Left and Right Heart H F Robertson and F Fetter Philadelphia—p 305
- Micrococcus Tetragenus Infection I Review of Literature Report of Nonfatal Case with Septicemia Meningitis and Arthritis and Bacteriologic Studies H A Reimann Minneapolis—p 311
- Fate of People with Unexplained Gastric Acidity Follow Up Studies A L Bloomfield and W S Pollard, San Francisco—p 321
- *Relation of Upper Respiratory Infections to Rheumatic Fever in Children I. Significance of Hemolytic Streptococci in Pharyngeal Flora During Respiratory Infection May G Wilson, Eugenia Ingerman R O DuBous and B M Spock New York—p 325
- Id. II Antihemolysin Titers in Respiratory Infections and Their Significance in Rheumatic Fever in Children May G Wilson, G W Wheeler and Marguerite M Leask New York—p 333
- Id. III. Seasonal Bacterial Flora of Throat in Rheumatic and Non-rheumatic Children G W Wheeler May G Wilson and Marguerite M Leask, New York—p 345
- Variability of Nonhemoglobin Iron T G Klumpp New Haven Conn—p 351
- *Effect of Protein on Carbohydrate Tolerance of Two Cases Having Combined Diabetes Mellitus and Pernicious Anemia N Jolliffe H Brandaleone and H Most New York—p 357
- Blood Pressure Changes in Normals and in Hypertensives After Intravenous Epinephrine and Histamine W Gordon and G Levitt Chicago—p 367

Diet in Promoting Nitrogen Gain in Nephrosis—In two patients with the nephrotic type of chronic interstitial nephritis, one aged 13 years and the other 35, Shih-Hao Liu and Hsien-I Chu studied the nitrogen balances and plasma proteins in relation to diets. With a moderate protein intake, nitrogen retention could be progressively increased by the addition of calories in the form of carbohydrate and fat. The first patient showed a maximal nitrogen gain at 88 calories per kilogram of body weight and the second patient retained the greatest amount of nitrogen at 62 calories per kilogram of body weight. Further increase in caloric intake resulted in no increases in the nitrogen retained. When these patients were fed the optimal number of calories, raising the protein intake increased the nitrogen retention somewhat. The maximal nitrogen retention was reached when 75 Gm of protein was fed in case 1 and 100 Gm in case 2. These amounts corresponded to 2.5 and 1.8 Gm. per kilogram of body weight and constituted from 12 to 13 per cent of the total calories. Feeding more protein did not increase the positive nitrogen balance. The first patient showed a slightly increasing nitrogen retention as higher percentages of animal protein were fed, while in the second patient the nature of protein made no distinct difference. While it is impractical to feed a purely animal protein diet, a diet with at least 50 per cent of its protein of animal origin would seem to ensure the best nitrogen gain. Changes in plasma proteins were slow, even in the presence of marked nitrogen retention. The proteins remained at about the same level in the first case. In the second case they slowly increased during the early part of the study. In the second patient, in whom albuminuria decreased as the study progressed, there was no significant change in the albuminuria in relation to the level of protein intake.

Infections of the Upper Respiratory Tract and Rheumatic Fever—Wilson and her associates observed a large group of rheumatic children. Their observations do not support the conception of a specific etiologic relation between respiratory infections and rheumatic fever. The possibility that the rheumatic child is constitutionally vulnerable to both infections is indicated by the frequency of a simultaneous onset of rheumatic activity and respiratory infection (following a common exciting factor). The greater susceptibility of the rheumatic child to respiratory infection compared with that of a nonrheumatic brother or sister is suggested. Their observations tend to minimize the diagnostic significance of hemolytic streptococci in the pharyngeal flora. The specificity of streptococcal respiratory infections based solely on bacteriologic criteria does not appear convincing in view of the observed comparable carrier rate of hemolytic streptococci in the pharyngeal flora of sick and well children. Immunologic studies show a rise in the titer of antistreptolysin following respiratory infections unassociated with hemolytic streptococci in the pharyngeal flora.

The etiology of the rheumatic sequels following scarlet fever is still controversial. During the authors' observations the occurrence of scarlet fever during severe carditis did not appear to influence the course of the latter. Respiratory infections in a rheumatic child seem to bear no more specific etiologic relationship to rheumatic disease than would be attributed to similar episodes occurring in the tuberculous child.

Diabetes Mellitus with Pernicious Anemia—Jolliffe and his co-workers studied two subjects having combined pernicious anemia and diabetes over a hospital period of six and nine months, respectively. One patient entered in a state of severe diabetic ketosis and in a relapse of the anemia, and the other in a relapse of the anemia with many psychotic manifestations. Diabetes developed following treatment for the anemia by parenteral injection of liver extract, iron by mouth, and high caloric and high protein diet over a period of three months. The carbohydrate tolerance of both patients was studied on low and high protein diets, with the following conclusions: 1. High protein diets in the two cases markedly reduced the carbohydrate tolerance. This reduction in tolerance cannot be explained by an increase in calories or by the extra carbohydrate made available from the excess protein. 2. A simultaneous high carbohydrate diet apparently prevented the immediate deleterious effects of the excess protein from becoming apparent. Ultimate results were qualitatively similar to those observed in previous studies when low carbohydrate diets were employed. 3. The loss of carbohydrate tolerance as a result of the high protein diet is not temporary. The tolerance remained impaired in one subject for at least twenty-five days, and in the other for at least six months. 4. Insulin, when given in amounts sufficient to prevent either long continued or severe glycosuria, does not ward off the deleterious effect of excess protein in the diet.

Journal of Nutrition, Philadelphia

6: 533-644 (May 10) 1935

- Blindness in Cattle Associated with Constriction of Optic Nerve and Probably of Nutritional Origin. L A Moore, C F Huffman and C W Duncan East Lansing Mich—p 533
- *Intestinal Stasis in Low Mineral Diets Elizabeth Chant Robertson and M Elizabeth Doyle, Toronto—p 553
- *Comparison of Antirachitic Potency of Cod Liver Oil and Irradiated Ergosterol on Curative and Preventive Basis W C Russell M W Taylor and D E Wilcox, New Brunswick N J—p 569
- Studies on Lactation II. Technique for Studying Lactation in Rats R G Daggs Rochester N Y—p 575
- Id. III. Effect of Various Dietary Principles on Lactation in Rats R G Daggs and R L Tomboulou Rochester N Y—p 581
- Effect of Grape as Compared with Other Fruit Juices on Urinary Acidity and Excretion of Organic Acids Ruth Cowan Clonise, Chicago—p 593
- Experimental Studies on Hypophysis Cerebri IV. Effect of Vitamin E Deficiency in the Female Albino Rat S I. Stein Minneapolis—p 611
- Vitamin E Content of Eggs as Related to the Diet of the Hen and to Hatchability G L Barnum, Washington, D C—p 621
- Leukopenia and Anemia in Monkey Resulting from Vitamin Deficiency P L Day W C Langston and C F Shukers Little Rock, Ark—p 637

Intestinal Stasis in Low Mineral Diets—Robertson and Doyle believe that the mineral poor diet used in their experiments on rats had in all probability a much lower mineral content than even the poorest human dietaries, but it is possible that the long continued consumption of a diet partially deficient in these factors may also lead to intestinal stasis. Constipation is a prevalent malady among civilized peoples. Many of the highly processed foodstuffs which are much favored, such as white flour and sugar are very low in minerals. Approximately 50 per cent of the total calories in an average diet are derived from these two sources, and in the diet of the poor the percentage is often higher. The common method of boiling vegetables in which the cooking water is discarded no doubt leads to great losses of the mineral salts, such as potassium. Overindulgence in table salt also increases the potassium loss. The combination of all these factors may perhaps play a part in the production of constipation. It appears that both potassium and calcium salts must be added simultaneously to the deficient diet to prevent the stasis that would otherwise occur. Numerous investigators working on other physiologic problems have emphasized the importance of the potassium-calcium balance in maintaining the well being of animals. It is possible that

the high potassium content of some laxatives is a factor in their laxative effect, especially as the calcium intake is high. Human milk is more laxative than cow's milk. This may possibly be due to its higher potassium-calcium ratio.

Antirachitic Potency of Cod Liver Oil and Viosterol—Russell and his associates found that the response of the white rat to antirachitically equivalent amounts of cod liver oil and viosterol, determined curatively, is the same when the two sources of the factor are fed on a preventive basis. This result is strikingly different from that obtained in the chicken, in which species the viosterol form of the antirachitic factor is much less effective than the cod liver oil form when compared on a preventive basis. The minimum protective dose on a preventive basis is between 2 and 10 curative units per fifty grams of ration. The unit or 1+ level, determined curatively, affords only partial protection when fed on a preventive basis.

Journal of Pediatrics, St. Louis

6 603 742 (May) 1935

- *Factors Influencing Effectiveness of Placental Extract in Prevention and Modification of Measles. C. F. McKhann, Arda A. Green and Harriet Coady. Boston—p. 603.
- Observations on Therapeutic Value of Specific Immune Serum in Experimental Poliomyelitis. E. W. Schultz and L. P. Gebhardt. Stanford University. Calif.—p. 615.
- Aplastic Anemia Following Stovarsol (Acetarsone) Therapy. D. L. Smith Jr. and R. A. Lyon. Cincinnati—p. 624.
- *Masked Mastoiditis. H. Bloch and E. F. Merolla. Brooklyn—p. 630.
- Acute Lymphatic Leukemia in Childhood. Study of Sixty Cases with Especial Reference to the Cytologic Characteristics of the Blood. S. D. Mills. Rochester. Minn.—p. 634.
- Low Calcium Tetany of the New Born. Review of Recent Literature and Report of Another Proved Case. J. L. Rothstein. New York.—p. 644.
- Hemihypertrophy. Report of Four Cases. A. J. Scott, Los Angeles—p. 650.
- Stramonium Poisoning. Review of Literature and Report of Two Cases. R. E. Jennings. East Orange. N. J.—p. 657.
- Dental Caries. Calcium and Inorganic Phosphorus Blood Serum Determination. C. G. Kerley, E. J. Lorenz Jr. and Emma R. Godfrey, New York—p. 665.
- *Encephalitis and Myocarditis in Fatal Case of Trichinosis. Report of Case in Fourteen Year Old Girl. M. B. Gordon. R. Cares and B. Kauffman. Brooklyn—p. 667.
- Clinical and Chemical Study of Nondiabetic Ketosis with Acidosis. D. C. Darrow and M. Katharine Cary. New Haven. Conn.—p. 676.
- Allergic Reactions to Schick Tests After Toxoid Immunization. Report of Two Cases. H. J. Freedman. Boston—p. 695.

Placental Extract in Prevention of Measles—McKhann and his associates observed that placental extract can be prepared in large amounts and can be made available for the large scale prevention or modification of measles. Attempts to refine and concentrate the measles antibody have resulted in preparations of less potency than the extracts containing all the globulins. However, the refined preparations can be passed through Berkefeld filters and may therefore be deemed safer to use. The results in a series of 1,258 cases demonstrate that the refined extracts, although less active than the crude preparations, are still effective in the prevention or modification of measles. However, this number of tests is inadequate to permit the determination of the best fraction of the extract to use and the dosage required in children of various ages and at various stages of the incubation period of the disease. The scarlet fever and diphtheria antibodies in placental extract appear to be almost entirely in the pseudoglobulin fraction, whereas the measles and poliomyelitis antibodies appear to be distributed throughout several protein fractions. The tissue protein insoluble in acidified salt solution contains no diphtheria antitoxin but does contain the antibody neutralizing poliomyelitis virus. It has not been tested for activity against measles. Reactions following the injection of placental extract, although infrequent appear to be due in some measure to the inclusion in the finished extract of variable amounts of a specific tissue protein. A method of preparation and administration of extract to eliminate reactions is at present under investigation.

Masked Mastoiditis—Bloch and Merolla present the cases of 119 infants suffering from gastro-enteritis and otitis media as evidence in favor of the clinical entity of masked mastoiditis. These patients were admitted from the free dispensary the clientele of which is composed largely of underweight, undernourished infants. Their ages varied from a few weeks to 13 months. The clinical course of the disease revealed three

stages. In stage 1 the nutritional progress of the infant was suddenly halted by fever. Examination revealed otitis media. Following myringotomy or spontaneous perforation of the ear drum, fever subsided and the few ounces lost were frequently regained. The ear drainage persisted. Stage 2 was characterized by occasional vomiting, an increase in the number of stools, which became slightly watery, a gradual loss of weight and a low grade fever. Stage 3 set in from several days to two or three weeks following the opening of the eardrum. The temperature rose from 3 to 5 degrees, and simultaneously the weight fell from 8 to 30 ounces. The infant then presented the common picture of acute intestinal intoxication. Diarrhea and vomiting became severe, dehydration was rapid, weight fell in spite of supportive therapy, anorexia was common, the infant was apathetic and rarely cried. Unoperated or late operated cases usually proceeded to athrepsia, cachexia and death. In some instances stage 1 was rapidly followed by stage 3. In another small group a milder course was observed, in which dietetic measures proved unavailing, whereas mastoid antrotomy resulted in rapid recovery. It is the authors' opinion that the mastoid infection set in coincident with stage 2, but the failure of the infants' resistance precipitated the profound toxemia of stage 3. The diagnosis of masked mastoiditis depended entirely on the clinical picture described. The classic symptoms and signs of mastoiditis were rarely present. The roentgen examination was not relied on, since many proved mastoid infections produced normal roentgenograms. The swelling of the posterior superior canal described by Lyman frequently occurred too late to be of value.

Encephalitis in Case of Trichinosis—Gordon and his co-workers cite a fatal case of trichinosis in a girl, aged 14 years, who presented a predominating picture of encephalitis throughout the entire course. The three generally accepted diagnostic criteria of the disease were absent: gastro-intestinal symptoms, muscular tenderness and eosinophilia (until the day preceding death). Myocarditis, cerebral congestion, and edema and toxic encephalosis were found at necropsy. Studies of the diaphragm, psoas and rectus abdominis disclosed heavy infestation by the parasites in the early stages. The changes in the brain were scant in proportion to the pronounced clinical picture of encephalitis. Blood studies of five members of the same family affected at the same time are presented. Trichinosis of the right deltoid was found in a brother, who presented a transitory encephalitic picture and recovered.

Military Surgeon, Washington, D. C.

76: 229 288 (May) 1935

- The Development of the Plan for Systematic Training of Officers of the Medical Department of the Army. R. U. Patterson—p. 229.
- Operative Mortality in Acute Appendicitis. L. B. Kline—p. 246.
- New Crusade. J. Voncken translated by E. E. Hume—p. 251.
- Detachment of the Retina. New Surgical Diathermic Treatment. H. C. Maxwell—p. 259.
- Contact. Simple Method of Contact Printing. V. H. Cornell and R. M. Reeve—p. 261.
- The Civilian Doctor's Part in a National Military Emergency. G. A. McBride—p. 266.

New England Journal of Medicine, Boston

212: 813 862 (May 2) 1935

- Massive Collapse of Lung Following Childbirth. Report of Two Cases. M. F. Eades. Boston—p. 813.
- Undulant Fever. Two Cases Simulating Subacute Bacterial Endocarditis and Pulmonary Tuberculosis. N. Sidel and M. S. Segal. Boston—p. 816.
- Physician and Patient as a Social System. L. J. Henderson. Boston—p. 819.
- Management of Gonorrhea. III. Clinical Diagnosis of Gonorrhea in the Adult Female. The Neisserian Medical Society of Massachusetts—p. 823.
- Digest of the Twentieth Annual Report of the Massachusetts Department of Public Health. H. D. Chadwick, Boston—p. 830.

212: 863 902 (May 9) 1935

- Cancer of the Stomach. Analysis of One Hundred and Ninety Five Cases with End Results. F. H. Lahey, N. W. Swinton and M. Peelen. Boston—p. 863.
- Study of Heart Disease Among Veterans. I. Clinical Classification of Five Hundred Cases. P. B. Matz. Washington, D. C.—p. 868.
- Embolism from Saphenous Thrombophlebitis and Its Prophylaxis. J. B. Sears. Boston—p. 874.
- Skeleton of an Unknown Person. W. W. Fullerton. Brockton, Mass.—p. 876.

New Orleans Medical and Surgical Journal

87:1 737-808 (May) 1935

- Breast Feeding with Especial Reference to Some of Its Problems L. von Meyenbug New Orleans—p 738
Use of Sodium Evipal as an Intravenous Anesthetic J R Veal A S Hamilton and C L Farrington New Orleans—p 743
*Ringworm of Extremities Due to Allergic Unbalance W H Browning Shreveport La—p 747
Simple and Practical Classification of Irregular Uterine Hemorrhage J T Witherspoon New Orleans—p 751
Agranulocytosis J E Knighton Jr Shreveport La—p 755
Differential Diagnosis Between Agranulocytic Angina and Acute Leukemia W S Kerlin Shreveport La—p 759

Ringworm Due to Allergic Unbalance—Browning suggests that ringworm of the extremities is a complication of hypersensitiveness rather than that hypersensitiveness is a complication of ringworm disease. When the patient is placed in a state of "allergic balance," the primary lesion heals quickly without any treatment directed toward the trichophyton. Patients are examined as for other allergic conditions, especially allergic conditions of the skin. Microscopic examination is positive for a fungus in most cases. Most mild cases respond to the ordinary methods of treatment because it is probable that these methods restore an "allergic balance" to the affected parts. Thirty cases are presented, most of which were of a severe type, but the results obtained were excellent. Other allergic manifestations were present in a large proportion of the cases. All the patients were hypersensitive to many allergens. The patch test is usually negative unless there is a superimposed contact dermatitis. The use of trichophyton is unsatisfactory for diagnostic purposes. Improvement usually begins within two weeks if the case has been correctly diagnosed and if instructions have been followed.

New York State Journal of Medicine, New York

35:1 517-562 (May 15) 1935

- General Anesthesia in Allergic Patients. Review of Two Hundred and Four Cases of Tonsillectomy and Radical Antrum Operations. Rose H André and R C Grove New York—p 522
Treatment of Trichinoma Vaginalis with Anayodin. Clinical Report Margaret McAllister Janeway New York—p 528
Vaccination Preceding Colonic Operations as Protection Against Peritonitis C F Dixon and J A Barger Rochester Minn.—p 529
Public Health Aspects of a Venereal Disease Program for New York City J L Rice New York—p 533

Ohio State Medical Journal, Columbus

31:1 313-400 (May 1) 1935

- Management of Common Duct Stone and Obstruction F M Douglass Toledo—p 329
Treatment of Ambulatory Rheumatic Heart Disease A F Kuhl Dayton—p 331
Epidemic Encephalitis P G Tait Toledo—p 335
*Observations on Growth and State of Nutrition of Premature Infants Given an Antirachitic and Antiscorbutic Food A J Horeish and G R Russell Cleveland—p 339
*Observations in Use of Irradiated Blood in Connection with Cancer B E Hyde Troy—p 349
The Periodic Health Examination L N Jentgen Columbus—p 357

Nutrition of Premature Infants Given Antirachitic and Antiscorbutic Food—Horeish and Russell give the results they obtained in the feeding of fifty-three premature infants. Of these eleven died and the remainder received at the hospital for an average of six months the same milk food, twenty-two from birth and twenty from the age of from 2 to 5 weeks. The milk food used was a powdered acid protein milk similar to casein and lactic acid milks and had a pH of 4.6. Its acidity was obtained by adding 20 cc of lemon juice to milk in which lactic acid has been produced by controlled bacterial fermentation. The lemon juice provided the antiscorbutic factor which has been found adequate for the cure of scurvy in infants. The fat of the milk is a mixture of animal and vegetable fats including biologically tested cod liver oil and has character numbers that are practically identical with those of human milk. The cod liver oil content of the milk is 3.8 cc per quart. Carbohydrate, in the form of corn syrup was added as deemed necessary to meet the carbohydrate and caloric requirements of the individual infants. Orange juice was administered in the second week starting with a dose of 1 cc daily and reaching a maximal dose of 15 cc daily in the sixth week. Saccharated

ferrous carbonate in a dose of 0.5 Gm three times daily was started by the second week. The infants showed an excellent gain in weight and approximated closely the ideal weight as portrayed in Wetzel's standard curve. The average daily gain in weight was equal to and in many instances surpassed the average daily rate of gain of premature infants in the series of other observers. Excellent muscle development and tissue turgor was found in all cases. The incidence of gastro-intestinal disturbances of the so-called nutritional type was low and their duration was brief, the infants being free from purely nutritional disturbances during 98.6 per cent of the period of observation. While the incidence of respiratory infections was relatively high, their severity as judged by their duration was mild, the entire group of infants being actually free from respiratory infections 94 per cent of the time. Rickets was prevented in each instance as judged by weekly roentgenograms of the wrist and by monthly determinations of the blood serum calcium and inorganic phosphate. The physiologic anemia of premature infants was not prevented by the liberal administration of saccharated ferrous carbonate. The authors believe that the distinct qualities that make the milk a particularly valuable food for the rearing of premature infants are its high protein, high mineral, high vitamin and reduced fat content.

Use of Irradiated Blood in Cancer—Hyde has accepted the present view that surgery, x-rays and radium are the only methods in use today that are of proved value in the attack on cancer. He uses x-rays in the form of a secondary irradiation. By the use of autogenous blood the cancer patient does not show a reaction and the normal or noncancer patient does. The use of these injections of blood in malignant disease produces benefit which warrants its use, but not by the untrained person. A spectroscopic difference has been demonstrated between the irradiated "cancer" blood and normal blood. The precipitate lowers the hemoglobin in the cancer blood and not in the normal blood. Not one patient in the author's 4,000 blood injections has shown a bad result. Internal and external cancers can be treated in the same way by intravenous injections. Dressings of irradiated blood have been applied to external cancer, and about the same amount of benefit has been noticed as was produced by intravenous injections. The skin does not have to be protected, as this blood appears to affect the cancer only. The fact that the blood reaction factor before cancer is demonstrable makes the method of value at that stage, since the use of this method of treatment may be prophylactic. No better results are obtained by using larger amounts of blood, about 7 cc is enough. The author uses 20 cc, because it is a convenient amount to work with.

Philippine Journal of Science, Manila

50:1 196 (Jan) 1935 Partial Index

- Occurrence of Bertiella in Man, Monkey and Dog in the Philippines C M Africa and E Y Garcia Manila—p 1
Studies on Diastolic Blood Pressure in Beriberi Cases Admitted to the Philippine General Hospital During the Years 1932-1934 K. Sugino Manila—p 21
Ethnographic Study of Yogads of Isabela R. E. Galang Manila—p 81

Psychoanalytic Quarterly, Albany, N Y

4:1 227-370 (April) 1935

- Claustrophobia B D Lewin New York—p 237
Fairy Tales and Neurosis S Lorand New York—p 234
Words and Masses Pictorial Contribution to Psychology of Stammering W J Spring New York—p 244
The Murders in the Rue Morgue Marie Bonaparte Paris France—p 259
Edgar Allen Poe. H Sachs Boston—p 294
The Menstruation Complex in Literature C D Daly Naini Tal India—p 307
Three Brief Notations Relative to Castration Complex H A. Bunker Jr New York—p 341

Public Health Reports, Washington, D C

50 595-632 (May 3) 1935

- Relations of Sickness to Income and Income Change in Ten Surveyed Communities. Health and Depression Studies No. 1. Method of Study and General Results for Each Locality G St. J Perrott and S D Collins—p 595
Bacterial Content of the Kansas Dust Storm on March 20 1935 Cassandra Ritter—p 622

Rhode Island Medical Journal, Providence

18:65-80 (May) 1935

- Lipoid Cell Pneumonia Case. J Langdon, Providence—p 65
 The Medical Expert. C A Walsh, Providence—p 66
 Twenty Years' Observation of Medical Questions Under Compensation Act. J J Donahue—p 69
 Correlation of Oral Infections with General Systemic Infections. J L Kendrick—p 74

Southern Medical Journal, Birmingham, Ala.

28:395-488 (May) 1935

- Surgical Relief of Pain About the Head and Face. W T Coughlin, St Louis—p 395
 Fractures of the Patella. W C Campbell, Memphis, Tenn—p 401
 Repair of Surface Defects from Burns and Other Causes with Thick Split Skin Grafts. J B Brown, V P Blair and L T Byars, St Louis—p 408
 Suppuration of Dermoid Cyst of Ovary Following Labor. C R Robins, Richmond, Va—p 415
 Use of Bronchoscopy in Pulmonary Diseases. E A. Looper, Baltimore—p 419
 Typhloemia Fatal Case of Typhoid Form Caused by Ingestion of Rabbit Autopsy Report. H G Beck and W C Merkel, Baltimore—p 422
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 Further Observations on Juvenile Diabetics and Hyperinsulinism. A A Herold, Shreveport, La—p 438
 When Is Insulin Dangerous? H Hill, San Antonio, Texas—p 441
 Contact Dermatitis Preliminary Investigation. M F Engman Jr., M Moore and R L Kile, St Louis—p 442
 Carotenemia and Carotenoderma. D T Gandy, Houston, Texas—p 444
 Some Points in Early Diagnosis of Gastro-Intestinal Cancer. E Jelks, Jacksonville, Fla—p 446
 Congenital Hypertrophic Pyloric Stenosis. B C Garrett, Shreveport, La—p 450
 Effect of Ketogenic Diet on Infections of Urinary Tract. A L Clark, H D Moor and D G Harrel, Oklahoma City—p 453
 Ray Diagnosis of Polyps, Cysts and Tumors of the Nasal Sinuses. C Moore, Washington, D C—p 456
 Diagnosis and Treatment of Sinusitis. W L Simpson, Memphis, Tenn—p 458
 Secondary Glaucoma. E W Burton, University, Va—p 461
 Theelin in Treatment of Gonococcal Vaginitis in Children. B Reading, Galveston, Texas—p 464
 Nutritional Work Among Undernourished School Children. E L Timmons, Colorado Springs, Colo—p 466
 Infantile Physiopathology. E Guajardo, Monterrey, Mexico—p 467
 Treatment for Neuropsychiatric Syndromes Employing 'Twilight Narcosis'. A L Skoog, Kansas City, Mo—p 468
 The Pellagra Problem in the South. C D Reece, Austin, Texas—p 473
 Hospital Teaching. R Q Goodwin, Oklahoma City—p 478
 Auxiliary Sterilizer. A L Atwood, Birmingham, Ala—p 481

Early Diagnosis of Gastro-Intestinal Cancer—Jelks states that emaciation, tumor, obstruction with persistent vomiting and severe hemorrhage, occurring in a person of the cancer age unquestionably indicate the presence of a malignant growth, but that, if the patient manifests such marked symptoms as these before treatment is instituted, his chance of recovery is slight and that, if progress toward cure is to be made, other and earlier occurrences in the patient's health life must be recognized. He lists seven of these which appear relatively early. 1 Although alternating constipation and diarrhea are apparently contradictory evidences, yet a period of constipation, followed by one of diarrhea, is very frequently a sign of cancer of the large intestine. The constipation is often thought to be characteristically progressive, but it is, in fact, when observed by the patient, usually intermittent until the final closing off of the alimentary canal is complete. 2 Vomiting sometimes occurs early in the progress of the growth. It likewise may, and usually does, come 'in spells' a long time before complete obstruction develops. 3 Pain in the epigastrium or lower part of the abdomen, which the patient usually calls "indigestion" and which may or may not be related to the taking of food, should suggest the likelihood of a serious lesion in the digestive tract. 4 The patient often complains of a sense of fullness after eating and of distention following meals, or even at other times in the twenty-four hours. The discomfort from this distention may be referred to the epigastrium or to the lower half of the abdomen. 5 Sometimes one of the first evidences of the disease is loss of appetite. Anorexia is in no sense diagnostic, but it frequently suggests the correct solution of the patient's problem. 6 The presence of anemia, which may be recognized by the doctor or by the patient because of pale-

ness or dizziness, is not an infrequent early sign of cancer, especially of the right intestine. 7 Occasionally a patient complains merely of weakness, which may be a very early sign of cancer and may result either from occult bleeding or from a general disturbance of the digestion.

Southwestern Medicine, Phoenix, Ariz

19:143-182 (May) 1935

- Medical Economics. R Brown, Santa Barbara, Calif—p 145
 Plan for Medical Care of Low Income Groups. J B Littlefield, Tucson, Ariz—p 148
 Syphilis Round Table Discussion. A. W. Raphael, Santa Fe, N. M.—p 149
 Id. Blood Test Survey. H S W Alexander, Santa Fe, N. M.—p 150
 Present Day Conceptions of Childhood Tuberculosis. J W Ames, Denver—p 151
 Evolution of Tuberculosis in Children. W I Werner, Albuquerque, N. M.—p 157
 Traumatic, Slow Intraperitoneal Hemorrhage with Delayed Surgical Shock. Report of Three Cases. W L Reid, Phoenix, Ariz.—p 160
 The Young Doctor of Arizona. J W Huffman, Tucson, Ariz.—p 162
 The Fighting Arizona Doctor. Brigadier General J B D Irwin, 1830-1917 (The Record of a Brilliant Surgeon Who Helped to Make Arizona Safe for the White Man). W M Thompson, Bisbee, Ariz.—p 164

Texas State Journal of Medicine, Fort Worth

31:1-66 (May) 1935

- Surgical Treatment of Pelvic Pain Due to Intractable Functional Dysmenorrhea and Inoperable Pelvic Lesions. J A Heyman, Wichita Falls—p 5
 Automobile Door Handle Injuries. H H Ogilvie, San Antonio—p 9
 Maximal Utilization of Pelvic Diaphragm Structures in Repairing Proctientia. A L McMurtry, Houston—p 11
 Carcinoid Degeneration of Appendix. G A Pagenstecher, J M Moore and H N Gonzales, San Antonio—p 15
 Peptic Ulcer Its Complications. G V Brindley Temple—p 18
 Blood Stream Infections. L H Reeves, Fort Worth—p 23
 Defense Mechanisms of Body in Blood Stream Infections. J P Simonds, Chicago—p 26
 Cerebral Injury Sequela Their Diagnosis and Management. A. D Errico, Dallas—p 28
 Clinical Photography as Valuable Adjunct to Radiology in Selected Cases. G D Carlson, Dallas—p 32
 Acute Bilateral Empyema. W R Snow, Abilene—p 34
 Typhus-like Fever Contracted from Opossum Fleas. Preliminary Report. J Chapman and A A Chapman, Sweetwater—p 36
 Diphtheria Immunization and Diphtheria Rate. J W Bass, Dallas—p 39
 County Children's Council and Its Value in the Public Health Program. E. W. Prothro, Sweetwater—p 43
 The Early History of the Texas Railway Surgeons Association. W A Lee, Denison—p 45

Typhus-like Fever Contracted from Opossum Fleas.—The Chapmans identified five cases of what they consider to be typhus fever of the endemic variety. In two cases, the only history of exposure was through fleas infesting opossums. That neither patient had typhus but some similar disease and that the patients had typhus but received the infection through some agent other than those at present recognized by students of the disease are possibilities which are disposed of, as the disease could have been only typhus or some other closely allied disease. Rocky Mountain spotted fever was eliminated from consideration by the type of eruption and absence of severe nervous and mental symptoms, and the exposure to the fleas of the opossums was the only probable source of inoculation. Opossums sometimes invade rat nests and may perhaps eat dead rats, since they devour other carrion. It would then be possible for the opossums to have become infested from dead rats or from rat nests. Also in substantiation of this possibility is the fact that fleas carry the virus as long as fifty-two days after the infective feeding, and further that the virus even multiplies within the fleas, so that it is not necessary to postulate a recent contact between the rats and rat nests and the opossums. The possibility is that opossums actually have typhus, as do rats, and that the virus was transmitted through the opossums' own ectoparasites rather than through adventitious fleas. Dyer's recent work has shown that woodchucks, house mice, meadow mice and white-footed mice all may have typhus, and it does not seem at all improbable that the opossum may also acquire the disease. Experiments are now under way to determine whether or not this is true.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

10: 241-304 (May) 1935

- Pathogenic Problem of So-Called Critical Allergic Conjunctivitis Specific Sensitization Nonspecific Sensitization Instability of Organic Colloids H Lagrange—p 241
- Trachoma Recent Advances and the Principles of Prophylaxis A F MacCallan—p 253
- Corneal Pitting H Herbert—p 261
- Bilateral Epithelioma of the Limbus in a Boy of Five Case A H Lowther—p 264
- *Early Ocular Sign in Facial Paresis H Cohen—p 267
- Additional Component of Convergence-Accommodation Reflex H Cohen—p 267
- Technic of Advancement and Tendon Lengthening in Strabismus Operations W B I Pollock—p 268
- New Strabismus Forceps G Handelsman—p 271

Early Ocular Sign in Facial Paresis—Cohen states that the following sign is present at an early stage, often before there is any demonstrable asymmetry of facial movement, and is late in disappearing when the nerve is recovering its function, e. g., in Bell's palsy. If a normal individual is told to "look upward but keep the eyes closed," the stronger contraction of the orbicularis palpebrarum, in keeping the eyelids together, masks the contraction of levator palpebrae superioris. If there is any weakness of the orbicularis palpebrarum, it can no longer antagonize the contraction of levator palpebrae superioris and the eye tends to open. This degree of weakness occurs in the early stages of facial paresis and late in the recovery stage. In the more marked degrees of facial paralysis in which the orbicularis palpebrarum is grossly affected, no closure of the eyes is possible and the facial paresis is evident.

British Journal of Radiology, London

8: 265-338 (May) 1935

- Radiologic Study of Intrathoracic Lymphogranuloma and Lymphosarcoma E. R. Williams—p 265
- Tissue Culture III Its Application to Radiologic Research F G Spear—p 280
- Adhesive Applicator for Radium Therapy A S Johnstone—p 298
- Radium Treatment of Epithelioma of the Penis R. G. Hutchison—p 306
- Distribution of Radiation from Typical Penis Mold H M Parker—p 315
- Ionization Chambers for X Ray Dosage Measurement II H I Jones—p 318
- Right Sided Diaphragmatic Hernia Case G B Bush—p 333

British Medical Journal, London

1: 863-908 (April 27) 1935

- Thrombo-Angitis Obliterans, with Especial Reference to Its Pathology and Results of Sympathectomy E D Telford and J S B Stopford—p 863
- Modern Views on Cancer Problem J P Lockhart Mummery—p 867
- Treatment of Tuberculous Pleural Effusions and Empyemas R. R. Trail—p 870
- Major Hysteria W R Russell—p 872
- Some Constitutional Dermatoses J T Ingram—p 877

1: 909-962 (May 4) 1935

- Progress in Medicine During the Past Twenty Five Years W Langdon Brown—p 909
- Progress in Surgery During the Past Twenty Five Years C Wallace—p 912
- Progress in Obstetrics and Gynecology During the Past Twenty Five Years J S Fairbairn—p 914
- Some Factors in Control of Poliomyelitis R W Fairbrother—p 916
- Corneal Grafts Report of Case B W Rycroft and G Handelsman—p 919
- Colloid Cyst of Third Ventricle of the Brain Report of Case Operated on with Recovery J E. Paterson and Margaret Leslie—p 920
- Funnel Chest and Pulmonary Tuberculosis W Pagel—p 922
- Primary Carcinoma of the Small Intestine D J Harries and C V Harrison—p 923

1: 963-1012 (May 11) 1935

- Conservative Attitude in Treatment of Acute Pyogenic Infections. C Donald—p 963
- Congenital Heart Disease D C Muir and J W Brown—p 966
- Time Factors in the Pasternization of Milk. I W Hall—p 972
- Erythema Nodosum and Focal Infection. L B Elwell—p 974
- Coronary Occlusion in a Patient Aged Twenty Four Years P B Fernando—p 976

Glasgow Medical Journal

5: 185-248 (April) 1935

- *Conjunctivitis Clinical and Bacteriologic Investigation I C Michaelson—p 185
- Iodism S Alstead—p 196
- Some Pages from the History of the Prevention of Malaria M Watson—p 202

Conjunctivitis—Michaelson investigated the bacteriology of conjunctivitis as it appears in Glasgow. He examined 433 patients with inflammation of the conjunctiva and lid margins. Cultures were made from the conjunctival secretion, and in ninety-seven cases direct examination of the smear was done as well. Sixty-two cases were bacteriologically negative. Some organisms are practically unconditionally infectious—that is, their presence in a culture taken from the conjunctiva indicates the cause of the inflammation. Gonococci, Koch-Weeks bacilli and Morax-Axenfeld bacilli belong to such a category. Some organisms are facultative pathogens. Such are hemolytic Staphylococcus albus, Staphylococcus aureus, streptococcus, pneumococcus, pneumobacillus and Bacillus coli. The presence of these organisms may or may not be the cause of the disease. Determination of this will depend on their continued presence in repeated cultures and on the number of colonies present, and the latter factor will again be affected by the stage of the disease. A third group, consisting of Staphylococcus albus-nonhaemolyticus, Bacillus xerosis and Bacillus subtilis are only rarely pathogenic. They are very often found on the normal conjunctiva. Under favorable circumstances they may become pathogenic. A number of these cases were due to nonbacterial causes or to organisms which were overgrown in the culture medium by the staphylococcus. The bacteriologic results in the 371 patients with positive cultures are tabulated, together with the percentage of cases in which a pure infection was present. The author draws the following conclusions: 1 The great variation that exists between the bacteriology of conjunctivitis in Glasgow and other parts of the globe. 2 The importance of using cultures in the bacteriologic examination of the conjunctiva. 3 The fact that the pneumococcus, when found in the conjunctiva, is nearly always group IV. 4 The rareness of "pure Koch-Weeks infection" among adults. 5 The association between dental disease and conjunctivitis due to Streptococcus and Staphylococcus albus-haemolyticus. 6 The frequency of Morax bacillus infection in childhood. 7 The frequency with which the non-hemolytic staphylococcus is associated with corneal complications. 8 The serious chronicity of disorders of the lid following an attack of measles.

Journal of State Medicine, London

43: 249-310 (May) 1935

- Cancer in Relation to Dyspepsia M J Smyth—p 251
- Measures to be Adopted in Prevention of Discharges of Ductless Glands S Woodwork—p 262
- The Cancer Problem Present Position with Regard to Prevention P P Cole—p 272
- Public Health Aspects of Planning E G S Elliot—p 282
- A New Theory to Explain the Origin and Spread of Epidemic Diseases W G A. Robertson—p 292
- *Mutations in the Tubercle Bacillus Under the Influence of a Tuberculin Sulphoguaiacolic Medium A Sartory R Sartory and J Meyer—p 303

Mutations in Tubercle Bacillus—On the basis of laboratory studies with the tubercle bacillus the Sartorys and Meyer make the following conclusions: 1 The prolonged action of the complex substance present in a precipitate obtained by adding sulphoguaiacolic acid to Koch's tuberculin in the presence of antituberculous serum to a medium for culture of tubercle bacillus has the property of penetrating the waxy sheath of the bacillus and acting on its cell elements. 2 There is then a morphologic modification of the bacillus which shows evolutionary forms, confirming the work of Roman and tending to show that the tubercle bacillus is more closely related to the fungi than the bacilli and could be reasonably classified among the actinomycetes. 3 Under the influence of this substance, loss of virulence is manifested in the medium itself before loss of acid-fastness. Of two virulent strains of human tubercle bacillus and two specimens of sputum with virulent tubercle bacilli received from Gordon Tippet, the authors have observed

that the human bacillus was less resistant to the prolonged action of the experimental medium than the bovine Vallee bacillus. The cultures of the third generation show forms very different from those of the normal tubercle bacillus. The bacilli are slender, very long, or in groups, resembling the characteristic form of the "grasbacillus." Most of them have already lost their acido-alcoholic property. They stain clearly and easily in blue by the Ziehl-Neelsen method and take on the form of branching filaments, endowed with a pronounced power of longitudinal growth. They are apt to divide transversely. The chromophilic and morphologic changes appear even in cultures twelve or fifteen days old. The tubercle bacillus, which they were able to isolate in a specimen sputum, was still less resistant to the influence of their cultural medium. The bacilli were already altered in a second generation and passed from the classic bacillary stage to a filamentous branching form with altered granules. The authors are unable to explain the different actions of the various tuberculous strains.

Lancet, London

1 917 922 (April 20) 1935

- *So-Called Acidosis Attacks. Plea for More Accurate Diagnosis. D. Paterson—p. 917.
Study of Pneumococcal Pneumonia. III. Radiology of Pneumonia. D. T. Davies, H. G. Hodgson and L. E. H. Whitty—p. 919.
*Experimental Hyperplasia of the Prostate. A. S. Parkes and S. Zucker-
man—p. 925.
Embolism of the Coronary Arteries. A. S. Hoseason—p. 928.
Cullen's Sign in Ruptured Ectopic Gestation. Report of Two Cases.
I. Smith and F. J. Wright—p. 930.

So-Called Acidosis.—Paterson, in discussing the clinical meaning of acidosis or ketosis, states that the metabolism of the fats is profoundly influenced by the balance between fats and carbohydrates and that, if the carbohydrate in the form of starches and sugars is insufficient, the fat will be only partially broken down and acetone and diacetic acid will be formed. This may be brought about because the amount of carbohydrate absorbed is insufficient, or because too much fat is being given. The usual sequence of events, however, is that the carbohydrate present in the food and stored in the muscles and liver is suddenly called on and used up during an infection. The body, deprived of carbohydrate, looks to its store of fat for energy, and ketone bodies are formed as a result. In the majority of children acidosis or ketosis by itself leads to little or no change in the clinical picture. The symptoms attributed to "acidosis" are produced by the factor that produces the acetone—and this is usually an infection. The author concludes that the diagnosis of acidosis is a bad one and should never be used. Rather the process underlying this clinical picture should be thought of. This will rarely be found to be primarily dietetic, but rather infective in origin. A search for the source of the infection, usually nasopharyngeal, should be made, and this should be treated.

Experimental Hyperplasia of the Prostate.—In their experimental production of hyperplasia of the prostate Parkes and Zuckerman gave daily (from six to twenty-eight days) injections of an oil solution of estrogenic material to ten immature male rhesus monkeys, varying in weight from 17 to 48 Kg., and to one immature Guinea baboon. The total amount injected varied between 14 and 30 mg. Six normal rhesus monkeys and one Guinea baboon of equivalent weights were used as controls. The injected animals showed pronounced prostatic changes comprising (1) diminution in the number of true prostatic glands, with a corresponding increase in the amount of fibromuscular stroma, and (2) epithelial growth in the uterus masculinus. The latter change is very conspicuous, and the utricle acquires a large distended lumen lined by as many as twenty-five layers of stratified epithelium. The apparent reduction in the number of true prostatic glands, which are derived from the urogenital sinus, and the corresponding increase in the amount of prostatic fibromuscular tissue may be regarded as part of the general effect of estrogenic substance on the smooth muscle of the accessory reproductive organs. There is good evidence that the effects of the substance are suppressed by the simultaneous administration of progestin, the hormone of the corpus luteum.

Medical Journal of Australia, Sydney

1 479 510 (April 20) 1935

- An Address. A. M. Davidson—p. 479.
The Treatment of Mammary Cancer. H. M. Moran—p. 484.
*New Treatment for Anterior Poliomyelitis and Encephalitis and Its
Experimental Basis. N. D. Royle—p. 486.
Dangers of Indiscriminate Alkali Therapy. C. Sippe—p. 488.
Survey of Mussels on Portion of the Australian Coast. D. H. Le Mes-
urier—p. 490.

1: 511 542 (April 27) 1935

- Some Aspects of Medical Practice in Van Diemen's Land, 1825-1839.
W. E. L. H. Crowther—p. 511.
Bacillary Dysentery in Rockhampton with an Account of Distribution
and Type of Bacillary Dysentery in Other States. E. A. North—
p. 519.
Surgical Shock. Some Notes on Causation and Treatment. I. D.
Miller—p. 522.
Bovine Tuberculosis in Bovines. H. B. Rudduck—p. 524.

Treatment for Anterior Poliomyelitis and Encephalitis.—The experiment of Royle shows that, following the high division of the cord in poliomyelitis, the activity of that organ can be maintained by the administration of ephedrine. He has observed in actual experiments that ephedrine constricts the capillaries. This is followed immediately by a dilatation of the arterioles and venules, so that there is an increase in blood supply. In large doses ephedrine so constricts the capillaries that it leads to a temporary cessation of blood flow in spite of the concomitant dilatation of the arterioles. The consequent anoxemia excites the cord to hyperactivity, as shown by the increase in plastic or postural tone. Small doses of ephedrine (0.0075 Gm.) increase the blood supply by what the author describes as the arteriolar capillary reaction when the capillaries are constricted, the arterioles and venules dilate and, when the capillaries are dilated, the arterioles and venules are constricted. Ephedrine, in addition to keeping up the activity of the spinal cord, also controls wasting and, if given frequently enough, should be effective in the wasting following the edema of the cord in poliomyelitis. It would be easier to prevent the onset of paralysis than to deal with it when present, because the paralysis represents the result of damage to the anterior horn cells from edema. If this edema is long continued, the effects on the anterior horn cells may be permanent. Ephedrine should be given in the postparalytic stage to keep up the nutrition of the muscles until recovery has taken place. Four illustrative cases are presented.

South African Medical Journal, Cape Town

9: 211 252 (April 13) 1935

- The Learned Profession of Medicine. P. D. Strachan—p. 213.
Constitutional Therapy with Particular Reference to Body Movements.
I. P. Schabort—p. 217.
The Induction of Abortion and Premature Labor. Indications. R. Theron—
p. 220.
Methods of Terminating Labor. A. E. Laubscher—p. 222.
Clinical Experiences with Some Diseases Giving a Positive Typhus
Reaction. H. H. Schnitz—p. 225.

Journal of Oriental Medicine, South Manchuria

22: 37 52 (March) 1935

- Vital Staining of *Tradescantia Virginica* with One Hundred and Fifty
Dye-stuffs. Part I. Experiments on Vital Staining of Cilia Cells of
Stamen. S. Hatano, H. Ryo, G. Nakamura and S. Takahashi—p. 37.
Therapy of Psoriasis by Injection of Patient's Own Blood Which Has
Been Treated by Ultraviolet Rays. M. Murayama—p. 40.
Investigations on Amebic Dysentery. VIII. New Method for Cultiva-
tion of *Endamoeba histolytica*. M. Yosezato—p. 41.
Precipitation of Diphtheria Antitoxin by Alnm. IV. Studies on Diph-
theria Toxin. T. Komiya—p. 42.
Pneumonococcal Aspergillina Case. E. Kitabatake and K. P. Lin—
p. 43.
Spermatocoele. Case. M. Motohata—p. 44.
Anatomocopathologic and Statistical Study of Japanese, Koreans and
Chinese in Manchuria (Based on Autopsy Material of Manchurian
Pathologic Institute During Last Twenty Three Years). Y. Matsuo—
p. 45.
Hygienic Problems of Water in Manchuria. I. Simple Method of Water
Analysis on Spot Especially Adapted to Water in Manchuria. T.
Kodama, S. Suzuki and M. Takeyoshi—p. 47.
Id. II. Characteristics of Water in Manchuria. T. Kodama, S. Suzuki
and M. Takeyoshi—p. 48.
Case Illustrating Nonidentity of *Pityriasis rubra pilaris*. Lichen Ruber
Plannus and Lichen Ruber Acuminatus. K. Yajima—p. 49.
Influence of Humanin on Smooth Muscles. T. Minehita—p. 50.
Blood Pictures of Smallpox Patients. T. Sada and G. Noda—p. 52.

Presse Médicale, Paris

43 713 736 (May 4) 1935

- *Meningeal Spirochetosis and Meningotyphoid J Troisier M Bariéty, Mlle B Erber G Brouet and Mlle J Sifferlen—p 713
Functional Examination of Respiration Du Pasquier—p 716

Meningeal Spirochetosis and Meningotyphoid—Troisier and his collaborators report a case in which a man, aged 31, contracted an acute infection characterized by meningitis and marked conjunctival infection but without important intestinal symptoms. Lumbar puncture revealed pleocytosis, mixed cellular reaction and hyperalbuminosis. The patient suffered a relapse of his meningitis but eventually recovered. Serologic tests of the patient's blood showed a persistent negative reaction to the paratyphoid organisms and a persistently positive reaction to Bacterium typhosum. The complete absence of the usual symptoms of typhoid and the previous numerous (eight) vaccinations of the patient against typhoid raised questions as to the diagnosis. They isolated from the patient's urine between the fourteenth and seventeenth days a spirochete capable of producing a fatal icterus in the guinea-pig. Furthermore, they found that the blood serum of the patient possessed agglutinins and immunins to Spirochaeta icterohaemorrhagica in high dilutions. They conclude that the meningitis was in reality spirochetal and that the typhoid bacillus infection was simultaneous but asymptomatic, owing to the previous antityphoid inoculations.

Policlinico, Rome

42 1019 1074 (May 27) 1935 Practical Section

- *Bassini's Modified Operation for Cure of Inguinal Hernia G Baggio—p 1019
Chronic Intestinal Amebiasis Prolonged Negativity of Laboratory Tests Case F Pullé and G Acanfora—p 1035
Immunization by Ultraprotones in Cancer G Carosini—p 1039

Bassini's Modified Operation for Inguinal Hernia—Baggio's technic, a modification of Bassini's operation for the cure of inguinal hernia, consists in freeing and excising the hernial sac and the hernial preperitoneal tissues through an incision made in the transversalis fascia, closure of the peritoneum with a lineal suture, reconstruction of the transversalis fascia in a layer by itself and construction of a new posterior wall of the inguinal canal. In the construction of the posterior wall the author uses the abdominal rectus muscle, deprived of its sheath and sutured to Poupart's ligament by means of U sutures in a deep plane, and, fastened to this layer, the inferior edge of the small oblique and transverse muscles, joined with the upper half of the cremaster, in a more superficial plane, and the lower half of the cremaster in the superficial plane. Over this pad the spermatic cord is placed and then covered by the aponeurosis.

Prensa Médica Argentina, Buenos Aires

22: 851 892 (May 1) 1935

- Tumoral Image of Pulmonary Tuberculosis J J Beretervide A J Heidenreich and G L Heidenreich—p 851
*Etiology of Influenza G Elkeles—p 857
Adenoids and Psychopsychic Development of Children J Mingo—p 863
Essential Vomiting of Extragastric and Extra Esophageal Origin in Infants J E Virasoro—p 877
Syphilitic Meso-Epididymitis Case R I Mathis and A Marano—p 883

Studies on the Etiology of Influenza—Elkeles says that two investigations are important in connection with the etiology of influenza: those of Shope and Shope-Lewis and those of Smith and his collaborators. Shope and his collaborators proved that hog influenza, which is similar to influenza in man, develops by the combined action of a filtrable virus and of influenza bacilli. Smith and his co-workers succeeded in transmitting human influenza to ferrets by means of intranasal inoculation of a filtrable virus obtained from the washings of the throats of patients with influenza. The pathologic picture in the animal is characterized by the presence of fever, purulent rhinitis, general malaise, anorexia, loss of weight, a cough and other disturbances. The intranasal inoculation of hog influenza virus produces the same pathologic picture in ferrets. The author's experiments were carried out with the aim of ascertaining whether human influenza is transmissible to hogs. He found

that the intranasal inoculation of the virus, as well as of cultures of the same virus previously inoculated in ferrets, produces in suckling pigs the same pathologic picture of experimental influenza as that reported by Smith and his co-workers in ferrets. The course of the disease in suckling pigs is more serious when the intranasal inoculation is made with a combination of virus and influenza bacilli. Bronchopneumonic foci are present in severe cases. The emulsion of tissues from bronchopneumonic lesions of suckling pigs when reinoculated in ferrets, produces the same characteristic clinical and pathologic picture of experimental influenza. The inoculation of influenza bacilli alone, without virus, produces neither pathologic signs nor anatomic changes. The author states that a close relationship exists between the virus of human influenza and that of hog influenza and emphasizes the relation of the virus and the bacilli of influenza in the development of the disease. He advises the use of suckling pigs in further research work on influenza. Suckling pigs are more suitable than ferrets for research work and react to the inoculation more easily than the latter, with the development of bronchopneumonic lesions, which may be of a graver type if they are inoculated with the virus-bacillus combination.

Semana Médica, Buenos Aires

42: 1257 1328 (May 2) 1935 Partial Index

- *Tuberculous Etiology of Erythema Nodosum R Cibils Aguirre—p 1257
Oscillographic Curves T Martini and R E Curutchet—p 1262
*Experimental Renal Calculosis in A Avitaminosis A Escudero and P Bosq—p 1283
Organic Hemiplegia in Pregnancy Case J Bazán and F A Uranga Imaz—p 1287
Giant Vesicular Ampullous Emphysema Simulating Total Pneumothorax Case I R Steinberg and D Vivoli—p 1292

Tuberculous Etiology of Erythema Nodosum—Cibils Aguirre says that, in five out of eight cases of erythema nodosum, tubercle bacilli were identified by direct culture of material from the erythematous nodule in one, by intraganglionic inoculation in guinea-pigs in one, by successive reinoculations and cultures in all five and by histologic examination of sections of the nodules in one. In one of the three cases in which negative results were obtained the inoculation was made with material obtained by biopsy from the erythematous nodule fifteen days after the appearance of the nodule, in another case, the material used in the second inoculation was taken from a guinea-pig inoculated six months previously, in the third case, the experiments were stopped because of infection of the animals. The author says that the results of his work, by which the presence of tubercle bacilli in the erythematous nodules was verified, constitute the most complete bacteriologic proof of the tuberculous etiology of erythema nodosum.

Experimental Calculosis in A Avitaminosis—Escudero and Bosq detected calcareous concretions in the renal tissues of five rats out of a group of six in which experimental A avitaminosis had been produced. The position of the calculi in the renal tissues as well as the aggregations of cells at certain points of the tissues seems to support the opinion that cellular aggregations play a role in the formation of renal calculi. The author believes that an intense congestion of the parenchyma, such as that observed in the renal parenchyma of the animal in which calculi were not as yet formed, is probably a disturbance as constant as xerophthalmia in A avitaminosis. He concludes that the formation of renal calculi should be considered one of the disturbances caused by A avitaminosis.

Archiv für Kinderheilkunde, Stuttgart

105 164 (April 26) 1935 Partial Index

- *Vaccination Resistance of the New-Born J von Lukács and D von Moritz—p 1
*Latent Serum Reaction E Barla Szabó—p 5
Tissue Reactions in Serum Disease E Barla Szabó—p 8

Vaccination Resistance of the New-Born—Von Lukács and von Moritz investigated why there are less positive vaccination reactions in the new-born than in older nurslings by comparing the reactions of newly born infants, vaccinated on the second day after birth, with the reactions of older nurslings. They found that newly born infants have a relative resistance to vaccination in that their reaction develops more slowly than that of the older nurslings. The papule becomes

relatively larger in the new-born, but the surrounding area is small. There is hardly any general reaction (fever) and the increase in weight is not impaired. The authors think that this deviation from the usual vaccination reaction is the result of a deficient antibody formation in the new-born.

Latent Serum Reaction—Barla-Szabó employed Kaufmann's cantharidal test to demonstrate the latent serum reaction in twenty children, aged between 3 and 12 years, in whom the administration of normal horse serum caused no clinical manifestations. In some of the cases not even Kaufmann's tissue reaction disclosed changes. In other cases Kaufmann's test disclosed the reactivity of the organism to be altered in the same manner as in those cases in which the serum reaction causes clinical manifestations.

Beitrage zur Klinik der Tuberkulose, Berlin

86 161 210 (April 25) 1935 Partial Index

Symptom Triad Situs Inversus, Bronchiectasis and Polyps of Nose A Behrmann—p 161

*Serodiagnosis of Tuberculosis by Means of Flocculation Reactions. E. Dissmann and Maria Dissmann-Wosak—p 176

*Therapy with Ultrashort Electric Waves Particularly in Tuberculous Disturbances O. Schedtler—p 189

Selective Upper Thoracoplasty in Pulmonary Tuberculosis N. W. Antelawa—p 200

Serodiagnosis of Tuberculosis—Dissmann and Dissmann-Wosak point out that the improvement of the flocculation reactions for syphilis and the observation that they are a manifestation of a reaction of antigen and antibody and thus a generally applicable immunity reaction led to the demonstration of the antibodies in the serum of tuberculous patients. Thus far it was generally the indirect method of the deviation of the complement that was employed. However, the especially purified and fractionated extracts of tubercle bacilli, which proved to be effective antigens in the complement fixation test, seemed to promise specific reactions in the flocculation system. The authors made various flocculation reactions on about 1,200 blood specimens from 480 patients with pulmonary tuberculosis, from thirty-six with other disorders and from 103 healthy persons. They employed (1) the Meimcke clarification reaction (II) with the especially prepared extracts as microreaction, as curvature reaction (accumulation of sediment in the bottom curvature of the test tube) and as centrifugation method, (2) the latter centrifugation method with the addition of the antigen according to Witebsky-Kuhn-Klingenstein, and (3) the complement fixation reaction according to Witebsky-Kuhn-Klingenstein. A comparison of the microreaction, the curvature reaction and the centrifugation method indicated that the curvature reaction in its second modification is the best method. It is advisable to perform the microreaction and the curvature reaction together. The strongest Meimcke antigen occasionally produces nonspecific reactions. The Witebsky-Kuhn-Klingenstein antigen with the standard clarification extract is of great value in the centrifugation method. Negative reactions have been observed in open, more or less extended forms of tuberculosis. Considerable changes in the disease process are accompanied by fluctuations in the intensity of the reactions. The authors think it probable that the occurrence of positive reactions in healthy persons may be the result of pulmonary infiltrates of short duration. They call attention to the differential diagnostic significance of seroreactions.

Ultra-Short Wave Therapy in Tuberculosis—In preliminary experiments with ultrashort waves Schedtler gained the impression that the heat effect seems to be the chief factor in ultra-short wave therapy. He therefore resorted to it in tuberculous processes in which heat, hyperemization and anti-inflammatory measures were indicated. He treated fourteen patients in whom pulmonary tuberculosis was complicated by dry pleurisy, with ultrashort waves of from 35 to 6 meters and obtained favorable results. Six cases of wet pleurisy, most of them of tuberculous etiology, were likewise treated with ultrashort waves. This treatment never produced prompt cessation of the exudation, but four refractory cases were led to resorption and adhesion, while in the two other cases the treatment remained ineffective. Three cases of tuberculous pleural empyema were not influenced by the

treatment, while two patients who had nontuberculous pleural suppurations recovered. In fistulating glandular processes and in tuberculosis of the joints and bones, ultra-short wave therapy was given in addition to open air rest cure and to cod liver oil treatment. None of these cases showed a noticeable improvement as the result of the ultra-short wave therapy, which, however, proved highly effective in three cases of nonspecific chronic multiple arthritis. In four cases of tuberculous peritonitis, the ultrashort waves produced considerable improvement. The symptoms of intestinal tuberculosis likewise were favorably influenced. In view of the fact that patients with pulmonary tuberculosis are highly sensitive to all types of rays, the author was cautious in the application of ultrashort waves to these patients, and his observations justified this attitude. Convincing therapeutic effects were not produced. Summarizing, the author points out that ultra-short wave therapy seems to be justified within certain limitations. He was unable to demonstrate specific actions and thinks that this new form of ray therapy can be employed whenever intensive heating is desirable. This applies particularly to the various forms of pleurisy. The analgesic action of the ultrashort rays should be given further attention. In the author's observations on the effect of ultrashort waves in tuberculous processes of the larynx and of the eyes, thus far, he gained the impression that they promote the healing process, provided the general condition is good and the treatment is continued for a sufficient length of time.

Deutsche medizinische Wochenschrift, Leipzig

61 741 780 (May 10) 1935 Partial Index

Water Exchange and Acid Base Equilibrium F. Hoff—p 741

*Occurrence of Local Edema in Human Subjects C. Ernst—p 745

Borderline Condition of Epidemic Encephalitis E. H. Romberg—p 747

*Rhizomelic Spondylosis H. Engel—p 752

Local Edema—On the basis of numerous experiments, Ernst reaches the conclusion that patients with vasoneurosis and hypertension have a tendency to local edema. He thinks the fact that the facial expression of such persons often changes rapidly from an enervated, prostrated expression to a condition of high turgor indicates the same. The site and intensity of the local edema is largely independent of hydrostatic conditions, but meteorologic and temperature changes as well as psychic changes in the patient exert an influence on the local edema. Thus the vasoneurotic diathesis is characterized not only by vascular anomalies but also by changes in the tissues. The author thinks that vasoneurosis has a causal connection with and creates a predisposition for a number of disorders, such as gastric ulcer, red hypertension, Raynaud's gangrene, ulcerous colitis, certain forms of asthma and some forms of cystitis. Moreover, vasoneurosis often concurs with certain types of glaucoma and with Ménière's syndrome.

Rhizomelic Spondylosis—Engel reports a case of rhizomelic spondylosis in a man, aged 32. He considers the case worthy of attention because, after the man had been completely immobilized for nine years, the spinal column as well as the hip joints being ankylosed, he underwent an operation to enable him to sit up. Pseudo-arthroses were produced in the trochanter regions of both lower extremities with the result that the patient is able to sit up and use his arms and hands, for only one of the shoulder joints is slightly impaired in its motility.

Deutsche Zeitschrift für Chirurgie, Berlin

245 192 (April 23) 1935 Partial Index

*Experimental Studies on Revival After Exsanguination. A. Winkelbauer—p 1

Experimental Studies of Thrombosis Ushiro—p 16

Fever in Traumatic Fat Embolism W. Ruckert—p 36

Neurinoma of Cervical Sympathetic O. Diebold—p 58

Revival After Exsanguination—Winkelbauer removed a definite amount of blood from the femoral artery of a dog into a Percy tube, after which the blood was allowed to escape until the disappearance of the pulse and heart tones and the arrest of breathing. After a variable waiting period the blood was reinfused either into the jugular vein or into the carotid artery in the direction of the heart or of the brain or, by means of a glass canula, in both directions. The experiments were con-

trolled by graphic recording of the pulse, auscultatory control of the heart tones and the use of electrocardiograms. The mode of death from exsanguination was not always identical. It was caused by arrest of the heart, the respiration or the vasomotor center. The author took advantage of the pre-terminal pause, which could always be observed in the respirations or in the electrocardiogram, to estimate the waiting period before the beginning of reinfusion. This period varied from one half to twenty and one half minutes. The infusion into the arterial system proved to be more effective during this critical period than the infusion into the venous system. The clinical signs of death did not coincide with the suspension of the cardiac activity. Revival was still possible as long as the electrocardiogram showed traces of regulated cardiac action. When the electrocardiogram no longer recorded any traces of cardiac activity, revival was not possible. Out of forty experiments performed by the author on thirty-seven dogs, fifteen were successful in reviving the animal. A complete return to normal in the surviving animals took place after a few hours or days. The electrocardiogram indicated an impairment of the intraventricular conductivity. At times the electrocardiograms resembled those of coronary occlusion with signs of high grade fibrillation. The frequently observed heartblock was regarded as being due to asphyxia.

Klinische Wochenschrift, Berlin

14 665 696 (May 11) 1935 Partial Index

*Influence of Muscular Activity on Blood Sugar and Blood Catalase H. Koeppel—p. 667

*Carotene and Vitamin A Contents of Human Serum E. Schneider and E. Widmann—p. 670
Cevitamic Acid and Blood Catalase G. Torök, M. Hedry and L. Neufeld—p. 673

*Curves of Serum Color Reaction in Pernicious and Simple Achylic Anemias E. Schmehle and H. Schmid—p. 675

Influence of Muscular Activity on Blood Sugar.—Koeppel points out that catalase, as an oxidation ferment, plays an important part in metabolism. Numerous studies disclosed that the catalase content of the blood is influenced by many factors. The author found that the catalase content of the blood plays a part in the oxidation of the sugar. The relation between blood sugar and catalase was proved by the observation that the two are changed simultaneously, but in the opposite direction, by (1) the administration of carbohydrates, (2) hunger and (3) muscular activity. The dependence of the blood sugar content on the intake of carbohydrates and on hunger was known and has been given therapeutic consideration, but its dependence on muscular activity was not so well understood and consequently has not been given the attention it deserves. It is important in determining the so-called fasting blood sugar value, for, when the blood sugar is tested after the fasting person has had considerable muscular exercise, the value thus obtained is not the same as when the test is made immediately after awakening from a restful sleep. The author thinks that the simultaneous determination of the catalase values may eventually give a clearer insight into the relation between blood sugar and catalase and consequently information about the metabolism.

Carotene and Vitamin A Contents of Human Serum.—Schneider and Widmann show that carotene and vitamin A are present only in the serum, but not in the blood corpuscles. They discuss the methods for the determination of carotene and vitamin A. They observed that with increasing temperature more and more carotene is destroyed and they think that this observation has some significance for the cooking and baking process. They found also that with increasing age the carotene content of the serum increases while the vitamin A content decreases. The vitamin A content, particularly, describes a regular life curve. The authors think that, when a deficiency in vitamin A is studied this life curve should be taken into consideration. The deficiency in vitamin A, which becomes manifest in spite of a sufficient intake, is caused by a functional impairment of the liver. The vitamin A content is important in connection (1) with certain ophthalmic disturbances, (2) with the secondary thyrogenic impairment of the liver and (3) with infections. Little is as yet known about the mechanism of the vitamin A action in the organism. Some

have been of the opinion that it catalyzes the oxidation processes in the liver, while others have maintained that it influences the glycolysis. The latter problem was investigated by several authors and some of them considered the formation of methylglyoxal as the essential factor in glycolysis. The authors likewise studied this problem and found that, if measured on the increase in methylglyoxal, the addition of carotene produces a slight increase in the glycolysis. Vitamin A alone effects no increase, while the combined administration of carotene and vitamin A produces a noticeable increase. Cevitamic acid exerted no influence on the glycolysis.

Color Reaction of the Serum in Pernicious Anemia.—Schmehle and Schmid determined with the step photometer in thirty normal serums the average normal curve of the color reaction of the serum. This average approximately corresponds to the curve most frequent in normal persons. The serum color index is considerably increased in severe cases of pernicious anemia and decreases rapidly under the influence of liver therapy. In patients in whom the color index reaches normal or subnormal values, the tendency to relapse is not so pronounced as in patients in whom the color index remains rather high in spite of normal erythrocyte values, for the high color index shows that there is still increased hemolysis. The authors discuss the color index in simple achylic anemia. They apply this term to a form of secondary anemia, accompanied by achylia or subacidity, which often exists for many years and has a blood picture that somewhat resembles chlorosis. The chief symptom is a disturbance in the gastric secretion caused by atrophy of the mucous membrane of the digestive tract. Thin and brittle nails are another sign of achylic anemia. The color index is low in achylic anemia, which indicates that it is not a hemolytic anemia, but it increases as the hemoglobin increases. The hemoglobin content can be increased by medication with reduced iron. Relapses are quite frequent in this form of anemia, but they never endanger the patient's life.

Medizinische Klinik, Berlin

31 637-668 (May 17) 1935 Partial Index

Causes of Hardness of Hearing M. Schwarz—p. 637

When Is Surgical Treatment Indicated in Disorders of the Biliary Tract? H. Finsterer—p. 639

Treatment and Prophylaxis of Diphtheria C. Noetel—p. 642

Therapy of Pleuropulmonary Fistulas A. Schick—p. 647

*Acceleration of Nylander's Sugar Reaction G. Lepehne—p. 649

Nylander's Sugar Reaction.—Lepehne observed that the presence of lead acetate considerably accelerates Nylander's reaction. He found that, in a urine which had been clarified with lead acetate for the purpose of quantitative polarimetric examination, Nylander's test was completed within a short time. Further studies revealed that, if Nylander's reagent was saturated with lead acetate, the black precipitate developed much more rapidly than when ordinary Nylander's solution was used. In trying to find the optimal composition of the new reagent, the author observed that the alkalinity of Nylander's solution is reduced by the addition of lead acetate. In order to prevent a disturbance in the reaction in strongly acid urines because of the reduced alkalinity, he prepared Nylander's solution with a 12 per cent instead of a 10 per cent solution of sodium hydroxide, and he mixed one part of the reagent with one part of the urine. This solution with its increased alkali content is carefully heated, then, while it is heated again, small amounts of finely powdered lead acetate are added until the solution is hypersaturated. The opaque fluid is cleared by filtration. A sediment, which precipitates later, does not disturb the reaction. Overheating must be avoided in order to prevent the formation of lead oxide and the resulting yellow coloration of the solution or of the sediment. The author states that he worked with this modified Nylander reagent for several years and found it reliable. If this new reagent is used, the black sediment, indicative of the presence of sugar, appears after from one-half to one minute of boiling, while the original reagent required from three to four minutes or longer. A slight protein content of the urine or strong urobilin and indican contents do not interfere with the reaction. The author mentions several other investigators who suggested the use of lead acetate for the improvement of Nylander's reaction.

Zeitschrift für die Gesamte Neurologie und Psychiatrie, Berlin

152: 451-616 (April 25) 1935 Partial Index

Third Artery of Red Nucleus K Stern—p 519

Intraventricular Meningioma of Right Cornu Posterius J De Busscher—p 522

*Aspects of Spinal Cord in 'Cured' Funicular Myelitis L Bouman and M Bielschowsky—p 538

*Late Lesions of Human Brain Caused by Roentgen Rays T Markiewicz—p 548

The Spinal Cord in a Case of "Cured" Funicular Myelitis—Bouman and Bielschowsky report the history of a man who died of carcinoma of the stomach in 1934. In 1920 and 1921 he had had symptoms indicating the existence of pernicious anemia with involvement of the spinal cord. At that time the patient was given arsenic therapy. He recovered and was in good general condition for twelve years, blood changes as well as spinal symptoms being absent. The achlorhydria and the cerebral symptoms, which the patient developed toward the end of his life, were caused by the gastric carcinoma, for changes in the blood indicative of recurrence of the pernicious anemia were not evident. The histopathologic aspects of the spinal cord of this patient are noteworthy. On macroscopic observation, the transverse sections revealed nothing abnormal. Not until stains were applied to the medullary sheaths did changes become evident, which differed from those usually observed in funicular myelitis. A transverse section of the dorsal spinal cord did not disclose the gaps that are typical for funicular myelitis in the posterior, lateral or anterior columns but the section did disclose characteristic spotted markings resulting from the confluence of smaller foci of medullary shadows and absorbing less of the hematoxylin of Weigert's stain. In these medullary shadows the normal number of axis cylinders was hardly reduced. They conclude from the histologic aspects of this spinal cord that the changes of funicular myelitis are largely reversible. They think that the organ preparations that exert a favorable influence on the blood picture of pernicious anemia should be given in much larger doses in cases in which the spinal cord is involved, for it is more difficult to influence funicular myelitis.

Late Roentgen Lesions of the Brain—Markiewicz reports a case in which a man, aged 34, had paresthesias of the scalp, epileptic attacks of the Jackson type, amaurosis and paraplegia of the lower extremities five years after the first roentgen irradiation and one and one-half years after the last one and a roentgen ulcer of the scalp in the occipital region a little later. The time that elapsed between the first and last irradiations and death was four and seven years, respectively. Anatomic studies disclosed multiple symmetrical necroses, some of which were hemorrhagic and most of which were in the cerebral medulla and almost exclusively in the occipital and parietal regions, at the site of the severest cutaneous changes. There also were signs of impairment of the interstitial tissues, and deposits of substances were found that greatly resembled the colloidal degeneration described by Alzheimer or the coagulation necrosis of Spielmeyer. However, in contradistinction to those authors, Markiewicz detected the vascular changes not only in the brain but also in the vessels of the pia. The changes observed in this patient correspond to those which Scholz produced by means of roentgen rays in animals, except that in the patient they were more advanced. There is a resemblance not only in that they are of circulatory origin but also in that the nervous parenchyma proved resistant to the roentgen rays. The changes in the patient supplement the observations made by Scholz in animals that it was possible to determine a reduced reactivity of the ectodermic as well as of the mesodermic interstitial tissues. Then there was a parallel process to the necroses namely, extensive deposits of colloidal substances which Scholz observed only in their beginning stages in and near the vessels. Whether the peculiar colloidal transformation of the vessels is the cause of the circulatory conditioned necroses cannot be definitely determined. At any rate, it appears that the deposits of colloidal masses themselves may later produce necrosis. The long latent stage between the application of the rays and the manifestation of the clinical signs is known from roentgen injuries of other organs, particularly those of the skin.

Zeitschrift für Tuberkulose, Leipzig

73: 1-80 (May) 1935

Significance of Deviation of the Complement According to Witebsky, Khngenstein Kuhn for Diagnosis and Prognosis of Pulmonary Tuberculosis F Schutz—p 1

Experiences with Meinknecht's Seroreaction for Tuberculosis K Zech—p 16

Significance of Determination of Sodium Chloride in Sputum O Zorn—p 21

*Pneumothorax Pleurisy and Simple and Effective Method of Preventing It I Petrin—p 31

Method of Preventing Pneumothorax Pleurisy—Petrin introduced from 2 to 4 cc. of sterile olive oil into the pleural cavity of rabbits and then injected air, in quantities from 80 to 150 cc., at intervals of from seven to ten days. When oil was not introduced, exudates resulted, while, if oil was introduced, the pneumothorax became complete and the pleura showed thickening but there was no exudate. Examination of the thickened pleurae disclosed inflammatory granulation in the course of becoming fibrous, that is, there exists a fibrous pleuritis in which the reparative process (granulation tissue) predominates over the alternative and exudative processes. Encouraged by the effects of oil injections in animals, the injection of oil was employed in 105 patients. At the second and third refilling of the pneumothorax, from 2 to 4 cc of sterile olive oil is introduced into the pleural cavity by introducing the oil through the pneumothorax needle by means of a syringe. The majority of patients complained of severe thoracic pain on the day the oil was introduced and many had a considerable rise in temperature. Roentgenoscopy disclosed that a sinus exudate developed in all patients, and in four it rose to the dome of the diaphragm. However, after about two weeks the exudate had become resorbed. A high exudate that necessitated a puncture or the premature interruption of the pneumothorax did not develop in any of the cases. A pneumothorax should never be made complete at once, but only fifteen days after the introduction of the oil. The author concludes that the clinical and experimental results of the endopleural oil injection justify a wide application of this treatment.

Zeitschrift für Krebsforschung, Berlin

42: 1-192 (May 8) 1935 Partial Index

Therapeutic Experiments with Ferments in Experimental Tumors in Rats Berta Ottenstein and S von Paskinszky—p 1

Aerobic Glycolysis of Blood Corpuscles in Patients with Tumor R Indovina and W Fabisch—p 63

*Kaposi's Disease as Systematized Angiomatosis F J Lang and L Haslhofer—p 68

*Experimental Studies on Problem of Tobacco and Cancer O Schurch and A Winterstein—p 76

Kaposi's Disease as Systematized Angiomatosis—Lang and Haslhofer point out that the opinions about the nature of the disorder designated by Kaposi as sarcoma idiopathum multiplex pigmentosum are still divided. The authors think that the different opinions about the nature of Kaposi's disease are due to the extraordinary manifold microscopic aspects presented by the disease. They observed two cases of Kaposi's disease. They point out that the tissue changes consist in sprouting and dilatation of the capillaries, hemorrhages and proliferation of the connective tissue cells. These changes are accompanied by pigment formation. The disorder involves primarily the corium and, occasionally, the subcutaneous connective tissue, whereas the epidermis is only secondarily involved. The authors describe the histologic aspects and reproduce photomicrographs. The tissue changes of the internal organs that may be involved correspond to those of the skin. In regard to the pathogenesis most investigators seem to agree that the Kaposi 'sarcoma' is due to vascular changes. Authors, who considered the condition tumorous called attention to the microscopic structure and to the apparent metastasization. Other investigators, however, cited factors that contradict the sarcoma nature of Kaposi's disease. The authors themselves reach the conclusion that Kaposi's disease is a systematized hemangiomatosis and consider the later developing spindle-cell nodules transformations and retrogressive forms of vascular tumors which finally end in complete cure. That the disorder is a hemangiomatosis is proved not only by the clinical aspects but also by the fact that angiomatous formations often have a multiplicity of first traces. This latter factor

disproves the metastatic nature of the changes in the internal organs. The spontaneous recovery from the vascular tumors is another factor that contradicts the sarcomatous nature.

Tobacco and Cancer—Schürch and Winterstein analyzed tobacco tar and found that it is free from polycyclic, aromatic hydrocarbons. The cancer-producing hydrocarbons that are found in coal tar are lacking in tobacco tar. The authors tested the cancerogenic action of tobacco tar on the skin and mucous membranes of mice and rabbits. They found that painting with tobacco tar, either alone or in connection with mechanical or thermic irritation, does not produce carcinoma. The various fractions of tobacco tar likewise proved to be free from cancerogenic action. In rabbits the general condition of which had been impaired by a high cholesterol diet and by application of coal tar, it was possible to produce tar warts and carcinoma by means of tobacco tar. The authors conclude that tobacco tar is a factor in the pathogenesis of cancer only in case a predisposition exists.

Zentralblatt für Chirurgie, Leipzig

62 1329 1392 (June 8) 1935

- *Elimination of Intercostal Nerves After the Method of Leotta in the Treatment of Pulmonary Tuberculosis F. Rabboni—p. 1330
Evipan Sodium in Local Anesthesia H. Kirchner—p. 1337
Treatment of Hirschsprung's Disease in Childhood F. Niklas—p. 1338
Melorheostosis E. Michalowski—p. 1344
Diagnosis of Loose Bodies in Elbow Joint J. Oberholzer—p. 1348
Vasectomy H. Stiasny—p. 1351

Alcoholization of Intercostal Nerves in Treatment of Pulmonary Tuberculosis—According to Rabboni, Leotta's method of restricting the respiratory excursion consists in injecting 2 cc. of 95 per cent alcohol into the intercostal nerve. To accomplish the desired effect, Leotta injects four intercostal nerves on both sides. The technic is simple and certain if the needle is introduced into the triangular space Leotta designates as the costopleural triangle. To avoid pain, 0.5 cc of 4 per cent procaine hydrochloride solution is injected before the alcohol is introduced. The treatment results in diminishing the sensitivity of the skin, immobility of the ribs and a diminution of the respiratory excursion accompanied by a lowering of spirometric values and of the vital capacity. The author feels that this condition must be maintained, regardless of the type of tuberculosis, for not less than two years. The return of rib mobility is recognized by a return to normal vital capacity and by fluoroscopic examination. Injection of the nerves is to be repeated as a rule after from three to four months. It is not necessary to combine this with any other method of collapse therapy. The advantages of the method are that the pleura is not harmed, a complete anatomic and functional restitution takes place, and it is free from any danger. The method is indicated whenever pleural adhesions make it impossible to induce a pneumothorax and when bilateral immobilization is desirable. It is particularly successful in cases presenting fibrous induration. The author further advises it for hemoptysis that is difficult to arrest.

Zentralblatt für Gynäkologie, Leipzig

50: 1025 1088 (May 4) 1935

- Aspects of Hyperventilation During Pregnancy and Puerperium D. Adlersberg and E. Klaffen—p. 1026
Drastring Example for Efficiency of Colposcopy O. Bandilla—p. 1039
Suprapubic Amputation of Uterus in Puerperal Sepsis F. C. Hilgenberg—p. 1045
*Diagnostic and Prognostic Significance of Aschheim-Zondek Reaction in Cystic Mole and Chorionepithelioma R. Koehler—p. 1049
Simultaneous Intra Uterine and Extra Uterine Pregnancy A. Katz—p. 1054

Aschheim-Zondek Reaction in Chorionepithelioma—According to Koehler the Aschheim-Zondek reaction is of greater significance in the diagnosis of cystic mole and of chorionepithelioma than in the diagnosis of pregnancy. He concedes that the positive Aschheim-Zondek reaction as such is no help in the recognition of the presence of a degenerated ovum, for its positive outcome indicates only the presence of active chorion tissue. In case of degenerative processes on the ovum, that is in case of cystic mole, the hormone content is considerably

greater, in that each cubic centimeter contains from 250 to 500 mouse units, compared to from 20 to 30 mouse units in normal pregnancy. The assumption of a malignant degeneration, in the absence of other symptoms, is justified if a positive Aschheim-Zondek reaction persists two or three weeks after the discharge of an apparently normal ovum or from sixty to ninety days after the expulsion of a cystic mole. However hemorrhages will generally suggest the malignant degeneration of an ovum, even before this period has elapsed. If, following the expulsion of a normal ovum or of one with cystic degeneration, the Aschheim-Zondek reaction again becomes positive after having been negative, malignant degeneration is likely, particularly if there are hemorrhages. For this reason, the Aschheim-Zondek reaction must be repeated at least every month in every case of cystic mole, so as not to miss the best time for the treatment of chorionepithelioma. The author gives the clinical history of a case of cystic mole, in which the suspicion of a chorionepithelioma was supported by the outcome of the Aschheim-Zondek test and in which it was corroborated by the total extirpation of the uterus, without previous exploratory curettage. However, he reports another case in which the erroneous outcome of the Aschheim-Zondek test was taken as an indication of a radical therapeutic procedure (total extirpation of the uterus in a young woman), which would not have been done had the Aschheim-Zondek test not failed in this case.

Sovetskaya Vrachebnaya Gazeta, Leningrad

April 30 (No. 8) pp. 601-680 1935 Partial Index

- *Role of Allergic State of a Childish Organism in Predisposition to Scarlet Fever E. Yu. Gen and E. V. Skrotskiy—p. 613
Anginas of Alimentary Origin S. I. Ratner, V. I. Avtonomov, V. I. Rabinovich and S. S. Rotenburg—p. 616
Treatment of Erysipelas with Sodium Bicarbonate V. V. Gerbst and V. P. Skulgina—p. 621
*Antivirus Prophylaxis of Grip E. E. Shtaynshtayder and T. S. Yakobson—p. 623

Relation of Allergic State to Predisposition to Scarlet Fever—Gen and Skrotskiy used the Dick test as the criterion for predisposition to scarlet fever and the intradermal injection of 1 per cent watery solution of Witte's peptone as a test of the allergic state of the organism. Observations were carried out on 516 children ranging in age from 3 to 8 years. Two-tenths cubic centimeter of the solution of peptone was injected intradermally into one arm, while simultaneously the Dick test was applied to the other. The authors found that the reactions of the two are quite similar in their manifestations (redness, swelling, pain) and in the time of appearance and disappearance. They ran a parallel course in 70 per cent of the cases. While 53 per cent of the healthy children reacted positively to the injection of peptone, only 4 per cent of those convalescing from scarlet fever reacted positively. Apparently scarlet fever desensitizes the organism to a nonspecific allergen. The same convalescing children reacted to the Dick test in 14 per cent of the tests. The authors conclude that the allergic state in children acts as a predisposing factor to scarlet fever. Their results favor the allergic character of the Dick reaction and the significance of the allergic factor in the pathogenesis of scarlet fever.

Antivirus Prophylaxis of Grip—Shtaynshtayder and Yakobson report mass vaccinations against grip. The method consisted of touching up the throats twice daily for two or three days with a grip antivirus prepared at the Metchnikov Institute and consisting of four parts of Pfeiffer bacillus antivirus, two of pneumococcus antivirus, three of streptococcus antivirus and one of Neisseria catarrhalis antivirus. The first vaccination was carried out during October and November 1933, on some 5,000 workers in several machine plants. A second vaccination experiment was carried out during an epidemic flare up in February 1934. A number of controls were not vaccinated. The morbidity from grip during the first month among those vaccinated was 1.1 per cent and 2.8 per cent among the controls, during the second month 2.1 among those vaccinated and 3.7 among the controls and during the third month, 2.7 and 2.8, respectively. In the second experiment 1,123 workers were submitted to the antivirus treatment, while 1,276 acted as controls. The morbidity percentages were 6.5 in the treated group and 12.5 in the controls. The authors conclude that grip antivirus is an effective

tive prophylactic agent in endemic and epidemic grip. The duration of the immunity is not less than one month. Vaccination reduces the incidence of grip to one half. The course of the illness in the vaccinated is shorter. The antiviral may be administered by the method of local application to the pharynx or nose.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

79: 2323-2422 (May 18) 1935

Gastric Perforation A. Kummer—p. 2324

Hypnosis with Aid of Evipan in Polyclinical Patients T. A. Kandou—p. 2330

*Hypophyseal Reaction in Tuberculosis L. Koster and P. A. Heeres—p. 2336

Etiology and Treatment of Respiratory Asthma G. F. Gezelle Meerburg—p. 2348

Hypophyseal Reaction in Tuberculosis—Koster and Heeres describe a syndrome occurring in tuberculosis which they consider due to a hyperfunction of the hypophysis. The clinical picture has much in common with hyperpituitarism and with hyperadrenalinism. It consists in moderate obesity, rapid growth of body weight, hyperthermia, erythremia, hypertension, hyperglycemia and glycosuria, purplish red striae on the abdomen, thighs and upper arms, moderate increase in the cholesterol content of the blood, marked increase in the basal metabolic rate, genital anomalies, falling out of hair, moon face and slight kyphosis. The subjective symptoms resulting from the tuberculous changes are pains in the back, shooting pains in the arms and legs, constant fatigue at the slightest effort, headache and vertigo. The author treated six patients, three of whom developed the symptoms after previous treatment for tuberculosis, while the others showed such symptoms in the course of an acute pleural process. No conclusions regarding prognosis were reached.

Acta Medica Scandinavica, Stockholm

85: 221-418 (May 6) 1935 Partial Index

*Potassium Content of Blood Serum During Fever Liselotte Kallós-Defner—p. 221

Examination of Hepatic Function in Patients with Acute Febrile Disorders K. Brochner-Mortensen—p. 229

Several Interesting Cases of Cerebral Tumor from Point of View of Differential Diagnosis S. Eckerström—p. 244

*Clinical and Serotherapeutic Studies on Preparalytic Stages of Poliomyelitis on Basis of Experience During Epidemic in Skive District in 1933 S. Bastrup—p. 262

Determination of Cholesterol in Blood G. Telum—p. 316

*Uremia as Cause of Death in Massive Hemorrhage from Peptic Ulcer T. Christiansen—p. 333

Potassium Content of Blood Serum During Fever—Kallós-Defner calls attention to a paper in which Cloetta demonstrated the unreliability of the methods recommended for the demonstration of the potassium content of the blood serum and in which a new method was described. Since Cloetta's method requires an expensive apparatus, the author simplified it somewhat. Her method is a moist incineration by means of sulphuric acid. The incineration is repeated from three to five times until the remaining ash is white and no longer has an acid odor. The ash is combined with distilled water and the potassium content is then determined according to the method of Jendrassik and Szél. In tests on normal persons the author found that the potassium values vary in different persons, but she gained the impression that the normal values fluctuate between 16.8 and 21.45 mg. per hundred cubic centimeters. She also made tests on patients with fever and found that the potassium content of the blood serum was greatly increased during fever and decreased again after it subsided. Experiments on rabbits disclosed that, if fever is produced in normal animals, the potassium content of the blood serum becomes considerably increased. After the fever subsides, the potassium content becomes normal again, or it may even go below the initial value.

Studies on Poliomyelitis—Bastrup observed 120 hospital cases of poliomyelitis. The disease can usually be diagnosed during the preparalytic stage solely from the clinical symptoms, but the spinal fluid tests, especially those which determine the number of cells, and the albumin and globulin, are helpful. In discussing the differential diagnosis, he gives particular attention to the disorders which may present similar symptoms or meningeal symptoms: influenza, encephalitis and tuberculous,

purulent or serous meningitis. He calls attention to the similarity between preparalytic poliomyelitis and so-called benign idiopathic serous meningitis and suggests that probably some of the cases that are diagnosed as serous meningitis are really sporadic cases of preparalytic poliomyelitis. He warns against attaching too much differential diagnostic importance to the sugar determination in the spinal fluid. He criticizes the practical value of the usual measures taken to combat epidemics and discusses serum therapy. This therapy presupposes that in the beginning poliomyelitis is a general infection, which later on, in the preparalytic stage, betrays a tendency to advance toward the central nervous system. The experiments with monkeys merely argue in favor of a possible prophylactic effect on the paresis, but not a curative effect. Once the paresis is present, serum therapy seems to be useless. Of the patients observed by the author, thirty-two received this therapy, ten were treated with horse serum and twenty-two with convalescent serum. The horse serum had no effect whatever. It could not be established definitively that convalescent serum had a prophylactic effect against paresis, nor could it, on the other hand, be shown that it did not. Nevertheless, according to the observation of the author and a few other investigators, convalescent serum seems to influence the general condition in some cases, and the author thinks that this form of therapy deserves further trials. He suggests the alternate intravenous and intramuscular injection as the best method of administration of convalescent serum.

Cause of Death in Peptic Ulcer—Christiansen's report is based on twenty-one fatal cases of massive hemorrhage in peptic ulcer. Necropsy was done in sixteen of these cases, and in twelve cases it revealed erosion of fairly large arteries. The time that elapsed from the beginning of the hemorrhage until death varied between three and thirty days. As it is hardly possible that a patient may live for any number of hours with a continual arterial hemorrhage, it seems reasonable to conclude that the hemorrhage must have stopped sometime before death and, consequently, that the hemorrhage could not have been the cause of death in the strictest sense of the term. This applies in particular to the cases which might be designated as "late" deaths. In some of these cases, complicating and intercurrent disorders (perforation, pneumonia, embolism) may have constituted the cause of death. In a majority of the cases, however, the fatal outcome resulted from general exhaustion. This condition is characterized more by symptoms of intoxication than by symptoms of true anemia, and even in those cases in which arterial erosion could be demonstrated on necropsy the hemorrhage presumably had ceased sometime before death. The hypothesis is set forth that this general exhaustion is a condition of extrarenal hyperazotemia, which may be preceded and accompanied by achloruria, and that this condition may be treated successfully by the administration of sodium chloride. In contrast to other forms of uremia of gas-trogenic origin, uremia associated with massive hemorrhage in peptic ulcer develops insidiously and without vomiting. The theory is advanced that in these cases the hyperazotemia is a symptom of intoxication arising from absorption of toxic substances that are formed by bacterial decomposition of the blood stagnating in the intestinal canal, this intoxication is further aggravated by demineralization from excessive flushing of the organism by water.

Hospitalstidende, Copenhagen

78: 393-420 (April 9) 1935

IV Experimental Investigations on Influence of Estrogenic Substance and Corpus Luteum Extract on Mammary of Adult Guinea Pigs on Daily Administration Partly of Small Doses for Several Months Partly of Large Doses in Course of Two and One Half Months E. Dahl-Iversen—p. 393

*Lipase Activity in Preparations of Dried Stomach Substance from Fields of Cardia, Pylorus and Pylorus Glands Respectively E. Meulengracht E. Schjødt and A. Eldahl—p. 408

Lipase Activity in Dried Stomach Substance—Meulengracht and his associates found that the lipase activity of preparations from the cardiac portion of the stomach of swine was somewhat greater than that of the preparations from the fundus and pyloric portions—a difference which they ascribe to the relatively greater amounts of interstitial tissue in the cardia.

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SYPHILIS AND PREGNANCY

A CLINICAL STUDY OF 2150 CASES

CHAIRMAN'S ADDRESS

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The women in this study were all colored and each had a strongly positive blood Wassermann reaction during some period of pregnancy.

It has been said that studies of this sort are of local interest only and without value except for the colored race. It is true that the incidence of syphilis is much higher in the colored race, but the disastrous results of syphilis on pregnancy are the same in every language, creed and color.

The study shows, indisputably, the ravages of the disease on pregnancy, the wonderful results of efficient antepartum antisyphilitic therapy and the maternal safety of such treatment.

RESULTS OF PREVIOUS PREGNANCIES

The records of previous pregnancies of 826 of the 2150 women were studied. Pregnancy ended disastrously 1,369 times. It is probable that there were not as many term pregnancies as the figures indicate (table 1), because the information concerning the duration of pregnancy was obtained from the patient.

ANTEPARTUM THERAPY

The antepartum clinic was visited by 1,454 women one or more times. Blood for the Wassermann test was obtained at the first visit. During recent years the positive Wassermann reactions have been repeated. A Wassermann test was done at the time of labor on the 696 women who did not visit the antepartum clinic.

The fundamental principle on which all our antepartum therapy is based is the prevention of the disease in the baby. We make no effort to cure the disease in the mother. Antepartum treatment is mild but continuous. Strict adherence to this principle makes antepartum treatment safe for the mother.

Our treatment consists of the intravenous administration of 0.45 Gm of nearsphenamine and a mercurial injection. In most cases treatment was given weekly. For the past two years two injections have been given each week.

The 2,150 pregnancies were classified as term, premature, late abortion and early abortion. If the result of pregnancy was a stillborn baby or a baby that died in the hospital, pregnancy was considered disastrous. The outcome of pregnancy was disastrous in 633

women. This means that 29.4 per cent of the 2,150 women did not leave the hospital with a living baby (table 2). The increase in the percentage of term pregnancies, and the decrease in the percentage of premature pregnancies, late abortions and early abortions with an increased number of antepartum treatments is shown in a striking manner in table 3. In this table the number of disastrous pregnancies are correlated with the number of antepartum antisyphilitic treatments. This percentage varies from 49.4, when no treatment was received, to 5.4 per cent, when ten or more treatments were received. These figures indicate that the best results are obtained with ten or more antepartum treatments. Syphilis rarely waits until the end of pregnancy to reveal its disastrous effects.

TERM PREGNANCIES¹

There were 1,368 term pregnancies, 1,269 babies were born alive and discharged from the hospital (92.8 per cent). Seventy-three babies were stillborn and twenty-six died in the hospital (table 4). It is to be remembered that the term babies discharged alive did not all escape infection. As will be shown later (table 11), 11.4 per cent of the living term babies had positive cord Wassermann reactions. Of the ninety-nine women who had disastrous pregnancies, seventy-one, or 71.7 per cent, had not received treatment. Term pregnancies ended disastrously in 14.7 per cent of the 484 women who did not have treatment and in 3 per cent of the 261 who received good treatment. It is probable that the latency of the disease in the mother explains the high percentage of term babies that were discharged alive.

PREMATURE PREGNANCIES²

The relation between prematurity and antepartum treatment is shown in table 5. Five hundred and five pregnancies were classified as premature. Two hundred and forty-eight babies were born alive, 184 were stillborn and seventy-three died in the nursery. The women who had not received antepartum treatment gave birth to 57.6 per cent of the premature babies and those who had good treatment gave birth to only 7.1 per cent. Premature pregnancies ended disastrously in 65.6 per cent of the women receiving no treatment and in 19.4 per cent of those receiving good treatment.

These figures do not give a complete picture of the tragic results. Two hundred and forty-eight premature babies left the hospital alive. It was impossible to follow most of them. It is a conservative estimate to say that 50 per cent died within a few weeks.

LATE ABORTIONS³

There were 154 late abortions. Eighty-seven per cent of the women did not receive antepartum treat-

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Sixth Annual Session of the American Medical Association Atlantic City N. J. June 13, 1935.

1 From eight to nine months over 2,500 Gm.

2 From seven to eight months from 1,500 to 2,500 Gm.

3 From five to six months, from 1,000 to 1,500 Gm.

ment Table 6 shows only one late abortion among those women who had more than six treatments. Of the 2,150 women in the study, 605 had six or more treatments. Only one late abortion occurred in this group (table 3). Not a single late abortion occurred among the 298 women in the study who received good treatment.

TABLE 1—Results of Previous Pregnancies

Term stillborn	151
Term died	300
Premature stillborn	243
Premature died	102
Late abortions (all dead)	224
Early abortions	343

TABLE 2—Results of Pregnancy in 2,150 Four Plus Cases

Pregnancy	Number	Per Cent
Term	1,368	63.6
Premature	503	23.5
Late abortion	154	7.2
Early abortion	123	5.7
Pregnancy disastrous	633	29.4

TABLE 3—Results of Antepartum Treatment (Figures in Percentage)

Treatments	2 150 Cases	Pregnancy				Stillborn and Died
		Term	Premature	Late Abortion	Early Abortion	
0	1 013	47.8	28.7	13.2	10.3	49.4
1	123	50.3	28.5	8.1	4.1	30.9
2	122	63.9	29.5	3.3	8.3	21.3
3	118	79.7	16.1	1.7	2.5	15.3
4	87	78.2	19.5	2.3		6.0
5	82	78.1	18.3	1.2	2.4	4.9
6	95	78.9	20.0		1.1	7.4
7	71	80.3	18.3		1.4	9.9
8	79	81.0	16.4	1.3	1.3	6.3
9	62	80.6	17.8		1.6	9.7
10 or more	298	87.6	12.1		0.3	5.4

EARLY ABORTIONS ⁴

One hundred and twenty-three women aborted early. Eighty-four and six tenths per cent of these did not have prenatal treatment. Table 7 shows the marked decrease of early abortions with increased antepartum treatment. Among the 605 women who had six or more treatments, there were but five early abortions (table 3). Only one early abortion occurred among the 298 women who received good treatment.

Increasing experience leads me to believe that maternal syphilis is probably a more frequent cause of early abortion than is now believed.

THE DEVASTATION OF SYPHILIS

The devastation of syphilis is further shown in table 8. Pregnancy ended prematurely 782 times. Of the 782 women, 67.6 per cent did not have antepartum antisyphilitic treatment. Nineteen and eight tenths per cent of these received poor treatment (fewer than six treatments). Pregnancy ended prematurely in only 4.7 per cent of the women who had good treatment (ten or more).

THE EFFECT OF ANTEPARTUM THERAPY ON THE MATERNAL WASSERMANN REACTION

One or two Wassermann tests were done on 1,257 women in the antepartum clinic and were repeated at the time of labor (table 9). Our experience is that of

others doing this work, that is, the Wassermann reaction seems as dependable during pregnancy as it is at any other time.

Of the 1,257 women, 273 received good treatment. The Wassermann reaction was negative at the time of labor in 77.3 per cent of these.

A negative Wassermann reaction during pregnancy, as at any other time, is not assurance that the patient does not have syphilis. There were ninety-five women with a negative clinic Wassermann reaction who did not receive antepartum treatment. The Wassermann test repeated at the time of labor on these women was positive. The results of the ninety-five pregnancies are of considerable interest (table 10). It is assumed that the disease was probably more or less latent in these women, yet pregnancy ended disastrously in 31.6 per cent.

THE CORD WASSERMANN REACTION

It has been repeatedly stated in the literature that the cord Wassermann reaction is of little or no value. An analysis of the cord Wassermann reactions on 1,372

TABLE 4—Term Pregnancies ¹

Treatments	Cases	Child		
		Alive	Stillborn	Died
None	484	413	55	16
One	73	70	2	1
Two	78	76	2	
Three	94	91	1	2
Four	68	67	1	
Five	64	64		
Six	76	74		1
Seven	57	53	3	1
Eight	64	62	1	1
Nine	50	46	2	2
Ten or more	261	253	6	2
Total	1,368	1,269	73	26
Per cent		92.8	5.3	1.9
Disastrous term pregnancies				
No treatment				14.7
Good treatment				8.0

Of the women who had disastrous pregnancies 71.7 per cent did not receive antepartum treatment.

TABLE 5—Premature Pregnancies ²

Treatments	Cases	Child		
		Alive	Stillborn	Died
None	291	100	141	50
One	35	15	14	6
Two	38	20	9	7
Three	19	9	7	3
Four	17	14	3	
Five	15	14	1	
Six	19	14	4	1
Seven	18	11	1	1
Eight	13	12	1	
Nine	11	10	1	
Ten or more	36	29	2	5
Total	605	248	184	73
No treatment				67.6
Good treatment				7.1
Disastrous premature pregnancies				
No treatment				65.6
Good treatment				19.4

living babies in this series indicates that the test is of value (table 11). The cord Wassermann reaction was positive in 11.4 per cent of the term babies and in 21.8 per cent of the premature babies. The reaction was positive in 21.2 per cent of the babies whose mothers did not have antepartum treatment and in 2 per cent of those whose mothers received good antepartum treatment.

⁴ Under five months or 1,000 Gm.

SPIROCHÆTA PALLIDA IN DEAD BABIES

The Levaditi method was used in staining the tissues of 197 babies. The results, with the number of antepartum antisyphilitic treatments that the mothers received, are shown in table 12. The organisms of syphilis were found in 120 babies (61 per cent). The mothers of 89.2 per cent of the positive babies did not

TABLE 6—Late Abortions³

Treatments	Cases	Child	
		Stillborn	Died
None	134	100	28
One	10	6	4
Two	4	4	
Three	2	2	
Four	2	1	1
Five	1	1	
Six			
Seven			
Eight	1		1
Nine			
Ten or more			
Total	154	120	34
No treatment 87 per cent			

TABLE 7—Early Abortions⁴

Treatments	Cases	Child	
		Stillborn	Died
None	104	103	1
One	5	4	1
Two	4	3	1
Three	3	3	
Four			
Five	2	1	1
Six	1	1	
Seven	1	1	
Eight	1	1	
Nine	1	1	
Ten or more	1	1	
Total	123	119	4
No treatment 84.6 per cent			

TABLE 8—Devastation of Syphilis Premature Pregnancies

Treatments	762 Cases	Per Cent
None	529	67.6
One	50	6.4
Two	44	5.6
Three	24	3.0
Four	19	2.5
Five	18	2.3
Six	20	2.6
Seven	14	1.8
Eight	15	1.9
Nine	12	1.5
Ten or more	37	4.7
Poor treatment		19.8

have antepartum treatment and the mothers of 10 per cent received fewer than six treatments.

ROENTGENOGRAMS OF DEAD BABIES

Roentgen studies were made of the long bones of 329 dead babies (table 13). The changes that are believed pathognomonic of congenital syphilis were present in 205 babies (62.3 per cent). The mothers of 83.9 per cent of the syphilitic babies did not receive treatment, and 15.1 per cent of them received fewer than six treatments.

It should be emphasized that the organisms of syphilis were found in 61 per cent of the babies on whom a Levaditi stain was done, and that long bone changes were present in 62.3 per cent of those of whom a roentgen examination was made. This is not a

coincidence. The two groups do not represent the same babies. Both examinations were made of many of the babies but by no means all of them. This close percentage strengthens the belief that either method, properly done, is equally dependable in the diagnosis of congenital syphilis.

SYPHILIS AND SOME COMPLICATIONS OF PREGNANCY

The opinion is more or less widespread that one of the causes for the high maternal mortality of colored women is the high incidence of syphilis. The fact that there were but three deaths in this series of 2,150 women seems to refute this opinion. Sepsis was the cause of each death.

TABLE 9—Maternal Wassermann Reactions (1,257)
Effect of Treatment

Treatments	CI + Lb -	CI + Lb +	CI - Lb +
None	57	115	95
One	22	61	
Two	56	57	2
Three	49	53	
Four	28	37	3
Five	50	25	
Six	54	30	1
Seven	44	21	
Eight	80	23	
Nine	37	19	1
Ten or more	211	61	1
Total	652	502	103
Good treatment (Labor Wassermann negative 77.3)			273

TABLE 10—Ninety-Five Cases No Treatment, Clinic
Wassermann Negative, Labor Wassermann Positive

Term alive	52
Term stillborn	3
Term died	2
Premature alive	13
Premature stillborn	13
Premature died	2
Late abortion stillborn	8
Early abortion stillborn	2
Pregnancy disastrous	30 or 31.6 per cent

TABLE 11—Cord Wassermann Reactions on Live Babies

Treatments	Cases	Term		Premature	
		Positive	Negative	Positive	Negative
None	457	70	301	27	59
One	82	15	54	3	10
Two	86	10	53	4	14
Three	94	11	75	1	7
Four	72	5	56	2	9
Five	72	4	58	2	8
Six	78	6	53	2	12
Seven	58	4	43	2	9
Eight	65	1	53	2	9
Nine	54	2	44	1	7
Ten or more	254	4	224	1	25
Total	1,372	132	1,024	47	169
Per cent		11.4	88.6	21.8	78.2
Per cent positive					21.2
No treatment					2.0
Good treatment					

It is of interest that 16.6 per cent of the last 15,011 Wassermann tests from our clinic were positive. This is not the true incidence of syphilis in pregnant colored women, because many of the tests had been influenced by treatment in previous pregnancies.

Any systolic blood pressure of 135 or higher, is recorded as a hypertension. The incidence of hypertension in this study was 26.3 per cent. In our clinic,

the incidence of hypertension in women with a negative Wassermann reaction is just as high. I believe that syphilis, per se, has but little to do with the hypertensions of pregnancy.

Eclamptic convulsions occurred in sixteen women (0.74 per cent). This incidence is not high when the incidence of hypertension (26.3 per cent) is recalled.

Preeclampsia was diagnosed in 156 women, and 108 women were believed to have chronic nephritis.

CONCLUSIONS

As a result of my experience in this study, extending over a period of twelve years, I feel justified in forming the following conclusions:

1 Pregnancy does not affect the reliability of the Wassermann reaction.

2 This test should be a routine part of antepartum care.

3 Regardless of the activity of the disease, sufficient antepartum antisyphilitic treatment assures the woman a syphilis-free baby in 95 per cent of the cases.

4 The best results will be obtained with ten or more treatments.

5 Treatment should be mild but continuous and should not be controlled by the Wassermann reaction.

TABLE 12—*Organisms in Dead Babies*

Treatments	Positive	Negative
None	107	61
One	7	0
Two	1	0
Three	2	1
Four	1	
Five	1	2
Six		
Seven		2
Eight		1
Nine		2
Ten or more	1	0
Total	120	77
Per cent	01	39

TABLE 13—*Roentgenograms of Dead Babies*

Treatments	Syphilitic	Normal
None	172	82
One	17	6
Two	8	8
Three	5	3
Four	1	2
Five		4
Six	1	2
Seven		5
Eight		3
Nine		4
Ten or more	1	0
Total	205	124
Per cent	62.3	37.7

6 The concurrent use of arsenic and a heavy metal has worked well in our hands.

7 Such therapy seems to be safe for the mother.

8 In the vast majority of cases, a strongly positive cord Wassermann test, properly done, means that the baby has congenital syphilis. A negative cord Wassermann reaction is of little value in the diagnosis of congenital syphilis.

9 The characteristic picture of osteochondritis of the long bones is pathognomonic of congenital syphilis.

10 There seems to be no condition in medicine that returns such huge dividends in life and health with such a small output of energy and money as that seen in the prevention of congenital syphilis.

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STREPTOCOCCIC MENINGITIS

REPORT OF CASE WITH RECOVERY

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Streptococcic meningitis has exacted an exceedingly high mortality. Most of the cases have been handled by otologists, as the incidence secondary to otitis media has prevailed in the larger proportion of all reported cases.

Thus far, the mortality rate, approximated from meager figures, appears to be over 97 per cent. Careful search of the literature reveals but sixty-six reported cases of recovery since 1901, including the one here reported. In reviewing the literature, one is impressed by the multiplicity and lack of correlated ideas as to the handling of this disease. Overzealousness has, to a considerable degree, resulted in the low percentage of cures. Fortunately, the number of cases of streptococcic meningitis is relatively small.

The majority of all streptococcic meningitis cases have as their source a purulent otitis media. I am aware that a purulent condition of the ear may exist coincidentally with a meningitis and the two be etiologically different. Therefore, it is necessary to find the same kind of organisms in the spinal fluid as in the ear to state that the meningitis is secondary to an otitis media.

At the Cook County Hospital in Chicago over a period of ten years (from 1911 to 1920) there were found only sixty-three cases of otitis out of a total of 1,188 cases of meningitis. There were 1,254 cases of suppurating ears, and the 1,188 cases were of that group. Fourteen of the 1,188 were due to accessory nasal sinus disease. Thus, it is seen that in some of the cases the otitic suppuration had no etiologic relationship to the meningitis. Eight cases showed streptococci on culture of the spinal fluid, approximately 0.7 per cent of the total number of meningitis cases. The other sources of origin were syphilitic, 6 per cent, tuberculous, 25 per cent, epidemic cerebrospinal, 48 per cent, and other infectious types—of which the streptococcic was a small part, and those of undetermined origin—20 per cent. From the foregoing figures, it is seen that the number of meningitis cases of streptococcic origin is relatively small. The meningitides should be separated into etiologic groups and a more definite and common plan of therapy inaugurated accordingly.

Kopetzky¹ classified the otitic meningitides and gave a summary of the spinal fluid characteristics in the various types: (1) protective meningitis (meningitis sympathica) and (2) suppurative meningitis (dangerous). Under type 2, he names two types: (1) fulminating and (2) exudative. When his classification is used with the spinal fluid changes, the differential diagnosis may be made a better prognosis given, the type of therapy planned and an effort made to carry it out.

The one common action agreed on by all is the complete eradication of the primary focus of infection, if possible, at the earliest moment. In cases in which more radical procedures have been used there have been fewer recoveries.

General surgeons, in the past, incised streptococcic foci and in most instances made numerous incisions into contiguous tissues with resultant spread of the infection.

From the United States Veterans Administration Facility
1. Kopetzky, S. J. Otolitic Surgery. New York: Paul B. Hoeber Inc. 324 361. 1925.

and greater mortality. Since a more conservative therapy by serums, numerous blood transfusions, local fomentations and conservation of the patient's strength by supportive measures has become the rule, more cures have been secured. Blood transfusions, even when the cell counts and hemoglobin are practically normal, have been given the credit of producing cures.

Were one to resort to extreme surgical measures (other than removal of the initial focus or foci) in the treatment of streptococcic meningitis, would one not break down protective barriers, remove the antibodies already built up and spread the infection to otherwise unaffected parts? The literature is abundantly witness to that fact. There are more frequent cures in cases in which more conservatism has been the rule. There are records of cases that have presented so-called spontaneous cures which, undoubtedly, have been due to the active protective reactions on the part of the host.

Spinal puncture with slow removal of a small quantity of spinal fluid for pressure, cell count, bacterial, copper reduction and other determinations is necessary and without harm in most cases. What is the result, however, when large amounts are taken at frequent intervals, in cases in which it is not under excessive pressure, with the idea of draining away infection products? It would be as reasonable to drain away the blood in septicemia. It is putting a demand on structures that form the fluid and is liable to lead to their exhaustion and it allows greater influx of bacteria if the initial focus has not been eradicated.

Experiments have failed to show any appreciable results from the injection of serums, drugs and chemicals into the spinal canal in streptococcic meningitis. Canuyl, Tassowatz and Wild² stress the beneficial effect of Vincent's streptococcus antiserum combined with blood transfusions and formation of a fixation abscess. They state that it is not necessary to inject the serum into the spinal canal, intravenous injections may suffice. They favor daily spinal punctures. However, the procedures followed in the cured cases show that unless there are definite signs of increased intracranial pressure the spinal fluid should be left alone as much as possible. New blood from donors, donors with acquired immunity built up by working in hospitals, should be given the patient in frequent transfusions.

Fleischmann,³ in experiments in the chemotherapy of meningitis, found that preparations given by the spinal route are not effective. He believes that disinfection of the meninges through the blood is possible, and that the plexus is permeable by drugs given intravenously. He showed this to be true in that, when 100 cc of anti-streptococcus serum was given intravenously, it could be demonstrated in the spinal fluid after from twelve to twenty-four hours in concentrations not much less than that in the blood. He later demonstrated that the same is true of agents used for chemotherapeutic purposes in cases of meningitis, while in normal cases even fatal doses failed to show in the spinal fluid.

Kolmer⁴ shows that intracarotid injections are simple and safe, that intense concentration of the medicament occurs in the meninges, and that encouraging results have been observed in that method of treatment of severe pneumococcic and streptococcic meningitis. In reviewing the literature, even the excessive trauma of

cutting down on the carotids appears not to be necessary, as sufficient concentration may be had by the usual intravenous route. I am reporting here a case of recovery in which there were no residuals, wherein the treatment was very conservative. Transfusions and medication were given by the usual intravenous route.

REPORT OF CASE

A white man, aged 34, weighing 150 pounds (68 Kg.), a laborer, admitted to the Veterans' Administration Facility, Jan. 26, 1934, complained of severe headache, fever and stiffness of the neck. He had a perforated left ear drum from a shell explosion during the World War, and the ear had discharged pus almost continuously since the date of injury. The longest period of freedom from discharge was about six or seven months. Tonsillectomy had been done about ten years before. The patient could not recall any serious illness. Two weeks before admission he noted extreme headache and stiffness of the neck muscles, but he was able to be up and about for two days, during which time he felt fine. January 24 he noted a return of the stiffness of the neck, accompanied by severe headache and fever. On admission the temperature was 101 F., pulse 80. He appeared extremely ill.

On examination the pupils were equal and regular and reacted to light and in accommodation. There was no nystagmus, ptosis or lag. The media and fundi were normal.

The tympanic membrane of the right ear was intact, slightly dull and moderately retracted. The spoken voice could be heard at 2 feet. Bone conduction was normal. Records showed that hearing had been in this state for some years past. The left ear presented a moderate sized central perforation of the tympanic membrane with seropurulent discharge, nonpulsating. There was no pain on pressure over the mastoids but the left was shaded to transillumination. There was a subjective feeling of deep pain in the area of the left mastoid. Records showed that there had been no hearing of the spoken voice with the left ear for years. Bone conduction was absent.

Transillumination of the sinuses was clear.

The neck muscles were rigid, the neck moved from side to side with great difficulty and pain.

The heart, lungs, abdomen, genitalia and extremities were normal. Knee jerks were absent, Kernig's, the cremasteric and the plantar reflex were present.

A spinal puncture was done, January 26. The fluid was under increased pressure and was opaque, the smear showed gram-positive extracellular cocci—single and in pairs. No intracellular or gram-negative cocci were found. There was no reaction with Neufeld pneumococcus serums types 1, 2 or 3. Many polymorphonuclears and few lymphocytes were found in the smear.

Gram-positive cocci were found in smears of the ear as in the spinal fluid and throat, singly and in pairs.

Cultures of spinal fluid showed alpha hemolytic streptococci, verified by the Connecticut State Bureau of Laboratories. Cultures of ear discharge showed the same.

Blood cultures were negative for any growth at any time.

Roentgen examination of the right mastoid showed large cells of the pneumatic type, with the walls intact. There was dense opacity of the entire left mastoid with complete occlusion of all the cells and no evidence of any air. The density was most marked in the periantral cells and the zygomatic process.

The Wassermann reaction was negative.

Blood counts revealed a normal number of erythrocytes, leukocytes varied from 7,300 up to 21,400, hemoglobin was from 95 per cent to 100 per cent.

The blood type belonged to group O (NRC) or IV Moss.

Treatment was immediately inaugurated. 95 per cent grain alcohol being used in the left ear, an ice cap was applied to the head, and codeine one-half grain (0.06 Gm.) given every six hours if necessary for pain. At 8 p. m. the temperature was 102.4 F. The second day, headache was less in the morning and alcohol drops in the ear were given with greater frequency, every two hours. The minimum temperature was 101.2 F., the

² Canuyl, G., Tassowatz, B. and Wild, C. *Bull. Acad. de med., Paris* 109: 570-573 (April 11) 1933.

³ Fleischmann, Otto. *Klin. Wchnschr.* 1: 217-220 (Jan. 28) 1922.

⁴ Kolmer, J. A. *Laryngoscope* 42: 12-33 (Jan.) 1932.

maximum 103 F. On the third day, January 28, the morning temperature was 101.2 F. A blood transfusion of 500 cc by the citrate method was given, followed by a chill of short duration, the temperature rising to 103.8. The patient felt much better. Liquids were forced, and catharsis and general supportive measures were administered. The patient continued to improve slowly with a temperature curve similar to lysis in pneumonia, to normal, February 4.

February 5 the ear discharge became much diminished, headache became very severe, and the temperature rose to 99 F, rigidity of the neck increased and the patient seemed somewhat confused. There was no projectile vomiting at any time.

February 6, a blood transfusion was given followed by elevation of temperature to 100.8 F later falling to normal. The patient felt much better. Transfusion was decided on preliminary to operation. The ear discharge, as stated, had become reduced in quantity and changed to a serous nature while on February 6 the quantity increased, becoming seropurulent again, and pulsating in character. I considered that, since the patient had extreme headache and more rigidity with rising temperature before transfusion, and since the character of the discharge had changed, there was pus beneath the external sclerotic plate

of the mastoid with a channel into the cranial cavity, and that obstruction to external drainage was forcing purulent material inward.

February 7, a simple mastoidectomy was performed on the left. The antrum was found full of granulations and seropurulent material. A large mastoid cell, also, full of granulations and seropurulent material, was present, opening into the antrum just external and inferior to it. A small fistulous tract led directly upward from the antrum to and through the tegmen, which was eradicated and the dura exposed as widely as possible. All granulations were removed from the antrum and the aditus. The wound was left open after plain gauze drains were inserted and dry dressing was applied. The mastoid otherwise was sclerosed to the nth degree.

Following the operation, the patient had less pain and rigidity. He had a gradual abating septic temperature until February 18, at which time it became normal. Another transfusion was given, February 16.

From the date of operation, at which time he was given intravenous dextrose following the operation, daily high colonic irrigations were given, the drain in the ear was kept renewed and moistened by 95 per cent grain alcohol, frequent saline

Reported Cases of Recovery from Streptococcal Meningitis

Author	Year	Sex	Age	Possible Source of Infection	Streptococci in Spinal Fluid	Method of Treatment
Schenks and Streit	1901	♂	35	Otitis and mastoiditis	Negative	Mastoidectomy
Schulze Walter	1903	♂	12	Otitis	Positive	Lumbar taps
Voss	1905	♀	7	Otitis after scarlet fever	Positive	Mastoidectomy
Alexander G	1908	♂	10	Otitis	Positive	Mastoidectomy and lumbar taps
Alexander G	1908	♂	24	Otitis	Positive	Mastoidectomy and lumbar taps
Peabody G L	1908	♂	37	Undetermined possible head trauma	Positive	Spinal taps and antistreptococcus serum intraspinally
Netter A	1909	♀	7	Otitis after measles	Negative	Lumbar taps
Myglind H J Laryngol & Otol 37: 597 (April) 1922	1910	♂	13	Otitis (Strep pyogenes)	Positive	Mastoidectomy
Graef C and Wynkoop R B	1910	♀	24	Submucous resection of nasal septum	Positive	Autogenous streptococcus vaccine
Obnacker Paul	1911	♀	5	Otitis after scarlet fever	Negative	Mastoidectomy and antistreptococcus serum
Tedesco Fritz	1911	♀	20	Undetermined	Negative	Lumbar taps
Day E W	1913	Not given		Brain abscess	Negative	Dural drainage
Day E W	1913	♀	19	Otitis and mastoiditis	Negative	Antistreptococcus serum intraspinally autogenous streptococcus vaccine subcutaneously
Barth	1914	♀	10	Trauma to back	Negative	Lumbar laminectomy
Leighton and Pringle	1915	♀	8	Otitis and mastoiditis	Negative	Lumbar laminectomy
Leighton and Pringle	1915	♂	5	Head trauma	Negative	Lumbar laminectomy
Du Bois, P L and Neal J B	1915	♂	20	Otitis (Strep pyogenes)	Negative	Antistreptococcus serum intravenously and intraspinally streptococcus vaccine subcutaneously methenamine
McKenzie Dan	1915	♂	50	Otitis and mastoiditis	Positive	Dural drainage
Crockett E A	1916	♂	16	Otitis after measles	Positive	Lumbar taps and antistreptococcus serum intraspinally
McCarthy F P Boston M. & S J 177: 621 (Nov 1) 1917	1917	♂	25	Head trauma (Strep viridans)	Positive	Daily lumbar taps with intraspinal injections normal human serum following
Bondy	1917	♂	21	Otitis and mastoiditis (Strep pyogenes)	Positive	Mastoidectomy and spinal taps
Bondy	1917	♂	43	Otitis (diplococcus streptococcus)	Positive	Labyrinthotomy
Bondy	1917	♂	28	Otitis and mastoiditis (Strep pyogenes)	Positive	Lumbar taps
Weaver G H J A M A 72 1362 (May 10) 1919	1919	♀	25	Undetermined (Strep viridans)	Negative	Antistreptococcus serum
Watson Williams E J Laryng Rhin & Otol 35: 197 1920	1920	♂	37	Otitis	Positive	Mastoidectomy labyrinthotomy spinal taps colloidal silver intraspinally
Neal Josephina B	1921	♀	5	Otitis (Strep haemolyticus)	Negative	Lumbar taps
Shaw Henry	1921	♂	8	Otitis (Strep haemolyticus)	Positive	Lumbar taps
Asker G N	1921	♂	12	Otitis (Strep haemolyticus)	Positive	Lumbar taps
Scott Sidney	1921	♀	10	Otitis and mastoiditis	Positive	Mastoidectomy
Patzig D	1922	Not given		Undetermined possible head trauma (Strep viridans)	Positive	Lumbar taps
Bowers W O New York State J Med 22: 158 (April) 1922	1922	♂	34	Otitis and mastoiditis (Strep haemolyticus)	Positive	Lumbar taps and jugular ligation
Bowers W O	1922	♂	12	Otitis (long chain streptococcus)	Negative	Mastoidectomy drain abscess, spinal taps
Yerger O E J A. M. A. 79: 1924 (Dec. 2) 1922	1922	♀	40	Otitis following measles	Negative	Mastoidectomy
Askey Stephen	1923	♂	12	Otitis	Positive	Mastoidectomy
Dandy Walter	1924	♂	6	Head trauma (Strep haemolyticus)	Positive	Surgical drainage
Dandy Walter	1924	♂	49	Removal brain tumor (Strep viridans)	Positive	Surgical drainage
Vining O W and Thompson H P	1924	♀	10	Tonsillitis (Strep haemolyticus)	Positive	Lumbar taps antimeningococcus and antistreptococcus serums
Urbantschitsch E	1926	♂	21 mo	Undetermined (Strep innocuus)	Positive	Mastoidectomy and spinal taps
Neal, Josephina B	1927	♀	7	Otitis after scarlet fever (Strep haemolyticus)	Negative	Lumbar and cisternal taps antiscarlatinal serum acriflavine base
Huenekens E J and Stoesser A F Am J Dis Child 33 779 (May) 1927	1927	♀	7	Otitis (Strep haemolyticus)	Negative	Lumbar taps saline irrigations mastoidectomy
Lang J	1928	♂	2	Tonsillitis (Strep haemolyticus)	Positive	Antimeningococcus serum

Reported Cases of Recovery from Streptococcic Meningitis—Continued

Author	Year	Sex	Age	Possible Source of Infection	Streptococci in Spinal Fluid	Method of Treatment
Neal, Josephine B	1930	♂	11	Otitis after scarlet fever (Strep haemolyticus)	Positive	Lumbar and cisternal taps antiscarlatinal serum
Solomoo G H M J Australia J 63 (May 17) 1930	1930	Not given		Trauma to pharynx		Not available
Cassel H D Ohio State M J 40: 401 (May) 1930	1930	Not given		Tonsillitis		Not available
Rosenberg Lester, and Hottley H W Ano Int Med 4: 1154 (March) 1931	1931	♀	6	Tonsillitis (Strep haemolyticus)	Positive	Lumbar taps, irrigation with acriflavine antimeningococcus and antistreptococcus serums
Leishman Arnot Canad M A J 24: 434 (March) 1931	1931	♀	16	Otitis and mastoiditis (Strep haemolyticus)	Positive	Lumbar taps mercurochrome lotrs spinally and intravenously
Appelbaum, Emanuel	1931	♂	6	Tonsillectomy (non hemolytic streptococcus)	Positive	Lumbar taps antimeningococcus and antistreptococcus serums
Applebaum Emanuel	1931	♀	8	Otitis	Positive	Lumbar taps antimeningococcus serum
Appelbaum Emanuel	1931	♂	15	Tonsillitis	Positive	Lumbar taps antimeningococcus and antistreptococcus serums
Layton T B Proc Roy Soc Med 27: 488 (Feb) 1932	1932	♂	25	Otitis (Strep haemolyticus)	Positive	Mastoidectomy lumbar taps with antimeningococcus serum followlog
Ersoer M S and Mendell T H J A. M. A 99: 1590 (Nov 5) 1932	1932	♂	21	Otitis and mastoiditis (Strep haemolyticus)	Positive	Mastoidectomy, lumbar taps, intracardiotid 0.5 per cent acriflavine base Pregl's solution of iodine 10 cc of each alternating intravenous dextrosa and blood transfusioo antistreptococcus serum lotraspinally
Erner M S and Mendell T H	1932	♀	19	Otitis and mastoiditis (Strep haemolyticus)	Positive	Mastoidectomy, spinal taps etc., same as preceding case
Lewis Edward Arch Pediat 49: 632 (Sept) 1932	1932	♀	8	Otitis and mastoiditis (Strep haemolyticus)	Positive	Mastoidectomy lumbar taps blood transfusions
Rothschild Earl J Nerv & Ment Dis 70: 360 (Oct) 1932	1932	♂	29	Possibly infected tooth (nonhemolytic streptococcus)		Spinal taps one injection antimeningococcus serum but it caused dangerous reaction intravenous 5 per cent dextrose 500 cc twice daily
Trounce T R and Douthwaite A H Brit. M. J 1: 752 (April 23) 1932	1932			Tonsillitis		Information not available
Plazy and Germain Bull et mém Soc méd d hôp de Paris 48: 1253 (July 18) 1932	1932	♂	20	Undetermined (non hemolytic streptococcus and meningococcus streptococcus) type A	Positive	Intraspinal intravenous and intramuscular injections of Vincent's antistreptococcus serum (serum diluted 10 times for intravenous injections patient developed a unilateral orchepididymitis attributed to the serum)
Cannfield Norton Michigan M Soc J 32: 108 (Feb) 1933	1933	♂	17	Otitis and mastoiditis (Strep haemolyticus)	Positive	Spinal taps intraspinal injections antistreptococcus serum also intravenously mastoidectomy not done owing to poor condition of patient, recovered and mastoid became again necrotic
Renole J R., and Craig W S Lancet 1: 634 (March 11) 1933	1933	♂	28	Tonsillitis (nonhemolytic streptococcus)	Positive	Lumbar taps intraspinal injections antistreptococcus serum
Basset A. Ameline A., and Malarat, J Bull et mém Soc nat de chir 59: 295 (Feb 25) 1933	1933					Information not available
Rockett Hildreth Brit J Child Dis 30: 196 (July-Sept) 1933	1933	♂	2½	Pertussis and bronchopneumonia (Strep haemolyticus)	Positive	Lumbar taps antiscarlatinal serum intrathecally and intramuscularly
Osooyt G Tassowatz B and Wild O Bull. Acad de méd Paris 109: 570 (April 11) 1933	1933	♀	11	Trauma to eyelid (Strep haemolyticus)	Positive	Exploratory Septicemia intravenously and fixation abscess formed Vincent's antistreptococcus serum intravenously and intramuscularly spinal taps blood transfusion
Müller M Echo méd. du oord 37: 271 (Juoc) 1933	1933					Information not available
Ebert E Acta oto-laryng 19 506 1934	1934	♀	62	Otitis and mastoiditis (Strep haemolyticus)	Positive	Mastoidectomy one spinal tap after operation
Felsen Joseph and Osofsky A G J A M. A. 102 2170 (June 30) 1934	1934	♂	22	Scalp trauma (Strep viridans)	Positive	Gas gangrene serum intraspinaly spinal taps (see paper for immunologic studies)
Kleefeld Louis Laryngoscope 44 56 (Jan) 1934	1934	♀	38	Otitis and mastoiditis (Strep haemolyticus)	Positive	Mastoidectomy elimination of sinus ligation of jugular vein irrigation of bulb with surgical solution of chlorinated soda lumbar taps
Gray H J	1935	♂	34	Otitis and mastoiditis (Strep haemolyticus)	Positive	Mastoidectomy blood transfusions alcohol et al.

purges were given, fluids were forced 5 cc. of methenamine was administered intravenously every day for three days

The dressing was not changed until four days following operation, at which time drainage was found to be good, and patient had no complaint.

The patient able to be out of bed March 5

Daily cleansing of the ear was carried out, and from March 5 alcohol was used in the ear only three times daily. By May 22 the mastoid incision was healed, the ear was completely dry, and the patient had gained in weight and was feeling well. Examination by the neuropsychiatrist revealed no residuals mentally or neurologically.

More interest should be shown in such a fatal disease, and cases should all be reported whether there has been recovery or not. In that manner more rational therapy could be inaugurated and more accurate figures secured for statistical information. There have been cases cured that have never been reported, which would have been of greater value to the profession had they been reported with complete data.

It will be noted from the accompanying table of reported cures that there has been a number of cases of complicating otitis. Most of the reported cases were treated conservatively.

SUMMARY

Streptococcic meningitis is usually a fatal disease with but sixty-six reported cases of recovery over a period of thirty-four years.

Treatment of most recovered cases has been more conservative than the generally published regimen and consists principally of eradication of the initial focus, spinal taps, intraspinal and intravenous injections of serums and blood transfusions.

The case here reported was treated conservatively, and it would be difficult to state the definite cause of recovery. It is the opinion, however, that maintaining the physiologic balance, as nearly as possible, had more to do with recovery than any other procedure.

INTRANASAL OPERATION FOR CHRONIC MAXILLARY SINUSITIS

END RESULTS IN TWO HUNDRED CASES IN
WHICH THE PRINCIPLES OF KÜSTER
WERE EMPLOYED

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In his discussion of the treatment of otitic sepsis, Ballance¹ remarked

Want of agreement among serious workers about a grave question of surgical treatment arises either from the lumping together of clinical conditions having an essentially different pathological basis or from essential pathological conditions not being clearly understood. All true and lasting surgical practice is based upon pathology, and when once the pathology of an affection is clearly appreciated divergence of view as to its treatment ought to disappear.

It is our opinion that basic surgical principles adequate to the cure of chronic suppurative disease of the paranasal sinuses were laid down by Kuster² fifty years ago, and that divergence in views as to the surgical treatment of this disease ought therefore to disappear. Any further advance in treatment should be in the direction of a more refined differential diagnosis and proper selection of cases and in the field of nonsurgical treatment.

It might be useful in evaluating these principles to trace the history of their development. To Meibom³ in 1718 is attributed the first attempt to cure suppuration in the maxillary sinus by operative intervention; he removed a tooth and lavaged the antrum through the fistula. Cowper and others later advocated the same treatment. This procedure was discarded because of the frequent necessity of sacrificing a sound tooth, and particularly because in only a few cases were symptoms relieved.

Lamorier⁴ and Desault⁵ advised puncture and lavage through the canine fossa, but this treatment was discarded because of the paucity of favorable results. Jourdan⁶ enlarged the natural ostium in an attempt to secure drainage along normal pathways, and Zuckerkandl⁷ in 1882 advised entering the maxillary sinus behind and below the infundibulum. These two approaches were discarded because of the severe bleeding encountered from the anterior lateral branch of the sphenoplatine artery, but more especially because of the frequency with which the orbit was entered. Mikulicz⁸ in 1886 advised opening the antrum through the inferior meatus, in order to retain as nearly as possible the normal pathway of antral discharge and at the same time avoid the dangers of Zuckerkandl's approach. He devised a trocar, later modified by Wilhelmski, with which to perforate the lateral nasal wall, and a curved cannula with which to carry out postoperative lavage, using a solution of boric acid.

In 1889 Küster published his fundamental paper, "The Basic Principles of the Treatment of Suppuration

in Rigid Walled Cavities." He took the maxillary sinus as the example of a completely rigid walled cavity with a lining of mucous membrane. He established as his principles of treatment an opening into the sinus large enough to allow inspection of the interior, and the removal of diseased portions of the membrane, polypi and sequestrums, and the establishment of a permanent fistula to afford unobstructed drainage. It is on these principles that all later sinus surgery has been based. He chose as his route of approach the canine fossa, making an opening from the pyriform process to the region of the first molar, and maintained the patency of the opening by suturing the mucous membrane of the antrum to the mucous membrane of the gingivobuccal groove.

In 1893 Caldwell,⁹ because of the extreme difficulty encountered in preventing reinfection of the antrum through the mouth with a permanent fistula present in the canine fossa, opened the antrum through the canine fossa, removed diseased tissue as advocated by Küster, and then made a permanent counter opening into the inferior meatus and allowed the opening in the canine fossa to heal. Because this method of surgical treatment met the requirements of Küster without the disadvantage of a permanent fistula into the mouth, and because it combined the advantage of a physiologically normal pathway of discharge, as advocated by Mikulicz, it gained immediate popularity and almost supplanted all other methods of surgical treatment of suppurative disease of the maxillary sinus. The Mikulicz operation was relegated to the position of an accessory to lavage of thick walled antrums because adequate exposure to remove diseased tissue and a permanent opening for drainage were not secured by the original technic.

Luc¹⁰ in 1897 described a similar technic, which has caused his name to be linked with Caldwell's, although his paper was published four years later. In 1903 Luc¹¹ advocated a large primary opening through the canine fossa, complete removal of the lining mucous membrane of the antrum, and a counter opening into the nasal chamber. He said

My double aim while performing the operation in question is to make two large bony resections. The one at the expense of the anterior wall of the sinus in order to obtain a wide but transitory communication between the sinus and the mouth and to remove completely the pus and diseased mucous membrane, the other at the expense of the internal or nasal wall of the sinus in order to create a wide and permanent communication between the antrum and the nasal fossa. This latter resection, which requires simultaneous ablation of the greater part of the middle and inferior turbinals, is greatly facilitated by the introduction of the little finger into the nostril, which enables the surgeon to avoid any lesion of the septum and to ascertain that the free communication desirable has been obtained and that no fragments of the turbinal mucosa likely to be in the way of the further drainage has escaped the cutting forceps. A considerable opening, not amounting to less than the third part of the wall at whose expense it is made, thus making the maxillary a sort of prolongation of the corresponding nasal fossa, [is fashioned]

In this paper he suggested, and this was apparently the first time it was suggested, complete removal of the lining membrane.

From the Section on Otolaryngology and Rhinology, the Mayo Clinic. Read before the Minnesota Academy of Ophthalmology and Otolaryngology, Minneapolis, Feb. 8, 1935.

1 Ballance, C. A. *Essays on the Surgery of the Temporal Bone*. London, Macmillan Company, 2:426, 1919.

2 Kuster, E. V. *Ueber die Grundsätze der Behandlung von Eiterungen in starren Höhlen mit besonderer Berücksichtigung der Empyems der Pleura*. Deutsche med. Wochenschr. 15:233-236 (March 21) 1889.

3 Quoted by Mikulicz.⁸

4 Mikulicz, Johann. *Zur operativen Behandlung der Empyems der Highmorschöhle*. Deutsches Arch. f. Klin. Med. 34:626-634, 1887.

5 Caldwell, G. W. *Diseases of the Accessory Sinuses of the Nose and an Improved Method of Treatment for Suppuration of the Maxillary Antrum*. New York, M. J. B. 58:526-528 (Nov. 4) 1893.

6 Luc, J. *Une nouvelle méthode opératoire pour la cure radicale et rapide de l'empyème chronique du sinus maxillaire*. Arch. internat. de laryng. 10:273-282, 1897.

7 Luc, J. *My Latest Improvements in the Radical Treatment of Chronic Suppurations of the Accessory Cavities of the Nose*. Ann. Otol. Rhin. & Laryng. 12:407-418 (Sept.) 1903.

In 1927 Hempstead⁸ described a technic of approach through the inferior meatus that met the requirements of Kuster without sacrificing any of the functioning tissue of the nose and avoided the more troublesome approach through the canine fossa. He advocated fracturing the inferior turbinate bone upward so as to expose freely the lateral wall beneath it. An opening was then made into the antrum large enough to afford easy inspection of all the lining mucous membrane except that of the anterior wall. This area could be inspected with the aid of a mirror. Any grossly diseased tissue was removed with a curet. After-care was by the dry method. This technic has been followed in the present series of cases.

The two methods that fulfil the surgical principles of Küster are the Caldwell technic and Hempstead's modification of the Mikulicz technic. There can be no question that the exposure in the Caldwell technic is somewhat superior, so this approach is reserved for those cases in which there is a suspicion of malignancy, evidence of sequestration, and for that small percentage of cases in which sufficiently good removal of diseased tissue has not been accomplished by the intranasal operation. Owing to the fact that the Mikulicz technic offers a greater rapidity of operation and ease of approach, with avoidance of the postoperative neuralgia sometimes seen with disturbance of the infra-orbital nerve, and owing to the fact that there is a less prolonged stay in the hospital with postoperative results equally good in our hands we have adopted it at the Mayo Clinic as the routine treatment, reserving the Caldwell approach for types of cases outlined before.

The question which is of the greatest moment in considering the value of the Mikulicz technic is the contribution of Luc, that is to say, the extent to which the lining mucous membrane of the sinus should be removed, or, more particularly, the meaning of "diseased membrane," as of course complete removal of the mucoperiosteal lining of the sinus in this approach is impossible.

Emerson⁹ stated that antrums with chronic atrophic changes in the mucous membrane were the most fertile source of systemic infection, he advocated entire removal of the lining membrane as the only adequate treatment. Kistner¹⁰ said "Hyperplasia in a sinus mucosa is one of the usual structural changes found in chronic latent or nonpurulent sinusitis. In patients in whom this type of sinusitis was associated with a systemic disease we found these tissues to contain pathogenic organisms." The attempt is made to separate this type of disease from ordinary chronic suppuration, so the application of these quotations to the type of case cited in this paper may not be exact.

Ferris Smith¹¹ however, is less cautious in his statements and said "It is obvious to every observer that infected lining membrane presenting marked chronic inflammation with cystic glandular degeneration and glandular hyperplasia, marked fibrosis with chronic infection, abscess formation in its various stages, chronic periostitis and other changes can never return to normal. In an extensive experience I have never failed to find bacteria in these chronically diseased sinus linings. They are common in the subepithelial areas in

the early chronic cases and are always found about the glands and vessels and in the reticular spaces in the old cases." He therefore, advocated removal of the lining membrane of the sinus with meticulous care.

Kistner, inferentially to add further support to the practice of complete removal of the mucoperiosteal lining of the sinus, maintained that the normal submucosa did not reconstitute itself after removal to furnish a lurking place for the pathogenic organisms that he found present. McGregor,¹² on the other hand, found that through a process of metaplasia the subepithelial fibrous tissue developed a submucosa in all respects similar to the normal, except that in cases wherein excessive granulation tissue had formed postoperatively it was likely to mean a thicker stroma. He reported a case in which a person with severe diabetes died sixteen days after operation of streptococcal septicaemia, colonies of organisms were found in the subepithelial tissue. He added "This is the only case in which I have been able satisfactorily to demonstrate organisms in the lining of the antrum although I look for them as a routine measure." Ross¹³ came to the conclusion that "actual bacterial invasion of the nasal mucous membrane prior to operation does not appear to occur from the evidence at hand." Such diametrically opposed conclusions mean that faulty observation occurred on one side or the other.

The articles of McGregor and Ross, however, produce no convincing reasons why the lining membrane should ever have been removed at all and apparently support the practice on grounds that no harm is done.

Fenton and Larsell¹⁴ found that the histiocytes in the subepithelial tissues are primarily concerned with the protection of the organism against invading bacteria, and also that chlorides have an inhibiting effect on their action. These observations would argue for the retention of a normal lining mucous membrane and avoidance of saline solutions in the treatment of sinusitis. Lawson¹⁵ stated that "actual secondary or subinfections are not seen resulting from acute and chronic disorders of sinus membrane with the frequency that theoretically should hold in view of the purulent character and amount of pathological change."

That systemic effects secondary to suppurative disease of the sinuses are probably rare was demonstrated by Anderson¹⁶ in that he failed to find evidence of such effects in 400 consecutive cases of chronic sinusitis. This tends to support the contention that bacterial invasion of the submucosa is uncommon.

French¹⁷ was of the opinion that "the chances for a good result are better to leave all mucosa possible." Hilding¹⁸ found in dogs that removal of the lining membrane of the frontal sinus was followed by the formation of bands of scar tissue which inhibited free drainage of the sinus, and that epithelium often failed to cover the scar.

12 McGregor, Gregor. Further Proof of the Regeneration of Mucous Membrane in the Human Antrum. *Arch. Otolaryng.* 14: 309-326 (Sept.) 1931.

13 Ross, P. J. V. A Study of Nasal Mucous Membrane in Hanging Drop Tissue Cultures. *Tr. Am. Acad. Ophth.* 37: 432-439, 1932.

14 Fenton, R. A. and Larsell, Olof. Some Experimental and Clinical Observations on the Reticulo-Endothelial Components of Accessory Sinus Mucosa. *Tr. Am. Acad. Ophth.* 38: 225-238, 1931.

15 Lawson, L. J. The Role of Nasal Accessory Sinus Membrane in Systemic Infections and Toxemias. *Ann. Otol. Rhin. & Laryng.* 30: 159-168 (March-June) 1930.

16 Anderson, C. M. Suppuration in Paranasal Sinuses as a Factor in Focal Infection. Review of Four Hundred Cases. *J. A. M. A.* 94: 1889-1891 (June 14) 1930.

17 French, R. F. Radical Maxillary Sinus Operation and After Treatment. *J. Iowa M. Soc.* 18: 89-92 (March) 1928.

18 Hilding, Anderson. Experimental Surgery of the Nose and Sinuses. III. Results Following Partial and Complete Removal of the Lining Mucous Membrane from the Frontal Sinus of the Dog. *Arch. Otolaryng.* 17: 760-768 (June) 1933.

8 Hempstead, B. E. Intranasal Surgical Treatment of Chronic Maxillary Sinusitis. *Arch. Otolaryng.* 6: 426-430 (Nov.) 1927.

9 Emerson, F. P. Degenerative Changes in the Lining Membranes of the Maxillary Sinus and Their Relation to Systemic Infection. *Ann. Otol. Rhin. & Laryng.* 37: 113-127 (March) 1928.

10 Kistner, F. B. Histopathology and Bacteriology of Sinusitis with Comments on Postoperative Repair. *Arch. Otol.* 13: 225-237 (Feb.) 1931.

11 Smith, Ferris. Management of Chronic Sinus Disease. *Arch. Otolaryng.* 19: 157-171 (Feb.) 1934.

Gorham and Bacher¹⁹ stated that from three to five months after complete removal of the lining membrane of the antrum in an unstated number of cases "there were a few small septums that formed incomplete pockets in the membrane" Mosher,²⁰ in his discussion of this paper, was of the opinion that this was the explanation of some of the unsatisfactory results he had observed in this type of operation due to the formation of bands of scar tissue Lewis²¹ said

It has been observed in dogs that excision of the antral wall and removal of the mucosa is followed by complete return to normal of the tissue and structures involved Compare this with your own observations of radical operations on human beings, or with the statements of many observers, whose findings include cicatricial basement membrane, squamous and cuboidal epithelium, vestiges of glands, general fibrotic changes and more or less complete obliteration of the stomata and subepithelial lacunae

It would seem from the foregoing review that the preponderance of evidence is in favor of removing only the obviously diseased portions of the lining membrane of the sinus The question of the presence or absence of bacteria in the submucosa of the sinus apparently needs clarification

Articles based on experience in using the Mikulicz type of operation are very few, as the Caldwell operation has almost supplanted it In 1921 Barlow²² reported the results in 100 cases, finding that 47 per cent of the patients were cured He further stated that, in cases in which the condition did not clear up, a sufficiently large intranasal opening had not been made at the first operation Tucker²³ reported 673 cases of chronic maxillary sinusitis in which patients were operated on by Hempstead's modification of the Mikulicz technic, and while he did not so expressly state, he implied that a cure was obtained in all but six cases Stevenson²⁴ reported 198 cases of chronic maxillary sinusitis in which the intranasal window operation was done in all but twenty-one It was necessary to do the Caldwell type of operation in five cases following primary window resection Stevenson found that complete recovery followed in all but nine cases

Buckley²⁵ in 1934 stated that "the intranasal operation when well done offers in a fairly large percentage of cases good results, but that result cannot be expected by simply making an opening in the antrum" Goodyear²⁶ stated (1934) that, since 1927, he had been increasingly interested in the results obtained by the intranasal operation, and he described a technic similar in all important respects to that described by Hempstead in 1927 He found, after many Caldwell-Luc operations, that the cavity of the antrum filled with a thick fibrous tissue, and that in some cases pocketing and reinfection occurred He said "Following the intranasal operation I have not been able to find any cases

in which this extreme thickening of tissue occurs, probably because the lining membrane has not been removed" He said further "I was particularly impressed with the fact that when only fair or poor results were obtained the opening was usually correspondingly bad"

This review of postoperative results has been limited to cases of chronic suppurative disease of the maxillary sinus because the simplicity of its structure makes the application of the surgical principles adopted less technically difficult and the diagnosis of chronic suppurative disease more certain If these surgical principles are applicable to the cure of maxillary sinusitis, it should follow that they could be applied to suppurative disease of all the other sinuses because of similarity in structure and physiology As a matter of fact, in 1893 Jansen²⁷ applied these surgical principles to the treatment of suppuration in all the paranasal sinuses, and he described the operative technic later popularized in this country by Lynch,²⁸ Sewall,²⁸ Ferris Smith and others

Two hundred consecutive cases of chronic suppurative disease of the maxillary sinus in which patients were operated on by various members of the staff during the year 1926 have been selected for the present study because sufficient time should have elapsed to judge whether or not any good results obtained might be permanent As the gage of chronicity, no case has been selected in which continuous symptoms have not been present for a year or more Although only a small proportion of these cases were investigated for the presence of specific hypersensitiveness, such cases have been almost eliminated by confining consideration to those cases in which the maxillary sinus alone was involved

Questionnaires have been sent these patients for detail as to whether or not their symptoms were relieved, and especially as to whether any further operations on the sinuses have been found necessary Those patients whom it was possible to reexamine in the past two years are considered as a separate group

In the group of cases in which an opportunity was afforded to observe the condition of the antrum after a lapse of from seven to eight years, a total of 115 operations was performed on seventy-seven patients In thirty-one of these cases the operation was bilateral, and in six cases subsequent operative procedures were found necessary In forty-five cases, or 58.4 per cent of the total, gross changes, such as infected granulation tissue or polypoid degeneration of the mucous membrane, were found in one or both antrums

In this group of seventy-seven cases it was found that in eleven, or 14.3 per cent, the results were for one reason or another unsatisfactory Of the patients, one was completely cured from the clinical standpoint but subjectively was not relieved or was worse, and five returned in from six months to a year with recurrence due to failure to secure a large enough window at the first operation, these patients were again operated on by the intranasal route and subsequently remained well One patient returned after two years without relief of symptoms and it was found that the preoperative investigation had been defective and that infection in a frontal sinus had maintained the disease in the antrum The frontal sinus was drained by the intranasal route and the patient has remained well

19 Gorham C. B. and Bacher J. A. Regeneration of the Human Maxillary Antral Lining Arch. Otolaryng. 11: 763-771 (June) 1930

20 Mosher Summary of Symposium Tr. Am. Acad. Oph. & Otolaryng. 1932 pp. 440-446

21 Lewis E. R. Considerations For and Against Curetting and Exenterating Sinus Operations Tr. Am. Laryng., Rhin. & Otol. Soc. 35: 190-196 (1929)

22 Barlow R. A. The Value of Conservative Intranasal Drainage for Chronic Empyema of the Antrum Minnesota Med. 4: 445 (July) 1921

23 Tucker J. C. Conservative Surgical Treatment of Chronic Maxillary Sinusitis Ann. Otol., Rhin. & Laryng. 37: 631-633 (June) 1928

24 Stevenson Walter Chronic Maxillary Sinusitis Analysis of 192 Cases That Came to Operation Arch. Otolaryng. 13: 506-531 (April) 1931

25 Buckley R. E. II. Symposium How to Obviate Failures in Results of Surgery in Otolaryngology Laryngoscope 44: 853-856 (Nov.) 1934

26 Goodyear H. M. Chronic Antrum Infection Treatment by Intranasal Antrum Operation and Packing Clinical and Experimental Results Arch. Otolaryng. 20: 542-548 (Oct.) 1934

27 Jansen A. Zur Eröffnung der Nebenhöhlen der Nase bei chronischer Eiterung Arch. f. Laryng. u. Rhin. 1: 135-157 1893

28 Quoted by Smith.

Of the absolute failures, in one case the patient had chronic bilateral bronchiectasis and the antrums remained infected despite an apparently adequate operation, and in another the patient returned with the window closed but with absence of any suggestion of infection present in the antrum. The latter case would tend to cast discredit on the assumption that permanent drainage must be established to secure a cure, but it has been our experience at the clinic in a much more extended series of cases that the cause of failure is usually an inadequate window. In the last case in which cure was not obtained postoperative hemorrhage necessitated packing, following which fever developed (temperature 103 F) and considerable pain in the side of the head. The antrum became completely dry, but the patient had recurrence of pain and fever with colds. On investigation, chronic sphenoiditis and posterior ethmoiditis were found on the side that had been operated on. Symptoms could be regularly relieved by canalizing the sphenoid and sucking out the infected contents. It was thought that the sphenoiditis resulted from the packing of the nasal chamber.

Two other patients for whom the Caldwell operation had been advised elsewhere returned without relief of symptoms. They had both been treated by antral lavage since leaving the clinic, and on termination of this type of treatment the condition had immediately cleared up and they had had no subsequent symptoms. These cases are not counted as failures but are included in the list of unsatisfactory results.

In the group of seventy-seven patients who have been observed subsequently it was found that for 85.8 per cent the results were completely satisfactory but that eventual cure was accomplished for 92.3 per cent of them.

Of the remaining 123 who were not seen subsequent to operation, 104 reported that they had no symptoms suggesting sinus disease. In this group of cases there were seventy-three, or 59.3 per cent, in which there were such gross changes as polypoid degeneration and infected granulation tissue, this tissue was removed by the curet. In twenty-seven cases bilateral operation was performed, making a total of 150 operations in 123 cases. It might also be of interest to note that in fifty-two, or 25.5 per cent, of the 200 cases the infection in the antrum could clearly be attributed to extension of the infection from an apical abscess. A primary apical abscess was not noted in any of the cases in which bilateral operation was performed.

Of the nineteen patients for whom results were not satisfactory, four reported unmistakable symptoms of specific hypersensitiveness, and I am inclined to attribute failure of the operation to this cause. One patient reported a definite but gradual improvement in symptoms since operation, and I believe that this is a gradual loss of sensitivity and that the patient is probably allergic. Two patients had bronchiectasis, and not only were the thoracic symptoms not relieved but there was no improvement in the symptoms of sinusitis, one of these patients reported relief of nasal symptoms but noted no relief as far as his cough and expectoration were concerned. One patient's continuing symptoms, according to a letter from his local physician, were due to involvement of the frontal sinus, an instance of incomplete investigation. In another case in which a choanal polyp was removed the patient was well until two years ago but since then has had a 'continuous cold', the probabilities are that in this case there has been recurrence of the polyp. One patient with severe

diabetes and ozena who was operated on for elimination of foci of infection reported no improvement in symptoms, as was to be expected. This patient died in a diabetic coma two years after the operation. Although this patient failed to survive, it was thought that exclusion of this case from the tabulation on this account would be unfair.

Another patient is included in the list of unsatisfactory results because of the development of a dangerous complication, osteomyelitis of the superior maxilla. He recovered after a somewhat stormy convalescence, however, and has been well since. The condition of another patient was satisfactory on the side operated on but polyp had to be removed subsequently from the opposite side, undoubtedly a more careful examination would have revealed the presence of disease there. One patient reported that the alveolar fistula in the upper jaw had remained open and that he was practicing lavage of the antrum twice daily. A second patient reported that the fistula into the antrum had failed to close and that symptoms had persisted until plastic closure was done a year later, since then he has been free of symptoms, which indicates the necessity of preventing communication with the oral cavity. One patient obtained no improvement in symptoms until a Caldwell-Luc operation was done elsewhere, since that time the nasal symptoms have disappeared and a chronic arthritis, of which she complained, has been much improved. Finally, four patients reported continuance of symptoms for which no probable cause could be ascribed.

SUMMARY

For the group reached by questionnaire, only nineteen out of 123, or 15.4 per cent, obtained unsatisfactory results, in other words, combining the figures in the two groups, 84.6 per cent received complete symptomatic relief.

In analyzing the causes for dissatisfaction in the whole group of 200 patients, it was found that in seven cases the probable error of failing to diagnose the presence of specific hypersensitiveness was the determining factor. In four cases bronchiectasis was present and, although this number is too small from which to draw conclusions, it is suggested that bronchiectasis may be a factor in producing the sinusitis rather than the reverse. In two cases postoperative complications interfered with a good result, in one case osteomyelitis of the maxilla, in the other, sphenoiditis. In six cases closure of the intranasal window resulted in failure, and in four cases in which the patients' replies did not furnish sufficient data to justify conclusions failure probably resulted from the same cause. In two cases misdirected therapeutic efforts were the direct cause of continuance of symptoms, and in two others inadequate investigation failed to reveal the presence of a frontal sinusitis which maintained the infection in the antrum. In two cases failure to close a fistula from the alveolus to the antrum was apparently the cause of the difficulty, and in one case in which bilateral intranasal windows failed to relieve the nasal symptoms, bilateral Caldwell-Luc operations elsewhere eliminated such symptoms and apparently also caused marked improvement in arthritis from which the patient suffered.

CONCLUSIONS

- 1 The surgical principles laid down by Küster are sound and accomplish the desired result.
- 2 Hempstead's modifications of the Mikulicz and the Caldwell operations meet these requirements.

3 Failure to remove the mucoperiosteal lining of the sinus does not militate against a good result

4 Good results of the operation depend on securing an adequate and permanent opening for drainage and on removal of diseased membrane

5 Bad results are caused by failure to secure adequate drainage, incomplete investigation, failure in diagnosis, and poor selection of cases

6 Cure can be obtained in about 80 per cent of cases of chronic maxillary sinusitis in which operation is by the intranasal route, as was evidenced by this study of 200 cases

7 It is apparent, therefore, that the intranasal operation in the majority of cases gives such a satisfactory result that except in exceptional cases it should be the operation of choice

THE ACTION OF MERCUROCHROME AND OTHER DRUGS

ON NORMAL HUMAN SKIN AND IN
INFECTED WOUNDS

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To be worthy of clinical use any antiseptic must be able to survive severe criticism and to find its true level on a factual basis, confirmed by the studies of at least two independent groups of observers. Quite aside from fallacies arising from assumptions based on analogy, and from the personal equation, the problem of evaluating any antiseptic, especially one used in several fields, is extremely complex, because of the many factors involved. Unintentional errors of technic and of reasoning are to be found in most articles dealing with this highly specialized field within a field, in which the pitfalls are not always obvious even to the experienced worker. However, probably the chief merit of such a controversy is the instigation of further research. This may be of value not only for the drug or drugs in question but also in relation to the whole problem of antiseptics, by the reiteration of certain extrinsic limitations of the action of all drugs and by the introduction of new or improved methods for their evaluation.

The scope of this paper is confined to the presentation of additional material in regard to the bactericidal and bacteriostatic action of mercurochrome and other drugs on skin and in wounds. This involves certain carefully limited comparisons and the use of new methods. No attempt is made at this time to review the literature, but the subject matter is limited to new material for which I am personally responsible.

PART I. SKIN TESTS

There are no standard methods for determination of the bacteriostatic and bactericidal action of drugs on the skin. For short time bactericidal action a method of taking cultures either of the surface of the skin or of skin scrapings has been used with results sufficiently contradictory to indicate the inaccuracy of the method and the vitally important need of its rigid control and further refinement. By the application of massive cultures to animal skin¹ it has been shown that no anti-

septic should be relied on to sterilize skin thus heavily infected. Similarly, in long series of cultures from human skin¹ it has been shown that, while marked action is obtained with drugs acting on normal flora, this action is not invariable. It would require a long series of experiments and a most critical analysis of the technic employed to convince one that any drug now available always sterilizes human skin. A prompt reduction of the number of bacteria, bacteriostatic action and many actual sterilizations from a number of drugs now in use may be expected, but there is no basis for any conclusion that sterilization is always the rule. Certainly any drug proposed for use for preoperative skin sterilization should be described with a realization of this limitation.

There has been even less attempt to formulate standard methods for the much neglected study of the bacteriostatic action of drugs on skin. The finger-tip method, originally used to test the action of normal skin,² offers a possible basis for this. At least it is superior to two other methods I have tried, first that of von Oettingen³ with excised, refrigerated human skin, which I could not confirm and, second, my own method of applying cultures directly to the skin (series VII).

Condensed summaries are given here of recent experiments that show conclusively that both the aqueous and the alcoholic 2 per cent solutions of mercurochrome are bactericidal and bacteriostatic on human skin. Because of their different behavior and uses, it is necessary to differentiate the two types of solutions, first, the aqueous 1 or 2 per cent solutions for use on mucous surfaces and in wounds, and, second, the 2 per cent solution in 35 per cent water, 55 per cent alcohol and 10 per cent acetone, hereafter to be referred to as tincture of mercurochrome, which is used as a preoperative skin disinfectant. There is reason to believe, as will be shown later, that some aqueous solutions have definite advantages over tinctures for use in wounds and demonstration of their bacteriostatic and bactericidal action on surrounding skin is of value. On the other hand, I do not believe that an aqueous solution of any drug should be used for preoperative skin disinfection. For these reasons it is necessary to study both types of solutions and to avoid generalizations that do not take these points into consideration.

The finger-tip method, used in most of these tests, consists essentially of application of the drug to clean finger tips, by means of saturated cotton swabs, letting the fingers dry in air and from three minutes to twelve hours later applying the ball of the treated finger lightly and steadily for from one to five minutes to the surface of an agar plate, deeply seeded with the test organism. After twenty-four hours of incubation at 37.5 C., the maximum dimensions of the areas of bacteriostasis, as represented by clear zones, and of the actual finger prints are measured by means of a millimeter rule and a hand lens. Transfers by means of a platinum loop of pieces of agar from the centers of the clear zones to broth, controlled for possible subculture inhibition,⁴ demonstrate also bactericidal action if present. It may be said that in these experiments, when bacteriostatic

² Hill, Justina H. and White, E. C. Action of Normal Skin on Bacteria. Arch. Surg. 26: 901 (May) 1933.

³ von Oettingen, W. F., Calboun, O. V., Badertscher, V. A. and Pickett, R. E. Comparative Studies on Mercurochrome and Other Antiseptics. J. A. M. A. 99: 127 (July 9) 1932.

⁴ Hill, Justina H. A Standard Inhibition Control for Germicidal Tests. Am. J. Pub. Health 21: 192 (Feb.) 1931.

From the James Buchanan Brady Urological Institute, the Johns Hopkins Hospital.

¹ Scott, W. W., Hill, Justina H., and Ellis, M. G. Action of Mercurochrome and Tincture of Iodine in Skin Disinfection. J. A. M. A. 92: 111 (Jan. 12) 1929.

action is demonstrated, the transfers are sterile that is, the test demonstrated both bacteriostatic and bactericidal action. It is necessary, however, to prove this by actual transfers for any drug so studied. The inclusion of solvent controls with every series is necessary. The water controls are even more important because of the occasional antibacterial action of normal skin.² *Staphylococcus aureus* was used in most of the tests, not only because of its significance on skin and in wounds but because of the strange inverse action of normal skin on bacterial spores,² upon which it exerts more action than on vegetative forms, making experiments with drugs and spores much less clearly defined than with such an organism as a staphylococcus.

It is obvious that, in a method involving the contact of a treated finger tip with an inoculated agar plate, the dimensions of any resulting zone of bacteriostasis will vary with the size of the finger print, the amount of drug on the skin, and the pressure of the finger, which should never be sufficient to crack the agar. The modification of Megrail and Hahn⁵ to control pressure by use of a torsion balance and a 5 Gm weight is of value. It seems to me that, although comparison of the total areas of inhibition gives the same general order of efficacy of the drugs tested, a better basis of comparison is the dimensions of the total zone of bacteriostasis minus that of the actual area of the finger print, as this difference at least partially offsets variations in the size of the prints. By doing a sufficient number of tests, with carefully impartial distribution of the fingers, this variation is further reduced and variations of pressure and of the amount of drug applied are equalized.

It is also obvious that tests of this type show that bacteriostatic action may be obtained with drugs after their application to skin and subsequent application to seeded plates, that is, the bacteriostatic test itself is not done while the drug is on the skin. We assume that if the finger tip coated with antiseptic transfers bacteriostatic action to a plate the antiseptic on the skin may also be exerting bacteriostatic action. Experiments in which the bacteriostatic action of the drug is tested while the drug remains both on the skin and in contact with the culture are described in series VII of this paper, but the technical difficulties of this long-contact method make it less feasible for large series than the finger-tip method.

SERIES I⁶—These tests represent the simplest form of the finger-print test, in which there was one application of drug and in which the contact of treated skin with the plates seeded with *Staphylococcus aureus* was made two minutes later, i. e., immediately after drying. Contact with the plate was for one minute only. In the series in which the 7 per cent tincture of iodine was removed with 70 per cent alcohol, it was necessary to apply the alcohol twice, the first time two minutes after the iodine, the second time one minute later, and the print was made two minutes after the second application. Five subjects were used, twenty tests apiece were made with the 7 per cent tincture of iodine and with the 2 per cent mercurchrome solutions, and ten apiece with the alcoholic solvents. Twenty tests with water only showed no action outside the finger print areas, but four of these controls showed very small amounts of bacteriostasis within the prints.

The rating of the solutions tested in this series in order of efficacy is given in table 1, as determined by the average dimensions of bacteriostasis obtained, minus the dimensions of the prints.

It is seen from this table that 2 per cent tincture of mercurchrome after its application to human skin is more bacteriostatic under the test conditions than tincture of iodine. The latter, not removed with alcohol, is more bacteriostatic under the same conditions than aqueous 2 per cent mercurchrome, but when the tincture of iodine is removed with alcohol, its bacteriostatic action is markedly less than that of either of the 2 per cent mercurchrome solutions.

SERIES II—Planimetric Readings—The method used was essentially the same as in series I, except that three applications of drug were made, and contact of treated skin with the inoculated plate was made five minutes after treatment. By measuring the areas of skin contact and of total bacteriostasis planimetrically and subtracting the former from the latter, it was found that the area for tincture of mercurchrome averaged 13.3 sq cm, for aqueous 2 per cent mercurchrome 8 sq cm, and for 3.5 per cent tincture of iodine 6.7 sq cm. It may be concluded from these experiments that both of the 2 per cent mercurchrome solutions are more bac-

TABLE 1—*Bacteriostatic Action of Drugs on Human Skin, Finger-Tip Method. One Application of Drug Followed by Contact with Staphylococcus Aureus*

Order	Drug	Average Dimensions of Bacteriostasis
1	Tincture of mercurchrome 2%	2.14 by 2.21 cm (Ave. 2.17 cm)
2	Tincture of iodine 7% not removed	1.71 by 1.70 cm (Ave. 1.70 cm)
3	Aqueous mercurchrome 2%	1.39 by 1.40 cm (Ave. 1.39 cm)
4	Tincture of iodine 7%, removed with alcohol	0.62 by 0.61 cm (Ave. 0.61 cm)
5	Alcohol 90%	0.46 by 0.51 cm (Ave. 0.48 cm)
6	Alcohol 55% water 35%, acetone 10%	0.03 by 0.1 cm (Ave. 0.09 cm)

teriostatic against *Staphylococcus aureus* on skin than is 3.5 per cent tincture of iodine, removed with alcohol.

SERIES III—These experiments are also similar to those of Series I except that three coats of the test drugs were applied five hours before the tests were made, and the fingers were kept loosely bandaged during the interim, but the hands were used. The test organism was *Staphylococcus aureus*, and, after removal of the bandages, contact with the plate was for five minutes. All of the twelve tests with aqueous 2 per cent mercurchrome and all of the eleven tests with tincture of 2 per cent mercurchrome showed both bacteriostatic and bactericidal action. No inhibition was obtained in the series of eleven alcohol, acetone, water solvent controls, and only one small area of bacteriostasis in the series of twenty-three water controls. These experiments have been confirmed by Megrail and Hahn⁵ (the first series of their report) and establish beyond any reasonable doubt the bacteriostatic and bactericidal action of both of the mercurchrome solutions on skin against *Staphylococcus aureus*.

SERIES IV—Dorsal Phalanges—These experiments, originated by Megrail and Hahn,⁵ were similar to the others except that the dorsal phalanges were used instead of the finger tips. Three applications of the drugs were made five hours before the test. The hands were actively used in the interim and washed as normally. The tests that my associates and I made showed bacteriostatic and bactericidal action in all of the ten

⁵ Megrail E. and Hahn R. C. Special Report to the Council on Pharmacy and Chemistry March 5, 1933 (unpublished).

⁶ Detailed protocols of the experiments described in this paper have been omitted as full publication requires too much space.

tests per drug with both 2 per cent mercurochrome solutions and with 3.5 per cent tincture of iodine. Our results differ from those of Megrail and Hahn (their IV-b). The number of variables is large and I believe that with exact definition of the number of washings and amount of use the differences would be eliminated.

SERIES V—*B. Subtilis* Spores—In this series five hours after treatment with three applications of the test drugs and after the superficial layer of drug had been at least partially removed by previous contact with *Staphylococcus aureus* plates for the experiments in Series III, second impressions were made on plates seeded with from four to seven day *B. subtilis* spores. Bacteriostatic and bactericidal action was observed in all of the eight tests with 2 per cent aqueous mercurochrome, in all of the five tests with 2 per cent tincture of mercurochrome, in none of the five tests with the alcohol, acetone, water solvent, and in only two of the thirteen water controls. Thus bacteriostatic amounts of either of the 2 per cent mercurochrome solutions may remain on the skin after removal of the most superficial layer of drug by previous contact.

SERIES VI—*Anthrax* Spores—In a series with ninety day anthrax spores, contacts were made either three minutes or twelve hours after three applications

TABLE 2—Summary of All Bacteriostatic Tests with Mercurochrome on Skin, Without Removal of Mercurochrome by Scrubbing

Drug	Total Number of Tests	Number Showing Bacteriostatic and Bactericidal Action	Number Not Showing Bacteriostatic and Bactericidal Action
Mercurochrome 2%, aqueous	68	68	0
Mercurochrome 2% tincture	63	63	0
Alcohol acetone water control	37	7 (18.9%)	30
Water control	68	11 (16.2%)	57

of the test drug. In three tests each with the two 2 per cent mercurochrome solutions larger zones of bacteriostatic action were obtained than with the three tests with the tincture solvent and with the four water controls. It was an extraordinary fact that all four of the normal skin controls showed both bacteriostatic and bactericidal action against these virulent spores. The drug tests therefore indicated an increased action but could not be regarded as bactericidal tests. It was impossible to do a long series of these tests on a number of individuals, but it may certainly be concluded that the application of either of the two mercurochrome solutions markedly increased the bacteriostatic action of the normal skin tested against anthrax spores.

SERIES VII—In an effort to keep treated skin and cultures in contact during the incubation period, a departure was made from the finger print method. Agar cultures of *Staphylococcus aureus* were prepared in sterile watch glasses. Either three minutes or five hours after three applications of the drugs to the skin, the cultures were strapped on the thigh for an eighteen hour period. When the cultures were removed after eighteen hours, all of the series of eight treated with aqueous 2 per cent mercurochrome and all of eight treated with tincture of mercurochrome were sterile, as shown by subcultures, the eight in the series of the solvent control for the tincture and the eight water controls showed massive growths of the test organisms. This method, as stated, is not satisfactory for a long

series, because of the possibility of infection in the control areas, and as suggested by von Oettingen⁶ because of possible action of unevaporated sweat on diffusion of the drug, in the areas excluded from air by application of the cultures. It may, however, be concluded from these experiments that both bacteriostatic and bactericidal action was obtained under the test conditions with both of the mercurochrome solutions.

Summary of Tests on Skin, Unscrubbed—All of these tests on human skin with aqueous 2 per cent or 2 per cent tincture of mercurochrome and with the solvent controls, in which the drug was applied to the skin two minutes, five minutes, five hours or twelve hours before contact with the bacteria, *Staphylococcus aureus*, or spores of *B. subtilis* or of *B. anthracis*, may be summarized as in table 2.

This shows clearly that in all the tests both the aqueous solution and the tincture of mercurochrome were bacteriostatic on human skin. With the exception of the few cases in which the solvents showed some action, this was also bactericidal action.

Scrubbing Experiments—In addition, four series were done to determine what, if any, action might remain after the use of the hands and removal of the drugs by various types of scrubbing. These experiments are of secondary importance, in that the clinical use of tincture of mercurochrome in preoperative skin disinfection does not involve the removal of the drug as in the case of iodine. They may, however, have some bearing on the maintenance of bacteriostatic action on skin during operation or around wounds treated with the aqueous solution.

SERIES VIII—Scrubbing Experiments—A The finger tips were given three coats of the drugs and left unbandaged, for five hours after treatment, while the hands were in use. They were then scrubbed for three minutes in cold running water without soap and prints were made on *Staphylococcus aureus* plates. With both of the mercurochrome solutions, seven of a total of ten tests still gave bactericidal and bacteriostatic action, while none of the ten alcohol, acetone, water controls or of the twenty water controls showed any action.

SERIES IX—Scrubbing Experiments—B (Megrail and Hahn, series II) In these experiments the fingers were given three applications of drug, not bandaged, used for five hours, washed during this period, then scrubbed for three minutes in cold running water with a soft brush and soap, dried on a paper towel and then printed on *Staphylococcus aureus* plates. This method originated with Megrail and Hahn⁶. Our results do not correspond with theirs. We found bacteriostatic action in seven out of ten tests with aqueous 2 per cent mercurochrome, in all of our five tests with tincture of mercurochrome, in five tests with 1:1,000 merthiolate, and in four out of five with 3.5 per cent tincture of iodine. As in series IV, in which our observations and those of Megrail and Hahn did not check, the number of variables is very large and I believe that a further refinement of methods would eliminate the discrepancy.

SERIES X—Scrubbing Experiments—C (Megrail and Hahn, series III) In these experiments after three coats of drug, the hands were used for five hours and then scrubbed for three minutes in cold running water without soap. These experiments originated with Megrail and Hahn, with whom we are in agreement.

We observed bacteriostatic action in three out of the four tests with aqueous 2 per cent mercurochrome, in all of the four tests with tincture of 2 per cent mercurochrome, in all of the four tests with 1,000 merthiolate, in three out of four tests with 3.5 per cent tincture of iodine, and none with the solvents. Parallel tests done with only one application of the mercurochrome solutions gave the same results as three applications.

SERIES XI—Scrubbing Experiments—D (Megrail and Hahn, IV-a) In these experiments the dorsal phalanges were given three applications of drug, used for five hours, and then scrubbed for three minutes with soap. Our results showed bacteriostatic action in eight out of nine tests with aqueous mercurochrome, in ten out of eleven with tincture of mercurochrome, and in nine out of ten with 3.5 per cent tincture of iodine. The discrepancies between our results and those of Megrail and Hahn in this type of test, open to extreme variation, are explicable on the same grounds as those in series IV and series IX.

PART II WOUND EXPERIMENTS

Even less approach has been made to possible standard methods of studying the action of antiseptics in wounds than on skin and the development of such methods is urgently needed. The fact, established by Carrel and Dehelly⁷ and by Sir Almroth Wright⁸ that no one application of any drug will sterilize a heavily infected wound seems to have been forgotten. Exact information in regard to the behavior of drugs in wounds is appallingly lacking. The recent paper by Simmons⁹ represents a step in the right direction, although I believe that the time periods of his tests were too short. We have confirmed his short time experiments but, by extending the time to twenty-four hours, have shown that his conclusion that wounds were sterilized by tincture of iodine cannot be maintained. Certainly, in the use of any drug for first aid or in other types of wounds there is need for emphasis of this fundamental limitation of any drug used for these purposes, at least until sterilization shall be proved beyond question.

Two methods are given here, one for determination of the effect of one application of a drug, as studied in a twenty-four period, the other a method of studying the rate of healing of local abscesses, treated repeatedly until healed. The methods are suggested as a basis for the elaboration of standards by which the action of drugs may be determined and comparative studies made.

A Short Time Tests—Method After a number of preliminary tests, the final method employed was as follows. Large guinea-pigs were shaved over the abdomen and thorax. From four to eight carefully separated 1 cm incisions through the skin were made. By means of blunt dissection, subcutaneous pockets about 1 cm deep were made round the edges of each incision. These were inoculated with *Staphylococcus aureus*, by means of one cotton swab per wound, the swab being saturated with an eighteen hour broth culture of the cocci. Five minutes later, by means of swabs moistened in sterile broth, two for every incision,

smears were made for preliminary wound counts, and cultures were made on agar plates and in broth, as an inoculation control and as a basis for comparison for later cultures. Treatment was then given by flooding the wound with the test drug on a saturated swab, which could be rotated in the wound until the excess fluid appeared at the opening. All but one of the wounds in a given animal were treated with a given drug, and one wound per animal was treated with water only and separately dressed. The skin around the wounds was also covered with the test drug. Sterile dressings were then applied, held firmly in place with adhesive tape and with an outside belt of sterile unbleached muslin. It was necessary to bind the animals' hind feet to keep them from kicking. Possible contamination with excreta was controlled by the application of collodion to the lower edge of the dressings. The sources of error in this technic when perfected were few and the same for all the drugs. Twenty-four hours later the dressings were removed and smears and cultures were taken, the greatest care being taken to use separate sterile instruments for each wound to lift up the edge of the incision so

TABLE 3—Summary of Twenty-Four Hour Counts, in Wounds Heavily Inoculated with *Staphylococcus Aureus* and Given One Application of the Test Drug

Treatment	Average Number of Cocci per Field	Percentage of Cocci Phagocytized	Number of Leukocytes per Field
1 Mercurochrome 2%, aqueous	6.7	18.4	1.25
2 Mercurochrome 2% tincture	18.2	1.9	0.7
3 Merthiolate, tincture	33.2	7.5	0.83
4 Alcohol, 65%, water 35% and acetone 10%	41.9	7.5	2.0
5 Water only (control)	75	17.6	6.5
6 Tincture of metaphen 1:200	91.3	2.85	0.3
7 Acriflavine, 1:1,000, in saline solution	99.8	1.23	0.4
8 Hexylresorcinol	100.9	8.0	1.29
9 Merthiolate aqueous	112.2	8.5	1.65
10 Alcohol 90%	114.7	8.7	0.99
11 Tincture of iodine 7%	137.0	0.9	0.25

that only the inner part of the wound was touched by the swabs.

The results at the end of twenty-four hours are summarized in table 3. Counts before treatment were somewhat variable, because of the presence of blood in some cases, but they ranged from 0.5 to 5 cocci per field, with an occasional higher count, the maximum, obtained once, being thirty. Cultures from all wounds, both before and after treatment, have been positive.

It is possible by examination of smears as well as by cultures to study three points: (1) the number of cocci per field, (2) the percentage of them that have been phagocytized, and (3) the number of leukocytes per field. These may be briefly discussed.

Twenty-four hours after treatment, the water treated controls averaged 75 cocci per field, 17.6 per cent of which were phagocytized. The number of leukocytes per field was 6.5. These figures may be taken as a basis of comparison. It is seen from table 3 that the lowest count was with the aqueous 2 per cent mercurochrome solution, which kept the bacterial count down to an average of 6.7 cocci per field without reducing the percentage of organisms phagocytized, which was 18.4 per cent. This was the only solution that did not decrease this percentage. The number of white cells per field was reduced by every drug used. The tinc-

⁷ Carrel, Alexis and Dehelly, G. Treatment of Infected Wounds New York, Paul B. Hoeber, Inc., 1917.
⁸ Wright, Sir Almroth. A Lecture on Wound Infections and Their Treatment. Brit. M. J. 2, 629 (Oct. 30) 1915.
⁹ Simmons, J. S. The Comparative Bactericidal Action of Mercurochrome and Iodine Solutions Used as Local Tissue Disinfectants. Surg. Gynec. & Obst., 56: 55 (Jan.) 1933.

ture of 2 per cent mercurochrome kept the count down to 182 cocci per field but caused a reduction of the percentage phagocytized to 19 and of the number of leukocytes per field to 07. The solvent control for the tincture of mercurochrome kept the bacterial count at 419 per field, reduced the percentage phagocytized only to 74, and the number of leukocytes per field to 2. As compared with these observations, it is seen that the number of cocci per field after treatment with 7 per cent tincture of iodine was 137, markedly more than the number in the water treated control, the percentage of cocci phagocytized was only 09, and the number of leukocytes per field was reduced to the low average of 0.25. The 90 per cent alcohol solvent control for the tincture of iodine also gave a count above the water control, i. e., 1147 cocci per field, the percentage phagocytized was reduced to 37, the number of leukocytes per field to 099. Of the other drugs tested only the tincture of merthiolate gave a bacterial count under the water treated controls. This solution kept the count down to 333 cocci per field, but reduced the percentage of cocci phagocytized to 75 and the number of leukocytes per field to 086.

It is evident from these tests that under the conditions of the experiments the aqueous 2 per cent solution of mercurochrome was superior to the other drugs studied. This is an interesting observation because tincture of iodine has a much more rapid *in vitro* bactericidal action than aqueous 2 per cent mercurochrome, and merthiolate has a much higher *in vitro* bacteriostatic action. The slow bactericidal action of mercurials has been demonstrated repeatedly¹⁰ but should be considered in relation to their bacteriostatic action. Considering these observations in relation to the fact that in the aqueous mercurochrome series the percentage of cocci phagocytized remains at least as high as in the water control series while the percentage of cocci phagocytized is very low in the series treated with tincture of iodine or with tincture of metaphen, it seems proved that the powerful immediate antibacterial action of iodine and of metaphen is offset under these conditions by their injurious effect on the tissues.

In comparing aqueous mercurochrome and tincture of mercurochrome in these wounds, the advantage clearly belongs to the aqueous solution, which gives a markedly lower bacterial count, a much higher percentage of phagocytosis and a higher leukocyte count. Leukocytosis and phagocytosis have long been recognized as the most important agents with which our bodies fight infection. The fact that the moderate antiseptic mercurochrome in aqueous solution does not interfere with phagocytosis explains in part its efficacy in wounds.

B Long Time Tests—In 1928 a series of wound experiments in guinea-pigs was reported.¹¹ Additional experiments have since been done by the same method, including a series of saline treated controls, in order that conclusions might be made in regard to local action. The method, fully described in the earlier paper, consisted of making a 1 cm incision in the abdominal skin of a guinea-pig blunt dissection subcutaneously round

the edge of the incision, and after the insertion of a few crumbs of aleuronat paste, inoculation of the wound with *Staphylococcus aureus*. Within forty-eight hours, abscesses are formed with high initial bacterial counts and many leukocytes. These lesions are regularly obtained and are suitable for the study of relative rates of healing, as they may be followed by means of daily wound counts until healed and repeated applications of a drug may be made.

While the rate of healing of the untreated controls was nineteen days, the local application of either 1 or 2 per cent aqueous mercurochrome reduced the healing time to eleven days. Treatment with saline solution, on the other hand, increased the healing time to twenty-six days.

SUMMARY AND CONCLUSIONS

1 There is urgent need for standard methods of studying the *in vivo* action of antiseptics for special uses. In this paper methods are suggested which, on further refinement, might serve as bases for such standards.

2 In regard to the action of antiseptics applied to the skin, it is shown that

(a) Under conditions of practical use no antiseptic studied can invariably sterilize heavily infected skin.

(b) Aqueous solutions of antiseptics are not as a rule suitable for preoperative skin sterilization.

(c) Both the 2 per cent tincture and 2 per cent aqueous mercurochrome solutions are bactericidal and bacteriostatic on human skin. The 2 per cent tincture of mercurochrome is superior to the aqueous solution on the skin, as has been shown previously. Only the tincture has been advocated for preoperative skin sterilization.

(d) If comparisons are to be made between the bacteriostatic actions of preparations of iodine and mercurochrome on the skin, the order of efficacy, according to the results of our experiments, is as follows: first, the 2 per cent tincture of mercurochrome, second the 7 per cent tincture of iodine, not removed with alcohol, third, the 2 per cent aqueous solution of mercurochrome, fourth, the 7 per cent tincture of iodine, removed with alcohol.

3 In regard to the use of antiseptics in wounds, it is shown that

(a) It is improbable that a single application of any known antiseptic will sterilize a heavily infected wound.

(b) There is evidence that while both the tincture and aqueous solutions of mercurochrome are bacteriostatic in heavily infected wounds, the aqueous solution, under the conditions of the tests, is superior to the tincture of mercurochrome and to the other antiseptics tested in that it keeps the bacterial count lower and does not interfere with phagocytosis.

The Presiding Follicle—Just after a menstrual period a number of follicles or egg-sacs in the ovaries begin to grow but, for some curious reason, one of these outstrips its fellows and is destined to become the presiding follicle so to speak, of that particular monthly cycle. It reaches full bloom, i. e. full maturity about half-way before the next period, though sometimes considerably earlier sometimes considerably later. As it grows it produces increasing amounts of its hormone, which is often spoken of as the female sex hormone. This particular hormone has the effect, once it gets into the blood stream of producing a steadily increasing growth of the lining mucous membrane (endometrium) of the uterus and of gradually increasing the amount of blood in the latter.—Novak, Emil. *The Woman Asks the Doctor*, Baltimore: Williams and Wilkins Company, 1935.

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TREATMENT OF TRICHOMONAS VAGINITIS WITH CONCENTRATED SALT SOLUTION

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At present, various chemical agents are being applied in order to destroy *Trichomonas vaginalis*. However, chemotherapy is frequently unsatisfactory for the following reasons: 1 In order to be effective, many chemicals must be used in concentrations that may be harmful to the vaginal mucosa, especially during prolonged treatment. 2 There is always a possibility that in the course of treatment a strain of the parasite may develop that is resistant to the chemotherapeutic agent. 3 Most of the chemotherapeutic methods are relatively complicated and cannot be applied by the patient at her home.

Taking into consideration the fact that protozoa in general are sensitive to variations in osmotic pressure of the surrounding medium, it occurred to us that the vaginal protozoon may also be affected by such variations. We therefore decided to study the action of hypertonic salt solutions on *Trichomonas vaginalis*.

The fact that *Trichomonas vaginalis* is an extracellular parasite living free in the vaginal secretion made it possible to conduct the experiments in vitro. We collected the vaginal discharge through a speculum with a cotton swab and transferred it into a test tube containing from 2 to 3 cc of physiologic solution of sodium chloride. The fluid, after shaking, was examined in a wet preparation under the high dry power of the microscope. For our investigations, only material which contained numerous motile parasites was used.

A drop of this trichomonas suspension was mixed on a slide with a drop of hypertonic solution of sodium chloride. The mixture was covered with a cover slip and immediately examined under the high dry power of the microscope. We performed this experiment with four dilutions of sodium chloride: 3, 6, 12 and 25 per cent respectively. We are recording only those changes in the trichomonas which took place immediately after the addition of the salt solutions. The 3 and 6 per cent salt solution apparently did not affect the parasites. They remained as actively motile as in the control preparation with physiologic solution of sodium chloride. Entirely different pictures were obtained when salt solutions of 12 and 25 per cent were used. The motility of the parasites stopped instantaneously and their shape underwent a radical change. The parasites became shrunken and crenated. To all appearances they were dead.

But here we had to consider the following facts: Investigations of Schewiakoff¹ with sea infusoria had brought to light the fact that these protozoa when transferred from their habitual surroundings to a more concentrated salt solution rapidly became inactive and changed their outward appearance. When these apparently dead protozoa were returned to the sea water, they regained their motility and became active again. This temporary cessation of life activities under the

influence of concentrated salt solutions is known under the name of "salt anabiosis." With reference to *Trichomonas vaginalis*, we could demonstrate that the transfer of the parasites immediately after their inactivation from a 12 per cent solution into a physiologic solution restored their normal shape and motility. The 25 per cent salt solution, however, made the phenomenon of inactivation permanent and irreversible. The parasites could not be returned to life when transferred to a physiologic salt solution.

On the basis of these experiments we began to apply salt in the treatment of patients suffering with trichomonas vaginitis. At first we used vaginal insufflation with finely powdered salt and then we tried to pack the vagina with gauze saturated in a 25 per cent salt solution. This packing was left in the vagina for twenty-four hours. A few patients having reported discomfort and burning pain in the vagina, we discontinued this mode of treatment and adopted the vaginal douching with a 25 per cent solution of salt.

The patient herself at home can easily prepare an approximately 25 per cent solution by dissolving 1 glassful of salt in 4 glassfuls of hot water. In order to secure an abundant vaginal flush, this amount of salt and water can be doubled. The solution is used at body temperature. The douching is well tolerated by the vaginal mucosa and does not cause any irritation or discomfort.

The combined number of our clinic and private cases was fifty-six. The diagnosis in all cases was confirmed by microscopic examinations. In all cases the characteristic symptoms of trichomonas vaginitis were present. The patients complained of itching and burning about the vulva. The vaginal discharge was more or less profuse, sticky, purulent and foamy, with a peculiar foul odor. In most cases the vaginal mucous membrane, especially in the fornices and on the cervix, presented pinpoint to pinhead sized granulations.

In nearly all cases the relief was prompt after one or two daily douches. The itch disappeared, the discharge became scanty, thin in character and odorless, or even disappeared entirely, and the vaginal mucosa assumed a normal appearance.

In thirty cases, no more live trichomonas organisms could be found after two or three douches. Twenty-four cases showed complete absence of live parasites after one week of daily douches and two cases required two weeks of daily douches to bring about the disappearance of the parasites.

It is a known fact that, with every method of treatment, the trichomonas vaginitis has a tendency to recur after menstruation.

In our series, during an observation period of eight months the recurrence of *Trichomonas* did not take place in twenty cases after one month of treatment, in twelve cases after two months of treatment, and in sixteen cases after three months of treatment.

Therefore by this method forty-eight patients, or 85.7 per cent, could be considered clinically and parasitologically cured after three months of treatment. The rest of the series (eight patients) performed the treatment very irregularly and their parasitologic examinations accordingly varied at different times. These cases were not considered as cured.

According to Davis² it is doubtful whether any type of home treatment will result in complete destruction of *Trichomonas vaginalis* or in a clinical cure that will

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¹ Schewiakoff W. Scheintod und Wiederbelebung sowie andere Schutzbildungen bei Marinen Infusorien. Publ. della Staz. Zoolog. Napoli 9: 59, 1928.

² Davis C. H. Lenkerhca in Curtis H. H. Obstetrics and Gynecology Philadelphia W. B. Saunders Company 3: 439, 1933.

persist for more than a few weeks. Our method, which is easily executed by the patient at home, gives a definite and prompt relief and prevents recurrence in a considerable number of cases.

CONCLUSIONS

1 Vaginal douching with 25 per cent salt solution is proposed for the treatment of trichomonas vaginitis.

2 The principle of the treatment is based on the osmotic effect of concentrated salt solution on trichomonas vaginalis.

3 The method is nonirritating, simple and inexpensive and can easily be carried out by the patient at home.

4 The method gives prompt relief from the itching and irritating vaginal discharge and prevents in most cases the recurrence of trichomonas vaginitis.

PREPUTIAL CALCULUS, A CLINICAL RARITY

REPORT OF A CASE

NORMAN R. INGRAHAM, JR., M.D.
PHILADELPHIA

History—A Negro, aged 30, admitted to the Genito-Urinary Service of the Philadelphia General Hospital, Dec 4, 1933, complained chiefly of acute urinary retention. Since birth he had never been able to retract the foreskin of the penis. Urine was expelled in a fine stream through a narrow opening in the prepuce. At each attempt at micturition, the urine flow being retarded not at the meatus but at the preputial orifice, there was a ballooning of the foreskin to form a sac, which had to be emptied by manual compression. For some months prior to admission, however, he had been unable to empty this preputial sac completely because of the presence of some hard substance, which he could easily feel in this structure with his fingers. This had increased rather rapidly in size until the sac had become swollen and hard, as though filled with stone. With the appearance of the foreign bodies, micturition which up to then had been comparatively easy had become increasingly difficult. On the day of admission he found himself, for the first time, unable to void, and he had not passed urine for twelve hours prior to coming to the hospital.

The remainder of his genito-urinary history was irrelevant. He stated that sexual relations were normal up to the appearance of the preputial stone, semen passing readily through the preputial orifice, but this had been impossible for the past few months.

Physical Examination—He was well developed and well nourished, apparently in good health save for the difficulty that brought him to the hospital, and he was normal physically except for the genito-urinary condition. The chest and heart were normal, the blood pressure was 125 systolic, 65 diastolic. The bladder extended half way to the umbilicus, the lower part of the abdomen was tender. The head of the penis was surmounted by an ovoid structure 4.5 cm in diameter, at the tip of which was a small opening 2 mm in diameter for the passage of urine. Palpation revealed a hard irregular mass beneath the foreskin with definite crepitation, as though stones were present. There was absolute urinary retention.

The body of the penis was large but otherwise normal. The left testicle was swollen and the epididymis was enlarged and tender. Rectally the prostate was a little large and boggy but not otherwise remarkable.

Treatment—On coming to the ward, he was placed immediately on the examining table and unsuccessful attempts were made to pass a flexible bougie and a metal catheter. The grating of the latter instrument on the foreign body left little doubt that there were stones, either in the anterior urethra, on the assumption that the foreskin was adherent to the glans, or in the preputial sac. An operative procedure was in order, an incision was carefully made over the dorsum of the mass and

a pocket of stones was revealed between the prepuce and the glans. One of the larger calculi pushed against the meatus accounted for the retention. Circumcision was performed. He voided 60 ounces (1,800 cc.) of urine in the next twelve hours. The urethra was considerably dilated and the glans slightly atrophic but otherwise normal.

Course in Hospital and Studies—Because of the infection of the epididymis and testicle, resulting undoubtedly from a retrograde passage of bacteria from the posterior urethra through the vas attending the acute retention, he had a temperature elevation up to from 101 to 103 F daily until December 25. An abscess in the left scrotal sac was incised and drained December 13. An intravenous pyelogram showed no evidence of stone in the kidneys or bladder and good kidney function. There was some ureterectasis of the proximal end of the right ureter. Cystoscopy, performed Jan 23, 1934, revealed a normal bladder with no stones. He was discharged the same day, completely cured.

The urine, Dec 5, 1933, was yellow, acid, with a specific gravity of 1.021, a faint trace of albumin, no sugar, leukocytes 1+, and an occasional epithelial cell.

Examination of the blood showed, December 15, red blood cells, 3,300,000, hemoglobin 70 per cent, white blood cells, 8,400. December 26, red blood cells, 3,820,000, hemoglobin, 70 per cent, white blood cells, 8,300. The Kahn test was 4+, the cholesterol test, 4+, and the Noguchi reaction, 2+. Sugar was 89 mg per hundred cubic centimeters, urea nitrogen, 15 mg.

Description of Stones—The stones, shown in the accompanying illustration, numbered 1,072 and weighed 76 Gm. They were worn smooth from constantly rubbing on one another and many were faceted. The dimensions of the seven largest are given in table 1. Their analysis, according to Dr Reinhold, was as follows: The stones consisted of a gray smooth core surrounded by layers of white chalky material. The outer lamina was chiefly calcium (and magnesium) carbonates plus a small admixture of protein-like material and traces of urate. The inner core and surrounding gray lamina were largely calcium carbonate but contained considerable protein material as well and some urate. There was no cholesterol, cystine or ammonium salts. No crystals were found.

THE AMERICAN LITERATURE

The extreme unusualness of this clinical condition, as judged by the paucity of the literature on the subject, particularly in America, makes some comment on it seem necessary. In this country, Gross¹ in 1866 had evidently never seen a case of preputial calculus, but he mentioned the fact that he had in his possession stones obtained from the preputial sac of a Chinese by Dr John G. Kerr² of Canton, China. Keating³ mentioned the condition of calcified smegma occurring in children without complete phimosis (set forth previously by Demarquay⁴ and recounted more recently by Heymann⁵ in adults) and described a case of preputial calculus associated with bladder stone. Nelson⁶ in 1872 reported the case of a Chinese of Sacramento, Calif., aged 35, who had thirty-eight calculi varying in size from number 6 shot to buckshot, in a preputial sac phimosed since childhood. Buchelmann⁷ in 1881 told of a case of this condition occurring in a Mexican, aged 60, in which there were two stones, 3.5 cm and 5.3 cm in diameter. Jenkins⁸ in 1887 found two calculi,

¹ Gross S. D. A System of Surgery. Philadelphia: Henry C. Lea, 2:816, 1866.

² Andrews J. A. Calculi in the Prepuce. J. Cutan. & Genito-Urin. Dis. 9:218, 1891. Kerr J. G. Preputial Calculi, New York: M. J. 18:283, 1872.

³ Keating J. M. Cyclopaedia of the Diseases of Children. Philadelphia, J. B. Lippincott Company, 3:622, 1890.

⁴ Demarquay J. N. Maladies chirurgicales du pénis. Paris, V. Adrien Delahaye et Cie, 1877, p. 145.

⁵ Heymann A. Preputialstein ohne Phimose. Ztschr. f. nrol. Chir. 21:305, 1927.

⁶ Nelson H. W. Formation of Calculi Under the Prepuce, Pacific M. & S. J. 15:175, 1871-1872.

⁷ Buchelmann A. G. Preputial Calculus. St. Louis: Cour. Med. 5:204, 1881.

⁸ Jenkins A. R. A Case of Calculus Preputialis. Ann. Surg. 5:211, 1887.

2 cm by 1 cm, in a 3 year old Negro boy in Henderson, Ky. More recently, Williamson⁹ performed a circumcision on a 15 year old Negro boy in Norfolk, Va., and found five uric acid calculi, in the preputial sac, the largest 7 mm in length.

THE FOREIGN LITERATURE

While the occurrence of preputial stone probably dates from the origin of man, the first recorded case in the readily accessible literature is that of Robert Clarke,¹⁰ preserved in the Philosophical Transactions

TABLE 1—Dimensions of Seven Largest Stones

Stone	Size in Centimeters
1	2.7 by 2.0 by 1.5
2	2.4 by 1.9 by 1.0
3	2.2 by 2.0 by 1.7
4	2.0 by 1.7 by 1.2
5	1.9 by 1.6 by 1.0
6	1.7 by 1.5 by 0.9
7	1.5 by 1.4 by 0.8

of the Royal Society of London in 1749. (A case seen in Paris in 1722 by Petit¹¹ was not reported until 1753.) Clarke's case is of especial interest since it describes briefly and dramatically the course which this condition, untreated, takes.

A man, aged 23, "from infancy labored under difficulty of making water. He was in greatest agony from every motion, but was relieved by putting a great pin, the head foremost, an inch at least between the prepuce and the stone, when sometimes mucous, sometimes a gritty matter would first ooze out and then came urine with some violence. During this time (from the age of 3 to 23 years) the end of the penis was observed to grow in the form of and as large as a hen's egg, occasioned as may be imagined by the concretion of the stone between the glans and the prepuce. At last there was a total suppression of urine for 48 hrs at least attended by the appearance of a sore on the side of the penis out of which the stony concretion dropped."

Demarquay,¹² Lewin¹³ and Englisch¹⁴ have more or less completely reviewed the literature up to 1903. They found some fifty-two cases occurring at almost any age (table 2).

TABLE 2—Ages in Which Cases Occurred

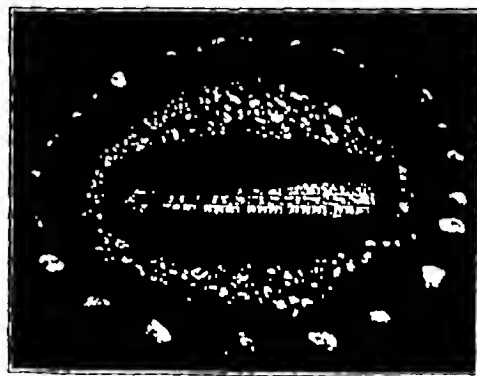
Age Years	Cases
1/2 to 10	7
11 to 20	1
21 to 30	9
31 to 40	4
41 to 50	6
51 to 60	5
61 to 70	1
71 to 80	2
No age given	17

The stone occurs usually singly or a few in number, only four cases are mentioned in which there were more than 100 stones (greatest number 400, by Winshaw of Fyzabad, India¹⁵). Some very large stones have been described. Thus Sabatier describes a preputial stone 6.9 cm in diameter and 15.3 cm in circumfer-

ence, weighing 141 Gm.¹⁶ Levavasseur¹⁷ found a stone weighing 210 Gm in a Frenchman of Carcassonne, aged 44, with congenital phimosis. Mathew¹⁸ obtained one from a Brahmin of Mazufferpore, India, 17.8 cm in circumference and weighing 222 Gm, while Vanzetti¹⁸ found a calculus measuring 8 cm by 6 cm and weighing 224 Gm, in a Ukrainian peasant.

From 1903 to date some thirty-seven cases are reported, most of them from outlying districts and in no sense remarkable. McCracken¹⁹ describes a case seen by him in Shanghai, China, in which 395 small stones were obtained from the preputial sac of a 35 year old man. Ramaroni²⁰ obtained forty-five small stones weighing 272 Gm from a 33 month old child in Paris. Griewank,²¹ in 1914, described the most remarkable case yet on record.

A 25 year old native of Upper Senegal and Niger was improperly circumcised at the age of 15 years, much redundant tissue being left which, in the ensuing ten years, closed down until only a small opening was left. The head of the penis grew to the size of the head of a fetus at term and spherical. The wall of the prepuce, thickened by inflammatory tissue, was 3 cm wide. The sac was filled with calcium ammonium phosphate stones to the number of from 1,800 to 2,000 and weighing 540 Gm.



Calculi obtained from the preputial sac of a Negro aged 30, with congenital phimosis.

SUMMARY OF IMPORTANT FACTS

Preputial stone occurs in those cases of phimosis, usually congenital in origin, in which the orifice for the passage of urine becomes so small that stagnation occurs in the preputial sac, distended by pressure of urine from the bladder. The anterior urethra becomes dilated,⁸ and the bladder hypertrophies and enlarges.¹⁰ Hydro-ureter may develop if the condition continues over a long period of time. Infection of the bladder, posterior urethra, epididymis and testicle may occur and urinary extravasation may result.¹⁷ Particularly in the presence of infection, the debris from which forms a nucleus, stagnation of urine is apt to result in the deposit of urinary salts to form calculi either in the kidneys,²² bladder or preputial sac. Those formed high up in the urinary tract are caught by the phimosed prepuce if

9 Williamson T V. Phimosed Preputial Sac. *Servicing as an Adventitious Urinary Reservoir*. J. A. M. A. 99: 831 (Sept 3) 1932.

10 Clarke, Robert. Phil. Tr. Roy. Soc. London 11: 635 (Jan. 21) 1749.

11 Petit A. Anatomie chirurgicale ou description exacte des parties du corps humain avec des remarques utiles aux chirurgiens dans la pratique de leur art. Paris: Cavelier et fils, 1753.

12 Demarquay J N. Maladies chirurgicales du penis p. 138.

13 Lewin G. Ueber Praputialsteine. Berl. klin. Wchnschr. 16: 177 1879.

14 Englisch J. Ueber Praputialsteine. Wien. med. Presse 44: 2208 1903.

15 Mathew R G. Large Preputial Calculus. Indian M. Gaz. 21: 84 1886.

16 Demarquay J N. Maladies chirurgicales du penis. Paris: V. Adrien Delahaye et Cie. 1877. Englisch¹⁴.

17 Levavasseur M. Observation relative à une pierre pesant sept onces et de la grosseur d'une pêche, située entre le prepuce et le gland. Rec. de méd. de chir. et de pharm. mil. 11: 367 1822.

18 Vanzetti. Calcul du poids de 224 grammes entre les deux feuillets du prepuce précédé de quelques réflexions pratiques sur les calculs de l'urètre chez les enfants. Bull. de la Soc. anat. de Paris 18: 16 1844.

19 McCracken. Tucker and Snell. Preputial Calculus, China. M. J. 30: 252 1916.

20 Ramaroni. Calculs préputiaux chez un enfant de 33 mois. Nouriss. son 6: 270 1917.

21 Griewank H. Snr une complication rare du phimosis. Gaz. hebdomadaire de médecine de Bordeaux 35: 39 1914.

22 Mankiewicz O. Zischr. f. Urol. 3: 580 1909.

they are carried downward by the urine flow, and the result is the same as though they were formed in the latter situation. The stones consist of organic matter impregnated with calcium or magnesium phosphate or urate, occasionally of ammonium salts or uric acid.²³ They increase more or less rapidly in size as successive layers are deposited. Venereal disease, by narrowing the outlet for urine flow and increasing the tendency to fibrosis, makes the formation of preputial stone more likely.²⁴ If the case goes untreated, urinary obstruction of severe degree will sooner or later develop, which without intervention, may give rise to the formation of a fistula.²⁵ Chronic irritation has caused the development of cancer of the glans in at least one instance,²³¹ and pressure atrophy of the glans is common.²⁶

The diagnosis rests on the realization of the existence of such a condition, and the treatment without exception, is circumcision.

Thirty-Fourth and Pine streets

RAPIDLY DEVELOPING CATARACT AFTER DINITROPHENOL

W W BOARDMAN, M D
SAN FRANCISCO

Dinitrophenol has been demonstrated to be a marked metabolic stimulant and as such has been recommended as an aid in the treatment of obesity. Extensive animal experimentation and a carefully controlled series of clinical cases convinced Dr M L Tainter and his co-workers that dinitrophenol in proper dosage and properly controlled produced no deleterious effect on the human organism.

A few cases have appeared in the literature in which death occurred after the ingestion of dinitrophenol, but in these cases there had been excessive dosage or the drug had been continued after the appearance of some complicating condition. At the present time, dinitrophenol is quite generally accepted as an adjunct in the treatment of obesity, although among the more conservative it is used cautiously and with a certain degree of fear.

I myself have used it in several cases and with satisfactory results. However, in the last two weeks I have seen two cases of rapidly developing cataract in relatively young women and have had reports of four similar cases.

REPORT OF CASES

CASE 1—Mrs L, aged 50, was given dinitrophenol off and on from October 1933 to May 1935, with a loss of weight from 237½ pounds (107.7 Kg) to 161 pounds (73 Kg). May 2 she complained of dimness of vision and was referred to Dr W D Horner, who reported incipient cataractous changes in both eyes. He stated that these changes suggested a toxic or metabolic disturbance rather than the usual senile cataract. Within a week the changes progressed so rapidly that only light and dark could be distinguished.

23 (a) MacPherson, J. A Case of a Large Calculus Removed from Beneath the Prepuce. *London M Gaz* 11408 1843. (b) Vanzetti. (c) Ahlin S G. Zur Kasuistik der Präputialsteine. *Zentralbl f Chir* 55 1484 (June 16) 1928. (d) Carles P. Uroclie calculeuse balano-preputiale. *Gaz hebdomadaire de Bordeaux* 35 54 1914. (e) Palasne de Champeaux. Un cas curieux de calculose balano-preputiale. *Paris med* 15 201 1914. (f) Griewank. (g) Ramaroni. (h) Wakimoto H. Ueber einen sehr seltenen Fall von primären Präputialsteinen. *Jap J Dermat. & Urol.* 40 26 1926. (i) Wilford E C. Remarkable Preputial Calculus. *China M J* 39:712 (Aug.) 1925. (j) Mohrmann B H. Fall eines Präputialsteines von ungewöhnlicher Grösse. *Dermat. Wechschr* 87 1185 (Aug 25) 1928. 24 Mudliar, M S. Case of Preputial Calculus. *Indian M Gaz* 40 157 1905. Huyborchts T. *Presse med* 55 299 1903. 25 McCracken, Tucker and Snell. Clarke. 26 Demarquay. Nelson.

CASE 2—Mrs A, aged 36, was given dinitrophenol in doses of from 100 to 500 mg daily from January to August 1934, with a loss of weight from 217½ pounds (98.6 Kg) to 165 pounds (74.8 Kg). From August 1934 to March 1935 the drug was discontinued. By this time she had gained back to 198½ pounds (90 Kg). Dinitrophenol was again given until Mar 1935 when an eye examination by Dr Horner disclosed incipient cataracts. Vision failed rapidly, so that within a month there was almost complete loss of vision in the right eye.

CASE 3—A woman, aged 39, whose case was reported by Dr A B Stockton, had been given dinitrophenol interruptedly over a period of eight or nine months with satisfactory weight reduction. In November 1934 she reported that her vision was getting dim and within thirty days the condition had progressed to almost complete blindness and with fully developed cataracts.

CASE 4—A woman, aged about 40, whose case was reported by Dr J R. Sharpsteen of Oakland, had been taking dinitrophenol without a physician's supervision for several months. She also has shown rapidly developing cataracts.

CASES 5 and 6—Two other cases, reported by Oakland physicians, have occurred of rapidly developing cataracts in women who have been taking dinitrophenol.

COMMENT

As the occurrence of cataract at this age is extremely rare and the only common factor in these cases has been the use of dinitrophenol it would certainly seem that until the question of the relationship between the dinitrophenol and the rapidly developing cataracts in young women is settled, the administration of the drug is definitely contraindicated.

490 Post Street.

CATARACTS FOLLOWING THE USE OF DINITROPHENOL

PRELIMINARY REPORT OF THREE CASES

WARREN D HORNER, M D
RICHARD BARR JONES, M D
AND
W W BOARDMAN, M D
SAN FRANCISCO

CASE 1—April 25 1935, a woman aged 50, reported for eye examination having been referred by Dr Richard Jones. She complained of blurred vision and was sure that she needed new glasses although she had received some from an optometrist only six months before.

Examination showed vision of 01 in each eye corrected to 03 with her glasses. Externally the eyes were not remarkable. Stereoscopic vision, perimetric fields, color sense and muscle balance were normal. Fundus examination showed partial cataracts in each eye. The eye backgrounds were indistinct but were grossly normal. Under dilation the slit lamp showed the cornea, iris and anterior chamber normal. The anterior lens capsule in each eye showed a peculiarly spotty, dry, lusterless appearance resembling the body of a fish out of water or a cornea that lacked tears. Just beneath the capsule fine light gray cloudy opacities were apparent.

There were a few irregular, pearl gray opacities lying deeper in the cortex. The posterior lens showed a remarkable yellowish green reflex and a scumlike metallic sheen not unlike the surface of dull brass that had been irregularly scratched. These lay in the cortex just beneath the posterior capsule and were not to be confused with the normal shagreen.

Refraction showed R. E. +3.00 sph \ominus +0.50 cyl axis 180° V 06 and J 62 blurred with +1.75 add. L. E. +3.00 sph \ominus 0.25 cyl axis 180° V 08 and J 50. The old glasses were approximately 50 per cent weaker in sphere. The appearance of the lens suggested either a toxic or a metabolic disturbance. Questioning revealed that the patient had been taking dinitrophenol under strict medical supervision and had lost 75 pounds (34 Kg). Communication with her physician revealed an absence of glycosuria, nephritis or any other physical condition that might bear on the cataracts.

For lack of something more efficacious, a solution of 3 per cent boric acid in glycerin was ordered for instillation in each eye twice daily.

One week later, May 2, vision, previously 06 and 08 with correction, was reduced to less than 01. The patient preferred her old glasses, which contained 50 per cent less sphere, a marked change in refraction.

May 6, vision in the right eye was less than 01, not improved, but she preferred a -0.50 to -1.00 sphere. The left eye vision was 02, with $+1.75$ sphere, V 06. With $+1.75$ add, she read J 150 partly.

May 8, V R E. = chart only unimproved V L E 06. She would accept no plus but preferred plano V 06. Intra-ocular tension measured R E 29 and 23 (Schiotz) at two day intervals, L E 22 and 31.

Under the slit lamp the lenses showed a dry, pebbly anterior capsule and a remarkable increase of bright pearly deposits in the anterior and central portions. These showed segmentation with dark spaces in between. The posterior layers could no longer be seen. Opacification was increasing rapidly. May 13 vision R E was reduced to light of chart unimproved V L E 01 partly, with minus sphere (-0.50 to -1.50) V 02.

May 17, vision of each eye was reduced to light of chart only, unimproved.

May 28 pilocarpine solution 1 per cent was prescribed three times a day to lower intra-ocular tension which had varied between 22 and 35 (Schiotz) in repeated trials.

June 3, further lens opacification had occurred with vision reduced to hand movements at 3 feet. Vision had thus decreased from 08 to hand movements in slightly more than one month. The patient is now awaiting cataract extraction.

CASE 2—A former eye patient, aged 37 in 1926 had vision in both eyes of 06 corrected to 10 by -0.37 sphere $\ominus -25$ cyl axis 180° . The lenses were clear and the fundi normal.

May 13, 1935 the patient appeared for examination apprehensive concerning her vision. She too had been taking dinitrophenol under careful medical supervision to reduce weight.

Examination showed V R E 08 with $+0.75$ sph $\ominus +0.50$ cyl axis 135° V 08 $+4$ V L E $+2.00$ sph $\ominus +0.12$ cyl axis 55° V 08 blurred. Near vision J 62 O U.

The marked change from a minus compound to a high plus compound in nine years is noteworthy particularly since the two refractions had been done under homatropine by the same observer.

The external eyes appeared normal. Fundus examination showed faint opacities in each lens. The slit lamp showed the same dry pebble-like anterior capsule noted in case 1 a few faint grayish opacities beneath the capsule some whitish flecks deeper, and a yellowish brown brass filing-like opacity in the posterior subcapsular layers.

May 20 she reported saying that vision had become much worse in the past few days. This was verified by the chart. V R E 06, with glasses 05. She preferred -0.50 sph to her previous lens V L E 07, with glasses 08-4. The subcapsular opacities in the right eye appeared more dense.

May 28, vision in the right eye was reduced to 01 partly unimproved by glasses. Vision L E 08-1 with $+1.00$ sph 08. Near vision R. none L J 200 with glasses J 62.

The right eye was markedly worse. The capsule appeared dry, as before. There was an increase in the steamy subcapsular opacities and those deeper in the cortex. Only a hazy reflex was obtained from the posterior layers. The left eye was apparently unchanged. The capsule appeared rough and dry. The subcapsular opacities remained faint. From here to the posterior cortex the lens was clear with the exception of a few scattered white flecks. The posterior subcapsular layers presented the same granulated brassy appearance with here and there a lighter more steel like glint showing dots and scratches.

May 29 a consultation was held with Dr Kaspar Pischel. Local measures consisting of ethylmorphine hydrochloride subconjunctival injections of physiologic solution of sodium chloride hot compresses forced fluids and the peroral administration of calcium were agreed on.

June 6 vision R E, light of chart unimproved. V L E 08. Prefers plano.

Further opacification had taken place in the right lens and a later extraction will be necessary. The left eye has remained unchanged. It has not become appreciably worse in three weeks' time.

CASE 3—A woman, aged 40, reported June 3 for examination, since she had been taking dinitrophenol and had known about cases 1 and 2. At the start of her treatment in July 1934 she had noted a transient blurring, but this had disappeared after a few doses. She had noted no further difficulty and had felt generally better (freedom from previous headaches) under her treatment.

Examination showed V R E 08 and J 50 in each eye. Refraction (homatropine) R E $+1.75$ sph $\ominus +0.25$ cyl axis 180° V 10-2 L E $+1.50$ sph $\ominus +0.25$ cyl axis 65° V 08+. The external eyes were normal. The fundus examination revealed bilateral faint lenticular opacities. The slit lamp showed the anterior lens capsule normal. There was no roughening apparent. Just beneath the capsule were seen faint grayish finely divided dots forming irregular precipitate-like strands. They made lacelike patterns. Occasional whitish cornmeal-like flecks were noted throughout the cortex. Posteriorly, just beneath the capsule, appeared yellowish brown, brass filing-like deposits similar to the appearance in the preceding cases. They showed considerable density. The vitreous appeared normal. These lenses showed the least changes that we have observed. Whether they will or will not increase is problematic. The patient is under careful observation.

Three more patients, aged 42, 43 and 52, who had received dinitrophenol have been examined. None of these showed the dried capsule, subcapsular opacification or the peculiar metallic sheen posteriorly. All of them showed occasional scattered, whitish, cornmeal-like flecks in the cortex, but as this is not uncommon in patients generally we have considered them negative. One patient showed bilateral faintly opaque zones in the lens periphery. These also are probably not specific changes.

AMOUNT OF DINITROPHENOL TAKEN

The following is an outline of the treatment with dinitrophenol for the purpose of weight reduction.

CASE 1—Mrs L, aged 50, was started on sodium dinitrophenol Oct. 20 1933, beginning with 100 mg daily and gradually increasing to 500 mg daily for a total dosage of 780 hundred milligram capsules and a total weight loss of $49\frac{1}{2}$ pounds (224 Kg) losing from $237\frac{1}{2}$ pounds (1077 Kg) to $188\frac{1}{4}$ pounds (854 Kg). The drug was discontinued from March 5 to May 17, 1934. A second course was given from May 17 to July 19 for a total weight loss of 17 pounds (77 Kg) and a total dosage of 229 hundred milligram capsules. The patient maintained her weight at approximately 160 pounds (72.6 Kg) until April 18 1935 when with a weight of 164 pounds (74.4 Kg), dinitrophenol was again administered in a dosage of 200 mg daily for one week, 300 mg daily the second week and finally 400 mg daily. At this point, dimness of vision was complained of and incipient cataracts were found. The patient received a total of approximately 1,072 hundred milligram capsules over a period of eighteen months.

CASE 2—Mrs A, aged 36, was treated continuously from Jan. 20 to July 24 1934, with a maximum dosage of 500 mg daily a total dosage of 910 hundred milligram capsules, and a total weight loss of $66\frac{1}{2}$ pounds (30 Kg) losing from $222\frac{1}{2}$ pounds (101 Kg) to 156 pounds (71 Kg). There was then a period of seven months without dinitrophenol and failure to follow dietary instructions with a resulting gain in weight of 44 pounds (20 Kg). The dinitrophenol was again administered on March 13 gradually increasing to a maximum dosage of 400 mg daily for a total dosage of 231 hundred milligram capsules and a total weight loss of 12 pounds (5.4 Kg). The drug was discontinued May 14 because of the finding of incipient cataracts in both eyes. This patient had a total of approximately 1,141 hundred milligram capsules of dinitrophenol over a period of sixteen months.

CASE 3—Mrs P, aged 30, started on sodium dinitrophenol March 1 1934 beginning with 100 mg daily and gradually increasing to a maximum of 500 mg daily for a total of approximately 316 hundred milligram capsules and a total weight loss of $21\frac{1}{4}$ pounds (9.6 Kg). The drug was discon-

tinued after June 26, 1934, but, with this relatively short period of treatment and small total dosage, definite lens changes are evident one year later

COMMENT

Three cases of cataract occurring in patients who have been receiving dinitrophenol as a weight reducer have been observed. The age of the patients and the absence of other external or physical factors suggest dinitrophenol as the cause. All three patients have shown posterior subcapsular opacities resembling brass filings, together with faint powdery, anterior subcapsular changes. Two of the three have shown a peculiar dried appearance of the anterior capsule. In these two the lens changes have been remarkably rapid in their development. In only one other condition, namely, frank traumatic cataract, have we seen lens fibers change so swiftly. In only one out of these four eyes has vision remained stationary for as much as three weeks. The others have progressed to blindness. The third patient has not been under observation long enough to determine progress. Since her opacities are the faintest that we have observed, the outlook may be better.

We shall not attempt an explanation of the effect of dinitrophenol on the lens in this report. This may be toxic, metabolic or dietary. It is known for a certainty that dinitrophenol does increase metabolism to a high degree and that it is possible to maintain this high rate during administration of the drug. It is conceivable that the lens changes result from this excessive burning up of body tissues.

Dehydration may be a factor, although this was carefully guarded against in the dinitrophenol administration. The hyperopia found at our first examinations, particularly when previous refractions had been myopic (case 2), suggests a thinning of the lens with decreased refractive power. If this is a drying out process, the roughened, dry-looking anterior capsule might follow. However, forced fluids in case 2 did not cause any appreciable difference either in the appearance of the capsule or in the disappearance of hyperopia as compared with case 1, in which less water was given.

Another possible explanation might lie in some food deficiency on account of the restricted diet these patients received. Particular care was given, however, to guard against this in the selection of their diets.

In six cases examined, in which dinitrophenol was taken for a considerable time, three showed lens changes of identical types. We are aware of lens changes in at least two other cases.

Under these circumstances, further use of dinitrophenol should be discontinued, pending further study on its secondary systemic effects.

384 Post Street

If Sugar Consumption Were Reduced.—It is estimated that, in the United States today, about one fourth of the energy requirement is met through eating sugar in its various forms. With this large proportion of the total energy intake in the form of such a one-sided food, it follows that the intake of protein, phosphorus, calcium, iron and vitamins is on the whole proportionately diminished. Investigations of recent years indicate strongly that this trend is contrary to good nutritional practices and that the American people would benefit if sugar consumption were reduced and the needed energy obtained from the consumption of other food materials. Probably the desire for sweet-tasting foods is best satisfied by the eating of fruits.—Sherman, H. C. *Food and Health*, New York, Macmillan Company, 1934.

Clinical Notes, Suggestions and New Instruments

THE USE OF FRESH HUMAN SERUM (COMPLEMENT) IN COMBINATION WITH THE ANTISERUM IN THE TREATMENT OF MENINGOCOCCIC MENINGITIS

REPORT OF TWO CASES

EDGAR C. FONDÉ, M.D., MOBILE, ALA.

In 1933 Bunim and Wies¹ directed attention to the use intrathecally of fresh human serum (complement) in the treatment of meningococcic meningitis. Report was made of one case in which on the thirty-sixth day of the disease, and after much antimeningococcic serum had been given, 15 cc. of fresh human serum was injected intrathecally, the spinal fluid, which had consistently grown meningococci, gave no growth forty-eight hours after its administration and convalescence proceeded uneventfully and completely thereafter. They cited thirty-one cases in which this treatment had been used and stated: "The literature of the last fifteen years has given no serious consideration to this addition in the serotherapy of meningococcic meningitis."

Since 1933 there has been no report in *THE JOURNAL* concerning the use of human serum in this disease. Rittenberg reported one case of influenzal meningitis with recovery in which this was given in addition to the treatment with anti-influenzal serum. Because of such striking improvement in both of the cases that I recently treated after the intraspinal administration of fresh human serum, I am reporting my observations to corroborate those of the others, and with the hope of focusing more attention on this procedure.

CASE 1—J. B., a white youth, aged 20, examined about 10 p. m., Jan. 5, 1935, was stuporous, opisthotonos was marked. The temperature was 103.6 F., the pulse 60 and the respiration rate 20. He showed all the characteristic symptoms and signs of meningitis. The illness began about noon, January 3, when the patient fainted in the postoffice. Persistent vomiting had been the chief complaint until the morning of January 5, at which time a severe headache developed. Rigidity of the neck, Brudzinski's and Kernig's signs and petechial rash were all present.

About 10 p. m. the spinal fluid showed 4,150 cells per cubic millimeter and many gram-negative intracellular and extracellular diplococci.

Conjunctival and intradermal tests for hypersensitization to horse serum were negative.

Thirty cubic centimeters of antimeningococcic serum was given intrathecally and 45 cc. of antimeningococcic serum intravenously. The patient's pulse and general condition became so grave during the intravenous administration that epinephrine was given and it was thought best to discontinue intravenous injections.

January 6 the patient's general condition was about the same. The temperature was 99 and the pulse 72. At 9:30 a. m. 20 cc. of whole blood² and 60 cc. of antimeningococcic serum were injected intramuscularly. Dextrose, 50 per cent, was given intravenously. Opisthotonos became very marked and at times the patient was delirious. At 8 p. m. spinal fluid showed 2,330 cells per cubic millimeter; no organisms were seen. Thirty cubic centimeters of antimeningococcic serum was given intraspinally.

January 7, the general condition was about the same, the patient was very rigid. The temperature was 100.6, and the pulse 75. Delirium persisted. At 11 a. m. 30 cc. of antimeningococcic serum was given intraspinally and 60 cc. of antimeningococcic serum intramuscularly. The patient was restless and delirious all day. At 8 p. m. spinal fluid showed

¹ Bunim, J. J. and Wies, F. A. Use of Fresh Human Serum (Complement) in Meningococcic Meningitis. *J. A. M. A.* 100:178 (Jan. 21) 1933.

² Rittenberg, B. B. Influenzal Meningitis. Report of a Case with Complete Recovery. *J. A. M. A.* 102:1674 (May 19) 1934.

³ The whole blood and human serum used in these cases were obtained from a young man who had recovered from meningococcic meningitis in August 1934 five months previously.

2,560 cells per cubic millimeter, no organisms were seen. Thirty cc of antimeningococcic serum was given intraspinally.

January 8, the patient's general condition seemed a bit better. The temperature was 100 and the pulse 68. The spinal fluid showed the same gross appearance. There was some headache and marked rigidity. At 11 a. m. and again at 9 p. m. 30 cc. of antimeningococcic serum was given intraspinally.

January 9, the general condition of the patient was better. The temperature was 99, the pulse 60. At 3 p. m. spinal fluid showed 2,340 cells, this fluid grew meningococci on 1 per cent dextrose ascitic blood agar. Five cubic centimeters of antimeningococcic serum was given intraspinally and 12 cc of fresh human serum³ was given intraspinally.

January 10, the patient's general condition was much better. The temperature was 99, the pulse 60. Fifteen cubic centimeters of antimeningococcic serum was given intraspinally. Spinal fluid showed 1,800 cells.

January 11, the patient was complaining of puffiness of the lips and generalized itching. The general condition was still improving. At 10 a. m. the spinal fluid appeared almost clear, the cell count was 30, this fluid gave no growth.

January 12 and 13, the patient had a typical attack of serum sickness. No other spinal punctures were done. The patient's convalescence progressed uneventfully and completely.

On the fifth day of the treatment (seventh day of the disease) 12 cc of fresh human serum was introduced intrathecally, the spinal fluid withdrawn at that time grew meningococci. On the next day 15 cc of antimeningococcic serum was given. On the morning of the seventh day of treatment (ninth day of the disease) approximately forty-eight hours after the injection of the fresh serum, the spinal fluid appeared grossly clear (30 cells per cubic millimeter) and gave no growth. No other treatment was necessary.

CASE 2—B. A., a man, aged 24, white, was brought into the clinic unconscious, about 10 p. m., Jan. 13, 1935. The pulse was barely perceptible, the patient was very cyanotic and had a diffuse petechial rash and mottling of the skin. He appeared moribund. The history was that on the night before (January 12) he had ridden a freight train with friends from New Orleans to Mobile, during which time he complained of feeling very drowsy. On his arrival in Mobile, Sunday morning, January 13, he began vomiting and complained of a severe headache, which increased in severity throughout the day until about 5 p. m., when he became unconscious. Rigidity of the neck and Brudzinski and Kernig signs were present.

The temperature was 101.8 F (axillary), pulse 120 and respiration rate 32. The spinal fluid showed 8,500 cells per cubic millimeter and many intracellular and extracellular gram-negative diplococci. At 11 p. m. 30 cc of antimeningococcic serum was given intraspinally and 120 cc. of antimeningococcic serum intravenously. Caffeine sodiobenzoate $7\frac{1}{2}$ grains (0.5 Gm.) was given at the beginning of the serum administration.

January 14, the patient was semicomatose and could not respond to questions. The spinal puncture had to be done under chloroform anesthesia. At 11 a. m. 60 cc. of antimeningococcic serum was given intravenously. At 3 p. m. the spinal fluid showed 8,340 cells and many gram-negative diplococci; it grew pure culture of meningococci. Twelve cubic centimeters of fresh human serum was injected intraspinally, 5 cc of antimeningococcic serum was injected intraspinally under chloroform anesthesia, and 10 cc of antimeningococcic serum was injected intramuscularly.

January 15, the patient was definitely better in the morning. The temperature was 101 F (by mouth) and the pulse was 100. Three cubic centimeters of fresh human serum was given intraspinally, 15 cc of antimeningococcic serum intraspinally, 20 cc. of antimeningococcic serum intravenously and 10 cc of antimeningococcic serum intramuscularly. The spinal fluid at this time showed 8,560 cells, no organisms were seen; the fluid had a definite yellow tinge.

January 16, when I walked into the patient's room in the morning he asked me when he could get out of bed. The temperature was 99, the pulse 80. At 10 a. m. 30 cc of antimeningococcic serum was given intramuscularly. The spinal fluid showed marked improvement: 1,800 cells in forty-eight hours culture reported no growth.

January 17, 18 and 19, no other spinal punctures were done. Convalescence proceeded uneventfully and completely, except that the patient had a little serum sickness and a definitely gonococcic epididymitis developed (following catheterization at the onset of illness).

During the second day of the disease, 12 cc. of fresh serum was given intraspinally after thorough dosage of antimeningococcic serum. The patient was first seen on Sunday night, January 13, when he appeared almost moribund, on Wednesday morning, January 16, the last spinal puncture was done and the patient was definitely on the road to recovery. The spinal fluid taken at the time the human serum was introduced grew meningococci, within forty-eight hours afterward the spinal fluid gave no growth.

The rationale of alternately using fresh human serum with antiserum intrathecally is expressed by Kolmer.⁴ "Ordinarily, when we inject an immune serum we furnish but one bactericidal substance, namely, the bacterial amboceptor, and no complement at all. If the patient's complement is decreased or at least insufficient to activate the amboceptor furnished, lysis will not occur, and accordingly an increased therapeutic effect may be secured by the injection simultaneously of an immune serum and fresh normal serum."

Of course when antiserum is given intravenously there is no need, particularly at the beginning of a disease, to supply complement, for it is already present in the patient's serum. But when antiserum is given intraspinally there is no complement present, for spinal fluid contains little or no complement. Kolmer and others⁴ have shown that the addition of fresh serum to antimeningococcic serum definitely increases bactericidal power and opsonic activity. In other words the bactericidal effect of amboceptor (supplied in the antiserum) is more effectual and phagocytosis is definitely increased.

In the two cases reported I believe that the change of the spinal fluid to yellow indicated that this had taken place and that lysis was more extensive.

Bunim and Wies recommended that 5 cc of fresh human serum be added to 15 cc of commercial antiserum and given intraspinally.

I recommend that the fresh human serum (15 cc or a quantity slightly less than the amount of spinal fluid withdrawn) be given within twenty-four hours following the initial intravenous and intraspinal injections of antiserum and that this in turn be followed within twenty-four hours by more antiserum. In other words, the sequence and kind of treatment similar to that used in the second case report is recommended for the reason that it has been shown that an excess of antiserum (amboceptor) may reduce the degree of bacteriolysis. Neisser and Wechsberg⁴ explained this by stating that the amboceptor absorbed a portion of the free complement and thus prevented this portion from combining with those amboceptors united with bacteria (complement deviation).

Since the advent of antimeningococcic serum in the treatment of meningococcic meningitis the death rate has been reduced from 70 to 80 per cent to 30 to 40 per cent (Stevens). Rationalizing consistently on this result along the lines of immunology suggested in this discussion it would seem that a great factor in causing the reduction is the early administration of ample amounts (from 100 to 120 cc) of antiserum intravenously. The antiserum that has been given intraspinally has been effectual but not as effectual as it could have been if a complement had also been added. It has been shown that bacteria grown in their homologous antisera become avirulent and microbic dissociation takes place.¹ The case reported by Bunim and Wies demonstrated this, which condition is not an infrequent experience in the treatment of the disease.

CONCLUSION

In two cases of meningococcic meningitis, at different periods during the course of the disease 15 cc of fresh human serum was given intraspinally, preceded and followed by the administration of commercial antiserum. Within forty-eight hours after its injection the spinal fluid of both patients became sterile. In the second patient who appeared more critically ill

⁴ Kolmer, J. A. Practical Textbook of Infection Immunity and Biologic Therapy. Philadelphia: W. B. Saunders Company, 1923.

the fresh human serum was injected within twenty-four hours following the initial administration of the commercial antiserum, and in this case convalescence and recovery occurred more rapidly.

Observations in these two cases, together with the reports in the literature, justify the opinion that the use of fresh human serum intraspinally is a distinctly valuable addition to the serotherapy of meningococcic meningitis.⁵

INTRAPELVIC PROTRUSION OF THE ACETABULUM (OTTO PELVIS)

WALTER N. LEVIN, M.D., FRESNO, CALIF.

Until recently, intrapelvic protrusion of the acetabulum had not been reported in American literature. Though first described by Otto¹ in 1824, the first report in this country did not appear until 1922 when Hertzler² reported one case. Since that time cases have been recorded by Lewin,³ one case, Doub,⁴ eight cases, Pomeranz,⁵ seven cases, Nichols and Shifflett,⁶ two cases and Schaap,⁷ two cases. In all, approximately sixty-five cases of true Otto pelvis have been reported, and the majority of these in the foreign literature.

Because of its rarity another case is here reported, with a brief review of the disease.

Intrapelvic protrusion of the acetabulum is a condition characterized clinically⁸ by pain and limitation of motion in the hip. This restriction of motion is particularly noted in abduction and rotation, and often in adduction, flexion and hyperextension. Muscular atrophy of the thighs is not uncommon, and a peculiar gait described as waddling or wabbling is present in late cases. The disease may be unilateral or bilateral.

Roentgenologically⁹ there is a deepening of the acetabulum with a medial displacement and thinning of its inner wall. The femoral head also shows changes but these changes are less marked. The general contour of the head may be retained but there is usually an irregularity of outline and a thinning of the articular cartilage. The joint space is narrowed. The greater trochanter is much closer to the ileum and, in advanced cases, may impinge on it.

The etiology is unknown. Most writers agree that it is not a disease entity but rather a disease process. Lewin³ believes that it is due to a combination of factors, which are "(1) hypertrophic arthritis of the hip joint, (2) weakening of the acetabular floor, (3) trauma due to weight bearing or injury and (4) muscular contraction forcing the head of the femur against the acetabular floor." Pomeranz⁵ and Schaap⁷ both report cases that seem to be due to the gonococcus. Golding⁹ reports a case in which he believes that the most likely cause is a disturbance in growth, a late ossification of the cartilages that make up the acetabular floor and the constant pressure of the femoral head being enough to produce the protrusion (Eppinger's theory). Rheumatic infections seem to be the cause of a number of cases. Intrapelvic acetabula attributable

to gross destructive processes, such as tuberculosis, syphilis, malignancy, osteomyelitis and fracture, are not true Otto pelvis.

The prognosis⁸ in this condition is poor. Ankylosis ultimately occurs, with a resultant disappearance of pain.

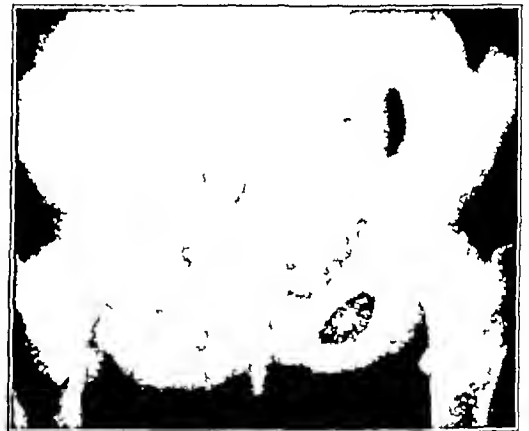
Only two references were found regarding treatment. Lewin³ recommends removal of the foci of infection and then orthopedic treatment. This consists principally of absolute bed rest, the application of Buck's extension, local applications to the hips for pain, and the application of a plaster cast. In unilateral cases the patient may be allowed on crutches after a 2 inch block has been put under the shoe of the opposite side. Schaap⁷ reports two cases due to the gonococcus that improved with autovaccines.

REPORT OF CASE

B. A., a white girl, aged 13 years, had been fairly well most of her life, except that she had always been thin and frail. She had had smallpox but no other illnesses and had had no injuries. She was a normal full term baby, breast fed for five months and then given Eagle Brand milk. She had orange juice since she was 1 month of age but had no cod liver oil. She has not yet begun to menstruate.

The family history is negative except that one of her sisters has diabetes mellitus.

The first appearance of any joint abnormality occurred in April 1934, when the patient found that she could not ride a horse because she could not spread her legs far enough apart to straddle it. However she made no mention of this incident



Roentgen appearance of the hip joints showing deepening and medial displacement of the acetabula and irregularity of the femoral heads.

to her parents. She had played with other children without suspecting that anything was wrong. In September she began to complain of pain in the thighs after walking or standing for any length of time. Her parents thought that she had rheumatism and took her to a chiropractor in November. She became progressively worse and began to walk "stiff-legged." She was finally taken to a physician and he referred her to the county hospital Jan. 11 1935.

The patient was thin and underdeveloped but did not appear acutely ill. She had a peculiar wabbling gait and her knees seemed to get in the way when she walked. She had a marked lordosis and a slight genu valgum. There was no evidence of rickets. The head was normal. The tonsils were cryptic but not grossly infected. No adenopathy or other abnormality of the neck could be found. The heart and lungs were normal. The abdomen was normal. Both upper and lower extremities were thin and their musculature was underdeveloped but in keeping with her general state of nutrition. Both hip joints were markedly limited in motion in all directions but more marked on the right side than on the left. The motion as measured was as follows: Abduction in the left hip was 8 degrees from the midline, and in the right hip 6 degrees; adduction in the left hip was 30 degrees from the midline, and in the right hip 18 degrees; flexion of the left hip was 45 degrees and of the right hip 25 degrees; hyperextension of the left hip was 15 degrees, and of the right hip none. Rotation was estimated to be about one fourth normal in the left hip and none in the right hip.

5 I do not consider as most important the fact that in both of these cases I used convalescent human serum. It is true that the volunteer was bled about the same time horses are bled for the antiserum but because of facts already mentioned and because I used such small amounts of convalescent serum I do not feel that the serum of the convalescent is at all necessary or more important than supplying complement. Of course if convalescent serum is at hand I recommend its use.

From the orthopedic department of the General Hospital of Fresno County.

1 Otto, A. W. Pfannenbeckenmissstaltung infolge deformierender Osteoarthritis. Seltene Beobachtungen zur Anatomie Physiologie und Pathologie. Gehörig ed. 2. Berlin 1824.

2 Hertzler, A. E. Osteo-Arthritic Protrusion of the Acetabulum (Intrapelvic Pfannenbeckenverwölbung). Arch. Surg. 5: 691-701 (Nov.) 1922.

3 Lewin, Philip. Osteo-Arthritic Protrusion of the Acetabulum. Surg. Gynec. & Obst. 41: 449-450 (Oct.) 1925.

4 Doub, H. P. Intrapelvic Protrusion of the Acetabulum. Radiology 12: 369-376 (May) 1929.

5 (a) Pomeranz, M. M. Osteo-Arthritic Protrusion of the Acetabulum. Am. J. Surg. 30: 169-170 (July) 1925. (b) Intrapelvic Protrusion of the Acetabulum (Otto Pelvis). J. Bone & Joint Surg. 14: 663 (July) 1932.

6 Nichols, B. H., and Shifflett, E. L. Intrapelvic Protrusion of the Acetabulum (Otto's Pelvis). Am. J. Roentgenol. 31: 346-348 (March) 1934.

7 Schaap, C. Intrapelvic Protrusion of the Acetabulum. J. Bone & Joint Surg. 41: 811 (Oct.) 1934.

8 Hertzler, A. E. Lewin, P. Doub, H. P. Golding, F. C. Protrusion of the Acetabulum (Central Luxation). Brit. J. Surg. 22: 56 (July) 1934.

Laboratory observations were as follows. The urine showed some pus cells in the voided specimen but otherwise was normal, the blood showed hemoglobin, 75 per cent (Dare), red blood cells, 4,350,000, white blood cells, 6,000, with 61 per cent polymorphonuclear neutrophils and 39 per cent lymphocytes, the blood Wassermann reaction was negative, the blood calcium was 9.8 mg per hundred cubic centimeters, and the Mantoux test was negative up to 1 mg.

Roentgen examination of the lungs showed them to be normal. The x-ray plate of the hips is reproduced here and is typical of the condition. The skull, shoulders, spine, knees and wrists were also examined roentgenologically and were considered to be normal.

1060 Fulton Street

TYPHOID ABSCESS ABOUT LOWER END OF STERNUM

JAMES A. GANNON, M.D., WASHINGTON, D. C.

Miss G., aged 41, a government employee, consulted me, Oct. 30, 1934, because of pain beneath the lower extremity of the sternum. Her family history was unimportant. Her previous history showed that she had been ill with typhoid from September 1927 to January 1928. During this illness she lost 30 pounds (13.6 Kg.). During the progress of typhoid pain developed in the chest, the exact area of which she did not remember. The pain troubled her continuously throughout her illness. In March 1928 a roentgenogram showed an abscess in the neighborhood of the sternum, which was drained and which contained typhoid bacilli. A sinus formed and drained until Aug. 17, 1928, at which time it was excised at the Letterman General Hospital in San Francisco.

Notes furnished by the hospital stated that under local anesthesia a small elliptic incision about 1 inch long running transversely was made around the sinus, which was located just to the right of the sternum over the sixth intercostal space. The sinus had been previously injected with methylene blue. It was excised and found to run down between the costal cartilages to the right side of the sternum. When this sinus was excised down below the ribs where it came in contact with the pleura, no communication with an infected rib or sternum could be found. It was not thought wise to explore the sinus further. The wound was left wide open and packed with iodoform gauze.

She was discharged from the hospital with the wound still draining, September 1, and was readmitted Jan. 4, 1929, complaining of a discharging sinus of the right side of the chest which dated back to the fall of 1927. At this time the sinus tract was injected with methylene blue and broadly excised. It was found to go down to the ensiform cartilage which was gradually sloughing away. The ensiform cartilage was removed in its entirety and a small involvement in the lower portion of the sternum was thoroughly curetted. The cavity was packed with iodoform gauze and the skin wound closed about it. She was discharged January 28 with a small sinus which was cleared up in a short time. Since March 1 the patient had enjoyed good health and had no trouble in the chest wall until she consulted me Oct. 30, 1934. Examination by me on this date showed that she was fairly well nourished and developed and appeared to enjoy good health. The tonsils had been removed. The teeth were in good order. There were no palpable glands in the neck, axillae or inguinal regions. The lungs showed no abnormality, the heart sounds were normal, the pulse was 80 and the temperature was 98.6 F. There was no tenderness or abnormality of the abdomen and she said that her menstrual function was normal and painless and that she felt well in every respect except for pain in the lower end of the sternum. There was an irregular scar with keloid tendency running from a point 1 inch above the ensiform cartilage downward and to the left to a point 1 inch below the ensiform cartilage. There was no redness or edema of the skin. There was no dullness on percussion, but there was pain on pressure over this area. Hot applications were advised and a roentgenogram was taken by Dr. Bierman on the following day. Dr. Bierman reported that roentgen examination of the sternum showed no evidence of such changes as would be seen with a recent osteomyelitis neoplasm or other similar pathologic

condition. The costal cartilage in this region was considerably calcified, but no other abnormalities were noted. The conclusion was that the sternum was apparently normal, with marked calcification of the costal cartilage.

I did not see the patient again until December 5, at which time she called on me with a definite abscess pointing just below the sternum. She said that the reason she did not call on me following her recent interview was that the pain had disappeared promptly after the roentgen examination and that it had just returned. The abscess was aspirated, and a culture was made after which the abscess was incised and drained. Dr. Cajigas reported that the culture contained a pure strain of typhoid bacilli and he made a vaccine from it. The patient was isolated in a hospital and cultures of the feces, blood and urine were made. The typhoid organisms were not found in any of the tests. The vaccine was injected subcutaneously in gradually increasing doses every three days and complete healing had taken place on Jan. 15, 1935. The patient has returned to work apparently well. Subsequent roentgenograms of the ribs and spine failed to show involvement of these bones.

This case is reported because of the long quiescent period, nearly six years, because of the inability to find bone involvement and because of the rapid recovery under vaccine treatment.

1915 Biltmore Street, N. W.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

PHYSIOLOGY OF THE PARATHYROID

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed the series will be published in book form.—Ed.

The parathyroid glands are concerned with calcium-phosphorus metabolism. Experimental work with animals indicates that calcium-phosphorus metabolism is of great importance in the body because it is necessary to the calcification of bone and teeth. The ionic calcium of the blood serum serves to control the varying normal degrees of irritability of nerve and of voluntary, as well as of involuntary, muscle. Because of this effect on the nerve endings and the involuntary muscle, it also increases vascular tone. It plays an important role in the clotting of blood and milk. That portion of the nonionized calcium which is diffusible may play its part with the ionized form in lessening the irritability of nerve endings and muscle.

Contrary to popular opinion at the present time, little is known concerning these glands so essential to life, in fact, only recently the claim has been made that they are not essential merely because parathyroidectomized animals are found to develop normally and to survive a complete reproductive cycle when given vitamin D. As complete parathyroidectomy is well nigh impracticable these statements can be taken only as opinions probably lacking in the basis of demonstrable fact.

The parathyroids are peculiar to vertebrates with the exception of the Actinopteri which include the known fishes of today. These little glands are classified as external and internal, or superior and inferior, and develop from the posterior pouches of the third and fourth branchial clefts. The external glands are usually

found outside the capsule of the thyroid gland in the higher vertebrates. The internal glands may be found within the thyroid in the bovine species and in man, or both the so-called external and internal parathyroids may be centrally placed within the thyroid lobe, as may occur in the canine, or all may be outside the thyroid, as in the albino rat, where the four parathyroids are arranged along the upper border of the thyroid and attached to it and to one another, the external ones being the larger. Accessory parathyroids are common and may be found along the course of the carotid artery in the neck and upper mediastinum as separate glandules, or these may occur as inclusions in the thyroid and in the thymus. The thymus inclusions are undoubtedly quite common.

The parathyroids originating from the third branchial clefts migrate lower than those budding from the fourth and are found in close association with the inferior thyroid arteries. The thymus originates from the anterior pouches of the third and fourth branchial clefts and, in close association with the parathyroids, the thymus anlagen descend in the neck, the portions springing from the third clefts descending lower than those from the fourth clefts, as is the case with the parathyroids. This explains the frequency with which aberrant parathyroids have been found as inclusions in the thymus of lower animals. It has been demonstrated that parathyroid inclusions occur in the cat thymus in 50 per cent of the animals studied. A recent report¹ indicates that parathyroid inclusions are found in the human thymus far more frequently than was formerly thought. Parathyroid inclusions have been found in the cervical as well as in the thoracic thymus in man. The most that can be expected, then, even with a total thyroparathyroidectomy, is a temporary and incomplete hypoparathyroidism of varying degree in each individual animal so operated on, owing to the removal of most of the normally active parathyroid tissue. This alone is sufficient to cause death in most animals when no means are taken to increase the blood serum calcium. It has been found in operative work on dogs that certain breeds survive complete thyroparathyroidectomy without exhibiting any drop in the blood serum calcium and without treatment of any kind. The logical conclusion is that active accessory parathyroids exist in these animals and are ample to the needs of the body in these isolated instances.

The parathyroid contains two types of cells¹ the principal cell and the oxyphile cell. The parathyroid "principal cell" is a large cell with a clear, faintly staining cytoplasm and a vesicular nucleus. The "oxyphile cell" is also a large cell with eosinophile granules in the cytoplasm and a small round, or slightly oval, deeply staining nucleus, centrally placed. This would indicate that the parathyroid has at least two functions, namely, control of calcium-phosphorus metabolism and another as yet unknown. Which cell is extracted by boiling in hydrochloric acid and the active element of which is now known as one of the parathyroid hormones is not yet known.

Calcium-phosphorus metabolism is not only concerned with the increase of ionic and dialyzable calcium in the blood serum and its normal retention and application to the needs of the entire body, but in maintaining the

normal calcium-phosphorus balance in the amounts of each within the normal varying degrees of their interrelationships. The parathyroids subserve this function, and when the so-called external and internal parathyroids have been removed the aberrant parathyroids hypertrophy and carry on this function sufficiently to maintain life, provided the operated animal survives that long. It is well known that the fetus is a calcium phosphorus robber during gestation and lactation, and nature may have provided these accessory parathyroids for the purpose of meeting this as well as accidental demands.

The normal amount of calcium in the blood serum in man is generally accepted at from 9 to 11 mg per hundred cubic centimeters, that of inorganic phosphorus,² as an average upper limit of normal, at about 6 mg per hundred cubic centimeters.

Hypoparathyroidism and hyperparathyroidism, while they do not strictly belong to a discussion of parathyroid physiology, are briefly mentioned, as it is from viewing the abnormal that one may draw probable conclusions concerning the normal. In parathyroid dysfunction due to a deficiency of calcium in the blood serum, varying degrees of hyperexcitability of nervous tissue and muscle may occur, the extreme degree being the clinical entity known as tetany. It has been estimated that 90 per cent of the convulsions in children under 2 years of age are due to this condition. Hyperparathyroidism, on the other hand, increases the viscosity of the blood and depletes the calcium of the osseous system. It may rightly be said that the normal function of the parathyroid is to preserve a normal nervous system and normal muscle contractility, including that of the heart, and to bring about and maintain the normal calcification of bone and the calcification of pathologic areas in healing processes.

The action of phosphoric acid on creatine is accompanied by the formation of certain by-products, including methylguanidine, which is toxic in large amounts. It is reasonable to surmise that in parathyroid dysfunction methylguanidine may occur in sufficient concentration to be toxic. Experimental work and certain clinical observations suggest a detoxifying effect following the injection of active parathyroid extracts. This is still a moot subject that cannot be affirmed or denied until scientists have completed their studies. The role that the parathyroids may play in maintaining natural immunity and normal healing power awaits scientific proofs to explain certain clinical observations.

As the early references to the parathyroid are so generally well known and because of the thorough review of the subject by Thomson and Collip,³ including more than 500 references, I feel that this short discussion concerning the physiology of the parathyroid calls for no more than a plain statement of facts and a passing mention of certain probabilities.⁴

² While the inorganic phosphorus content may be stated as 6 mg per hundred cubic centimeters for the upper limit of normal it would be more nearly correct to place the average upper limit of normal at about 5 mg. The average normal content of inorganic phosphorus of the blood serum has been variously estimated between 2.5 and 4 mg per hundred cubic centimeters in the human being on an average diet. For instance, Hunter (Quart J Med 24 393 1931) states 2.5 to 3.5 mg per hundred cubic centimeters to be the normal range with levels up to 5 mg in children. Key and Byrom (Brit J Exper Path 8 240 1927) consider the average normal to be 2.9 mg in females and 3.1 mg in males.

³ Thomson D L and Collip J B. The Parathyroid Glands. Physiol Rev 12:309 (July) 1932. An excellent review with 543 references.

⁴ A supplementary bibliography of thirty-nine references has been omitted from THE JOURNAL but will be included with this article when it is published as part of the book on Glandular Physiology and Therapy.

¹ Brewer L A. The Occurrence of Parathyroid Tissue Within the Thymus. Report of Four Cases. Endocrinology 18:397 (May-June) 1934.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—ED

THERAPY OF PSORIASIS

OUTLINE BY DR. THEODORE CORNBLEET

There is no disorder more capricious in its responses to therapeutic measures than is psoriasis. Remedies that at one time are effective are valueless at another in the same person. The mildest agents may be helpful at first, and then the most powerful may not suffice to make an impression on the condition when it has reached an intractable state. There are no specifics and no known causes to attack. Out of the almost countless number of remedies proposed, only a few are worthy of mention as being relatively dependable.

One of the characteristics of psoriasis is the recurrence of the eruption at intervals. The periods of freedom may range from only a few weeks to many years. The aim of the treatment is then to clear up the eruption that is present. No promise for the future can be safely made. The treatment must be carried out in a thorough fashion until every trace of the lesions is removed. Any remaining lesions predispose to an early recurrence. As with many other dermatoses, the attack on psoriasis is by both general and local measures.

GENERAL MEASURES

The patient is given a thorough physical examination, and anything abnormal is corrected. The treatment for the skin condition itself proceeds as follows:

1 *Diet*—A low protein diet has been advocated by many, who believe that it is helpful to reduce or entirely

Low Fat Diet

Forbidden	Allowed
All greasy soups	Lean soups (fat removed after letting it get cold)
All sausages and delicatessen except frankfurters made of lean meat	White of egg
All fat meats such as pork, mutton, fattened chicken, duck, goose, eel, herring, salmon, carp and other rich fish, roe and egg yolk.	Lean beef (roast beef, boiled beef and so on)
All cheeses except cottage (cream) cheese	Lean veal, lean venison (rabbit, deer and the like), lean ham.
All fats (bacon, butter, fat, palm, margarine, oil, cream, butter, whole milk, buttermilk and the like)	Lean fowl (squab, chicken, partridge)
Meat may be roasted with some butter, but the fat must be removed from the gravy by letting it get cold.	Lean fish (pike, cod, pickerel and others)
Cakes, cookies, whipped cream, butter, cookies	Sugar, malt, honey, raspberry juice and other fruit and berry juices
	All kinds of fruit and berries raw or preserved
	Flour, rice, cream of wheat, potatoes, macaroni, noodles
	All kinds of vegetables prepared without butter or fat
	Bread, white or rye bread, zwieback, toast, rolls
	Skim milk

eliminate animal foods, including in this meat, eggs, poultry and fish, and in addition to forbid the use of peas and beans and fermented cheese. Recently a low fat diet has been advocated as more rational, because it is believed that in the psoriatic patient a disturbance of fat metabolism exists. Fat should be restricted to 20 Gm a day (10 Gm for children) including the fat

used for cooking, and such diet must be continued for many months, as the effect does not appear for weeks or months and a relatively low fat diet must be continued indefinitely, as the psoriatic predisposition persists. The weight must be watched.

2 *Climate*—Psoriasis is generally worse or it recurs during the winter season and usually improves with the appearance of warm weather. Many patients improve when they go to a warm, equable climate, and they may thus at times prevent the recurrences that they otherwise get with the advent of cold weather. Psoriasis does, however, occur in warm climates, but it is less prevalent in these. A resident in a warm climate may derive benefit from a temporary change in residence even if it be to a colder one. A change in environment often is helpful even if only temporarily. A sea voyage or a trip to the seashore is said to be particularly helpful.

3 *Drugs*—(a) Arsenic is, of all the internal remedies advocated, the most important. It sometimes will clear an eruption without the aid of local applications. It should never be used with an acute or progressive eruption. It should be used only when the eruption has become subacute or chronic or is stationary. As arsenic may lead to unfavorable changes when long continued, it should be used only at intervals. It is well to start with a small dose and to increase the dosage up to tolerance. When symptoms such as puffiness of the eyelids, edema of the ankles or gastro-intestinal disturbances, are seen the dosage should be slightly reduced. There are some who believe it should be used only as a last resort, because it may lead to such untoward results as keratoses and epitheliomas, as well as to other damage. Solution of Potassium Arsenite (Fowler's solution) is the form of arsenical mostly used. Commencing with a dosage of three drops in water twice a day, this is increased by one drop each succeeding day until a maximum of from 10 to 15 drops is taken or until symptoms of intolerance appear. After a three months use it is well to give the patient a rest from arsenic. It may be recommenced after a two to three months interval. One should always write "do not repeat" on the prescription, for many cases of chronic arsenic poisoning result from unsupervised continuance of the drug.

(b) Salicylate is held in high favor, particularly in early acute cases with considerable itching, in which arsenic is contraindicated as it makes the itching worse. Sodium salicylate is generally used. It is prescribed in doses of 0.6 Gm with an equal amount of sodium bicarbonate to be taken freely diluted three times daily (prescription 1).

(c) Alkalis are used by many and are particularly favored in gouty or rheumatic subjects. They may be combined with salicylate (prescription 1).

PRESCRIPTION 1—Salicylate and Alkali

R	Sodium salicylate	10.00 Gm
	Sodium bicarbonate	10.00 Gm.
	Cinnamon water	60.00 cc.
	Syrup of cinnamon (N. F. VI)	to make 120.00 cc.
M	Label: Two teaspoonfuls in water three times daily after meals (in acute itching stage)	

(d) Of other alteratives, antimony is sometimes of service in acute progressive cases. Other agents that have been recommended are colchicum, potassium iodide and mercurous iodide. Arspheamine has been advocated by some but, except when there is a coexisting syphilis, it is questionable whether its use is justified.

Thyroid and pituitary are said to be of value. As will be seen, there are many possible remedies but there is no reliable one.

4 "Proteotherapy"—(a) Autohemotherapy. This method has gone through alternating periods of great favor and disfavor in psoriasis. Some feel that by itself it will clear many of the eruptions. There can be no question that at times it is of distinct benefit and that it often increases the effectiveness of other remedies. Twenty cc of whole blood is removed from the vein and injected intramuscularly, before clotting, generally into the gluteal region, every fifth day.

(b) Autoserotherapy. Blood, 50 cc, may be removed, allowed to clot and centrifugated under sterile conditions. The serum is then injected intramuscularly or intravenously.

LOCAL THERAPY

General measures alone usually do not suffice to clear up an eruption. They require the aid of local applications.

1 *Removal of Scales*—The removal of scales that have accumulated on the lesions and offer an inert barrier to the effective action of the medicaments must precede all local treatment. It may be accomplished by daily warm baths with Linniment of Soft Soap ("tincture of green soap") and water. An alkaline bath, made by dissolving one or two tereupfuls of sodium bicarbonate in the bath, assists in the process. Following the bath the softened scales are brushed off with a turkish towel. A stiff brush may be required to complete the removal of the scales. The skin may become dry as a result of this process and some bland grease or oil may be rubbed into the skin which also helps to soften and remove the scales. Salicylic Acid 5 to 10 per cent in Petrolatum (prescription 2) applied to the lesions is particularly helpful toward removing obstinately adhering scales.

PRESCRIPTION 2—Salicylic Acid Ointment

Rx	Salicylic acid	3.00 Gm
	Petrolatum	30.00 Gm
M	Label: Apply locally over night (to aid in removal of scales)	

2 *Soothing Applications*—Care must be used in the acute types or in the generalized forms not to use too stimulating an agent lest the skin be irritated and the eruption converted into an exfoliative dermatitis. In psoriasis, salves act better than lotions. In the acute forms a soothing ointment, such as Ointment of Rose Water ("cold cream") or Boric Acid Ointment, is likely to be found useful. As the eruption becomes less acute, more and more stimulating medicaments may be added, but the action of such applications should be closely watched and they should be promptly discontinued and bland ones substituted with the first signs of extension of the eruption or irritation of the surrounding skin.

3 *Irritative Applications*—These for the most part are reducing agents. The preferred ones are powerful.

(a) Chrysarobin is one of the most effective. Chrysarobin itself should not be used on the hands, face or scalp because it colors the normal skin deep brown and the hair yellow and it produces conjunctivitis. It may be used in ointments with Petrolatum as the base in strengths of 1 to 10 per cent. After the application has been made to the lesions, it is sprinkled with Talcum. After several days (from one to ten days, with an average of five days) the surrounding skin is seen to have become reddened. The

chrysarobin ointment is then discontinued and a bland one used instead, such as Zinc Ointment or Boric Acid Ointment. As Chrysarobin is irritating not only to the skin but also to the kidneys, patients having extensive application of this agent must be closely supervised. Discutient (scale removing) and irritative treatment may be combined as in a compound chrysarobin and salicylic acid ointment (Unna and Dreuw) useful for local scaly patches (prescription 3). From one to three days following the application of this ointment a brownish crust forms on the surrounding skin and the patches of psoriasis scale intensely. Bland ointment may then be used together with baths to remove the crusts and scales. After a few days the chrysarobin preparation may again be used, to be followed as before by simple oils or greases. Several such alternations are usually effective.

PRESCRIPTION 3—Compound Chrysarobin and Salicylic Acid Ointment

Rx	Salicylic acid	10.00 Gm.
	Chrysarobin	
	Oil of cade	of each 20.00 cc
	Soft Soap	
	Petrolatum	of each 25.00 Gm.
M	Label: Apply to patches (Useful on subacute scaly lesions)	

Less efficient than the ointments of chrysarobin are the chrysarobin varnishes. These have the advantage, however, that they may be better confined to the lesions themselves and help to spare the clothing, which otherwise is discolored a mahogany brown stain that requires chlorinated lime or benzene for removal. A 7 per cent solution of chrysarobin in chloroform may be painted over the lesions. When the chloroform evaporates, a fine powder remains, which is then covered over with flexible collodion. Simpler but less effective is a 7 per cent solution of chrysarobin in "traumatin," which is a 10 per cent solution of gutta percha in chloroform to which 2 per cent of salicylic acid may be added. When the films begin to peel, they are removed and replaced with a new application.

(b) Tars of various types, such as wood tar, oil of cade or coal tar are preferred by some physicians, who no longer use chrysarobin because of its obvious disadvantages and because it may vary in its effectiveness from sample to sample. The tars may be used in 5 to 10 per cent strengths in Zinc Ointment or Paste of Zinc Oxide (Lassar's Paste). They may be put in flexible collodion in somewhat greater strengths, from 10 to 20 per cent. Tar may be used with other agents such as Sulphur or Soft Soap as in the long used Compound Sulphur Ointment (Wilkinson's ointment).

They may be used in liquid form and undiluted but are usually best dissolved in alcohol in 10 to 25 per cent strengths and Salicylic Acid 5 to 10 per cent, and Soft Soap 25 to 50 per cent may be added (prescription 4). The liquid form may be painted over the patch after removal of the scales following a bath. When the liquid tar preparation has dried for a while,

PRESCRIPTION 4—Salicylated Oil of Cade Pigment

Rx	Salicylic acid	10.00 Gm.
	Oil of cade	25.00 cc.
	Soft Soap	25.00 Gm.
	Alcohol	to make 100.00 cc.
M bath	Label: Paint over patches permit to dry and wash off excess in	

the patient may be returned to the bath and the excess of tar finally washed off. It is always well to begin the use of tar preparations with the weaker concentrations and build up to the stronger, because they may at times surprise one with an unexpected reaction, for

the tars may produce toxic symptoms, such as vomiting and diarrhea, and kidney irritation. These promptly disappear when the application is removed. Betanaphthol and Resorcinol may be looked on as colorless tar succedanea, to be employed in 5 or 10 per cent solutions or ointment when the colored tar preparations are objectionable.

(c) Ammoniated Mercury is mostly used for the scalp. The strength is 10 per cent, and a base is used that will wash out of the scalp readily, such as rose water ointment. Salicylic acid may be incorporated to advantage in proportions of 3 to 5 per cent. Such an ointment (prescription 5) may also be used on the glabrous skin. The urine should be watched for signs of kidney irritation.

PRESCRIPTION 5—Ammoniated Mercury and Salicylic Acid Ointment

R	Ammoniated mercury	3 00 Gm
	Salicylic acid	5 00 Gm
	Rose water ointment	30 00 Gm
M	Label	Apply to scalp

4 **Irradiation**—(a) Ultraviolet rays are most useful in the acute types of psoriasis as well as in the superficial types in folds. Some believe that their use at intervals, after involution of an eruption by other measures such as x-rays, may materially prevent recurrences. The exposures should be given twice weekly and to the point of obtaining definite reactions with pigmentations. This method is not quite so effective as that with the x-rays but is free from possibility of dangerous sequelae. A method that has been particularly effective is the combined use of 1 to 5 per cent coal tar ointment with ultraviolet rays. The ointment is spread on the skin about one-eighth inch thick. At daily intervals the excess ointment is wiped off with olive oil, a thin film of the crude coal tar being left. Irradiation with a mercury quartz lamp is then carried out. This is said to be particularly effective in the exfoliative dermatitis following psoriasis. This form of treatment should be carried out only in a hospital or where the patient can be closely supervised, but in modified form it can be used for ambulatory patients.

(b) When judiciously used, roentgen therapy is effective, painless and clean and requires no care on the part of the patient. Once he learns of it, he is apt to want it in preference to all other remedies. Its excessive use, however, is dangerous. Psoriasis is usually a recurrent disease and the repeated use of x-rays over an area is liable to lead to serious sequelae such as telangiectasis, keratosis and epitheliomatous degeneration. If from four to six weekly doses of a quarter unit (75 roentgens) are ineffective, it is wisest to discontinue the x-rays, as the eruption is apt to be resistant to further exposures. On the scalp it is perhaps best to employ weaker doses of about one-eighth unit (38 roentgens) once weekly. For the nails a quarter unit of filtered rays to the tip of the finger as far proximally as a half inch from the cuticle is most effective. Strong local remedies should not be used in conjunction with the x-rays. A 5 per cent ammoniated mercury ointment may generally be used with safety. Some believe that the psoriatic skin is more sensitive to x-rays than the normal. As with other dermatoses, dosage should be reduced for patches occupying the more tender skin in the folds such as submammary and axillary. Psoriasis of the auditory canals may be treated with 0.5 unit filtered rays at intervals of two to three weeks. The surrounding skin should be carefully shielded. At times, lesions of psoriasis may

involute promptly and recurrences be resistant, while x-rays are ineffective in some from the start. If roentgen treatment is persisted in without effect, the lesions are apt to become resistant to other measures as well, and increasing the dosage to obtain results leads to dangerous sequelae. X-rays should not be employed in eruptions that recur quickly or that are acute and spreading.

(c) Radium is of limited use in psoriasis. It is valuable in tube form in such places as the auditory canal. A silver tube screened with rubber and placed within the canal to give from 40 to 50 millicurie hours generally produces excellent results.

(d) W-rays or grenz rays may be useful for hairy parts or where the underlying tissues may be injured by x-rays, such as the testes. The dosage should be such as not to provoke sharp reactions.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
HOWARD A. CARTER, Secretary

CAMP SUPPORTS ACCEPTABLE

Manufacturer S. H. Camp and Company, Jackson, Mich.
The following supports are available:

VISCEROPTOSIS SUPPORTS Visceroptosis supports are designed to aid in holding the ptosed organ or organs in more nearly normal position, to be used on recommendation of physician in conjunction with other treatment.

PRENATAL SUPPORTS Certain obstetric patients with thinned, overstretched abdominal walls, or exceedingly pendulous abdomens, may require supports. When ordered by a physician these are available both for support and for relief of the often accompanying backache.

POSTNATAL AND POSTOPERATIVE. When prescribed by the physician in cases needing support, postpartum supports are designed to coordinate clinical needs of the physician with comfortable support of the patient. Postoperative garments are very often used after operation on obese subjects, in cases of drainage and in those cases in which suppuration has taken place.

HERNIAL SUPPORTS These supports are recommended for selected umbilical, ventral (incisional) or inguinal hernia, when such are of sufficient size as to require support, and when operation is contraindicated, refused or postponed for a time. The selection of the proper case for such support is left to the physician.

SACRO-ILIAC SUPPORTS These supports are designed to protect and to limit the motion of the sacro iliac joints and are to be sold only when prescribed by a physician.

MAMMARY GLAND SUPPORTS Mammary gland supports, bust slings or brassieres are designed to support sagging or pendulous breasts, also in the enlargement of the mammary gland during the antepartum period and during lactation.

LUMBOSACRAL AND DORSOLUMBAR SUPPORTS These supports are designed to protect and to limit the motion of the dorso-lumbar and lumbosacral region when less complete immobilization than that afforded by plaster-of-paris casts. Leather jackets and specially designed braces is recommended by a physician.

According to S. H. Camp and Company, these garments are available in corset departments of selected department stores, certain corset shops, and reliable surgical supply houses. The garments are sold to patients on the prescription of a physician, and his directions are followed when the fit is made. The fitters are trained by S. H. Camp and Company in its own school under the direction of a physician. These fitters are instructed to follow implicitly the directions of the physician when fitting the garment. They are warned against attempting

to diagnose the condition, and, whenever there appears to be an indication of a misfit of the garment, the patient is referred back to the physician in charge.

S H Camp and Company has informed the Council that it has never paid commissions or rebated any percentage of the selling price to physicians on any of its merchandise, and assures the Council that it will not do so in the future.

These belts and supports have been investigated in clinics acceptable to the Council on Physical Therapy and have been found to meet satisfactorily the therapeutic claims made for them.

The Council therefore voted to include these Camp Supports in its list of accepted devices.

FISCHER SHORT WAVE HIGH FREQUENCY APPARATUS ACCEPTABLE

Manufacturer H G Fischer and Company, Inc., Chicago

This unit is recommended for medical diathermy as used for producing heat within the body tissues.

The apparatus is mounted in a wooden cabinet on a chassis of open frame construction containing all parts and instruments readily removable as a unit from the cabinet for repairs and inspection. The circuit is of a well known oscillating type with the addition of the rectifying unit. All high voltage and high frequency currents are well insulated from the wooden chassis with the aid of stand-off insulators and bakelite washers. Two vacuum tubes and two rectifying mercury tubes are employed.

Protection is afforded to the tubes against overload by the circuit breaker, which automatically limits the currents whenever the current through the tube reaches the dangerous point. The circuit breaker opens and the current limiting resistance keeps the current through the tube within a safe value. The meter used is of the thermocouple type having two scales—a high and a low reading. This meter does not record the current passing through the patient but indicates when the apparatus is in electrical resonance.

After several hours of operation, the maximum transformer temperature read 176 F, which is within the limits of safety. The frequency of the energy is about 127 megacycles per second, which corresponds to a wavelength of about 24 meters.

The input power was found to be 627 watts (average of five tests). So far as is known, there is no reliable or acceptable method of measuring the power output of short wave diathermy machines.

The machine was tested in a clinic acceptable to the Council for a period of two months, and the investigator reported that the unit supplied sufficient energy to heat the body tissues whenever such treatment was indicated. The unit was not used for hyperpyrexia treatments. It was tried out for tissue cutting and it appeared to be satisfactory in this respect.

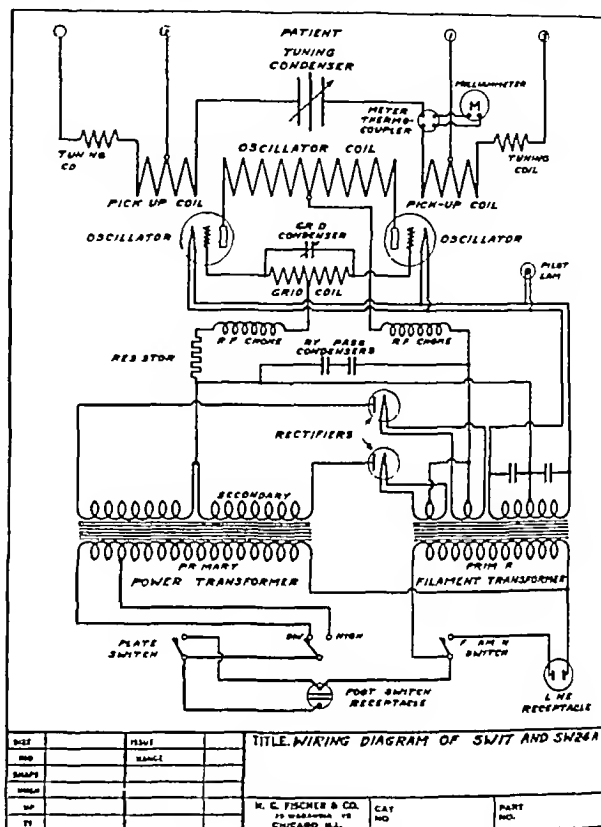
Fischer Short Wave High Frequency Apparatus

In a series of observations on anesthetized dogs, the heating effects of the Fischer Short Wave Machine were investigated. The average of twelve tests showed that there was a temperature rise in the kidney, rectum, liver and spleen. However, the temperature rise was not as great as that obtained by diathermy with the same size electrodes. In this series of tests the unit operated at full load, and the electrode pads were applied on each side of the thorax.

The tissue heating effect in the human thigh was also investigated. Thermocouples were introduced into the subcutaneous deep lying tissue (quadriceps extensor). After twenty min-

utes' treatment operating at the patient's tolerance and using the electrode pads, the temperature rise was observed to be less than that for diathermy. However, when cuff electrodes were used, that is, long electrodes wrapped around the thigh, the temperature rise in the deep lying tissues was above that obtained by diathermy (average of three tests).

This machine will produce a substantial heating effect in body tissues, provided cuff electrodes are employed, but the



Schematic diagram of circuit.

heating effects produced by the electrode pads are less than that of diathermy. Burns may be produced by this machine, but, with ordinary care, they may be avoided. Their likelihood to occur is much less than that of diathermy.

In view of the foregoing report, the Council on Physical Therapy voted to include the Fischer Short Wave High Frequency Apparatus in its list of accepted apparatus.

THERMAT SELF-HEATING HEAT PAD ACCEPTABLE

Manufacturer Bauer and Black, 2500 South Dearborn Street, Chicago

This pad may be used as a substitute for a hot water bottle. Heating is accomplished by means of the chemical reaction. The chemical mixture consists of finely divided iron, sodium chloride, and manganese dioxide. It contains 84 per cent iron, 10 per cent manganese dioxide and 6 per cent sodium chloride. When a couple of teaspoonfuls of water are added, a chemical action takes place during which heat is evolved. The receptacle consists of a flexible rubber material and the heat mixture proper is contained in a canvas bag. The size of it is approximately 12 by 10 inches. The weight is 18 ounces. When the patient is through with the bag, the cover may be removed and the pad will cool off rapidly. After the unit is cooled, it is again ready for use. It has a life of from eighty to 125 hours. The estimated cost of operating the Thermat is about one-third cent per hour of actual use.

The Council on Physical Therapy voted to include the Thermat Self-Heating Pad in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTIONS WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

PYRETHRUM OINTMENT—An ointment containing an extract from powdered pyrethrum flowers (*Chrysanthemum cinerariaefolium*). The extract is obtained by treating powdered pyrethrum flowers with a hydrocarbon oil of the kerosene type, this extract is then incorporated into an ointment base composed of hydrous wool fat, petrolatum and paraffin. The finished ointment contains 27 per cent of the active extract (representing 0.75 per cent of pyrethrins I and II) and 73 per cent of ointment base.

Actions and Uses—Pyrethrum ointment-Upsher Smith has been shown to be an effective agent in the treatment of scabies. Based on the (as yet unpublished) investigation of Sweitzer and Tedder the claim is made that the ointment penetrates the burrows and kills both the mites and the eggs and that except in rare instances it does not produce dermatitis with resultant exfoliation. Sweitzer and Tedder reported four cases of allergic sensitivity to the active substance in a series of 618 patients treated.

Dosage—The ointment is applied to the entire body following a thorough cleansing with soap and water. Further applications are made on at least three or four successive days. In most cases it is necessary to continue the treatment for a period of from five to seven days, and in obstinate cases the use of the ointment may be required for a longer time. The ointment should not be used on patients who are sensitive to pyrethrum flowers.

Manufactured by the Upsher Smith Company Minneapolis No U S patent or trademark.

Pyrethrum ointment is an unctuous yellowish green mass. Place 5 Gm. of pyrethrum ointment in a suitable flask, add 25 cc. of half normal potassium hydroxide alcoholic solution and an equal volume of water and heat the mixture under a reflux condenser for five minutes. The alcohol is removed by evaporation the mixture cooled and allowed to separate. Remove the liquid by decantation add sufficient barium chloride solution, thoroughly mix and allow to separate. To the mixture add 1 cc. of sulphuric acid to remove the excess of barium salt. To about 5 cc. of the filtrate add an equal volume of mercuric sulphate solution an immediate pink color develops which deepens on standing finally changing to a green coloration with the development of a turbidity or a precipitate (*monocarboxylic acid*). Determine the pyrethrin content by the procedure (with slight modification) described by Seil in Soap in May 1934 the combined pyrethrin content (pyrethrins I and II) is not less than 0.75 per cent nor more than 1 per cent.

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1935, p 366)

U S Standard Products Co, Woodworth, Wis

Polynaerobic Antitoxin (Tetanus Gas Gangrene) Refined and Concentrated (U S S P Co)—An antitoxic serum prepared by immunizing horses with the toxins of *B. tetani*, *B. perfringens* (*B. welchii*) and vibrios septique. When tests of trial bleedings indicate that the potency is sufficiently high the horses are bled into anticoagulant and the plasma concentrated and refined by methods according to the Park Banzhaf process. The unit values of the concentrates are determined according to the methods described by the National Institute of Health. It is marketed in packages of one syringe one prophylactic dose containing vibrios septique antitoxin 2,000 units, tetanus antitoxin 1,500 units and *B. perfringens* (*B. welchii*) antitoxin 1,000 units.

Dosage For prophylaxis The contents of one syringe injected subcutaneously or intramuscularly

AMINOACETIC ACID (See THE JOURNAL, April 6, 1935, p 1241)

Aminoacetic Acid-Merck—A brand of aminoacetic acid N N R.

Manufactured by Merck & Co Inc. Rahway N J No U S patent or trademark.

ALLERGENIC EXTRACTS-LEDERLE (See New and Nonofficial Remedies 1935, page 28)

The following dosage form has been accepted

House Dust (New York Apartment House) Allergic Extract Lederle Marketed in vials containing respectively 6 cc of undiluted and diluted 1:10 extract of New York apartment house dust.

The product is prepared in the following manner vacuum cleaner collections from New York apartment houses are dried sifted and extracted with toluene alcohol and ether. The dry powder is then extracted under toluene with the buffered solution. After dialysis the extract is concentrated and sterilized.

COD LIVER OIL (See New and Nonofficial Remedies, 1935, p 292)

Abbott's Cod Liver Oil—It has a vitamin A potency of not less than 1,500 units (U S P X-Revised, 1934) per gram and a vitamin D potency of not less than 100 units (U S P X-Revised, 1934) per gram.

Manufactured by the Abbott Laboratories North Chicago Ill No U S patent or trademark.

Abbott's cod liver oil complies with the U S P X Revised 1934 standards for cod liver oil. In addition it is required to have a vitamin A potency of not less than 1,500 units per gram and a vitamin D potency of not less than 100 units per gram as described by the method of the U S P X Revised 1934.

ANTIPNEUMOCOCCIC SERUM (See New and Nonofficial Remedies 1935, p 377)

Parke, Davis & Co, Detroit.

Antipneumococcic Serum (Felton) Types I and II Refined and Concentrated—Prepared by immunizing horses against highly virulent but dead cultures of *Diplococcus pneumoniae* isolated from lobar pneumonia. The product is refined and concentrated by a method devised by Dr L. D. Felton and contains antibacterial properties against *Diplococcus pneumoniae* types I and II. Marketed in packages of one vial with syringe attachment containing 10,000 Felton units each of types I and II pneumococcus antihodies with a vial of normal horse serum diluted 1:10 for reaction test and in packages of one vial with syringe attachment containing 20,000 Felton units each of types I and II pneumococcus antihodies with a vial of normal horse serum diluted 1:10 for reaction test.

Dosage—From 10,000 to 20,000 Felton units repeated at intervals of four to six hours during the first twenty-four hours intravenously.

DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1935, p 397)

E. R. Squibb & Sons, New York

Refined Diphtheria Toxoid Alum Precipitated Squibb—Also marketed in packages of one 1 cc. vial, in packages of ten 1 cc. vials and in packages of one 10 cc. vial representing one, ten and ten immunizing doses respectively.

DEXTROSE (See New and Nonofficial Remedies, 1935, p 280)

The Sterisol Ampoule Corporation, Long Island City, N Y

Sterisol Ampoule Dextrose 5% in Physiological Solution of Sodium Chloride A solution containing in each 100 cc. 5 Gm of anhydrous dextrose and 0.85 Gm of sodium chloride. Supplied in ampoules containing 250, 500 and 1,000 cc.

DEXTROSE (See New and Nonofficial Remedies, 1935, p 280)

The National Drug Company, Philadelphia

Ampul Solution of Dextrose 10 Gm 20 cc Each ampule contains dextrose C P anhydrous 10 Gm in distilled water to make 20 cc.

Ampul Solution of Dextrose 25 Gm, 50 cc Each ampule contains dextrose C P anhydrous 25 Gm. in distilled water to make 50 cc.

Ampul Vial Solution of Dextrose 25 Gm 50 cc Each ampule-vial contains dextrose C P anhydrous 25 Gm in distilled water to make 50 cc.

Ampul Vial Solution of Dextrose 50 Gm 100 cc Each ampule-vial contains dextrose C P anhydrous 50 Gm in distilled water to make 100 cc.

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

PAUL NICHOLAS LEECH Secretary

"DYNO" NOT ACCEPTABLE AS A PROPRIETARY NAME FOR DEXTROSE

Some years ago the Council had before it the consideration of the brand of dextrose-U S P marketed by the Corn Products Refining Company under the proprietary name "Cerelease." The product had been presented to the Committee on Foods. When the Committee on Foods was established by the Board of Trustees of the Association as a separate entity from the Council on Pharmacy and Chemistry, it was stipulated that, in the acceptance by the Committee on Foods of products used both as foods and in the treatment of disease, the name must meet the requirements of the rules of the Council. The Council ruled that the proprietary name Cerelease could not be recognized as a name for the well known substance dextrose. The Committee on Foods concurred and the firm was informed of this decision.

Later, the Corn Products Refining Company submitted to the Committee on Foods its dextrose under the name "Dyno" and the question was again referred back to the Council. The Council reaffirmed its stand concerning the use of a proprietary

name for dextrose, pointing out that the firm could make a very appropriate adaptation of the brand name "Argo," which it uses for corn starch, to apply to its dextrose, for example, "Argo Dextrose Anhydrous" and "Argo dextrose, Hydrated." It was pointed out that such names would not conflict with the rules of the Council and would be acceptable to the Committee on Foods.

In the letter of the Corn Products Refining Company requesting the Council's consideration of this question, was included the text of a proposed label statement:

One of the panels of the proposed label was to contain the following:

D Y N O
Reg. U. S. Pat. Off.
Pure Dextrose
A pure refined table sugar
Derived from Corn

The other panels of the proposed label contain claims in regard to the uses of dextrose as a food. The Council held certain of these claims to be distinctly misleading in suggesting that dextrose is superior as a food to cane sugar. That may be true in special cases which would come under the heading of therapeutics, but in normal individuals the Council would be inclined to doubt any claim of material superiority, except as regards the degree of sweetness.

When the firm was informed of the Council's consideration of its request it replied that there was no intention to suggest that dextrose is superior as a food to cane sugar. However, a careful reading of the text submitted by the firm shows that this implication may be taken.

The firm made no agreement to discontinue the use of the proprietary name Dyno and the Council therefore authorized publication of this explanatory statement.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORTS
RAYMOND HERTWIG, Secretary

NOT ACCEPTABLE

GRAIN-LAX THE PREDIGESTED COMPLETE FOOD

William C. Arthurs, Glendora, Calif., submitted to the Committee on Foods a bread prepared from water, honey, whole wheat, rolled oats, potato flour, dry milk, bran, vegetable shortening, baking powder and salt, called "Grain-Lax The Predigested Complete Food."

Manufacture—The ingredients in formula proportions are mixed and baked for four hours in air tight containers in a steam chamber at temperatures ranging from 260 to 230 C.

Discussion of Label—The label states:

The Predigested Complete Food. A combination of Grain products. Mineral Salts. Milk and Honey. A tissue builder and NATURAL APERIENT. Improvement in health will be noticed after two weeks consistent use—Especially good for growing children.

The nutritional values of this bread are essentially those of whole grain cereals, supplemented by a small amount of milk. The indigestible fibrous content is sufficient to aid in counteracting constipation due to insufficient bulk.

The product is not predigested; it must be digested just as are usual bakery goods before the nutrient content is available to the body. This is not a complete food as claimed. A number of essentials for adequate nutrition are absent and others are not present in adequate quantity for good nutrition. The declaration of ingredients is incomplete, potato flour, bran, shortening and baking powder are not listed. Mineral salts as such are not added as stated. Descriptive statements of ingredients of compounded foods, to be correctly informative, should name all ingredients in the order of decreasing proportions, thereby giving more prominence to materials in major quantity. The name 'Grain-Lax' and the claim 'Natural Aperient' acclaim the product for counteracting constipation

no matter what the cause. Constipation, however, may be due to many causes not correctable by this bread, which essentially is an aid for counteracting constipation due only to insufficient bulk in the diet. The consumer should be advised accordingly. The product is not 'especially good for growing children.' The claim 'Improvement in health will be noticed after two weeks consistent use,' because of vagueness, is grossly misleading. Many conditions of ill health will not be improved by this bread, and others may be seriously aggravated by a coarse food of this character. Such claims promote self diagnosis and self treatment, practices dangerous to health. Those in ill health should be under the care of a competent physician. Prescribing through advertising is inimical to public welfare. Grain-Lax, therefore, will not be listed among the Committee's accepted foods.

NOT ACCEPTABLE

JOHNSON'S MILCO-MALT

The Canada's Pride Products Company, Inc., New York City, submitted to the Committee on Foods a powdered mixture of sucrose, cocoa, malted milk and salt, flavored with vanillin, called 'Johnson's Milco-Malt.'

Analysis (submitted by manufacturer) —

	per cent
Moisture	20
Ash	19
Fat (ether extract)	36
Protein (noncaffeine and nontheobromine N × 6.25)	110
Nitrogen	18
Crude fiber	30
Carbohydrates other than crude fiber (by difference)	78.1
Theobromine	0.31
Caffeine	0.06

Discussion of Name Label and Advertising—The label states:

A blend of finest grade of pure malted milk, cocoa and cane sugar. Is composed of only health giving ingredients. Boiling destroys the health giving ingredients. Some claims from the submitted advertising follow: 'Milco-Malt the builder of strong bodies, keen minds, steady nerves—an essential in every day life. Many victors, baseball players, prize fighters, business leaders, successful men and women now keep well and healthy by drinking Milco-Malt. This invigorating food-drink restores energy and builds up vitality. Makes little bodies strong and sturdy. Grownups drink Milco-Malt regularly to restore energy and vitality. Combined with milk this single drink gives you many health benefits. That's health news too for Milco-Malt builds sturdy bodies from teeth to toes, generating body warmth, energy, strength, and weight. Milco-Malt is a balanced food, just chock full of fats, minerals, proteins, carbohydrates and vitamins. Milco-Malt keeps children alert in school, active in play and restful in sleep.'

The name 'Milco-Malt' phonetically equivalent to malted milk, suggests the product is a beverage base which with water produces essentially a malted milk and thereby creates a false impression of the nature and nutritional value of the product. The milk solids content of Milco-Malt is insufficient to justify "Milco" as a part of the name. The statement of composition on the label does not correct the misleading character of the name. The descriptive statement "blend of pure malted milk, cocoa and cane sugar" overemphasizes the malted milk content by mentioning it first. Cane sugar is the predominant ingredient. Descriptive statements for food should list ingredients in the order of decreasing proportions, thereby giving first place or more prominence to the ingredients occurring in major quantity.

Milco-Malt contains no 'health giving' ingredients, no constituents that will build keen minds, sturdy nerves, enable persons to keep well and healthy, or 'restore energy and vitality.' No foods can give health or energy and vitality. These conditions depend on many factors not provided even by the complete diet. It is not 'a balanced food' nor is it chock-full of fats, minerals, proteins and vitamins.

The name is inappropriate and the advertising misleading and misinformative. Advertising falsely presenting products compounded from ordinary foods such as milk, cocoa and sugar, as health foods with mythical values for giving or restoring health and vitality, is against the best interests of the public and the food industry and is a serious handicap to manufacturers and advertising agencies earnestly attempting to serve the public honestly. Milco-Malt therefore cannot be listed among the Committee's accepted foods.

NOT ACCEPTABLE

(1) SEAKIST SIEVED CEREAL

(2) SEAKIST SIEVED VEGETABLE SOUP

The Nielsen Corporation, Limited, Oakland, Calif., submitted to the Committee on Foods (1) a sieved whole wheat flour product cooked in milk and water called "Seakist Sieved Cereal" and (2) a sieved vegetable soup containing water, tomato puree, carrots, celery, cabbage, barley flour, butter, whole wheat flour, sucrose, yeast extract, onions, and salt called "Seakist Sieved Vegetable Soup"

Discussion of Names—The names "Seakist Sieved Cereal" and "Seakist Sieved Vegetable Soup" incompletely and inappropriately define and describe the products. Milk is an undeclared ingredient of the sieved cereal, barley and whole wheat flours and yeast extract undeclared components of the vegetable soup. These are not expected ingredients in products with the respective names. The public is entitled to know the ingredients of foods it purchases, food names, if at all descriptive, should correctly define the nature and composition of the food articles. The food industry should exercise care in naming and labeling foods that the consumer may be correctly informed.

The company was advised of the recommendations of the Committee but is not willing to make the recommended changes. These products therefore will not be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

- (a) MELVERN VANILLA ICE CREAM
- (b) MELVERN CHOCOLATE FLAVORED ICE CREAM
- (c) MELVERN STRAWBERRY ICE CREAM
- (d) MELVERN PEACH ICE CREAM
- (e) MELVERN PECAN KRUNCH ICE CREAM
- (f) MELVERN BUTTERED PECAN ICE CREAM
- (g) MELVERN BLACK WALNUT ICE CREAM
- (h) MELVERN PINEAPPLE ICE CREAM
- (i) MELVERN ORANGE-PINEAPPLE ICE CREAM
- (j) MELVERN CHERRY CUSTARD ICE CREAM
- (k) MELVERN PISTACHIO ICE CREAM (ADDED ALMOND FLAVOR)
- (l) MELVERN FRENCH VANILLA ICE CREAM
- (m) MELVERN LEMON CUSTARD ICE CREAM

Manufacturer—Melvern Dairies, Inc., Washington, D. C.

Description—(a) Prepared from a pasteurized homogenized mixture of condensed milk cream (40 per cent) water, sucrose, gelatin vanilla extract and United States Department of Agriculture certified color.

- (b) Same as (a) with added chocolate and cocoa
- (c) Same as (a) with added strawberries sucrose and certified color
- (d) Same as (a) with added peaches and certified color
- (e) Same as (a) with added pecans
- (f) Same as (a) with added buttered pecans
- (g) Same as (a) with added black walnut salad and caramel
- (h) Same as (a) with added canned crushed pineapple
- (i) Same as (a) with added crushed orange and pineapple and certified color
- (j) Same as (a) with added cherries, maraschino cherries, egg custard prepared from egg yolks sugar cream (40 per cent) whole condensed milk and water and certified color

(k) Same as (a) with added pistachio nuts, ground almonds, almond extract and certified color

(l) Same as (a) with added egg yolk, and certified color

(m) Same as (a) with added egg yolk, lemon juice, lemon oil and certified color

Manufacture—Sugar and gelatin are added to the cream (40 per cent), condensed milk and water, which have previously been heated to 43 C. The combined ingredients are pasteurized by the holding method at 68 C. for thirty minutes, homogenized, cooled to 4 C., allowed to stand twelve hours and frozen for twelve minutes. The special flavors, fruits and other ingredients are added during the freezing process. The frozen ice cream is packed in cartons, in waxed paper cups, and in nonreturnable paper cans the lids of which carry the name of the product and date of manufacture. The ice cream in containers is hardened at -29 C. The ice cream for cut brick form is run directly from the freezer into pans and when hard is removed, placed on white parchment paper, cut into slices and each slice individually wrapped and inserted into cartons, which are sealed with gummed tape bearing the appropriate name. Four of these packages are sealed in a paper bag, the seal bearing the name of the product and date of manufacture. The various types of ice cream are prepared from the basic ice cream mix by addition of appropriate flavors, fruits or nuts in definite proportions.

Analysis (submitted by manufacturer) —

	Basic Mix	per cent
Moisture		59.1
Total solids		40.9
Ash		0.8
Fat		14.3
Protein (N × 6.38)		1.3
Carbohydrates by difference (essentially lactose and sucrose)		24.4
Titratable acidity as lactic acid		0.1
Gelatin		small amount
Cherry Custard Ice Cream		
Fat		11.4
Lipoid phosphoric acid as P ₂ O ₅		0.02
French Vanilla Ice Cream		
Fat		14.5
Lipoid phosphoric acid as P ₂ O ₅		0.03
Lemon Custard Ice Cream		
Fat		14.9
Lipoid phosphoric acid as P ₂ O ₅		0.02
Fat Content per cent		
Vanilla Ice Cream		13.6
Chocolate Ice Cream		13.0
Strawberry Ice Cream		10.8
Peach Ice Cream		10.7
Pecan Krunch Ice Cream		14.1
Buttered Pecan Ice Cream		14.1
Black Walnut Ice Cream		13.9
Pineapple Ice Cream		11.6
Orange-Pineapple Ice Cream		12.6
Pistachio Ice Cream		12.9

Calories (basic mix) — 2.3 per gram 65 per ounce

CELLU GRAPEFRUIT PACKED IN WATER
WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Florida Citrus Exchange, Tampa Fla.

Description—Canned cooked Florida grapefruit packed in water without added sugar or salt.

Manufacture—Grapefruit picked at the proper stage of ripeness is washed polished and graded according to size. Cannery size fruit is peeled by hand and the rag removed, the fruit is separated into sections, the membrane is removed, and the fruit is placed in cans covered with water and heated. The cans are sealed, processed and cooled.

Analysis (submitted by distributor) —

	per cent
Moisture	90.8
Total solids	9.2
Ash	0.3
Fat (ether extract)	0.1
Protein (N × 6.25)	0.5
Reducing sugars as invert sugar	4.9
Sucrose	1.4
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	8.1

Calories — 0.3 per gram 9 per ounce.

Claims of Distributor—For diets in which sweetened fruit is proscribed.

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SATURDAY, JULY 13, 1935

FAT ABSORPTION

The manner in which fats are absorbed from the alimentary canal has long been a controversial subject.¹ Although the evidence is clear that neutral fat is hydrolyzed by the lipases of the alimentary tract prior to absorption, there is lack of agreement concerning the nature of the process by which the water-insoluble fatty acids are brought into solution and transported across the intestinal wall. Pflüger believed that the insoluble fatty acids liberated during fat digestion combined with the alkali of the pancreatic juice to form soaps. The latter, by virtue of their solubility in water, could readily diffuse into the epithelium. Recent investigations of the reaction of the intestinal contents have thrown some doubt on the assumption that these materials are generally alkaline. It has, in fact, been demonstrated that an alkaline reaction is seldom, if ever, found in the small intestine. These observations increase the significance of the role of the bile in fat absorption and have resulted in detailed studies of the mechanism by which this fluid facilitates the passage of fat through the intestinal wall.

The general importance of the bile in fat absorption has long been known. In addition to augmenting the activity of the hydrolytic lipases, the main function of bile apparently is to increase the solubility of the fatty acids and soaps in the intestine and thus aid their transport through the absorbing cells. The exact manner in which bile functions in this capacity has never been adequately elucidated. Within recent years, however, the extensive investigations of Verzar and his colleagues at the University of Basel, Switzerland, have greatly clarified the important role of bile in the absorption of fats. In addition to the well known ability of the bile acids to emulsify fats by virtue of their surface tension-lowering properties, it has been demonstrated that these bile acids appear capable of bringing a considerable amount of insoluble fatty acids into solution in water. This property of certain substances to bring other

insoluble materials into solution in water is called hydrotropism, a term first suggested by Neuberg. The increase in solubility effected by hydrotropic substances may be of considerable magnitude. Despite this augmented solubility, however, the question why less bile acid is required for fat absorption in the intestine than is necessary in vitro still remains to be answered. It appears likely that the bile acids must act locally on the permeability of the intestinal mucous membrane. Following this suggestion, Verzar points out that it is therefore unnecessary for the bile acids to dissolve all the fatty acid at a given instance. Instead, the bile acids may be adsorbed on the surface of the epithelial cells of the intestinal mucous membrane and in that position can repeatedly conduct new quantities of fatty acids in water-soluble form through the surface of the epithelium. This idea gains support from the well known fact that the fat present in the interior of the epithelial cells is neutral fat, the bile acid-fatty acid complex must therefore have been split in the cell. The liberated bile acid, as a strongly surface-active substance, could easily be adsorbed on the cell surface, especially on to the outer finely striated border of the cells. There it might repeatedly dissolve fatty acids and transport them through the membrane. It is recognized that conclusive experimental evidence of the accuracy of Verzar's conception is difficult to obtain, but this newer hypothesis does afford an interesting graphic account of the manner in which bile exerts its influence on fat absorption.

The rate of fat absorption is often mentioned in clinical literature as a valuable aid in the appraisal of the normal functioning of the liver. The estimation of the degree of alimentary lipemia is generally taken as an index of the rate of fat absorption. A recent study of this type has been reported from the Tulane University of Louisiana School of Medicine.² Fat absorption curves of normal men and of patients with disease of the liver were obtained by following the changes in total lipids of the serum subsequent to the ingestion of 100 Gm of cottonseed oil. Patients with definite disease of the liver showed an absorption curve distinctly different from the normal and denoting a diminished and delayed absorption of ingested fat. This altered absorption curve, based on blood lipid values, is deemed by the investigators sufficiently characteristic and different to be of aid in determining the status of the function of the liver. Although sporadic reports of this type support the use of this procedure in diagnosing liver function, the results of determinations of the rate of fat absorption from studies of lipemia should be interpreted with caution. The quantity of fat in the blood at a given time is subject to the influence of a number of factors. The rate of uptake from the alimentary tract and the rate of deposition of the absorbed material in the body cells are important regulators of the level

¹ Bloor, W. R. *Physiol. Rev.* 2:92 (Jan.) 1922. Verzar, F. *Nutrition Abstr. & Rev.* 2:441 (Oct.) 1933.

² Sullivan, Maurice, and Fershtand, J. A. B. *Fat Absorption Arch. Int. Med.* 65:834 (May) 1935.

of blood lipid. It should be remembered that lipemia occurs in diabetes as well as in starvation and does not, on the other hand, develop in cases of cirrhosis of the pancreas or carcinomas affecting other abdominal organs. These few instances of altered blood lipid levels, unrelated directly to liver functioning, suffice to emphasize the limited importance that should be attached to fat absorption, or alimentary lipemia, as a diagnostic measure of hepatic condition.

EFFECTS OF EMOTIONAL EXCITEMENT

The classic and recurring tale of some frail individual who under the stress of excitement lifted and removed a trunk or other heavy object which later three strong men could scarcely raise has been too often verified to discard as fiction. Such an episode must be viewed as one effect of strong emotional disturbance. Emotion as a state that can produce extraordinary psychologic as well as physical reactions has long interested clinicians, psychologists and physiologists.

It has been regarded¹ as a complex having four aspects: (1) behavioristic—the facial expression and observable action, (2) physiologic—vascular, secretory, neuromuscular and other changes, (3) introspective—the conscious attributes, and (4) psychopathologic—the pathologic disturbances of emotional life. Whether it is possible to separate these factors in a significant manner is still a matter of speculation, but Morris² has adopted a scheme of comparing the pulse, blood pressure and blood sugar under a state of excitement with that of the same individual when calm. The psychologic literature, Morris states, contains numerous studies of the pulse, blood pressure and other physiologic variables in individuals during and following the application of a standardized stimulus intended to produce an emotional state. There is a sufficiently large body of data of this type, usually well analyzed statistically, the only obvious but important deterrent to an acceptance of these conclusions being the question as to whether the stimulus, artificial as it must be, is in any way comparable to the stimuli received by people under the ordinary stress of life.

In determining the presence of emotional excitement, four criteria were used by Morris. The first was the knowledge of the situation by the observer, the second the subject's introspective report, the third the observation of facial expression and actions, and finally such observable bodily changes as tremor, flushing or pallor, perspiration or lacrimation. Knowledge of the situation by the observer and at least one of the other criteria were considered necessary to establish the presence of emotional excitement.

The pulse rate was counted by palpation of the radial artery in most instances. The blood pressure was determined in all cases by the use of a mercury sphygmomanometer. The blood sugar was estimated by a combination of the method given by Somogyi³ and the colorimetric method of Benedict.⁴

Twenty-six subjects were studied during a state of mild excitement and during a state of calm. When tabulated there was an average rise of 22.1 mm in systolic pressure, 11.8 in diastolic pressure and 14.3 in pulse rate during the period of excitement. There was, however, considerable individual variation in each of these physiologic variants.

In another series of eight showing prolonged emotional excitement, the blood sugar levels were noted especially. Control values were obtained in five while in a state of calm. The rise in the blood sugar during excitement were respectively 20, 25, 30, 42 and in one case 149 mg. One case of manic-depressive psychosis was included. While excited, this individual had a blood sugar of 79 mg, a blood pressure of 120/80 and a pulse rate of 104, when calm, 78 mg, 110/78 and 86.

The fact that certain physiologic variations under emotional stress verge on the pathologic does not come as a surprise. Among other indications of possible significance it adds point to the common observation that the pulse and blood pressure recorded on patients on their first visit to a physician are frequently not a satisfactory index of the patient's norm.

THE BACTERICIDAL AND BACTERIOSTATIC EFFECTS OF MERCUROCHROME

The comparative evaluation of antiseptics involves many difficulties. Numerous procedures have been devised in the hope of avoiding at least some of the sources of error that arise from transfer to clinical usage of results obtained in test tube experiments. Adequate standard methods have not yet been developed, consequently studies in this field by different workers are rarely comparable. This has led to great confusion and much controversy.

Elsewhere in this issue is an article by Justina H. Hill¹ of the Brady Urological Institute (whence mercurochrome originated) concerning the action of mercurochrome in comparison with some other preparations on normal human skin and in infected wounds in animals. Miss Hill presents an extensive series of experiments on the comparative bactericidal and bacteriostatic effects of 2 per cent aqueous and 2 per cent acetone-alcohol-aqueous solutions of mercurochrome.

¹ Harlow H. F. and Stagner R. Psychology of Feelings and Emotions cited by Morris.²

² Morris D. P. The Effects of Emotional Excitement on Pulse Blood Pressure and Blood Sugar of Normal Human Beings. *Yale J. Biol. & Med.* 7:401 (May) 1935.

³ Somogyi, Michael. A Method for the Preparation of Blood Filtrates for Determination of Sugar. *J. Biol. Chem.* 86:655 (April) 1930.

⁴ Benedict S. R. Determination of Blood Sugar. *J. Biol. Chem.* 64:207 (May) 1925. 68:759 (June) 1926.

¹ Hill Justina H. The Action of Mercurochrome and Other Drugs on Normal Human Skin and in Infected Wounds. *this issue* p. 100.

and of tincture of iodine applied to normal human skin. She concludes from her investigations that both aqueous and acetone-alcohol-aqueous solutions of mercurochrome are bactericidal and bacteriostatic when applied to human skin but that the acetone-alcohol-aqueous solution is superior for this purpose to the aqueous preparation. Miss Hill found further that the acetone-alcohol-aqueous solution, under the conditions of her tests, exerted greater bacteriostatic effects than 7 per cent tincture of iodine. Comparative studies on the effects of the two preparations of mercurochrome 7 per cent tincture of iodine, tincture of merthiolate, aqueous solution of merthiolate, tincture of metaphen, neutral acriflavine in salt solution, and hexylresorcinol solution, on subcutaneous wounds inoculated with *Staphylococcus aureus*, indicated that the 2 per cent aqueous solution of mercurochrome was superior to all the others in reducing the number of organisms and in producing the least interference with phagocytosis.

In order to obtain a reasonably clear picture of the clinical effectiveness of antiseptics, it is necessary to analyze the data obtained with various methods of evaluation and to correlate these with the results of actual clinical application. Only a few of the many investigations can be considered here. Simmons,² for instance, found mercurochrome to be decidedly inferior to tincture of iodine in the disinfection of wounds. Miss Hill has confirmed these observations though she considers that the time intervals employed by Simmons were too short. With intervals of twenty-four hours, none of the antiseptics employed by Miss Hill were found to sterilize wounds infected with *Staphylococcus aureus*. However, it must be noted that her comparison of the effectiveness of the different antiseptics was based largely on bacterial counts from swabs inserted into the wounds, apparently without consideration as to whether the visible organisms were alive or dead. Also, variations in the amount of exudate produced under the influence of the different antiseptics, which undoubtedly would affect the bacterial count, appear not to have been evaluated.

Scott and Birkhaug³ showed that tincture of metaphen and tincture of iodine were both superior to acetone-alcohol-aqueous solution of mercurochrome for skin sterilization, tincture of metaphen being the most effective of the three. Birkhaug⁴ found phenylmercuric nitrate, metaphen and tincture of iodine all to be much superior to mercurochrome for skin disinfection, phenylmercuric nitrate being the best for this purpose. In test tube experiments with six different organisms, this investigator found that phenylmercuric nitrate had 434 times, metaphen 310 times, merthiolate

271 times, mercuric chloride 76 times and hexylresorcinol 45 times the germicidal potency of mercurochrome.⁵

Thus it appears from these and other studies, in particular the investigation by von Oettingen,⁶ that most workers have found mercurochrome to be a relatively weak antiseptic. This is not contradicted by the data presented by Miss Hill, the results of her investigations, so far as they appear to be fully valid, supplement rather than conflict with those of the other studies. It must be appreciated that the alleged superiority of any antiseptic, and, in this case, of mercurochrome, is dependent on the conditions under which this superiority was demonstrated. Mercurochrome has been used clinically for a sufficient time so that its relative effectiveness in actual practice is now fairly well known. The consensus appears to be that mercurochrome is a moderately active antiseptic, it is relatively nonirritant and it has a certain definite but quite limited usefulness in the prevention and treatment of certain infections.

Current Comment

DINITROPHENOL AND CATARACT

In this issue of *THE JOURNAL* appear reports¹ of several cases in which cataract seems to have occurred almost in the form of a malignant development in persons who had been taking dinitrophenol for long periods of time. The coincidence is of interest regardless of whether or not it may be established that the disturbance arose because of the dinitrophenol or because of some other undetected cause. It should of course, be borne in mind that dinitrophenol has not been standardized chemically. The possible occurrence of toxic contaminants in preparations of dinitrophenol must be considered. The possibility also exists that the cataracts may have resulted from associated malnutrition and an unbalanced diet, which are in many instances a part of the program of those who attempt rapid reduction of weight by the use of dinitrophenol or other methods. *THE JOURNAL* has warned its readers repeatedly against the dangers of uncontrolled use of new preparations of this type. The incident here recited serves as a further warning against use of these products until the actual merits and dangers may be more definitely determined. The report of the Council on Pharmacy and Chemistry rejecting dinitrophenol² for inclusion in New and Nonofficial Remedies, published last week, further emphasizes the hazards of the use of dinitrophenol and related substances.

¹ These figures of course refer to the substances themselves and not to the relatively dilute solutions in which they are marketed.

² von Oettingen, W. F. Calhoun, O. V. Badertscher, V. A. and Pickett, R. E. Comparative Studies on Mercurochrome and Other Antiseptics. Report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 99: 127 (July 9) 1932.

³ Horner, W. D., Jones, R. B. and Boardman, W. W. Cataracts Following the Use of Dinitrophenol. This issue, p. 108. Boardman, W. W. Rapidly Developing Cataract After Dinitrophenol, p. 108.

⁴ Dinitrophenol Not Acceptable for N. N. R. Report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 105: 31 (July 6) 1935.

² Simmons, J. S. The Comparative Bactericidal Action of Mercurochrome and Iodine Solutions Used as Local Tissue Disinfectants. *Surg. Gynec. & Obst.* 59: 55 (Jan.) 1933.

³ Scott, W. W. and Birkhaug, K. E. The Comparative Value of Metaphen in Alcohol-Acetone-Aqueous Solutions in the Preoperative Disinfection of the Skin. *Ann. Surg.* 93: 587 (Feb.) 1931.

⁴ Birkhaug, K. E. Phenylmercuric Nitrate. *J. Infect. Dis.* 53: 250 (Sept. Oct.) 1933.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION PUBLIC HEALTH ETC)

ARKANSAS

Society News—The Southeast Arkansas Medical Society was addressed at Dermott, June 17, by Drs George B Fletcher, Hot Springs National Park, on "Pain in the Sciatic Region" John G Snelling Jr, Monroe, La, "Fractures of the Femur, and Louie G Martin, Hot Springs National Park, "Five Years' Report on Treatment of Neurosyphilis and Methods of Giving Such Treatment" An auxiliary to the society was formed at this meeting and Mrs Edward E. Barlow, Dermott, chosen president—At a meeting of the Ninth Councilor District Medical Society in Mountain Home June 4 speakers included Drs William Wallis Smith on infections of the hand Carle B Souter Smith, cataract surgery in India and Francis B Camp, heart diseases All were from Springfield, Mo

Clinical Meeting—The thirteenth meeting of the Fort Smith Clinical Society was held at Fort Smith, June 27, under the auspices of the staffs of Sparks' Memorial and St. Edward's Mercy hospitals The morning was devoted to clinics A round table discussion on 'The Patient with a Headache' formed part of a noon luncheon session with Drs James W Amis Hubert C. Dorsey and Everett C Moulton as the speakers The rest of the program was presented by Drs Hardy H Smith Jr on 'Recent Advances in Treatment of Gonorrhea' Thomas Price Foltz, 'Amebic Infections' and Charles S Means "Prenatal Care" The afternoon session was presented by the following physicians

Walter G Eberle, A Study of the More Recent Observations Regarding Etiology and Treatment of Eclampsia
Richard L. Sutton Jr, Kansas City Mo Skin Cancer
Edward William Alton Ochsner, New Orleans Complications of Appendicitis

Mgr P F Horan, pastor, Immaculate Conception Church, spoke at the evening meeting on "An Appreciation of Modern Medicine" and Dr Sutton presented "An Arctic Safari with Camera and Rifle in the Land of the Midnight Sun"

DELAWARE

Society News—Dr Thomas A Shallow Philadelphia, addressed the New Castle County Medical Society, May 21, on "Carcinoma of the Rectum"

New State Board Officers—Dr Joseph S McDaniel Dover was recently elected president of the Board of Medical Examiners of Delaware which automatically made him a member of the Medical Council of Delaware. At the meeting of the council, Dr McDaniel was elected secretary He will also continue as secretary of the board of medical examiners Other members of the Medical Council of Delaware are president Daniel J Layton, chief justice of the state and Dr Julian Adair, Wilmington, president of the homeopathic board Members of the medical board include Drs Taleasin H Davies Wilmington John H Mullin and Olin S Allen, both of Wilmington, and William Marshall Jr, Milford

DISTRICT OF COLUMBIA

The Annual Election.—Dr Sterling Ruffin was chosen president of the Medical Society of the District of Columbia at its annual meeting, May 8 and Dr Coursen B Conklin was reelected secretary The next annual meeting will be held in Washington, May 6, 1936

Dinner to Retiring Curator—The Washington Society of Pathologists recently held a farewell banquet in honor of Major Virgil H Cornell, retiring curator of the Army Medical Museum and secretary-treasurer of the society Lieut Col William Denton is the new curator and has also been elected secretary of the society

Personal—Dr George E Farrar Jr formerly instructor in internal medicine University of Michigan School of Medicine, Ann Arbor has been appointed associate pharmacologist in the Food and Drug Administration U S Department of Agriculture Washington—Admiral Cary T Grayson chairman, American Red Cross, has been appointed chairman of the League of Red Cross Societies succeeding the late John Barton Payne

Dr Morgan Resigns as Dean at Georgetown.—The resignation of Dr William Gerry Morgan as dean of Georgetown University School of Medicine has been announced, effective July 1 Dr Morgan will continue his association with the school as regent of the university and professor of gastroenterology, a position he has held since 1904 He has been dean since 1931 His colleagues gave a dinner in Dr Morgan's honor at the Mayflower Hotel, June 27

Medical Bills in Congress—H R. 8158, introduced by Representative Dirksen, Illinois, proposes to amend the act to regulate the practice of optometry in the District of Columbia so as to provide that nothing in the act shall prohibit the operation by any individual, firm, partnership or corporation in any mercantile establishment of an optometric department under the supervision direction and management of a regularly licensed and registered optometrist H R. 8437, introduced by Representative Luckey, Nebraska, proposes to authorize the issuance of a license to practice the healing art in the District of Columbia to Dr Arthur B Walker H R. 8739, introduced by Representative Guyer Kansas, proposes to prohibit within the District of Columbia the manufacture, importation, exportation transportation, sale, gift, purchase or possession of any spirituous, vinous, malt, fermented and all alcoholic liquors whatsoever, which may be used as beverages, except natural wine for religious services, and ethyl alcohol for compounding or manufacturing medicines for internal use and for use as a disinfectant by physicians, surgeons and dentists in their professions

FLORIDA

New Medical Board—Dr Horace A Day, Orlando, was chosen president of the Florida State Board of Medical Examiners at a meeting June 17, to succeed Dr Simon E Driskell Dr John D Raborn, Trenton, was named vice president and Dr William M Rowlett Tampa, was reelected secretary

GEORGIA

University News—A two weeks graduate course for Negro physicians was recently conducted by the University of Georgia School of Medicine, Augusta The work consisted of lectures, ward rounds, outpatient department observations and laboratory demonstrations

Physician Honored—Dr Job C Patterson, Cuthbert, entertained the Randolph County Medical Society recently in honor of Dr Willet W Binion, Benevolence, who has completed fifty years of practice in the county Dr Binion was presented with a gold watch

Society News—Dr Thomas F Harper, Coleman, read a paper on 'Use of Bismuth in the Treatment of Syphilis' before the Randolph County Medical Society in Cuthbert, recently—At a meeting of the Georgia Medical Society in Savannah, recently Dr John Reid Broderick discussed hyperparathyroidism, Dr George H Lang gave a paper at the meeting, May 28, on "Meningitis Following Infection in Paranasal Sinuses"—At a meeting of the Third District Medical Association in Americus, June 5, speakers included Drs Henry M Tolleason Eastman on amebiasis, Guy J Dillard, Columbus, diabetes John Calvin Weaver, Atlanta, head injuries George S Murray Columbus, heart failure in middle life David Henry Poer Atlanta exophthalmic goiter, and Jesse H York Atlanta "Fascia Lata and Preserved Fascia in Hernial Repair" Dr James E Paullin, Atlanta, president of the state medical association also spoke

ILLINOIS

Society News—Dr James H Hutton Chicago addressed the Peoria City Medical Society June 18, on 'Recent Advances in Endocrine Diagnosis and Treatment'—Dr Percy H Swahlen St Louis addressed the Union County Medical Society May 2 on 'The Kidney in Obstetrics'—Dr Robert W Keeton Chicago, addressed the Whiteside County Medical Society June 27 on 'Feeding the Sick in Acute Infections'

Health Examinations at State Fair—One thousand children from 6 months to 2 years of age will have complete physical examinations and mental tests at the Illinois State Fair in Springfield, August 17-24 under a cooperative plan of the Sangamon County medical and dental societies, local hospitals and the state department of health Arrangements have also been made to give chest examinations including electrocardiograms to from 2000 to 3000 adults

Twenty-Eight Day Quarantine for Scarlet Fever—The Illinois State Department of Health announces that the minimum period of isolation for scarlet fever patients without com-

plications has been changed to twenty-eight days from the date of onset, according to the newly revised quarantine rules. The department, in an earlier announcement of the new regulations, reported the minimum quarantine period for these patients to be three weeks (THE JOURNAL, July 6, p 52)

Chicago

Personal—Earl A. Dennis, Ph D, assistant in zoology, School of Medicine, Division of Biological Sciences, University of Chicago, has been appointed assistant professor and head of the department of biology, American University, Washington, D C

Institute of Medicine Awards Fellowships—Two Jessie Horton Koessler fellowships of \$500 each have been awarded for the year beginning July 1, one to Robert A. Bussabarger, M S, for work on "Hematological Studies on Gastrointestinal Animals" in association with Dr. Andrew C. Ivy at Northwestern University Medical School and the other to Clayton G. Loosli, Ph D, for investigation on "Lung Phagocytes in Experimental Pneumonia" under Dr. Oswald H. Robertson in the department of medicine at the University of Chicago

INDIANA

Personal—Dr. Sayers J. Miller has been appointed director of the student health service at Purdue University, Lafayette, he has been acting director since the death of Dr. Oliver P. Terry

Society News—Dr. Thomas F. Reitz, Evansville, addressed the Gibson County Medical Society in Princeton, June 10, on myocardial insufficiency—The Jay County Medical Society, Portland, heard Dr. Leon G. Zerfas, Indianapolis, discuss deficiency diseases, June 7—At a meeting of the Floyd County Medical Society, New Albany, June 14, Dr. William H. Garner spoke on reduction of fracture of the hip—At a meeting of the Hamilton County Medical Society in Noblesville, June 11, Dr. Harold F. Dunlap, Indianapolis, discussed the diarrheas—The Wayne County Medical Society was addressed in Liberty, June 13, by Dr. Roscius C. Doan, Miamisburg, Ohio, who discussed the Elliot treatment of pelvic inflammation—At a meeting of the Wabash County Medical Society in Wabash, June 5, Dr. Arthur Fletcher Hall Jr., Fort Wayne, discussed the treatment of syphilis—Dr. Louis E. Barron, Columbus, addressed the Wayne-Union County Medical Society in Richmond, May 23, on "Physiology of Stomach in Relation to Disease."

IOWA

Society News—A symposium on syphilis was presented before the Des Moines Academy of Medicine and the Polk County Medical Society, May 28, by Drs. John H. Tait, Erwin Schenk, Tom B. Throckmorton and William B. Chase Jr.—At a meeting of the Lee County Medical Society, June 19, Drs. Michael L. Mason, Chicago, discussed "Infections of the Hand", Julius Rudolph Yung, Terre Haute, Ind., "Toxic Diffuse Goiter, Diagnosis and Treatment", Allen Graham, Cleveland, "Cancer of the Breast," and Bert I. Beverly, Chicago, "Behavior Problems in Children"

KENTUCKY

Society News—Speakers before the Jefferson County Medical Society, June 17, were Drs. John MacM. Townsend, Louisville, on "Use of Corbus-Ferry Gonococcus Filtrate in the Treatment of Gonorrheal Urethritis" and Frank A. Simon, Louisville, on "Evaluation of Skin Testing in Allergic Diseases." Drs. Philip F. Barbour and Herbert H. Hagan, Louisville, discussed acute conditions of the abdomen in children, June 3

LOUISIANA

Pediatric Society Meeting—Dr. Charles J. Bloom, New Orleans, was chosen president of the Louisiana State Pediatric Society at its annual meeting, April 29. Dr. Ruth G. Aleman, New Orleans, and Dr. Jefferson A. Crawford, Lake Charles, were named vice president and secretary, respectively. Dr. Samuel P. Wainwright, Birmingham, the guest speaker, discussed "Pertussis Immunization"

MASSACHUSETTS

Dr. Locke Appointed Professor at Williams College—Dr. Edwin Allen Locke, clinical professor of medicine at Harvard Medical School, Boston, has been appointed supervisor of health, physical education and the athletic program at Williams College, Williamstown, with full professorial rank it is announced. Dr. Locke graduated from Harvard Medical School in 1901

Dr. Kuhns Wins Fiske Fund Award—Dr. John G. Kuhns, Boston, has been announced as the winner of the Fiske Fund Award of the Rhode Island Medical Society. The prize, which amounted this year to \$200, was established 100 years ago by Dr. Caleb Fiske to encourage original work on the part of members of the society, of which he was one of the early presidents. Dr. Kuhns' essay was entitled "Low Back Pains."

MICHIGAN

Rabid Dogs in Wayne County—A quarantine was established on the dogs of Wayne County, June 22, and on the lower townships of Macomb County, June 27, in an attempt to prevent the spread of rabies in southeastern Michigan. A similar quarantine is expected in other counties around Wayne County within a short time. Since February 1, twenty-eight dogs have been found to be rabid in Detroit. Dogs must be detained on the premises under the terms of the quarantine, which will be terminated September 14 if the disease is controlled by that time

Personal—Chalmers J. Lyons, D.D.Sc., professor of oral surgery, University of Michigan School of Medicine, Ann Arbor, and consulting dental surgeon to the University Hospital, died May 18 after a brief illness. He was 62 years of age—An honorary degree of master of arts in literature and medicine was conferred on Dr. James H. Dempster by the Detroit Institute of Technology, June 12, "for his literary accomplishments in the field of medicine and medical history as well as in his contributions as editor of the *Journal of the Michigan State Medical Society* for his many years of teaching, and for the inspiration he has given to so many Detroit young men." Dr. Dempster is a past president of the Wayne County Medical Society—Dr. Leslie A. Lambert, Flint, has been named health officer of Flint to succeed Dr. Kenneth B. Moore, who resigned to study at the University of Michigan—Dr. Clyde C. Slemmons, Lansing, has been reappointed health commissioner of Michigan

MINNESOTA

Dr. Balfour Appointed Associate Director—Dr. Donald C. Balfour, professor of surgery, University of Minnesota Graduate School of Medicine, Rochester, has been appointed associate director of the Mayo Foundation, a newly created position. Dr. Balfour, a graduate of the University of Toronto Faculty of Medicine, has been affiliated with the foundation since 1907. He was chairman of the Section on Surgery of the American Medical Association in 1928

Officers of State Medical Board—Dr. Albert Fritsche, New Ulm, took over the duties of president of the Minnesota State Board of Medical Examiners, July 6, succeeding Dr. Fredolph H. Magney, Duluth. Dr. Max W. Alberts, St. Paul, was elected vice president, and Dr. Julian F. DuBois, Sauk Center, secretary-treasurer, succeeding Dr. Edward J. Engberg, St. Paul. Dr. Alberts was appointed a member of the board, May 9, to succeed Dr. Engberg

Personal—Honorary degrees of doctor of laws were conferred on Drs. William J. and Charles H. Mayo by the University of Minnesota at the recent commencement. At the alumni dinner before the exercises Dr. William J. Mayo was presented with a scroll for distinguished service as a member of the board of regents since 1907—Dr. Henry S. Plummer, Rochester, was given the honorary degree of doctor of science by Northwestern University at its commencement, June 15

MONTANA

Milk Control Board—A milk control board for the state was created by a recent act of the legislature, members of the board include H. F. Wilkins, executive officer of the livestock sanitary board, chairman, B. F. Thraillkill, chief of the dairy division of the department of agriculture, and George A. Norris Billings

NEW HAMPSHIRE

Athletic Director Retires—Dr. John W. Bowler, professor of physical education at Dartmouth College, Hanover, has retired after thirty-six years' service with the college. A 'Bowler Day' was held in his honor, May 4, marked by athletic events and a banquet attended by many athletic stars he had developed during his career

NEW MEXICO

Personal—Dr. Frank W. Parker Jr., San Bernardino Calif., has been appointed district health officer in charge of Grant Luna and Hidalgo counties, with offices in Silver City—Dr. Elroy F. McIntyre, Santa Fe, was elected president of the New Mexico Public Health Association

Vital Statistics—The death rate in New Mexico for 1934 was 134 per thousand of population, compared with 132 in 1933, according to the *New Mexico Health Officer*. Infant mortality was reduced from 1334 per thousand live births to 1226. Accidental deaths increased in 1934 to 383, from 313 in 1933, automobile accidents were responsible for 131 deaths in 1934 as compared with 101 in 1933. A tabulation of deaths from diarrhea and enteritis in children under 2 years of age during the past five years showed an average rate of 80.8 per hundred thousand of population. One county, however, reported only one death from this cause in the five years.

NEW YORK

Fifty Years of Hospital Service—Dr Lawrence G. Hanley, Buffalo, was the guest of honor at a dinner, May 23, celebrating his fiftieth anniversary on the surgical staff of the Buffalo Hospital of the Sisters of Charity, with the sisters as hosts and Dr Pierce J. Candee as toastmaster. On behalf of the medical staff Dr John T. Donovan presented a gold watch to Dr Hanley, and for the nurse alumnae of the hospital Dr Thomas J. Walsh presented a traveling bag.

Personal—Drs Lucius H. Smith, Palmyra, and Myron E. Carmer, Lyons, were guests of honor at a meeting of the Wayne County Medical Society, Lyons, June 4, marking their completion of fifty years of practice. Dr Smith is a graduate of Syracuse University School of Medicine and Dr Carmer of the University of Vermont School of Medicine.—Dr Hans P. Hanson, formerly in charge of veterans' facilities at St. Cloud, Minn., has been appointed head of the Veterans' Administration Facility at Canandaigua.

New York City

Street Named for Madame Curie—A section of the highway along the East River from Sixty-Third to Seventy-Ninth Street, hitherto known as Exterior Street, was renamed Marie Curie Avenue at a ceremony, June 9, at which Mayor La Guardia made the dedicatory speech. Among other speakers who eulogized the late Madame Curie were Dr James Ewing of Memorial Hospital and Dr Anthony M. Sawicki of the Brooklyn Curie committee. Mrs. William Brown Meloney presided.

Assembly of Data by Relief Workers—Emergency relief workers are assembling data on health subjects including the trapping of rats in a campaign to eliminate them as possible carriers of typhus fever, investigation of the chemicals used in beauty shops, investigation of various stores to determine whether potentially harmful drugs and medical preparations are sold in places other than registered pharmacies, study of the mental and emotional development of children, a tuberculosis survey, and an investigation to find children not immunized against diphtheria.

Dinner to Dr Linder—The board of directors and the medical staff of the Jewish Hospital of Brooklyn gave a dinner at the Waldorf Astoria, June 9, in honor of Dr William Linder, who was recently elected dean of surgery of the hospital. Speakers at the dinner were Joseph J. Baker, president of the hospital, Edward Lazansky, vice president, Irwin Steingut, director, and Drs. Meyer A. Rabinowitz, president of the medical board, and Leo S. Schwartz, representing the alumni and medical staff. Dr Linder, a native of Hungary and a graduate of Bellevue Medical School in 1896, has been associated with the Jewish Hospital for twenty-nine years. He is also chief surgeon of Israel Zion Hospital, and professor of clinical surgery at Long Island College of Medicine. Dr Linder in 1932 was president of the Medical Society of the County of Kings.

Society News—The United Hospital Fund has moved its offices to 370 Lexington Avenue, where the new Associated Hospital Service and the hospital survey operated under the fund's auspices will also have offices.—Dr James C. Healy, Boston, addressed the American Stomatological Society, May 27, on "Allergy and Endocrinopathy, Their Medicodental Relationship." Dr Edward Frankel Jr. was elected president at the annual meeting.—Dr Claus W. Jungblut and Raymond L. Zwemer, Ph.D., among others, presented a paper before the Society for Experimental Biology and Medicine, May 15, on "Inactivation of Diphtheria Toxin in Vivo and in Vitro by Crystalline Vitamin C (Ascorbic Acid)."—Dr Walter Timme addressed the New York Roentgen Society, May 20, on "Correlation of X-Ray Findings with Clinical Neuro-Endocrine Symptoms."—Speakers before the New York Pathological Society, May 23, were Dr. Louise H. Meeker on "Leiomyosarcoma of the Uterus," Homer W. Smith, Sc.D., "Filtration and Secretion in the Human Kidney," and Dr. Jean R. Oliver, "The Third Dimension in Pathological Investigation."

NORTH CAROLINA

Medical Library in Asheville—The Asheville Medical Library was opened in June, under the sponsorship of the Buncombe County Medical Society. Dr Julian A. Moore is director and secretary-treasurer for the library, which will be open four hours a day. The committee of the society that organized the library project was composed of Drs. Paul H. Ringer, Julian A. Moore, Alva B. Craddock, George Curtis Crump and Eugene M. Carr.

Infantile Paralysis in Eastern Carolina—Drs. Alexander G. Gilliam and Warren P. Dearing of the U. S. Public Health Service have been sent to North Carolina to aid in fighting the outbreak of poliomyelitis, which has thus far centered in the east central part of the state, it was reported July 7. An Associated Press dispatch dated July 6 says that cases have occurred in sixty-one of the 100 counties in the state since January 1. Three hundred and twelve cases had been reported up to July 6.

Group Hospital Plan Organized—The Hospital Savings Association of North Carolina, Inc., was recently organized with Dr Isaac Hall Manning, Chapel Hill, formerly dean of the University of North Carolina School of Medicine, as president. Mr. Robert Lassiter, a Charlotte manufacturer, is vice president and Mr. J. Lyman Melvin, Rocky Mount, former secretary of the North Carolina Hospital Association, acting secretary. Among the directors are Drs. Paul P. McCain, Sanatorium, president of the Medical Society of North Carolina, Louis B. McBrayer, Southern Pines, secretary of the state society, John B. Wright, Raleigh, Jacob Franklin Highsmith, Fayetteville, John F. Brownsberger, Fletcher, and Byrd C. Willis, Rocky Mount.

OREGON

Date of State Medical Meeting Changed—The annual meeting of the Oregon State Medical Society will be held at Gearhart, September 19-21, instead of September 12-14.

PENNSYLVANIA

Personal—Dr. Francis Joseph Dever, chief internist at St. Luke's Hospital, Bethlehem, for many years, has resigned and will restrict his work to private practice.—Dr. Frank J. Conahan, Bethlehem, has been appointed medical director of Northampton County to succeed the late Dr. Edgar M. Green, Easton.

Philadelphia

Faculty Appointments at Temple—Dr. Charles Leonard Brown, associate professor of internal medicine at the University of Michigan Medical School, Ann Arbor, has been appointed professor and head of the department of medicine at Temple University School of Medicine. Dr. John A. Kolmer, formerly professor of medicine, recently resigned to devote his time to research. Dr. John Lansbury of the staff of the Philadelphia Institute for Medical Research has been made associate professor of medicine, and Dr. Gerald H. J. Pearson has been promoted to be assistant professor of pediatrics at the university.

Advisory Board for Research Unit—A board of six scientists has been appointed as an advisory council to the George S. Cox Medical Research Institute of the University of Pennsylvania. The council will hold annual meetings to receive reports, review the work of the institute, which is devoted to the study of diabetes, and consult with the staff on further investigations, it was said. Members of the board are Drs. James B. Collip, Montreal, Elliott P. Joslin, Boston, Philip Smith, New York, Rollin T. Woodyatt, Chicago, and Oliver H. P. Pepper, Philadelphia. The institute was founded in 1932 with a fund bequeathed by the late Mr. Cox, a Philadelphia banker and manufacturer. Dr. Cyril N. H. Long is director of the scientific staff.

RHODE ISLAND

State Medical Election—Dr. John E. Donley, Providence, was named president elect of the Rhode Island Medical Society at the annual meeting, May 22, and Dr. Roland Hammond, Providence, was installed as president. Dr. James W. Leech, Providence, was reelected secretary.

Personal—Brown University has awarded to Dr. Charles V. Chapin, Providence, the Susan Colver Rosenberger Medal given each year to an alumnus for distinguished service to humanity. Dr. Chapin was superintendent of the department of health of Providence for forty-two years.

SOUTH CAROLINA

Appointments to State Board—Dr Kenneth M Lynch, Charleston, has been appointed to the state board of health to succeed Dr Robert Wilson, Charleston, resigned, and Dr Walter R Mead, Florence, to succeed the late Dr William Eggleston, Hartsville. At a meeting of the board, June 26, Dr Foster M Routh, Columbia, was elected chairman to succeed Dr Eggleston.

Medical College Commencement—Leonard T Baker, LL.D, president of the University of South Carolina, Columbia, made the principal address at the commencement of the Medical College of South Carolina, June 6 when forty-one physicians were graduated. The Ravenel award was presented to Dr Vance Wells Brabham Jr, Orangeburg, for a paper on "Problems of Medical Care."

TENNESSEE

Professor of Medicine Appointed—Dr Hugh J Morgan, professor of clinical medicine, Vanderbilt University School of Medicine, Nashville, has been appointed professor of medicine to succeed Dr Charles Sidney Burwell, September 1. Dr Burwell was recently elected dean and professor of research medicine at Harvard University Medical School, Boston. Dr Morgan is a graduate of Johns Hopkins University School of Medicine, Baltimore.

Dr Burwell Honored—About thirty-five physicians who have served on Dr Charles Sidney Burwell's staff at Vanderbilt Hospital at various times in the past ten years assembled for a reunion at the hospital, June 8. The group made ward rounds and saw a motion picture of the hospital made ten years ago. Dr Burwell entertained with a reception. At a dinner at the University Club Dr John B Youmans was toastmaster and speakers were Drs Walter S Leathers, dean of the Vanderbilt University School of Medicine, Tinsley R Harrison, Hugh J Morgan and Albert Weinstein. Dr Burwell will leave shortly to become dean of Harvard Medical School.

Health at Memphis—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended June 29 indicate that the highest mortality rate (194) appeared for Memphis and that the rate for the group of cities as a whole was 105. The mortality rate for Memphis was the same for the corresponding week of last year and was 108 for the group of cities. The annual rate for the eighty-six cities for the twenty-six weeks of 1935 was 122, as against a rate of 121 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may increase the death rate.

Regional Society Meetings—The West Tennessee Medical and Surgical Association held its forty-fourth annual session at Dyersburg, May 16. Among the speakers were Drs Maecenas B Hendrix, Memphis, on "Immediate Treatment of Industrial Trauma", John E Powers, Jackson, "Treatment and Care of the Rheumatic Heart," and William H Witt, Nashville, "Symptoms Suggesting Hypoglycemia, Diverticulitis, Pernicious Anemia and Subarachnoid Hemorrhage." Dr James L McMillan, Decaturville, was elected president. The Upper Cumberland Medical Society held its forty-first annual meeting at Red Boiling Springs, June 4-5. Among speakers were three Louisville, Ky, physicians. Drs Philip F Barbour, on "Appendicitis in Children", William E Gardner, "Flight Neurosis," and Granville S Hanes "The Source and Treatment of Low Backache", Carl C Howard, Glasgow, Ky, "Thrombi and Emboli" and Howard C Curtis, Wichita, Kan, "Mental Conditions Following Brain Injuries and Skull Fractures." Dr Erbie B Clark, Sparta, was elected president and Zebidee L Shipley, Cookeville, secretary. The Black Patch Medical Society elected Dr William B Dye, Springfield, president at a meeting in Clarksville, June 5. Speakers were Nashville physicians. Drs Albert Weinstein, on disorders of the pituitary gland, William W Wilkerson Jr, treatment of hay fever and asthma, and R. Wallace Billington, spinal and pelvic fractures.

WEST VIRGINIA

Monument to Founders of State Society—The West Virginia State Medical Association has erected a monument to the founders of the association at Rivesville, Marion County. The names of sixteen physicians who sponsored the first meeting, April 10, 1867, appear on a scroll attached to the stone marker. The first secretary of the association was

Dr James E Reeves, who founded the little town of Rivesville. His early association there was the reason for placing the monument at Rivesville. The marker will be dedicated at the annual meeting of the association in 1936.

Personal—Dr Edward T W Hall was the guest of honor at a meeting of the Lewis County Medical Society, Weston, April 9, marking his completion of fifty years of medical practice. Dr Thomas H Blake, Buffalo, has been named director of the division of child hygiene of the state department of health. Dr and Mrs Charles O Henry, Fairmont, celebrated their golden wedding anniversary, May 6. Dr Arthur E McClue has been reappointed state health commissioner for a term of four years. He took office in March 1933. Dr Thomas H Blake, Buffalo, has been appointed director of the division of child hygiene of the state health department. Dr Walter C Swann, Huntington, was elected president of the West Virginia Heart Association at the annual meeting in Wheeling in May.

WYOMING

Hospital Superintendent Appointed—Dr Joseph F Whalen, Green River, has been appointed superintendent of the Wyoming State Hospital, Evanston, to succeed Dr David B Williams, who resigned June 1. Construction is to be started immediately on a new building for male patients, to cost approximately \$90,000.

Outbreak of Smallpox—At least 4,000 persons have been vaccinated because of the recent appearance of several cases of smallpox in Sheridan County, according to *Colorado Medicine*. Free clinics were held by the Sheridan County Medical Society in cooperation with the state board of health, the state and county relief agencies and the county commissioners.

GENERAL

France Bars American Physicians—The parliament of France has passed a law requiring that all physicians and dentists practicing in France shall be French citizens. An amendment deferring enforcement of the law until 1940 was added in the senate. It was pointed out that the decree will probably result in the abandonment of the American Hospital at Neuilly. During discussion of the bill it was brought out that the University of Paris Faculty of Medicine granted degrees last year to 585 Frenchmen and 237 foreigners.

Changes of Status of Licensure—The Connecticut State Board of Health announces that the governor signed an act April 10 restoring the license to practice medicine of Dr Fred Eric C Ramville, Jewett City. The Board of Medical Examiners of Maryland took the following action at its meeting April 29:

Dr Charles Francis Baxter Paterson, N. J. license revoked for willfully falsely knowingly designedly and unlawfully obtaining money by false pretenses. Dr Baxter's license to practice in New Jersey was revoked on the same grounds.

Warning Against Addict—The supervisor of narcotic control of the New York State Department of Health reports that several physicians and pharmacists in various towns in New York have been approached by a man attempting to obtain narcotics. In each instance the circumstances generally represented an emergency arising through a railroad accident or a passenger seriously ill aboard a train. Each time a check for \$5 was presented in payment. The man making these transactions has been described to the New York state police as about 45 years old, 5 feet 10 inches tall weighing 160 pounds, with brown hair.

Shoe Company Stops Use of "Doctor" as Trade Name—The Federal Trade Commission announces that the Arenberg Plotkin Shoe Company, Scranton, Pa. has agreed to cease using the words "Approved by Dr Aren" to designate its products, when the latter have not been approved or sanctioned by a physician of that name. The firm also agreed not to use the word "Doctor" or the abbreviation "Dr" as a trade name for shoes or in any way that may deceive buyers into believing that the shoes were made by a physician's design and contain special features as a result of medical advice, when this is not true. According to the commission's stipulation the firm had stamped the words "Approved by Dr Aren" across the soles of certain shoes sold in interstate commerce.

Impostor "Dr Rogers"—The surgeon general of the U. S. Public Health Service, Dr Hugh S. Cumming, announces that a man representing himself as "Dr Rogers" of the U. S. Public Health Service has recently victimized a Chicago physician, who cashed a worthless check for \$50. The man is apparently familiar with names of officers of the service and some of its work. He is of medium height and weighs about 160 pounds, has dark hair which is thinning, eyes set close

together and wears glasses, is well groomed and neat in appearance, and his knowledge of the service appeared to indicate that he could have been associated with it at some time. He is also said to have much information about medical affairs in general and is well informed about current politics and Washington affairs. The surgeon general points out that the impostor may have gained information, which he is now misusing, while an inmate at the Hospital for Defective Delinquents, maintained by the U. S. Department of Justice, Springfield, Mo., where Surgeon L. M. Rogers was chief medical officer.

Medical Bills in Congress—Change in Status. H. R. 8554, the second deficiency appropriation bill, has passed the House. This bill, among other things, authorizes an appropriation of \$20,000,000 for veterans' hospital and domiciliary facilities. According to the report of the House Committee on Appropriations (H. Rept. 1261), it is proposed to construct 6,835 beds for neuropsychiatric patients, including 134 replacements, 455 beds for the tuberculous, including 300 replacements, 2,276 beds for general medical care, including 800 replacements, and 2,250 domiciliary beds, including 1,400 replacements.

Bills Introduced. H. J. Res. 333, introduced by Representative Gasque, South Carolina, proposes to amend the Emergency Relief Appropriation Act of 1935 to authorize grants to community hospitals. H. R. 8280, introduced by Representative Dorsey, Pennsylvania, proposes to prohibit the burial of the human dead at sea. H. R. 8346, introduced by Representative Whitchel, Georgia, proposes to reenact all laws in effect March 19, 1933, granting pensions to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection and the World War, their widows and dependents. H. R. 8351, introduced by Representative Whitchel, Georgia, proposes to provide allowances for widows and children of World War veterans who died of disability not acquired in service. H. R. 8461, introduced by Representative Hildebrandt, South Dakota, proposes to provide for the conservation of health among Indians by providing for the completion of the construction of the Sioux sanatorium at Pierre. S. D. H. R. 8656, introduced by Representative Boehne, Indiana, proposes to restore compensation benefits to veterans who served in Russia. H. R. 8665, introduced by Representative Disney, Oklahoma, proposes to authorize an appropriation of \$1,500,000 to construct hospitals for Indians in the state of Oklahoma. H. R. 8740, introduced by Representative McSwain, South Carolina, proposes to reenact all laws in effect March 19, 1933, granting pensions to former members of the military service who were discharged for disability incurred in line of duty, their widows and dependents.

Society News.—Dr. William W. Francis, Montreal, was elected president of the Medical Library Association at the annual convention in Rochester, N. Y., June 18.—Dr. Fritz B. Talbot, Boston, was chosen president of the American Pediatric Society at its annual meeting, May 4, and Dr. Hugh McCulloch, St. Louis, was reelected secretary.—Dr. Roy R. Kracke, Emory University, Ga., was named president-elect of the American Society of Clinical Pathologists at its annual meeting, June 9, Dr. Foster M. Johns, New Orleans, was inducted into the presidency, and Dr. Alfred S. Giordano, South Bend, Ind., was reelected secretary.—Officers of the American Gastro Enterological Association, installed at its meeting, June 10, are Drs. Chester M. Jones, Boston, president-elect, Howard F. Shattuck, New York, president, and Russell S. Boles, Philadelphia, secretary. The next session will be at Atlantic City, May 4-5, 1936.—Dr. Carl Eggers, New York, was elected president of the American Association for Thoracic Surgery at its annual meeting, June 4, Dr. Leo Eloesser, San Francisco, vice president, and Dr. Richard H. Meade, Jr., elected secretary. The next annual meeting will be held at Rochester, Minn.—Dr. Frank Hinman, San Francisco, was chosen president-elect of the American Association of Genito Urinary Surgeons at its annual meeting, June 8, and Dr. James D. Barney, Boston, was installed as president. Dr. Henry L. Sanford, Cleveland, was reelected secretary.—Dr. Benjamin P. Watson, New York, was elected president of the American Gynecological Society, and Dr. Otto H. Schwarz, St. Louis, was reelected secretary.—Officers of the American Orthopedic Association, named at the annual meeting, June 7, are Drs. Hiram Winnett Orr, Lincoln, Neb., president-elect, Frederick J. Gaenslen, Milwaukee, president, and Ralph K. Ghormley, Rochester, Minn., secretary.—At the annual meeting of the American Otolological Society, May 29, Dr. Edmund P. Fowler, New York, was chosen president-elect of the American Otolological Society. Dr. Francis R. Packard, Philadelphia, was installed as president and Dr. Thomas J. Harris, New York, was reelected secretary.—Dr. Frank G. Runyon, Reading, Pa., was chosen president of the American Proctologic Society at its annual meeting, June 10, and Dr. Curtice

Rosser, Dallas, was elected secretary. The next annual session will be held in Kansas City.—Dr. Charles Macfie Campbell, Boston, was named president-elect of the American Psychiatric Association at its annual meeting, May 15, and Dr. Clarence O. Cheney, New York, was inducted into the presidency. Dr. William C. Sandy, Harrisburg, Pa., was reelected secretary. The next annual session will be held at St. Louis.—Dr. James J. Waring, Denver, was elected president of the National Tuberculosis Association at its annual meeting, in Saranac Lake, N. Y., June 26, Drs. James A. Price, Memphis, Tenn., and Frederick H. C. Heise, Trudeau, N. Y., were chosen vice presidents.

FOREIGN

Physician Donates Library.—Dr. Aeneas McDonnell, Queensland, Australia, has recently given about 300 books to the Queensland General Hospital. A special room has been arranged as a library and will be called the Aeneas McDonnell Library. A new operating room in the hospital was recently named for Dr. McDonnell.

Typhoid Outbreak in Rome.—The *Chicago Tribune*, July 5, reported that 1,170 cases of typhoid with twenty-two deaths had occurred in Rome since June 1. It was stated that while the cause of the increase in the disease had not been determined, authorities were sure it was not due to pollution of the water or milk supplies. The upper classes have been particularly affected, while school and college students, troops and the poorer classes of the population seem to have escaped, it was said.

Personal.—Sir James W. Barrett, vice chancellor of the University of Melbourne, has been appointed president-elect of the British Medical Association to succeed the late Sir Richard Stawell, who died April 18.—Prof. Richard Kuhn, director of the Institute for Chemistry in Kaiser-Wilhelm Institute for Medical Research, Heidelberg, Germany, has been awarded the Pasteur Medal by the Societe de chimie biologique.—Mr. Lambert C. Rogers has been appointed professor of surgery at the University of Wales, Cardiff, to succeed Prof. Alfred W. Sheen, who retires on account of age.

Government Services

Funds Asked for Health Survey

The U. S. Public Health Service has asked the division of applications and information of the works progress administration for an allotment of \$3,450,000 to carry out a "health inventory" in fifty cities with special reference to chronic diseases and physical impairments such as infantile paralysis, arthritis, deafness, blindness, Bright's disease and other afflictions incapacitating persons for employment, according to the *New York Times*. It was stated that the study would include a house to house canvas, physical examinations and a survey of medical facilities for the care of the sick, with special reference to the chronic diseases. There would also be an intensive study extending over several years of the importance and effect of given chronic ailments on the capacity of the patient and family to remain self supporting and in other respects to carry on as a useful member of society.

Food Shipments Seized

The addition of coloring materials to alimentary pastes conceals inferiority, a form of adulteration that no form of labeling can correct, states the Food and Drug Administration in reporting its seizures for May. Thirty-seven shipments of these products were seized when analysis showed the presence of soy bean flour, of turmeric, a vegetable dye, or of a yellow coal tar food color. The use of even small quantities of soy flour or of color in flour macaroni is a violation of the Food and Drugs Act. The administration points out that, in cases in which added color does not conceal inferiority, the fact of the presence of artificial color must still be declared on the label of the food containing it. Tomato products made from unfit material, though representing a small percentage of such products on the market, still lead in food law violations. Thirty-three lots were seized in May. Other confiscations included thirty-four sacks of decomposed coconuts, one lot of moldy dried red peppers, two lots of insect-infested canned spinach, 400 cases of wormy and decomposed bottled olives, one lot of rancid condensed milk, 875 gallons of unfit cream en route to buttermakers, 38,000 pounds of moldy and rancid butter, two shipments of decomposed canned anchovies, four of decomposed canned tuna and 400 pounds of tainted fresh shrimp. Three cylinders of nitrous oxide contaminated with other gases, one shipment of substandard epinephrine chloride and two of belladonna extract, and a large stock of different deteriorated drugs.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 15, 1935

Vitamins and the British Pharmacopeia

The pharmacopeia commission, which was appointed in 1933 for three years to collect material for the next edition, has reported that it has been actively engaged in preparing an addendum to the British pharmacopeia, publication of which is expected next year. The commission has formed a committee of experts to deal with the vitamins and their preparations. At a meeting of the General Medical Council, which received this report, Dr. H. G. Dain, chairman of the Insurance Acts Committee of the British Medical Association, said that he found difficulty in drawing a line between food and drugs, since the products that contained vitamins would in the ordinary way be foods. He thought that the public and the profession should be taught that vitamins could not be regarded as drugs and that the government should take steps to see that common foods contained the vitamins that properly belonged to them. Sir Henry Dale replied that, although much vitamin research lay on the border line between therapeutics and nutrition, the pharmacopeia did not aim at establishing standards of normal diet. Some vitamins had now been isolated in a chemically pure form. Apart from the need of them in normal diet many patients would require vitamins to be given in the most concentrated form. It was the duty of the pharmacopeia to see that such potent remedies were standardized apart from any question of general policy.

Defense of Civilians Against Air Attacks

It is a grim commentary on our boasted civilization that the defense of civilians against air attacks, which may destroy cities and mutilate indiscriminately men, women and children, is a problem that now exercises the government. At the Royal Society of Arts, Mr. Davidson Pratt, a member of the Chemical Defense Committee, which works under the Committee of Imperial Defense, outlined a scheme, which will soon be published officially. Mustard gas, falling in liquid form like rain and vaporizing to poison all that it contaminates is considered the great danger. As yet there is no efficient cheap gas mask for the public, and efficient uniforms against blistering gases have yet to be devised. Households are recommended that the safest place is upper rooms, closely sealed with mud, if nothing better is available. A Geneva protocol has been signed by a large number of nations and ratified by a smaller number prohibiting the use of gas in war, but experience has shown that not much reliance can be placed on "scraps of paper." Airplanes can drop bombs of any size, which may liberate a variety of toxic agents that act on the human body in different ways. Such gases as phosgene and chloropicrin attack the lungs, tear gases, such as ethylchloroacetate and chloroacetophenone, affect the eyes, organic arsenic compounds, such as diphenylchloroarsine, diphenylcyanoarsine and diphenylamine arsenous chloride, are irritants to the respiratory passages. Others of the vesicant type, such as mustard gas and lewisite, will burn the skin or any other part of the body with which they come in contact, whether as liquid or as vapor. Thus, protection of the whole body is required in the case of these, whereas for others a mask protecting the lungs and eyes is adequate.

Mustard gas, which is heavy, may contaminate objects for days in cool weather before all the liquid has evaporated and objects are safe to handle. The safest thing the civilian can do is to keep within doors as soon as warning of an air raid

is given. This must be done promptly, as an airplane spray gives no warning. To make indoor protection as safe as possible there should be in every house, office or building a gas-protected room or rooms in which the occupants can stay until the all-clear signal is given. The top of the house is the safest place, as the occupants will be above the level of any gas clouds produced in the streets. The room should be made as gas proof as possible by closing up all means of ventilation with materials ready to hand. Fires should be extinguished in the gas-protected rooms. There will have to be provision for people caught in the streets. The idea of extensive underground shelters, proof against explosive bombs and gas, is likely to be feasible only for certain vital services, because of the enormous expense involved. The problem of a cheap simple gas mask that will be fool proof and susceptible of mass production from the materials available in the country is receiving the attention of experts. Decontamination squads will have to be organized to deal with areas, buildings and vehicles that must be quickly freed from gas. The services of laundries will be linked up with these, as their processes may be used for cleansing clothing.

Atmospheric Pollution

Atmospheric pollution is one of the drawbacks of civilization and, among other evils, is regarded as responsible for the notable increase in cases of cancer of the lung that have been observed in England in recent years. The Report on the Investigation of Atmospheric Pollution for the year ended March 31, 1934, has just been issued by the government. It summarizes the results of observations made by seventy-five municipal authorities, five industrial undertakings and one agricultural institution. The figures show a slight improvement on those of last year. The greatest total deposit in any gage was in the city of London, where impurities were deposited at the rate of more than 640 tons in the year per square mile. Deposits of about 100 tons per mile were recorded for large manufacturing cities, such as Leeds, Sheffield and Halifax. Measurements of the concentration of sulphur in the atmosphere have been made at twelve stations. The highest concentrations were found at London, Leicester, Newcastle and Sheffield. The measurement of daylight has been made by a new apparatus, which is largely automatic. The light falls on a photo-electric cell and the resulting current charges a condenser, which, when the charge reaches a certain amount, discharges through a neon lamp, causing an ordinary four figure counter to move forward one unit. When perfected, this method should prove a welcome addition to the means of estimating the loss of light caused by smoke pollution of the atmosphere. The instrument can be fitted with filters so that it may measure either visible or ultraviolet rays.

Exhibition of Means of Noise Abatement

The formation of the Anti-Noise League, with influential medical support, in order to diminish the evil of noise in modern life, has been described in previous letters. The league has organized an exhibition of means of eliminating needless noise, which was opened by the prime minister. Scientists and manufacturers have joined the movement, and the exhibition is intended to educate the public in the prevention of noise and to stimulate cooperation between experts who understand the problem of noise and those who suffer from it. Many of the exhibits have been designed to reduce the noises common in houses, business premises and factories, as well as in public thoroughfares. One device is a "floating floor," which consists of a heavy auxiliary floor supported on a structural floor by an elastic mounting such as rubber springs. The difference between the noises produced by impacts on this floor and on an ordinary floor are demonstrated.

PARIS

(From Our Regular Correspondent)

May 31, 1935

Rôle of the Liver in the Pathogenesis of Migraine

At the February 1 meeting of the Société médicale des hôpitaux de Paris, Etienne and Colleson of Nancy reported their observations as to the part played by hepatic insufficiency in the etiology of paroxysmal migraine and of other more persistent types of this clinical entity. There are three types of migraine. The first includes the familiar attacks. The second includes cases in which a migraine-like condition is more or less continuous, in the form of persistent headache, a feeling especially on awakening of a confused mental state, nausea often without vomiting, fatigue, and inability to concentrate and to work. In the third type the second more persistent migrainous state is interrupted by the severe attacks typical of the first group.

Seventy-five cases (thirty five of men and forty of women) were studied over a prolonged period.

Forty-five persons were given treatment exclusively directed toward stimulating hepatic function, such as alkalis in small doses, especially sodium benzoate, magnesium salicylate, sodium citrate, and vegetable and other cholagogues, for a period of ten days. In the other thirty cases, treatment at Vichy was given in addition.

In seven of the forty-five cases the attacks disappeared completely after the first fifteen days of treatment. In twelve other cases the same result was obtained only after two months. In the remaining eighteen cases the attacks disappeared after a longer interval. Eight cases are not included because they have not been followed for a sufficiently long time. In all, thirty-seven patients of the forty-five who were given only medication as stated were relieved completely of their attacks. Twelve of the thirty patients who also received treatment at Vichy noted complete cessation of attacks after some months. In three others the interval between attacks was much longer than before. There was a marked decrease in the frequency of the attacks in nine cases, and in nine others both the interval was longer and the number of attacks lessened. In patients suffering from the more persistent chronic second type, the first improvement showed itself in the cessation of the acute attacks the slight daily one yielding only after the treatments were systematically taken up again. In women with intermenstrual and menstrual migraine, the latter was more difficult to suppress.

Influence of Cancer of Pancreas on Diabetes

Bickel and his associates of Geneva, Switzerland, reported a case at the January 11 meeting of the Société médicale des hôpitaux de Paris of a man, aged 56, who had a severe diabetes for a year. The glycosuria varied from 200 to 300 Gm a day, with acetonuria associated with an interstitial pancreatitis with resultant hypoplasia of the islands of Langerhans. While under observation, a primary carcinoma of the body of the pancreas developed with metastases in the peritoneum and massive infiltration of the liver. Concomitant with the development of the neoplasm there was a progressive improvement of the diabetes, so that after several months a complete disappearance of the glycosuria and acetonuria was noted. Although a dozen similar observations have been reported, no satisfactory explanation of the phenomenon was offered. A pancreatic cancer, when it involves the islands of Langerhans can possess secretory properties, as in the case reported in 1927 by Wilder and his associates of hyperinsulinemia in a carcinoma of the islands of Langerhans. In the present case the primary neoplasm of the pancreas also presented an excessive secretion of insulin, which explains the marked recession of the glycosuria and acetonuria as the carcinoma developed. The liver metastases, however, failed to show any evidence of secretory activity. The liver, which was almost completely invaded by the neoplasm, undoubtedly

played an important part in the hypoglycemia, thus confirming the work of Mann and Magath and of other Americans that experimental hepatectomy or primary liver cell carcinoma is followed by hypoglycemia. The authors believe that diabetes favors the development of pancreatic carcinoma. Sections from some of the islands of Langerhans showed true adenomatous proliferation, and such a change may be the point of origin of a carcinoma as the result of the irritation of the interstitial pancreatitis and the excess of work the islands are called on to do.

Additional Accidents Following Arteriographies

In recent letters a number of accidents following arteriography were reported. Another paper on the same subject was read at the March 6 meeting of the Société de chirurgie by Wertheimer and Frier of Lyons. Seventy-seven injections were made on sixty-one patients for various types of arteritis (nineteen senile, seven diabetic), aneurysms, Volkmann contracture and other arterial lesions. A colloidal solution of thorium was used in the majority according to the technic of Dos Santos viz, injection under a pressure of two atmospheres except when occlusion is suspected, and then only a few tenths of an atmosphere. Only the accidents are included in the report. One fatal result followed the use of the colloidal thorium solution in a case of Volkmann's contracture of several months' duration in a child. During the injection, a transitory vasoconstriction was noted in the forearm and hand and, at the same time a respiratory syncope, which failed to yield to treatment. No other accidents were noted in using the colloidal thorium solution. In one case, death followed the use of "collothor," another thorium preparation. The patient was a man of 65 suffering from an incipient gangrene of the lower extremity due to obliterative endarteritis. Severe pain followed the injection, and amputation was necessary the following day because of the rapid extension of the gangrene. Death occurred twenty-four hours later. There have been altogether three cases, including the one reported here, following the use of the colloidal thorium solution, hence it cannot be regarded as free from danger.

The members of the society have been requested to report their experiences with arteriography from time to time.

Death from Tetanus as a Complication of Burns

At the January 30 meeting of the Société de chirurgie a case was reported by Louis Bazy in which death from tetanus occurred eight days after admission to the hospital for burns of the third degree involving both lower extremities. A man, aged 34, had fallen against a forge full of blazing coke during an epileptic attack. After thorough cleansing of the burned skin, a dressing of 10 per cent eucalyptus in olive oil was applied. Spasmodic contractions first appeared in the lower extremities on the eighth day and extended rapidly upward until the clinical picture of tetanus became typical. Ten thousand units of anti-tetanic serum was injected into the spinal canal, but death occurred. Tetanus bacilli were found by culture in the serum of the burned area on the right leg. No prophylactic injection of antitetanic serum had been given, because there were no breaks in the continuity of the skin over the burned area.

Bazy believes that one ought to vaccinate against tetanus the same as one does for other infectious diseases. He has carried this out on as large a scale as possible by the injection of tetanus anatoxin once a year. This was done in some of the ambulance centers during the World War, every wounded individual being given 1 cc. of tetanus anatoxin on the first and second days and two more doses on the following days. On being sent back, the wounded were given a ticket showing how much of the anatoxin had been given.

Gosset, in the discussion, stated that a committee appointed by the Academy of Medicine had studied the question of vac-

nation against tetanus in 1931. The conclusions were that immunity against tetanus could be obtained by three injections of the tetanus anatoxin given at intervals of three weeks. He believed that such a method should be recommended by the Société de chirurgie for more general adoption.

Rouviellois stated that such vaccination was being employed on a large scale in the French army.

National Subscription for Roux Memorial

The friends and pupils of the late Professor Roux of the Pasteur Institute are organizing a memorial fund to be used as an aid to students who are interested in the various divisions of biology. The Pasteur Institute has experienced a severe reduction in income and its present revenues scarcely suffice to pay the salaries of its personnel and to provide funds to carry on research. Hence it has become necessary to ask the medical profession in general and nonmedical admirers of the Institute to "do their bit" in helping to carry on the research work by buying books containing 100 coupons of one franc (about 7 cents). The committee in charge of the Roux Memorial Foundation will have at its head the president of France. Those willing to aid this worthy cause have been asked to send contributions to Mr. Dufaure, 205 rue Vaugirard, Paris.

Results of Diphtheria Vaccination in School Children

Dr. Poulain of St. Etienne reported at the February 5 meeting of the Academy of Medicine of Paris, the results of vaccination of 6,000 school children with the Ramon anatoxin. A few severe local and general reactions were noted in older pupils but none below the age of 6 years. The dose, 60 units is given in two or three injections (1 cc each of 60 units). Only one case of diphtheria was observed among 6,000 children who were thus vaccinated. The higher the number of units given, the more certain is the prophylaxis. No deaths have occurred in children immunized with 40 units or more. In children between the ages of 2 and 6 years given doses varying from 5 to 35 units, the risk of an attack of diphtheria is one-fourth and the risk of a fatal issue is one-twelfth that of non-vaccinated infants.

With the tendency to give a dose of 60 units in a single injection, one can foresee that the mortality from diphtheria will diminish markedly and the incidence of the disease even more so. At present, with the cooperation of the teachers and medical school inspectors, one can succeed in vaccinating 85 per cent of the children, but when the harmlessness of the vaccination and its good results become more widely known one may hope that vaccination will become obligatory.

Infantile Tetany Cured by Cervical Sympathectomy

Jung and Mathis, associates of Professor Leriche of Strasbourg, reported a case at the meeting, Dec. 12, 1934, of the Société de chirurgie de Paris.

The patient was a girl, aged 11 years, who at the age of 10 months had attacks of rigidity of the extremities without pylorospasm. When she was 6 years old, similar rigidity, but accompanied by vomiting, appeared every one or two months and more frequently, once a week, during the year preceding her admission to the Strasbourg University Hospital. Calcium was given by mouth and by intramuscular and subcutaneous injections, without any benefit. The same was true of parathyroid extract and calcium gluconate. During the attacks, the contractures of the upper and lower extremities presented the typical signs of a tetany. Preceding this, there was severe epigastric pain and repeated vomiting. The latter continued for several days after each attack. The calcium metabolism was markedly increased. April 24, 1934, the middle right cervical sympathetic ganglion was resected. During the following twenty-four hours the attacks were almost continuous, but their severity was lessened by parathyroid extract. After the second

day there were no further attacks, the extremities remaining flaccid, and there was no vomiting. The calcemia four days after the operation showed a marked diminution as compared to the preoperative analysis. This was still much lower on June 1. A month later, however, there was a recurrence of the attacks during the onset of an attack of scarlatina. The peripheral tetany and the vomiting improved rapidly, following the use of the parathyroid extract and calcium gluconate. Since this recurrence and until the time the report was made in December, there had been no further attacks.

The object of the operation is to reactivate the parathyroid deficiency by indirect action on the cervical sympathetic. The role of the parathyroid in aiding calcium metabolism is well known, and the attempt to stimulate this internal secretion has been successful in combating the hypoparathyroidism to which infantile tetany is due.

BERLIN

(From Our Regular Correspondent)

May 6, 1935

Review of German Casualties in the World War

A recent letter (*THE JOURNAL*, April 6, p. 1260) contained a condensed medical report of the World War, as it affected the German army and navy. In the meantime, some interesting details have been made known. A careful study reveals that the average annual number of deaths was 461,741, or 34.5 per thousand of the 13,387,000 war participants. In comparison, the number of deaths in the German armies during the Franco-Prussian War was 307 per thousand of the war participants. That the number of deaths per thousand was but slightly higher than in the Franco-Prussian War, in spite of great improvements in the destructive implements of war, was due to the improved protective measures, the better hygienic conditions and the progress in medical science.

The war showed that the idea of military fitness was not given enough latitude during peace times. On the basis of new criteria for the testing of registrants for war service from 20 to 25 per cent of the persons exempted before the war from military duty, because of alleged unfitness for service, were found available for the front (184,142) while more than 50 per cent (470,279) could be used in some of the war services.

The strength of the combined German field and garrisoned forces averaged for the four years of the war about 6,300,000, or about 4,100,000 in the field armies and about 2,100,000 in garrison. The strength of the field armies rose from about 2,500,000 the first year of the war to about 5,000,000 during the fourth year. Over the four-year war period the number of wounded and ill patients receiving treatment by army physicians and surgeons was 27,185,240, of which 19,471,917 cases occurred in the field armies. For each hundred war participants there were 164 cases of illness and forty-three cases of wounding, that is nearly four cases of illness to one case of wounding. Only during the first two months of the war did the cases of wounding exceed the cases of illness. About half of the patients receiving medical treatment entered a military hospital (13,403,131). From the battle fields 7,852,851 wounded and ill persons were taken to the field hospitals and 584,786 directly to their home hospitals. From the field hospitals fewer than half of the wounded and sick (3,547,157) were transferred to their home hospitals. On an average the field hospital trains carried monthly 86,081 patients from the war area to their home hospitals. 66,600 from one field hospital to another, and 86,300 in like manner from the field hospitals to the home area. During the course of the war the field hospitals became more and more developed and were provided with special departments, because the wounded and sick who were transported home remained out of the service for a considerable period. Of the men treated in the field and remaining with their own contingent, 98.7 per cent became again fit for service, of those treated in the field

hospitals, 92.7 per cent, and of those admitted to the home hospitals, 90.0 per cent. The average monthly losses in the field armies, due to sickness, wounds and injuries (including the permanent losses) for the four years of the war were as follows. Of 1,000 soldiers in the field armies, 3.8 were killed in action, 3.8 were reported missing, 2.4 were wounded and 73.1 were reported sick. Of this total of 104.7, 73.1 became again fit for service, in addition, 16.1 returned from their homes fit for service. Thus the field army had monthly a permanent loss of 15.5 per thousand (killed in action, deaths due to disease or accident, missing, unfit for service and the current number on the sick list).

The deaths occurring among persons not treated by army physicians (results of wounds, accidents, disease, suicide) amounted annually to an average of 198,859, or 31.2 per thousand of the total strength of the army, and among the group treated by army physicians the deaths amounted to 101,652, or 16 per thousand (4.6 being due to disease and 11.3 due to wounds). The total number of deaths due to wounds (an annual average of 265,431) and the total deaths due to disease (an annual average of 30,825) were in the proportion of 1:0.12. Accidents caused the death of 1 per thousand of the war participants (during peace times, 0.3 per thousand). The suicide rate was about the same in the various war areas and was twice as high among the home population as among the men in the field. On the whole, the number of suicides was less than half that recorded in peace times. During the four years of the war, 702,778 were dismissed as unfit for service, an annual average of 175,695, or 27.6 per thousand (13.5 wounded, 14.1 patients with disease). In 55.6 per cent of those dismissed on account of disease, the unfitness for service was not due to injuries connected with war service. In the four years of the war, 53.6 out of 1,000 enrolled soldiers were dismissed as unfit for service, of which number 6.8 were mutilated. The total number of men who lost the sight of both eyes was 1,445, of one eye, 10,394. Of the 89,760 mutilated soldiers, 74,630 had mutilated limbs, 56.7 per cent had mutilated upper extremities (left arm 30 per cent, right arm 26 per cent) and 43.3 per cent suffered mutilations of the lower limbs.

Open, or movement, warfare, as was to be expected, is shown by statistics to have caused heavier losses than trench, or position, warfare. The number of cases of wounding in the field armies was 4,814,557 including those killed in action, 5,587,244. In addition 771,249 were reported as missing, and about half of these are assumed to have been killed.

Of the 4,814,557 wounded treated by physicians during the four years, 289,053 or 6 per cent died of that number 61,704, or 1.3 per cent, with the troops, 181,817, or 3.8 per cent in the field hospitals, and 45,532, or 0.95 per cent, in the home military hospitals. Of the 4,525,504, or 94 per cent, who recovered, 7.2 per cent were dismissed as unfit for further service. Concerning the outcome of wounds, it may be said that about one third of the wounded men became again fit for service, most of them having remained with their contingent, a further third returned to the front from the home area, and the final third became fit only for home service or unfit for service, or died.

According to the statistics of the medical report, for 375.8 wounds received on the German side there were 481.6 wounds received on the opposing side and for 53.1 killed in action the opposite side lost 86.2. The medical report shows also that in the World War of 100 wounded 93 recovered, on the average, on either side and 7 died which is evidence of the wonderful progress made in the modern sanitary service.

The side arms sword and bayonet played a smaller part in the infliction of wounds than in former wars. The first year of the war, for one wound inflicted with side arms there were sixty-six gunshot wounds (53.7 in the Franco-Prussian War), in the last year of the World War there were 300 gunshot wounds to one wound with side arms. In the later years of

the war, wounds produced by the artillery exceeded by far those caused by gunshots. It has been estimated that possibly 75 per cent of the wounds inflicted during these years belonged to the former class. In wounds of the neck, trunk, upper limbs and thorax, gunshots were chiefly in evidence, but the wounds of the head, the spinal column and the lower limbs were caused mainly by artillery. In head wounds, the hand grenades played an important part. The wounds caused by shrapnel affected fairly evenly all parts of the body. Two thirds of all artillery injuries were produced by shell fragments, the head and the spine being particularly endangered. The large shell fragments inflicted wounds of the lower limbs, the abdomen and the spine. Traumatic tetanus occurred as frequently at the beginning of the war as during the Franco-Prussian War. Of 1,000 wounded men, 3.8 contracted tetanus. Following the general introduction of tetanus immunization the number of cases declined sharply. During the last two years of the war, the percentage of cases was reduced to 0.4 per thousand wound cases. At the beginning of the World War the case mortality of tetanus was 75 per cent, which was gradually reduced to 51.4. During the war, tetanus antitoxin was injected not only in connection with the slightest injury but also in every operation that was undertaken more than seven days after the first protective inoculation, also in connection with any difficult change of bandages made after that time. Tetanus was more widespread in certain areas of France than in others. Gas gangrene developed in 0.6 per cent of the wounded men, and 35.8 per cent of the persons developing it died. Attempts to prepare a suitable immunizing vaccine were not completed when the war closed.

Incidence and Mortality of Various Diseases

Disease	Cases of the Disease per Thousand Soldiers	Case Mortalities Per Cent
Tuberculosis	5.3	14.4
Typhoid	4.6	10.1
Dysentery	6.1	5.6
Cholera	0.13	51.2
Typhus	0.20	22.5
Diphtheria	1.5	3.0
Influenza	11.9	0.33
Scarlet fever	0.50	4.6
Malaria	4.7	0.37
Measles	0.16	0.56
Smallpox	0.02	4.4

The cases of illness (exclusive of wounds) increased at first rapidly and then gradually declined until the summer of 1918, the falling curve being checked only by the summer and the winter peaks. In the summer of 1918 they reached the highest point in the whole war, owing to the influenza epidemic. As a rule, in the field armies the infectious and transmissible diseases (typhoid, typhus, malaria, dysentery, cholera) and the gastrointestinal diseases were more widespread than among the garrisoned forces, that was true also of influenza and heat stroke. Among the garrisoned troops, on the other hand, venereal diseases, nervous and cardiac diseases, disorders of the respiratory organs—also measles, diphtheria and scarlet fever—were more prevalent than in the field armies. In the east, during the first and second years of the war, the morbidity was higher than in the west but in the Balkans, and especially in Turkey, the morbidity was higher than on the eastern or western front. The tabulation shows the incidence of various diseases and their case mortalities.

The actual figures for a number of the diseases were: smallpox 459 (appeared only on the eastern battle front), typhus 5,982, malaria 120,781, dysentery 155,376, typhoid 116,481, cholera 3,303. As compared with peace conditions, heat stroke showed a high incidence only in August and September 1914.

Of the cases of nervous disease, a total of 613,047 were admitted to the military hospitals. An increase of mental disease was not observed during the war, although the number of psychopaths increased as the war went on, so that during trench,

or position, warfare there was one neurologic patient to ten wounded men. Even after recovery, the psychopaths proved to be unfit for service, exerting, as it were, a contagious influence on their environment and gradually finding their way to the home hospitals. Cases of nephritis did not occur in any numbers until August 1915 but were then observed on both the eastern and the western fronts, doubtless as a result of exposure to heavy rains, combined with severe exertion. Special military hospitals for the treatment of cases of nephritis were provided. Venereal diseases in the field armies were less prevalent than among the troops in peace times, but in the home area the incidence was somewhat greater. There were, however, 713,491 cases, or 28 per thousand.

Owing to the strict discipline, only 80,000 developed injuries from war gases. In the "wind" gas attacks about 9 per cent of the patients died, from gas projectiles about 6 per cent, from explosion of gas mines about 12 per cent, and from mustard gas from 2 to 3 per cent. Mustard gas caused, to be sure, few deaths but prolonged illness. The observation time had to be extended to five days, as the disease symptoms did not appear for twelve hours. Of the men exposed to mustard gas, 20 per cent became severely ill, 20 per cent moderately ill and 60 per cent mildly ill, 38 per cent of the mildly ill became again fit for service during the first week.

ITALY

(From Our Regular Correspondent)

April 30, 1935

Convention on Tuberculosis

The Convention on Tuberculosis was held in Bolzano under the chairmanship of Professor Carpi. The first paper, on "Criteria of Clinical Orientation in the Treatment of Pulmonary Tuberculosis," was presented by Professor Carpi, who brought out that by the treatment of tuberculosis one does not mean the treatment of the infection, for the clinic cannot perform miracles but rather the treatment of the tuberculous disease, or, in other words, of the tuberculous patient. At the start, an exact evaluation of the case is indispensable. The dispensary is the fundamental organization for diagnosis and the protection of society but cannot occupy itself with the evaluation of the therapeutic needs of the patients. There is a need of clinical centers to establish a precise diagnosis, in individual cases, of the type, the evolution and the location of the tuberculous disease. The speaker holds that this task, which is so important, should be reassigned to the hospitals.

The treatment comprises two types: the hygienic, climatic and dietetic type and the intervention type. The speaker still recognizes in climate a valuable therapeutic factor but thinks that it should be considered only in connection with other curative factors. One needs to select the climate in accordance with the clinical aspects of the case. A mountain climate, the benefits of which are undeniable, is not suitable for all cases of tuberculosis but is chiefly valuable in the beginning—pleural and bronchial—types. Other patients derive equal benefits from sanatoriums located in middle and low altitudes. Specific vaccine treatment possibly has been allowed to decline more than it should. Intervention treatment is represented by collapse therapy—not only by pneumothorax but also by various surgical forms. It is a question of an individual and not a general therapy. The indications for it are not found in the cavities but in the forms that lead to the destructive phase, namely the exudative, the infiltrative and the phthisiogenic, which are to a large extent capable of retrogression.

The second topic, "Functions of the Clinics and Hospitals in the Crusade Against Tuberculosis," was presented by Professor Cevolotto. According to the sentiment of the recent congress of Warsaw, dispensaries may be assigned a curative function, which should be limited, however, to pneumothorax.

It is impossible to place precise limits on the functions of dispensaries. A greater freedom should be allowed their directors, because a mere prophylactic function is not sufficient to bring an adequate number of patients to the dispensary. In giving a definition of the various types of climate, one should take account of the fact that it is a question of average climatic conditions, whereas it is a common practice to describe the climate of a very restricted region. The action of a given climate may be best judged from the therapeutic results secured in a large series of cases.

Tuberculosis may be cured also in the hospital, if it is located in a favorable climate, but treatment is not the function of such an institution with reference to all tuberculous patients. The chief function of the hospital is to classify, on the basis of clinical observation, the patients referred by the dispensaries and to determine what is the suitable therapeutic management of the case. According to Cevolotto, the hospital should be intimately associated with the dispensary in the treatment of cases that require intervention therapy. He thinks that, in the crusade against tuberculosis, an organization is feasible similar to that in vogue for prophylaxis against syphilis, in which the director of the dispensary manages likewise the associated special department. Other functions of the hospital are to collect patients gravely ill who, on leaving the sanatorium, desire to return to their own region in order to be near their families, and to treat patients with acute forms on account of which they cannot be moved. A general discussion followed the presentation of the papers.

Congress of Internal Medicine

The Società italiana di medicina interna will hold its forty first congress in Bologna, next October. The following topics will be discussed: (1) clinical classification of types of icterus (Professor Micheli, senator, and Professors Dominici and Allodi); (2) evaluation of the individual constitution (Professor Viola, senator); and (3) mediastinopericarditis, in collaboration with the Società di chirurgia (Professor Zagari).

Appointment of Prof. Augusto Stefanelli

Prof. Augusto Stefanelli has been appointed to the chair of zoology and comparative anatomy at the University of Bari. For his introductory lecture he chose the topic "Biology: Its Historical Development and Its Greater Contemporary Problems." After defending the priority of Italian scientific investigators with reference to certain fundamental problems, he traced the development of some biologic theories down through the centuries, described the period in which evolution and darwinian theories had dominated biologic thinking, and then pointed out the untenability of these theories. He discussed the hypotheses advanced, after the overthrow of darwinism, to explain the evolution of living beings, emphasized "form" as a biologic component of prime importance, and demonstrated the great value of morphologic studies. He considered the present status of the cellular theory and our knowledge of vital activity, biogenesis, sex and the mechanism of heredity, adducing evidence for his belief that forms and structures cannot be explained solely by the action of chemical and physical forces. He stressed that one must not lose sight of the spiritual value of studies of nature, must not become engrossed in an incomplete and often illusory determinism, and must not deny that even science leaves many phases of truth still in the dark.

Deaths

The death of Professor Sante De Sanctis, director of the Clinica neuro-psichiatrica di Roma, has been announced. His publications, such as the treatises on infantile neuropsychiatry, experimental psychology and forensic psychiatry, are used as reference works in scientific circles. Important also are his

works on dreams, the mimicry associated with thought, and the aspects of religious conversion. Italy is indebted to him for the creation of institutions for abnormal and defective persons, aid for persons who suffered mental impairment in the war, and for collaboration in the revision of the penal code. He was absolutely opposed to the sterilization of mental patients, by reason of the damage that such intervention causes to the organism.

Prof. Pietro Bastianelli, director and chief surgeon of Ospedale di S. Giovanni Valdarno, died recently at Florence. During the thirty-five years that he was hospital director he performed more than 16,000 interventions. He had specialized in gastric surgery and was a champion of gastric resection, having performed more than 500 gastric resections. Thirty years ago he was the first surgeon to apply plication (with success) in a case of congenital megacolon.

BUDAPEST

(From Our Regular Correspondent)

June 10, 1935

Cancer in Hungary

At a recent meeting of the Hungarian Statistical Society, Dr. Tivadar Széll, ministerial secretary, gave an address on cancer mortality. He said that it seems to be on the increase in the whole world and that this tendency will continue. This increase, however, is not real. Cancer was not less frequent formerly than at present, but it is diagnosed now more frequently than in former times. Today more people live to reach old age, when they are more liable to get cancer. In Budapest the cases of cancer amount to 150 per hundred thousand of population annually. This figure is five times as high as that in the nineties of the last century.

As to the causative agent of cancer there are only plausible theories. Cancer should not be considered an infectious disease in spite of the fact that statistics in Budapest have shown that there are so-called cancer streets and cancer apartment houses, where the number of cancer cases is strikingly large. Interesting observations can be drawn from comparing the cancer and the tuberculosis mortality. Throughout the world, he said, the cancer mortality rises in direct proportion with the fall of the tuberculosis mortality. This is closely connected with the general progress of the people. The higher their culture, the more frequently is cancer diagnosed and the less frequently is tuberculosis found. If things continue to go on as at present, in a few years the number of cancer deaths may be expected to overtake and even surpass the tuberculosis mortality.

The first national cancer statistics in Hungary were made in 1896, but the first in the city of Budapest were made in 1874. Cancer was always higher in Budapest than in the remainder of the country, because in Budapest there are more clinics, hospitals and physicians to study and care for the people. It is interesting that the difference in rate is proportionately less in cancer of the female genitals, as those are the easiest recognizable cancers.

The city of Budapest is divided by the river Danube into two parts, the ancient Buda and the modern Pest, and the occurrence of cancer is considerably more uncommon in Buda than in Pest. Buda is chiefly inhabited by rich people living in villas, surrounded with gardens, while Pest is populated by the middle and poorer classes, living mostly in apartment houses. There are four times as many victims of uterine cancer among women living in poverty than among those living in plenty. In the wards of the hospitals the cancer patients comprise 6 per cent of the patients, while among the private pay patients they account for only 1 per cent. It is a striking feature of the statistics that cancer often occurs in company with tuberculosis. According to the Hungarian statistics cancer is more common in women, but under 20 it is entirely absent. Women are more

prone to cancer at an early age than men, the proportion becomes equal only after 60. In regard to religion, the Jews seem to acquire the disease with some predilection, while the least susceptible are the Greeks.

The distribution of cancer cases by professions is interesting. Particularly prone are workmen in the tar, anilin, briquette and paraffin industries. Of artisans, furriers are most inclined to get cancer.

In conclusion, Dr. Széll said that the future holds some promise that surgical institutes and x-ray and radium laboratories will save more and more cancer patients. The increase of cancer mortality, noticeable at present, is not an unfavorable phenomenon, it is only the consequence of the spread of culture and knowledge whereby the disease is recognized earlier.

Hospital Conditions in Poland

At present 700 hospitals are open to the public in Poland. Of these, the state maintains only forty-three, while out of the remaining 657, 313 are supported by the municipalities, villages and other communities, and 234 by societies, unions, and the social insurance. The total number of hospital beds amounts to 56,830, of which 11 per cent are in the state hospitals, 48 per cent in the municipal hospitals, 35 per cent in the social insurance hospitals and 6 per cent in private hospitals.

The ministry of social welfare is alert in providing the sick with ample hospital accommodation. It calculates that the proportion of hospital beds to each thousand urban inhabitants should be five, while the rate for the rural population should be at least two.

The inhabitants of Poland, according to the 1931 census, number 31,927,773, of whom 23,247,794 are rural inhabitants. According to the minister, the bed requirement of the urban population is 43,400, while that of the rural population is 46,496. Since at present the number of beds amounts only to 56,360, there is a shortage of something over 33,000. At present only the city of Warsaw and the Slaski province are adequately supplied with hospital accommodations. The cities of Cracow and Posnan have 90 per cent of their quota. The bed supply in the rest of the cities and the provinces is between 10 and 50 per cent. Conditions are the worst in Stanislawow, Tarnopol and the eastern counties.

Membership in the Hungarian Scientific Academy

It is most difficult to become a member of the Hungarian Scientific Academy, the requirements being, besides noteworthy scientific work and independent research, a high standard of literary work, personal distinction and nobility of character. Candidates for membership must be recommended by at least six members, and in their recommendation they have to point out the merits of the candidate. There are three grades of memberships: honorary, regular, and corresponding.

At the recent meeting of the Hungarian Scientific Academy, Professor Baron Alexander Korányi was elected an honorary member. For many years he has been the pride of Hungarian medical science. His discoveries ensure his name a well deserved place in the history of medicine.

Dr. Albert Szentgyörgyi was elected a corresponding member. His work in biochemistry has been recognized internationally. In recent years his activities have been in the field of vitamin research. He was the first to separate vitamin C from the adrenal. He discovered that vitamin C is present in the green paprika, and by his instructions it was possible to produce several kilograms of pure vitamin C in crystalline form. He placed at the disposal of foreign research workers a quantity of the pure preparation, whereby magnificent research has been started abroad. Now not only the structure and formula of vitamin C has been established but a foreign factory is producing this compound synthetically.

Marriages

GEORGE TURNER CROUT, Gwinn, Mich, to Miss Frieda Wilhelmina Kusch of Lauenburg, Germany, June 15

COLE D GENG, Green Lake, Wis, to Miss Marjorie de Laughter Scruggs of Asheville, N C, June 15

BENJAMIN SUNDERLAND RICH to Miss Helen Jackson Preston, both of Baltimore, June 15

HOMER B FIELD, Lake City, Iowa, to Miss Viola A Bohmfalk at San Antonio, Texas, June 28

GEORGE H PUTNAM, Slocumb, Ala, to Miss Bertha Mae Thompson in Dothan, June 1

THURMAN SHIPLEY, Cookeville, Tenn, to Miss Helen Cates of Lenoir City, May 29

THOMAS B WOODS, Headland, Ala, to Miss Mirum Christmas of Dothan, May 11

ALEX J ARIEFF to Miss Edith Mendelsohn both of Chicago, June 23

LESTER L LONG to Miss Esther May Payne both of Seattle, June 29

HENRY A JEGI, Galesville, Wis, to Miss Ruby Purple, June 4

Deaths

Thomas McCrae ♂ Magee professor of practice of medicine and clinical medicine, Jefferson Medical College, Philadelphia, died, June 30, aged 64. Dr McCrae was born in Guelph, Ont, Canada, Dec 16, 1870. He received the bachelor of arts degree from the University of Toronto in 1891, where he was a fellow in biology from 1892 to 1894, and where he received the degree of bachelor in medicine in 1895, and of doctor of medicine in 1903. He studied at the University of Göttingen in Germany in 1899. On returning to America he became instructor in medicine at the Johns Hopkins University School of Medicine, Baltimore and in 1901 was appointed associate in medicine and in 1906 associate professor of medicine. In 1912 he went to Philadelphia as professor of medicine at Jefferson Medical College and since that date has been physician to the Jefferson and Pennsylvania hospitals. In 1924 he was Lumsden lecturer at the Royal College of Physicians in London, of which he was a fellow. He was chairman of the Section on Practice of Medicine of the American Medical Association, 1914-1915. From 1916 to 1925 he was secretary of the Association of American Physicians and in 1930 its president. He was a member of the American Philosophical Society. In 1927 the University of Toronto awarded him the honorary degree of doctor of science. Dr McCrae was for years associated with the late Sir William Osler, with whom he collaborated in writing a seven volume "System of Medicine," which he later abridged to five volumes under the name "Modern Medicine" and which he continued to edit after Osler's death. He was also the editor of the eleventh and twelfth editions of Osler's widely known textbook "The Principles and Practice of Medicine." Dr McCrae was devoted not only to the practice of medicine but especially to the teaching of medicine and in both spheres of work he won world-wide renown.

Duncan Campbell Smyth ♂ Boston, Harvard University Medical School, Boston, 1909, member of the American Academy of Ophthalmology and Oto-Laryngology, the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American Otological Society, the New England Otological and Laryngological Society and in 1933 vice president of the American Bronchoscopic Society, instructor in laryngology at his alma mater on the staffs of the Symmes Arlington Hospital Arlington, Mass, Massachusetts General Hospital and the Massachusetts Eye and Ear Infirmary, aged 50, died, June 11, of cerebral hemorrhage.

Herman M Johnson ♂ Dawson, Minn, University of Minnesota Medical School, Minneapolis, 1901, member of the House of Delegates of the American Medical Association 1926-1927, 1929-1934 past president of the Minnesota State Medical Association fellow of the American College of Surgeons mayor of Dawson was instrumental in the passing of the basic science law in Minnesota, medical superintendent of the Dawson Surgical Hospital aged 61 died June 19

Pedro Gutierrez Igaravidez ♂ San Juan P R, Universidad de Cadiz Facultad de Medicina Spain 1895, past president of the Puerto Rico Insular Board of Health past

president of the Medical Association of Puerto Rico, member of the Radiological Society of North America and fellow of the American College of Physicians, formerly director of the Institute of Tropical Medicine of Puerto Rico, aged 63 died suddenly, May 24, of angina pectoris

Salmen Korke Siebler, Cincinnati, University of Cincinnati College of Medicine, 1918, member of the Ohio State Medical Association, instructor of pediatrics at his alma mater at one time director of the Clinic of the United Jewish Social Agencies and physician for the Hebrew Union College, aged 40, on the staffs of the Cincinnati General Hospital, Child Guidance Home and the Jewish Hospital, where he died, June 9, of malignant hypertension

John R Wathen, Louisville, Ky, University of Louisville Medical Department, 1898, formerly clinical professor of surgery at his alma mater, member of the Southern Surgical Association, one of the founders and fellow of the American College of Surgeons, at various times on the staffs of the Kentucky Baptist Hospital Louisville City Hospital and St Anthony's Hospital aged 62, died, suddenly, May 25, of heart disease

Thomas Henry Kelley ♂ Chicago Rush Medical College, Chicago, 1903, fellow of the American College of Surgeons, on the staffs of the Illinois Central Hospital Jackson Park Hospital and the South Shore Hospital, aged 53, died suddenly, June 11, in the Sacred Heart Sanitarium, Milwaukee, of coronary sclerosis, angina pectoris and coronary occlusion.

Royal Knight Joslin ♂ P A S Lieut Commander, U S Navy, retired, Newport, R I, Tufts College Medical School, Boston 1917, served during the World War, entered the navy in 1921 and retired in 1932, on the staff of the Newport Hospital aged 51, died June 16, in the U S Naval Hospital, of chronic myocarditis

Jerome L Harrell, Norris City, Ill American Medical College St Louis, 1884, member of the Illinois State Medical Society, past president of the White County Medical Society formerly member of the state legislature, bank president, aged 76 died suddenly May 23 of chronic myocarditis

Edward Henry Frigge, Vincennes, Ind Jefferson Medical College of Philadelphia, 1911, member of the Indiana State Medical Association past president and secretary of the Knox County Medical Society county physician on the staff of the Good Samaritan Hospital aged 59, died, May 18

David Munson Trecartin, Bridgeport, Conn, Dartmouth Medical School Hanover, N H 1894 member of the Connecticut State Medical Society fellow of the American College of Surgeons, on the staff of the Bridgeport Hospital aged 67 died May 27, of myocarditis and chronic nephritis

Benjamin W Stearns ♂ Unadilla, N Y, College of Physicians and Surgeons, Baltimore 1892, University of Buffalo School of Medicine, 1893 at one time health officer of Binghamton, aged 68 was killed May 23, when the automobile in which he was driving was struck by a train

James Heiskell Carpenter, Salisbury, Md, University of Virginia Department of Medicine, Charlottesville, 1897 member of the Medical and Chirurgical Faculty of Maryland, on the staff of the Peninsula General Hospital, aged 61, died, May 20, in a hospital at Baltimore

Floy McEwen ♂ Newark N J College of Physicians and Surgeons, Medical Department of Columbia College, New York 1891 on the staffs of the Babies Hospital Coit Memorial and St Michael's Hospital aged 70 died June 11, of pyelonephritis and prostatic hypertrophy

Max Weinstein ♂ Rockaway Beach, N Y, University and Bellevue Hospital Medical College, New York, 1911 for many years on the staff of the Rockaway Beach Hospital and Dispensary aged 51 was found dead in the garage at the rear of his home May 24

Marion Ulrich, Millersburg Pa, College of Physicians and Surgeons Baltimore 1880, member of the Medical Society of the State of Pennsylvania, aged 83, died April 22 in a hospital at Harrisburg, of pneumonia following an injury received in a fall

John A B Sinclair ♂ Miami Fla. University of Virginia Department of Medicine Charlottesville 1901 formerly a medical officer in the navy served during the World War aged 56 died May 19 in a hospital at Miami Beach, of chronic myocarditis

William C Spencer, Verona Miss Memphis (Tenn.) Hospital Medical College 1892, member of the Mississippi State Medical Association and the Associated Anesthetists of the United States and Canada aged 81 died May 20 of hypostatic pneumonia

James T Reddick, Paducah, Ky, University of Tennessee Medical Department, Nashville, 1880, member and past president of the Kentucky State Medical Association, for many years member and president of the board of education, aged 76 died, May 12

George William Clarke, San Diego, Calif, Harvard University Medical School, Boston, 1904, member of the Illinois State Medical Society, served during the World War, aged 62, died May 14, of cerebral thrombosis and hypertension.

Edwin Leroy Kimball, Spokane, Wash, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1875, formerly county coroner, aged 83 for many years on the staff of St Luke's Hospital, where he died, May 17

John Hardee McGuffey, Greensburg, La, Tulane University of Louisiana Medical Department, New Orleans 1909, member of the Louisiana State Medical Society, aged 64, died, May 1, in Baton Rouge, of valvular heart disease

William Thomas Cooke, Toledo, Ohio, St Louis University School of Medicine, 1933, aged 27, resident physician to St Vincent's Hospital, where he died, May 19, of pulmonary embolism, complicating acute appendicitis

Amos D Olds, East Point Ga, Atlanta Medical College, 1887, aged 73, died, May 25, in the Crawford W Long Hospital Atlanta, of injuries received when the automobile which he was driving was struck by a train

Alexander L Spooner, Luverne, Iowa, Keokuk (Ia) Medical College 1892, member of the Iowa State Medical Society, president of the Kussuth County Medical Society, aged 74, died June 1, of pneumonia

Clarence Christian Craft, Hickory N C George Washington University School of Medicine Washington D C 1909, member of the North Carolina Medical Association, aged 54, died, May 24, of cerebral hemorrhage

Garland Eggleston Faulkner, South Boston, Va. University of Virginia Department of Medicine Charlottesville, 1910, member of the Medical Society of Virginia, served during the World War, aged 47, died, May 30

Thomas Henry Wright, Newark N J, Flint Medical College of New Orleans University, 1901, aged 57 died, May 26, in the Essex County Hospital Cedar Grove, of cerebral arteriosclerosis and cardiorenal disease

Percy Louis Taylor, Springfield Ill, Barnes Medical College, St Louis 1898, member of the Illinois State Medical Society, aged 61 died May 24, in St John's Hospital, of hypertensive arteriosclerosis

Irving Linden Ward, Montague, Calif, University of Oregon Medical School, Portland, 1897, aged 61, died, April 14, in the Siskiyou County Hospital, Yreka of cerebral hemorrhage and arteriosclerosis

Horace L Watson, Montpelier Vt, University of Vermont College of Medicine, Burlington 1887 member of the Vermont State Medical Society aged 72 died May 19, of carcinoma of the lungs and throat

John Armour Kirkpatrick, Chicago Hahnemann Medical College and Hospital, Chicago, 1884 aged 81, died, May 29, in St. Luke's Hospital, of hypertrophy of the prostate and chronic myocarditis

Edwin Parker Sanborn ♂ Bristol, Conn Boston University School of Medicine 1905 served during the World War, on the staff of the Bristol Hospital, aged 58 died, May 21 of coronary occlusion

Alexander D Russell, Dover Tenn University of Tennessee Medical Department Nashville 1901 county health officer aged 60, died May 24 in the Clarksville (Tenn) Hospital, of pneumonia

Louis Joseph Cordonnier ♂ Greenville Ill Washington University School of Medicine, St Louis 1907 past president of the Bond County Medical Society aged 54 died May 26 of coronary occlusion.

Wilbur Paddock Klapp, Philadelphia University of Pennsylvania Department of Medicine Philadelphia 1888 member of the Medical Society of the State of Pennsylvania aged 72 died May 10

W Arthur Minton, Piqua Ohio Louisville (Ky) Medical College 1894 member of the Ohio State Medical Association aged 64 died, May 11 in the Memorial Hospital of hypostatic pneumonia

Alfred Emil Staps ♂ Chicago National Medical University, Chicago 1898 Chicago Medical School 1921 field health officer of the city board of health aged 64 died May 30 of arthritis

Frederick Cleaver Hickok, Brooklyn, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, aged 71, died suddenly, May 30, of arteriosclerosis

Robert Dickey Ross, Wadesboro, N C University of the City of New York Medical Department, 1890, member of the Medical Society of the State of North Carolina, aged 70, died, May 27

Samuel Lawrence McManigal ♂ Garrettsville Ohio, Medical College of Ohio, Cincinnati, 1902, aged 59, died, June 7, in St Luke's Hospital, Cleveland, of streptococcal infection

Jacob Ervin Bartel, Los Angeles, Starling Medical College, Columbus, 1891, aged 69, died, April 24, in the Los Angeles County General Hospital, of pulmonary tuberculosis

Buford O'Neal Joiner, Tennesse, Ga, Atlanta School of Medicine, 1912, member of the Medical Association of Georgia, aged 48, died, June 16, of cardiac decompensation

William Washington McBride, Gleason, Tenn, University of Tennessee Medical Department, Nashville, 1890, aged 76, died suddenly, May 14, of chronic myocarditis

Calvin Thomas Riley, Woodsfield, Ohio, Pulte Medical College, Cincinnati, 1881, aged 82, died, May 9, in Spencer, W Va, of cardiovascular disease and pneumonia

John B Gordon, Bunker, Mo (licensed in Missouri in 1883) member of the Missouri State Medical Association, aged 83, died, April 2, of cerebral hemorrhage.

Elbert Church Fortner, Oakland, Calif, College of Physicians and Surgeons of Chicago, 1886, aged 73, died, April 23, of bronchopneumonia and coronary occlusion

James Gilbert Munroe, Winnipeg, Manrit, Canada Halifax Medical College, Halifax, N S, 1899, aged 62, died, June 4, of coronary thrombosis and pyelonephritis

John Paul Kenny, Youngstown, Ohio, Western Pennsylvania Medical College, Pittsburgh, 1896, aged 62, died, May 17, in Cleveland, of coronary occlusion.

Thomas Henry Connolly, Barrington, R I, Bellevue Hospital Medical College, New York, 1895 formerly state senator aged 62, died, May 20

Orray Lesler Massinger, Bridgeport, Conn., Southern Homeopathic Medical College, Baltimore, 1897 aged 61, died, May 27 of arteriosclerosis

Frank Peter Cox, Wolf Lake Mich, Rush Medical College Chicago, 1897, aged 62, died, May 29, as the result of a maxillary sinus infection

J Henry O'Neill, Morgan City, La., Louisville (Ky) Medical College, 1896, aged 66, was drowned, May 9, when he jumped into the river

John Septimus Cadwalader, Meadville Pa Western Pennsylvania Medical College, Pittsburgh, 1901 aged 69, died, May 7, of heart disease

Albert F Meyer, Cleveland, Western Reserve University Medical Department Cleveland 1883 aged 73 died, May 16 of cerebral hemorrhage

Robert Greenleaf Whitlock, San Pedro Calif, Cooper Medical College, San Francisco 1907 aged 55 died April 22 of coronary thrombosis

Alfred B Jones, Lebanon Ind Medical College of Indiana, Indianapolis, 1887 aged 77 died April 14, of pernicious anemia and chronic nephritis

Frank Kaufhold ♂ Newark, N J Cornell University Medical College New York 1906, aged 51, died June 17, of coronary thrombosis

Anna Lipnowski Krygier, Ormond Fla, Universite de Geneve faculte de medecine, Geneva, Switzerland, 1896 aged 68 died April 16

William Holland Henderson, Portsmouth, Ohio University of Cincinnati College of Medicine, 1928 aged 31, was found dead May 14

Francis Clifford Smathers, Punxsutawney Pa, Jefferson Medical College of Philadelphia, 1905 aged 57 died May 7, of leukemia

Robert D Matchan, Minneapolis, Hahnemann Medical College of Philadelphia 1879 aged 80, died, May 12, of myocarditis

Wade W Lawrence, Cambridge Ohio Medical College of Ohio, Cincinnati 1903 aged 55, died April 23, of erysipelas

James Alexander Duguid, Vanceboro N C North Carolina Medical College, Charlotte, 1905 aged 56, died, April 11

Alexander Ramsey, Winterset, Iowa College of Physicians and Surgeons Keokuk 1886 aged 78, died April 26

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nositum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

O K Magnesum Mineral Water—O K Mineral Water Co. Enfield, Ill. Composition Essentially Glauber's and epsom salts with smaller amounts of common salt calcium sulphate and carbonate and traces of silica and sodium nitrate, in polluted water. Adulterated because of filthy or decomposed animal or vegetative substance present misbranded because quantity not plainly stated on package, misbranded, further because fraudulently represented as a cure for kidney and liver troubles rheumatism malaria all forms of stomach trouble etc.—[N J 21792 September 1934]

McMahon's Solution of Calcium Croosote—McMahon's Mfg Co., De Ridder, La. Composition Essentially a calcium and croosote compound (3 per cent) water (97 per cent) and croosote (5 minims per one half fluid ounce). For coughs sore throat bronchitis etc. Fraudulent therapeutic claims.—[N J 21794 September 1934]

Koch's Mentholone Ointment—Dr. Koch Vegetable Tea Co., Winona, Minn. Composition Essentially, small amounts of menthol camphor and eucalyptol in petrolatum and paraffin. Adulterated as to strength and purity because not antiseptic, as claimed misbranded because of fraudulent therapeutic claim for the stuff as an antiseptic and a cure for catarrh hay fever croup pneumonia, etc.—[N J 21804 September 1934]

Koch's Sopt O Cido—Dr. Koch Vegetable Tea Co., Winona, Minn. Composition Essentially small amounts of zinc chloride, saccharine, formaldehyde and acid volatile oils including peppermint thymol and menthol with alcohol glycerin and water, dyed red. Adulterated because not of strength and purity professed and not antiseptic and germ-destroying as claimed misbranded because of fraudulent therapeutic claim as to efficacy in tonsillitis sore throat etc.—[N J 21804 September 1934]

Koch's Cold and Grip Tablets—Dr. Koch Vegetable Tea Co., Winona, Minn. Composition Essentially per tablet acetanilid 213 grains caffeine 0.24 grain phenolphthalein and extracts of plant material including cinchona with starch and calcium carbonate. Misbranded because below professed standard and quality as 2½ grains of acetanilid was claimed for each tablet whereas not more than 2½ grains of it was present also misbranded because fraudulently represented as a cure for la grippe.—[N J 21804 September 1934]

Koch's Rolatam Hoaling Salva—Dr. Koch Vegetable Tea Co., Winona, Minn. Composition Essentially zinc oxide and a small amount of carbolic acid, in petrolatum. For salt rheum eczema sores boils, leprosy caruncles etc. Fraudulent therapeutic claims.—[N J 21804 September 1934]

Koch's Mustard Ointment—Dr. Koch Vegetable Tea Co., Winona, Minn. Composition Essentially volatile oils including those of mustard wintergreen and red pepper in petrolatum. For croup pleurisy bronchitis and sore joints. Fraudulent therapeutic claims.—[N J 21804 September 1934]

Koch's Vegetabilia Family Tea—Dr. Koch Vegetable Tea Co., Winona, Minn. Composition Essentially plant material including scenna sassafras coriander fennel licorice, uva ursi and sage. For blood, stomach liver and kidney disorders etc. Fraudulent therapeutic claims.—[N J 21804 September 1934]

Hart's Swedish Asthma and Hay Fever Medicine—Hart's Swedish Asthma Medicine Co., Buffalo, N. Y. Composition Essentially potassium iodide with glycerin flavoring and coloring. Misbranded because of claim, Pure grain alcohol 4 per cent when no alcohol was present misbranded also because of fraudulent therapeutic claims.—[N J 21783 September, 1934]

Primley's Extract of Sarsaparilla—McKesson-Churchill Drug Co., Peoria, Ill. Composition Essentially potassium iodide plant drug extracts including a laxative drug and alcohol sugar and water. For scrofula, chronic sore eyes jaundice liver complaint, female disorder, syphilis, rheumatism etc. Fraudulent therapeutic claims.—[N J 21784 September 1934]

Hyssop Compound—Hyssop Medicine Co., Chicago. Composition Essentially plant drug extracts including a laxative, with potassium iodide, alcohol (13 per cent by volume) sugar and water. For nervous troubles hysteria sexual weakness scrofula etc. Misbranded because alcohol declaration was incorrect and also because of fraudulent therapeutic claims.—[N J 21785 September 1934]

National Antacid Powder—National Drug Co., Philadelphia. Composition Label declared bismuth subcarbonate 1 part baking soda, 2 parts calcium carbonate precipitated 2 parts magnesium oxide, 2 parts. Analysis of two specimens showed one contained 13 per cent less bismuth subcarbonate and another 18 per cent less than declared on label. Adulterated and misbranded because below professed standard and purity since label represented bismuth subcarbonate was one-seventh of the article, whereas it was less.—[N J 21808 September 1934]

Ormovin Wine of Cod Liver Extract, Etc.—Ormont Drug & Chemical Co., Inc., Long Island City, N. Y. Composition Plant drugs including malt, wild cherry and nux vomica with sodium hypophosphite (0.6 per cent) manganese hypophosphite (0.09 per cent), iron hypophosphite (0.06 per cent) alcohol, sugar and water. For coughs lung and bronchial affections, debility etc. Fraudulent therapeutic claims.—[N J 21789 September 1934]

Aspiral—Charles M. Hick & Co., Chicago. Composition Tablets each containing essentially 45 grains of aspirin, with phenolphthalein. For toothache, earache rheumatism, etc. Fraudulent therapeutic claims.—[N J 21791 September, 1934]

Phytamin Tablets—Phytamin Corporation, Battle Creek, Mich., and New York. Composition Brown sugar-coated tablets containing chiefly calcium phosphate iron phosphate plant drug extracts small amounts of sodium potassium, iodine and carbonate compounds volatile oils including cinnamon and cloves, a fixed oil starch and yeast. For anemia indigestion, nervous troubles, neurasthenia, etc. Misbranded because claims as to vitamin content were false and misleading and because of fraudulent therapeutic claims.—[N J 22184 September 1934]

Red Heart Blood Tans—Reese Chemical Co., Cleveland. Composition Essentially iron and calcium carbonates, zinc phosphide and plant drug extracts including nux vomica and a laxative drug. For blood and nerve disorders. Fraudulent therapeutic claims.—[N J 21786 September 1934]

Tru Knif Ads—Tru Lax Mfg Co., Newark, N. J. Composition Essentially peppermint oil, a pungent substance such as red pepper and a trace of an alkaloid, in a mixture of sugar starch and gum. For bronchitis asthma coughs catarrh, etc. Fraudulent therapeutic claims.—[N J 21782 September 1934]

Thor's Vitamin Compound—Thor Pharmaceutical Co., Atlanta, Ga. Composition Essentially yeast phenolphthalein nux vomica and compounds of iron copper manganese calcium magnesium, sodium and potassium. For anemia acid stomach constipation, nervousness etc. Fraudulent therapeutic claims.—[N J 21805 September 1934]

Faminox—Drug Store Products Inc., Cleveland. Composition In each tablet acetphenetidin 24 grains aspirin 23 grains and small amounts of caffeine and phenolphthalein. Misbranded because label did not show acetphenetidin to be a derivative of dangerous acetanilid and also because of fraudulent claims as a remedy for certain female disorders etc.—[N J 21809 September 1934]

Schwinds Rose Hoaling Salva—Schwind Laboratories, Sioux City, Iowa. Composition Essentially a lead compound incorporated in a fat. For sores infection piles frost bite etc. Fraudulent therapeutic claims.—[N J 21811 September 1934]

ANOTHER POSTHUMOUS TESTIMONIAL!

ALLENTOWN MORNING CALL, MONDAY, MAY 27, 1935

LOCAL LADY TOOK NATEX YEAR AGO
—HAD GOOD HEALTH EVER SINCE

Was only medicine this high
ly respected German resi-
dent ever took that brought
permanent lasting relief

It is the most remarkable fact that
the late Mrs. Mary Deemer, who
died May 25, 1935, at the age of
68, after a long illness, had
been suffering from a severe
case of rheumatism for many
years. She had tried many
different remedies, but none
gave her any relief. She was
in great pain and was unable
to do any work. She was
very weak and was losing
weight rapidly. She was
very anxious to get well and
was very grateful to the
doctors who had treated her.



Mrs. Mary Deemer

Mrs. Mary Deemer of Allentown, Pa., stated that she found 'Nutex' the only 'patent medicine' that really gave relief. Mrs. Deemer died May 25, 1935. Her testimonial was published in the Allentown Morning Call May 27, 1935. On the same page and but three columns removed from the testimonial was Mrs. Deemer's death notice.

Deaths

DEATHS
Mrs. Mary Deemer, 68, of Allentown, Pa., died May 25, 1935, at the age of 68, after a long illness. She was buried in the Allentown cemetery.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

DIAGNOSIS OF APPENDICITIS

To the Editor—Will you be good enough to send me a list (with description) of all the important signs (not symptoms) that may be elicited in all types of appendicitis? I will appreciate the favor.

M D West Virginia

ANSWER.—The so-called signs of appendicitis are more useful in the atypical, subacute or chronic forms in which the classic symptoms are absent and the study of the reflexes is more essential. The abnormal position of the appendix accounts for many errors of diagnosis. The most important signs are based on local tenderness and muscular rigidity.

Most of the signs are classed as eponyms under the names of the authors.

I Local Signs of Inflammation—

Inspection 1 A tender swelling or tumor in the right lower quadrant due to either gaseous distention, thickening of the bowel or abscess.

2 Przewalsky's sign A swelling above Poupart's ligament composed of glands around the circumflex artery.

3 Restriction of the abdominal respiratory movements, especially on the right side, due to reflex tenderness of the muscles.

4 Flexion of the right thigh. Marcus explained that it was due to an inflamed appendix overlying the psoas muscle. Rutherford Morrison believed it was due to a retrocecal appendix abscess with inflammation extending into the psoas sheath.

Palpation

A Cutaneous hyperesthesia 1 Hyperesthesia and hyperalgesia. These may be elicited by lightly stroking the skin over the region of the appendix with the forefinger or a pin and by pinching it. It is of value if positive and is especially striking if the appendix is close to the abdominal wall and distended. It is usually negative when the appendix is deeply placed in the abdomen or lying in the pelvis. Its absence may denote gangrene in an initial appendicitis.

2 Livingston's sensitive triangle. There may be localized hyperesthesia in a triangle bounded by a line from the umbilicus to the highest point on the crest of the ilium below by a line from the latter point to the spine of the right pubis and medially by a line from this point to the umbilicus. Sensitive skin reactions obtained by pinching between the finger and the thumb, whose greatest intensity is at the center of the triangle, are for and if outside the triangle are against appendicitis.

B Superficial tenderness 1 Blumberg's sign This consists of deep momentary pressure over McBurney's point with sudden release of pressure producing sharp pain. This is a sign of peritoneal inflammation.

C. Deep tenderness This varies with the location of the appendix. It is usually nearer the base than the tip. 1 McBurney's sign The greatest pain or maximum tenderness as determined by the pressure of one finger is between $1\frac{1}{2}$ and 2 inches from the anterior superior spine of the ilium on a straight line drawn to the umbilicus.

2 Clado's point The maximum tenderness is where the interspinous line crosses the right rectus margin.

3 Lanz's point The junction of the right and the middle thirds of a line drawn between the two anterior superior spines.

4 Lotheissen's point The maximum tenderness is 2 inches or two fingerbreadths downward from McBurney's point and at right angles to the spino-umbilical line.

5 Morris's point Tenderness at a point on the spino-umbilical line just at the outer edge of the rectus muscle.

6 Aaron's sign Referred pain or tenderness in the epigastrium, umbilical region, left hypochondrium and precordial or left inguinal region induced by continuous pressure over McBurney's point and pyloric spasm, which may be observed under the fluoroscope.

D Tenderness elicited by rectal palpation 1 Wachenheim and Reder's sign There is pain or tenderness in the right iliac fossa over the ileocecal area on rectal palpation with the finger tip directed upward and to the right, in the absence of an abscess.

E. Tenderness over the appendix produced by pressure elsewhere.

1 Rovsing's sign There is pain over McBurney's point on palpating or massaging the descending colon. It is explained

as producing increased air pressure within the cecum or reflex peristaltic action originating at a distance and proceeding directly to the appendix.

2 Chase's sign Similar to the Rovsing sign but elicited by pressure on the transverse colon.

3 Bastedo's sign Pain over McBurney's point, produced by inflating the colon with air by rectum, and subsidence of pain when the air is released. The degree of pressure required can be measured by a manometer.

4 Sorensen's sign With the patient in the supine position with the thighs flexed, one presses on the hepatic flexure of the colon and has the patient cough. Pain over McBurney's point in appendicitis is due to the pressure of gas downward in the ascending colon.

Percussion 1 Gregory's sign Percussion of the left half of the abdomen corresponding to McBurney's point produces pain over the appendix, usually at McBurney's point. Percussion over the descending colon is less likely to produce it. Similar to Rovsing's sign.

2 Murphy's "piano percussion" is used to demonstrate a small quantity of fluid or exudate in the abdominal cavity resting on the hollow viscera. The right lower quadrant of the abdominal wall is struck by the four fingers one after the other beginning with the fourth. There is absence of the tympanitic note obtained by ordinary percussion.

3 Klemm's air cushion Local tympany in the right lower quadrant, which corresponds to the gaseous distention of the cecum and ascending colon often observed in roentgenograms in chronic appendicitis.

II Tenderness elicited by change of posture, or muscle tenderness—

1 Ott's sign When the patient is on his left side there is a feeling of distress and of a painful dragging sensation as if a heavy body in the abdomen had fallen to the left, sometimes referred to as the "mesenteric pull."

2 Tressder's sign The prone position allows the cecum to fall away from the inflamed appendix and gives relief from pain.

3 Meltzer's sign Marked tenderness when pressure is made over McBurney's point with the patient supine, arms elevated, knees partly flexed and the right leg is extended, kept rigid and gradually elevated, thus impinging the appendix between the abdominal wall and the belly of the psoas muscle. Observed in 10 per cent of chronic cases.

4 Sattler's sign In the sitting position the patient raises the extended right leg (with aid if necessary) while the assistant supports the back. The cecum is then pressed between the abdominal wall and the psoas muscle. In appendicitis a sharp pain is felt at the junction of the right and the middle thirds of a line uniting the iliac spines.

5 Drosin's four postures (a) Supine A sudden push to the right of a line one half way between the umbilicus and the ensiform process at the end of expiration if positive means adhesions.

(b) Sum's position With the patient on the right side, the cecum and the appendix are brought upward under pressure by palpation.

(c) Supine The right leg supported at the knee and the left extended bring the appendix and the cecum upward, increasing tenderness and rigidity.

(d) When the abdomen is relaxed between expiration and inspiration, bimanual pressure over both sides of the abdomen will give differentiation.

6 The obturator test The right thigh is rotated internally at the hip joint and the inflamed muscle is put on the stretch.

7 Cope's sign The psoas muscle is stretched by extending the thigh. The two latter tests depend on the proximity of the appendix and the presence of peritonitis.

8. The femoral test (Cope) This is elicited by compression of the femoral artery in Scarpa's triangle on the right side, thus producing pain by increase of tension at the level of the pelvic brim. The test may be of value if the appendix is lying at that site or if tender iliac glands exist.

III Pain or tenderness due to hypersensitive nerves and referred pain—

1 Gray's sign If one presses with the point of the finger about $1\frac{1}{2}$ inches below and to the left of the umbilicus, one can frequently elicit tenderness there. Occasionally at the tender spot there seems to be a small aperture in the rectus sheath, which may correspond to a terminal branch of the eleventh dorsal nerve. Pressure is made over the appendix and then it is repeated on the left side when the pain is found to be absent or lessened.

2. Morris's sign Hypersensitiveness of the right group of lumbar ganglions is determined by making deep pressure on the abdominal wall about $1\frac{1}{2}$ inches to the right of the umbili-

cus and a little below that point. It is not accompanied by a similar sensitiveness in the left group of lumbar ganglions.

3 Dubard's sign. Elicited by pressure over the right pneumogastric nerve along its course in the neck.

4 Gray's shoulder sign. In three cases, pain in the left shoulder was associated with chronic appendicitis reflexly through the phrenic nerve. It disappeared after appendectomy.

5 Miescu's sign. Pain from gentle pressure on the right phrenic nerve in the neck is positive in acute or latent appendicitis and disappears after ice is applied over the appendix. It is ascribed to an ascending right sided lymphangitis, irritating the phrenic nerve.

6 E. V. Mastin observed pain referred to the clavicle in cases of acute appendicitis. This might be reproduced at times by pressure over the appendix.

7 Horn's sign. Traction on the spermatic cord may cause severe pain in the right iliac region.

IV Decrease in muscle tone or atrophy—

1 Volkovitch's sign. There is a localized atrophy and relaxation of the abdominal muscles over the appendix in chronic appendicitis, in contrast to the increased rigidity in the acute form. It is never decreased more than 15 degrees below that of the left side with Exner and Tandler's tonometer.

2 Przewalsky's sign. The right iliac muscle is atrophied from inflammation of the branches of the right crural nerve. One may hold up the healthy leg two minutes but only fifteen seconds on the affected side. The leg is held out straight a few inches above the bed and the examiner's hand is removed.

PHOSGENE POISONING

To the Editor—In the case of a person presumed to have died from phosgene poisoning, can it be ascertained that phosgene was the sole cause of death? If such a diagnosis can be established, will you please state what are the characteristic symptoms, signs and pathologic changes?

PH D N Y

ANSWER—If the person exposed to phosgene gas was in perfect physical condition before such exposure and the atmosphere to which he was exposed was known to be saturated with a heavy concentration of phosgene which he breathed for some time and his death occurred within twenty-four to thirty-six hours following, and during the interval he was completely prostrated, presenting the well known symptoms so closely associated with phosgene, his death could be attributed either directly or indirectly to the effects of such exposure.

From 80 to 85 per cent of all deaths due to poisoning by phosgene occur during the first twenty-four hours after exposure.

Symptoms to be expected are immediate sensory irritation of the respiratory passages accompanied by severe smarting and watering of the eyes, catching of the breath, and violent coughing with a feeling of tightness and pain in the chest, respirations from 20 to 35 per minute, rapid and shallow, attempts to take a deep breath giving rise to severe pain and fits of nausea, retching and vomiting, expectoration, which may or may not be profuse, severe headache and listlessness, with a marked sense of general fatigue.

With the development of edema in the lungs, these symptoms become greatly exaggerated and breathing becomes panting in character and shallow. The ears, lips and progressively the entire face become cyanotic. A bloody frothy discharge may appear from the nostrils and mouth.

The pulse is feeble and of a flickering nature, varying from 125 to 140 a minute. Evidences of circulatory failure become quite apparent. The superficial veins of the face and neck become distended. The skin is cold and clammy. The expression is anxious and distressed. At this stage the patient may rapidly pass into the most dangerous state, becoming more restless, weaker, and assuming a comatose state followed by death.

The pathologic changes depend on the time of death following exposure to phosgene. The essential lesions are pulmonary edema, destruction of the pulmonary alveoli, marked changes in the blood due to the loss of liquid constituents thereby becoming greatly concentrated, enlargement of the right side of the heart and thrombosis.

If death takes place within the first twenty-four hours, the trachea is moderately congested, the congestion extending to the smaller bronchi. The trachea and bronchi may be filled with a yellowish creamy fluid which may be escaping from the nostrils and mouth after death as a frothy blood tinged substance. The lungs are voluminous, heavily edematous and congested with blood. Aerated patches of emphysema and depressed patches of collapse are common especially at the edges of the lung. On section, a frothy serous fluid mixed with blood drips

abundantly from the cut lung. The pleural cavities contain a quantity of straw colored fluid. The heart is generally dilated. The veins are generally distended with blood.

If death occurs on the second or third day, the foregoing conditions are somewhat aggravated.

After the third day the condition of the lungs is changed. Serous fluid no longer drips from cut sections and they resemble the lungs of a case of bronchopneumonia and pleurisy indicating bacterial infection.

SYPHILIS IN PREGNANCY

To the Editor—In August 1934 I consulted you in regard to the treatment of a patient two months pregnant whose husband had a three plus Wassermann for seventeen years in order to insure a healthy baby. During the antepartum period the mother received thirteen injections of neosarsphenamine, a total of 42 Gm. Owing to rather poor cooperation no other form of treatment was carried out. The mother showed a faint trace of albumin all through the antepartum period but no other untoward effects. February 7 an apparently robust baby was delivered and the cord Wassermann was negative (as well as the Kahn test). Atlee and Tyson in their article "Congenital Syphilis: Results of Early Treatment" (*Am J Dis Child* 44:718 [Oct.] 1932) state that babies born of latently syphilitic mothers have potential congenital syphilis and advocate that they be treated from birth on for a period of fourteen weeks with weekly injections of a bismuth compound and sulpharsphenamine in order to prevent its development. Is such a procedure indicated in the handling of this case? Please omit name.

M D New Jersey

ANSWER—A negative cord Wassermann reaction does not, of course, rule out the presence of syphilis in the child, nor does a negative Wassermann reaction of the mother's blood indicate that the child is free from syphilis. On the other hand, a positive cord Wassermann reaction alone is not an indication for antisyphilitic treatment. A simple way of detecting syphilis in a living child when the disease is present is to take a roentgenogram of the long bones. If evidences of osteochondritis are present in the roentgenogram, one may consider this practically pathognomonic of syphilis. However, the absence of syphilis osteochondritis does not exclude syphilis.

In the case cited, the husband had a 3 plus Wassermann reaction. However, as far as is known the patient never had a positive Wassermann reaction or clinical evidences of syphilis except perhaps a miscarriage, which of course by no means implies syphilis. The husband was treated intensively and the patient received some antisyphilitic treatment. Assuming that the patient had syphilis, the injections of arsphenamine that were given to her during pregnancy may have been sufficient to insure the birth of a healthy child. Therefore, this baby should not be treated unless evidences of syphilis appear. The Solomons (U S Interdepartmental Social Hygiene Board, Washington 1922), in a study of the living children born of 236 syphilitic mothers found that 72.5 per cent had no evidence of the disease. If the mother has undergone adequate treatment and the child shows no evidence of syphilis there is no reason to treat the child.

DEMENTIA PARALYTICA

To the Editor—A man aged 50 whose only complaint was difficulty in voiding the urine was referred to the hospital for malaria treatment on account of a positive Kahn reaction in the blood and spinal fluid. Because of the development of a severe hemolytic jaundice the malaria was stopped after he had five chills. Serologic examination of the spinal fluid immediately following treatment showed no response except a fall in the cell count from 67 to 17. Immediately following discharge, symptoms developed that he never had before such as pains in the legs, slight ataxia and increased urinary (no incontinence) difficulty and impotence. Three months after the malaria treatment another examination of the spinal fluid showed no change. Cystoscopic examination disclosed a small median bar. Neurologic examination is negative except for increased reflexes. At present he is receiving a bismuth preparation and iodide. Will you please discuss the prognosis as well as outline any other treatment that may be helpful.

M D Michigan

ANSWER—It may be too early to judge definitely, but at present there appears to be sufficient clinical evidence to consider favorably the malarial treatment in dementia paralytica. The same cannot be said for taboparesis, tabes or cerebrospinal syphilis. Many competent clinicians advise against such therapy, except in dementia paralytica.

As for the manifestations that appeared after the five chills, there are possibilities the certainty of which it is difficult to establish. Perhaps these various symptoms might have developed from a cord lesion without any therapy—simply the usual progressive development of the disease. Since they appeared after the chills, the natural inference would be to associate them in some way.

At present, the precise and exact pathology in tabes is not known, much less the modus operandi of the supposed beneficial effect of the induced malarial infection.

If it is accepted that the primary and essential pathologic condition in tabes is in the vascular supply or the spinal nerves and the cord changes are only secondary, it is conceivable that the malarial infection produced an increased leukocytic infiltration or inflammation and fibrosis of these primary lesions, with increased mechanical pressure and resulting functional disturbance.

According to the evidence as presented, the prognosis must depend on a dual diagnosis, supposed cord lesion and malaria.

Probably the bismuth compound and the iodide will do as much good as any other therapy and less harm.

MEDDLESOME OBSTETRICS—ICE BAGS TO STOP MILK FLOW

To the Editor—A number of women who live near a neighboring town have come to me regarding pregnancy. They tell me that a physician in another town is advising his patients to have something done to bring the confinement on about four to six weeks ahead of the expected time, advising them that the baby will not be so large and consequently they will have a much easier time at the confinement and also advising them that this is the method advised at all the leading hospitals and clinics. I have never seen any literature that confirms his statements and as he loses either at birth or a few days after about one third of his babies I should like to know whether such treatment or handling of confinements is being advocated as he says. Also this man has his patients apply ice bags to the breasts when they have lost their babies through this treatment. I should like to know whether this is considered the proper treatment of the breasts in such conditions. Kindly omit name and address.

M D South Dakota

ANSWER—It is difficult to conceive that any ethical physician would conduct his obstetric practice in as reprehensible a manner as is described. No authority on obstetrics and no obstetric clinic would sanction such pernicious and meddlesome interference with the forces of nature. The great loss of fetal lives is due not only to prematurity but also to the methods employed for starting and terminating labor. If the physicians in the meddler's town do not somehow make him cease his harmful practice, it will not be long before the lay public will raise a cry against the unnecessarily frightful fetal mortality. Perhaps even one or more lawsuits for malpractice may make the physician realize what he is doing.

Ice bags have long been placed on the breasts of women who must stop nursing or whose babies are born dead. The ice bags do not stop the secretion of milk much if at all, but they give relief from the pain that results from the intense engorgement of the breasts. In addition to the use of ice bags it is advisable to keep the breasts snugly bound up. The patient should restrict fluids for a few days and she should take a saline laxative for two or three successive days to insure elimination of fluids through the bowels.

GLANDULAR ENLARGEMENTS IN CHILDREN

To the Editor—What is the significance of glandular enlargements in children particularly those in the cervical and inguinal regions? Does it always denote infection or inflammation? If this question is printed kindly omit name and address.

M D Alabama

ANSWER—There are a number of causes for cervical adenitis in children. Swelling of the cervical glands may be due to a local infection in the tissues adjacent to the glands. Among the common local causes are tonsillitis, tonsillar hypertrophy, peritonsillar or retropharyngeal abscess, dental caries or tumor, diphtheria, eczema, erysipelas, impetigo, contagiosa, laryngitis, pediculosis capitis, rhinopharyngitis, sinusitis, stomatitis, Vincent's angina and regional tuberculosis. Systemic diseases such as leukemia, lymphosarcoma, measles, mumps, rubella, scarlet fever, serum sickness, smallpox and syphilis may cause cervical adenitis. Among the rarer causes are actinomycosis, Brucella infection or Malta fever, glandular fever or infectious mononucleosis, Hodgkin's disease, Mikulicz's syndrome and tularemia.

Among the local conditions that may cause inguinal glandular enlargement are infections of the leg, cellulitis, insect or snake bite, some skin diseases, and erysipelas. Systemic causes may be the same as have been mentioned for cervical adenitis.

As can be seen from the foregoing most of the conditions causing cervical or inguinal glandular enlargement are infections or inflammatory processes although such a condition as serum sickness would not fall into this category. As the exact etiology of some of the rarer mentioned conditions is still unknown, it would be difficult to state the exact reason for the glandular enlargement in these conditions.

PROTECTION AGAINST CARBON MONOXIDE POISONING

To the Editor—An organization with which I am associated is desirous of purchasing from the Mine Safety Appliances Company its pyrotannic acid carbon monoxide detector, for the purpose of accident prevention among employees driving company cars as well as employees in the gas production and distribution department. According to the literature put out by the Mine Safety Appliances Company, the determination of carbon monoxide in the blood can easily be made and with fairly accurate results by supervisors who do not have any medical standing or recognition. I would greatly appreciate your comments regarding the proposed plan as the company wishes to provide its employees with every reasonable precaution against carbon monoxide.

G J RUOFF, Safety Engineer Poughkeepsie N Y

ANSWER—In protecting employees from carbon monoxide poisoning, consideration may be given to the determination of carbon monoxide in the air rather than in the blood. If this seems to be the more practicable plan, it is suggested that the carbon monoxide indicator developed by the United States Navy and sold by the company that sells the pyrotannic acid detector might be found satisfactory for the purpose. The pyrotannic acid method requires 0.1 cc of blood for each determination and it should be taken by persons having such ability and experience, as in taking blood for red cell counts. No great skill or special training is required for satisfactory results, if the blood is available. The method is specific for carbon monoxide poisoning and, if diagnosis is desired, this method is satisfactory.

COMPATIBILITY OF ICE CREAM AND SEA FOOD

To the Editor—Time and time again one hears that it is bad for the health to eat ice cream after sea food. Is there any truth in this statement from the medical standpoint of incompatibility? Kindly omit name.

M D Pennsylvania

ANSWER—We can think of no logical reason why ice cream should not be eaten after sea food, any more than we can see why cream should not be eaten with cherries, or meats with starches. It is possible that a deep student of folklore or of ancient medicine might reveal the source of some of these prohibitions. Some of them can actually be traced back to the days when all foods were classified as warming, cool, dry or moist, so that they might be used in combating the various "humors," which for hundreds of years were thought to be the cause of disease. Today the expression "cool as a cucumber" is used simply because cucumbers happened to be in the list of foods that were cooling to the third degree. Theoretically, they could not be eaten with foods that were warming to the third degree.

DROWSY PERIODS

To the Editor—An attorney aged 70 complains that he is overwhelmed by sleep for a brief period almost every day. His mind is alert. He is physically in good condition. Blood tests and urinalysis reveal no pathologic changes. He has a little prostatic uneasiness but it is not distressing. He shows no other sign of senility. Can you suggest any treatment or regimen that might benefit him?

J A. HAGEMANN M.D. Pittsburgh

ANSWER—The data supplied are rather meager. One would like to know at what time of day the drowsiness comes on and whether there is any relation to meals. If there is no organic basis or abnormal chemical condition, one might try giving ephedrine an hour or so before the expected drowsy period.

STAINS ON TEETH

To the Editor—Will you be good enough to give me some information concerning the dark to black stains on children's teeth sometimes seen? I should like to know the cause of such stains if it is dietary or what it is and what is the remedy other than scaling. Please omit name.

M D Washington

ANSWER—The green to black stains sometimes found on children's teeth are growths of fungi. The stains are most frequently found in mouths with ropy saliva and it is advisable to give the child plenty of water, citrus fruits and milk. This often reduces the amount of stain. Proper brushing of the teeth will do as much as anything to prevent the formation of the stain.

LEAD POISONING FROM HAIR TONIC

To the Editor—Please inform me whether a hair tonic which contains three moderate teaspoonfuls of sugar of lead to one gallon of water and used twice a day on the scalp could have a systemic (lead poisoning) effect. Kindly omit name.

M D Virginia

ANSWER—Long continued use of such application may produce systemic lead poisoning.

Council on Medical Education and Hospitals

ABSTRACT OF MINUTES OF COUNCIL BUSINESS MEETING HELD IN ATLANTIC CITY, JUNE 9

1 The meeting was called to order at 3 30 p m Those present included Drs Merritte W Ireland, Fred Moore, Charles E Humiston, Reginald Fitz, J H Musser, Frederic A Washburn, William D Cutter, Fritof H Arestad and Carl M Peterson and Mr Homer F Sanger In the absence of the chairman, Dr Ray Lyman Wilbur, Dr Ireland presided

2 It was resolved that the minutes of the business meeting of Feb 17, 1935, be approved

3 It was resolved that the secretary by communication commend the University of Georgia School of Medicine for the advancements it has made, and it was further resolved that recognition be accorded to students entering in the fall of 1935

4 It was resolved that the University of Alabama School of Medicine be informed that the Council has taken no action looking toward the discontinuance of its approval of two year schools as an entire group, and that for the present at least each individual school will be judged according to its performance

5 It was resolved that a committee be appointed, consisting of Rev Alphonse M Schwitalla and Drs Herman G Weiskotten and William D Cutter, to study the pattern map used by the North Central Association of Colleges and Secondary Schools and ascertain whether such a map could be made applicable to medical schools

6 It was resolved that the Chicago Medical School be not approved and that the report submitted by the secretary be approved and forwarded to the president of this institution

7 It was resolved that the Eclectic Medical College of Cincinnati be not approved and that the report submitted by the secretary be approved and forwarded to this institution

8 It was resolved that the telegram from the officers of the University of Mississippi be answered by informing them that the University of Mississippi School of Medicine was removed from the Council's list of approved schools July 1, 1934, and that the report of the inspection recently made by Dr Weiskotten, which is before the Council, does not warrant reinstatement.

9 It was resolved that the American Board of Pediatrics, having met with the standards laid down by the House of Delegates, be approved

10 It was resolved that the list of pathologists as submitted be approved

11 It was resolved that, as soon as the American Board of Radiology shall be approved, those physicians at present on the Council's list of approved radiologists shall be notified that this listing is to be discontinued Applications now pending before the Council will be returned

12 It was resolved that a communication be sent to the executive secretary of the American Hospital Association, and also to the American College of Surgeons, asking for their cooperation and urging them to stimulate their local subsidiary organizations to effect a real improvement in the training of interns

13 It was resolved that the Essentials in a Hospital Approved for Interns be amended as follows (Words in italics are being added and section 1 is reworded)

Title Essentials in a Hospital Approved for *Training* Interns

1 Hospitals Eligible for Approval

(This section formerly read) Only general hospitals are eligible which have at least 100 beds with a minimum daily average of seventy-five patients, and which provide a variety of medical, surgical, obstetrical and pediatric patients either in the hospital proper or through suitable affiliations with other institutions

(As amended) General hospitals are eligible which admit at least 2,000 patients per year and/or have a daily average

census of seventy-five patients, and which provide a variety of medical, surgical, obstetric and pediatric patients either in the hospital proper or through suitable affiliations with other institutions New-born infants are included in computing the daily average census but are not counted as admissions

VII Interns

2 INTERN SCHEDULE.—The intern service should cover at least twelve months and should be so arranged as to furnish the interns adequate instruction in medicine, pediatrics, obstetrics, surgery and in the laboratory and x ray departments. *The number of interns should be sufficient to permit each one to study his cases thoroughly The best institutions employ at least one for each 500 admissions* The interns should be selected from medical colleges rated in class A by the Council on Medical Education and Hospitals

14 It was resolved that the lists of hospitals and other institutions for approval or otherwise be accepted.

WILLIAM D CUTTER, M D, Secretary

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY Cincinnati Sept. 17 Appli-
cation must be filed before July 15 Sec Dr William H Wilder 122
S Michigan Ave Chicago

American Board of Otolaryngology Cincinnati Sept. 14 Sec.
Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PROCTOLOGY Seattle Aug 8 Philadelphia Oct.
10 and St Louis Nov 10 Sec., Dr C. A. Aldrich 723 Elm St.
Winnetka Ill

AMERICAN BOARD OF RADIOLOGY Detroit Dec. 12 Sec Dr Byrl
R Kirklin Mayo Clinic Rochester Minn

CALIFORNIA Los Angeles July 22 25 Sec Dr Charles B Pinkham,
420 State Office Bldg Sacramento

CONNECTICUT Endorsement Hartford July 23 Sec. Medical Exam-
ining Board Dr Thomas P Murdock, 147 W Main St Meriden

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be
held in all centers where there are Class A medical schools and five or
more candidates desiring to take the examination Sept 16 18 Ex. Sec.
Mr Everett S Elwood 225 S 15th St Philadelphia

NEVADA Reno Aug 5 Sec Dr Edward E Hamer Carson City

OREGON Basic Science Corvallis July 27 Sec., Basic Science
Examining Committee Mr Charles D Byrne University of Oregon,
Eugene.

SOUTH DAKOTA Rapid City July 16-17 Dir Division of Medical
Licensure Dr Park B Jenkins Pierre

WASHINGTON Seattle July 15 17 Dir Department of Licenses Mr
Harry C Huse Olympia

Vermont February Examination

Dr W Scott Nay, secretary, Vermont State Board of Medical Registration, reports the written examination held in Burlington, Feb 12-14 1935 The examination covered 12 subjects and included 90 questions An average of 75 per cent was required to pass Three candidates were examined all of whom passed The following school was represented

School	LICENSED BY ENDORSEMENT	Year Grad	Per Cent
University of Vermont College of Medicine	(1934)	84	86 1 * 87 1 *

* License withheld pending completion of internship

California Reciprocity and Endorsement Report

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports 13 physicians licensed by reciprocity and 2 physicians licensed by endorsement from April 4 to June 6, 1935 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Physicians and Surgeons of Chicago	(1910)		Illinois
Northwestern University Medical School	(1932)		Hawaii
Rush Medical College	(1931)		Illinois
Indiana University School of Medicine	(1926)		Iowa
State University of Iowa College of Medicine	(1932)		Maryland
Johns Hopkins University School of Medicine	(1925)		Michigan
University of Michigan Medical School	(1920)		New York
University of Nebraska College of Medicine	(1925)		South Dakota
Columbia University Col of Physicians and Surgeons	(1929)		New York
University of Oregon Medical School	(1926)		Oregon
Vanderbilt University School of Medicine	(1926)		Arizona

School	LICENSED BY ENDORSEMENT	Year Endorsement of
Johns Hopkins University School of Medicine	(1929) N B M Ex.	
Harvard University Medical School	(1931) N B M Ex.	

West Virginia March Report

Dr Arthur E McClue, state health commissioner, reports the oral and written examination held in Charleston, March 18-20 1935. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Five candidates were examined, all of whom passed. Thirteen physicians were licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Louisville School of Medicine		(1933)	87
Long Island College of Medicine		(1931)	85
Jefferson Medical College of Philadelphia		(1933)	84
University of Tennessee College of Medicine		(1931)	82.2
University of Edinburgh Faculty of Medicine		(1932)	85.4
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Georgia School of Medicine		(1933)	Georgia
Northwestern University Medical School		(1927)	Michigan
University of Illinois College of Medicine		(1916)	Illinois
Indiana University School of Medicine		(1932)	Indiana
University of Louisville School of Medicine		(1931)	Kentucky
Tulane University of Louisiana Medical Department		(1911)	Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons		(1929)	Maryland
Ohio State University College of Medicine		(1929)	Ohio
University of Pittsburgh School of Medicine		(1912)	Pennsylvania
Medical College of Virginia		(1929) (1931)	(1933) Virginia
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Johns Hopkins University School of Medicine		(1928)	N B M Ex
University of Virginia Department of Medicine		(1930)	N B M Ex

Book Notices

A Textbook of Biochemistry. Edited by Benjamin Harrow Ph.D. Associate Professor of Chemistry The City College College of the City of New York and Carl P. Sherrin M.D. Sc.D. Dr. P. H. Member of the Staff of St. Vincent's Hospital New York City. Cloth. Price \$6. Pp. 797 with 52 illustrations. Philadelphia and London W. B. Saunders Company 1935.

The subject of biochemistry is growing so rapidly and so extensively that it is becoming increasingly difficult for one individual to write an authoritative textbook adequately covering the entire field. In the present volume the editors have attempted to solve the problem by having thirty specialists in the various branches of biochemistry contribute chapters covering their own particular fields. While this procedure seems to work out satisfactorily in the preparation of a treatise designed for advanced students and others interested in following the latest developments in a particular field, it has certain definite disadvantages when applied to the writing of a textbook for medical and other students who are presumably being introduced to the subject for the first time. A good textbook, like a good teacher, besides stressing fundamental principles, must present for the consideration of the student those facts, critically selected from the vast array of available material, which may be reasonably expected to give him a well rounded, usable knowledge of the subject. In a book by numerous contributors, however, there is always the danger that, unless it is carefully edited, individual authors will devote a disproportionate amount of space to elaborate discussions that contribute little to the needs of the general student at the expense of fundamental principles and well established facts on which the student's understanding of the subject must rest. As an example of such a defect in the present volume may be cited the chapter on immunochemistry in which the author frankly states that "Wells, in his Chemical Aspects of Immunity has so thoroughly reviewed the subject that the writer will attempt chiefly to relate certain advances made since the second edition of Professor Wells' book was written." There is, furthermore, the additional danger that individual authors may be granted more space than is warranted by the contribution which their specialties may be expected to make toward giving the student a well balanced view of the entire field. In the present volume the question as to whether the editors have made the most judicious use of available space is open to serious doubts. While only twenty-five pages are devoted to urine and sixteen pages to hormones, there are eighty-seven pages on proteins of which fifty-five are devoted to "Some Aspects of the Physical

Chemistry of Amino Acids and Proteins." The book contains a great deal of material ordinarily not found in textbooks of biochemistry, so that the editors are enabled to say in their preface that "we are among the first of its readers to have added to our stock of knowledge and to have gained a wider perspective." This very statement, however, points to the limitations of the volume as a textbook of biochemistry for medical students. It will be found much more useful as a reference book for advanced students and others interested in acquiring a more detailed knowledge of biochemistry.

Heart Disease in the Tropics. By H. O. Gunewardene M.B. B.S. D.M. R.E. Consulting Cardiologist Colombo Ceylon. Cloth. Price Rs. 5/- Pp. 101 with illustrations. Calcutta Butterworth & Co. Ltd. 1935.

The purpose of this monograph is "to indicate features in cardiovascular diseases induced by tropical conditions and by diseases peculiar to the tropics." The author's classification of heart disease differs materially from that of the American Heart Association. He lists as types of heart disease rheumatic fever, mitral stenosis, myocardial degeneration, angina pectoris, auricular fibrillation and extrasystoles. This method of classification is confusing, since one patient may have two or more of these entities. The material for the text is drawn from 400 cases observed in private practice and 455 cases from the General Hospital in Colombo. The incidence of rheumatic heart disease as quoted by the author may be estimated at 13 per cent. Syphilitic heart disease comprises only 5 per cent of the total. The degenerative lesions, including high blood pressure, myocardial degeneration, renal disease, angina pectoris and coronary thrombosis, are the common types of cardiovascular disease totaling 50 per cent, which is approximately the same incidence as in the southern part of the United States. It is stated in the preface that ancylostoma infection is comparable as a common cause of heart disease to rheumatic fever of temperate climates. Later the author states that heart disease due to ancylostoma infection might justly be called the "poor man's heart disease" of the tropics. It is doubtful whether there is sufficient evidence in the text to justify these statements. In the statistical data, ancylostoma infection has not been listed as a type of heart disease. Several peculiarities of heart disease in the tropics are pointed out by the author. Rheumatic heart disease occurring in that locality is apparently of a milder form than the rheumatic carditis of the United States and England. Dropsy is said to form at a much more rapid rate in the higher temperatures. Anemia is a pertinent factor in cardiac disability in the tropics. Potassium iodide is badly tolerated in the warmer climates. The text as a whole presents some interesting case histories and brings out a number of important features of the cardiac problem in the tropics. The material, however, is not as well organized as it might be and is somewhat inconclusive.

The Kidney in Health and Disease. In Contributions by Eminent Authorities. Edited by Hilding Berglund M.D. and Grace Medes Ph.D. Research Biochemist in the Lankenau Hospital Research Institute Philadelphia Pa. With the collaboration of G. Carl Huber M.D. Professor of Anatomy of the Graduate School of the University of Michigan Ann Arbor. Warfield T. Longcope M.D. Professor of Medicine in the Johns Hopkins University Baltimore and Alfred N. Richards Ph.D. M.D. Professor of Pharmacology in the University of Pennsylvania Philadelphia. Cloth. Price \$10. Pp. 754 with 163 illustrations. Philadelphia Lea & Febiger 1935.

This single volume probably contains more original authoritative information than any other book on the subject in any language. The book is an outgrowth of a symposium on the structure and function of the kidney in health and disease, which took place in Minneapolis in 1930. The editorial task was initiated by Hilding Berglund and completed by Grace Medes and some of the contributors. For the purposes of this volume the participants in the symposium have revised their contributions and amplified them to some extent to bring them down to date. Several contributions not included in the symposium were added to make the work complete. The list of contributors contains the names of men who have made noteworthy contributions to the subject. Among some of these are the late G. Carl Huber, Franz Volhard, A. N. Richards, James L. Gamble, E. T. Bell, Leonard Rowntree, Longcope, Louis Leiter, M. Herbert Barker, Norman Keith and Kenneth Blackfan. Almost every phase of structure and function of

the kidney in health and disease has been considered, from both the experimental and the clinical aspect. Collectively these contributions constitute a comprehensive and authoritative exposition of existing information. The volume is highly recommended to every physician as an invaluable addition to his library. It is an important permanent contribution to the medical literature.

Physiologie und Pathologie der Wehen. Ergebnisse der Wehenmessung. Von Dr. Tassilo Antoine, Assistent der Univ. Frauenklinik I. Prof. Welbel. Paper. Price 4 marks. Pp. 50 with 43 illustrations. Vienna: Wilhelm Maudrich, 1935.

The author of this monograph undertook a study of the physiology and pathology of uterine contractions. For this purpose he used external hysterography (external tokometry) because he considers the intra-uterine method to be hazardous. For the first time he presents measurements of uterine contractions during the early months of pregnancy and he found that even early in gestation the uterus reacts to oxytocics. The author presents curves obtained not only during normal labor but also in pathologic conditions of pregnancy such as habitual abortion, hydramnios, preeclampsia, eclampsia, uterine atony and menstruation during pregnancy. He also studied the activity of the uterus during the latter days of the puerperium and during periods of severe after-pains. In his investigations of uterine contractions he was especially interested in the tonus of the uterus and the duration and amplitude of the uterine contractions. He found that the most important element was uterine tonicity. He observed that a disturbance in the internal rhythmicity of the uterus with absence of coordination of the separate muscle elements was of great significance in the occurrence of irregular uterine contractions. He further found that all oxytocics act practically in the same way. A fact which is not generally known is that, even after intramuscular injection of an oxytocic, an effect is not obtained in less than a half hour. This monograph is an elaboration of an article which appeared last year in the *Archiv für Gynäkologie*.

The Biochemistry of Medicine. By A. T. Cameron, M.A., D.Sc., F.R.C. Professor of Biochemistry, Faculty of Medicine, University of Manitoba, and C. R. Gilmour, M.D., C.M., F.R.C.I., Professor of Medicine and Clinical Medicine, University of Manitoba. Second edition. Cloth. Price \$6. Pp. 518 with 31 illustrations. Baltimore: William Wood & Company, 1935.

Those who had the pleasure of reading the first edition of this book will welcome the second. The book is a concise review correlating modern and established biochemical data with disease processes. It is presented in a most lucid manner and should be easily followed by those who have not had the opportunity to keep up with the recent biochemical contributions to medicine. Among the subjects receiving the greatest amount of revision are vitamins, endocrine secretions and the chemistry of respiration. Several subjects not touched on in the first edition are diseases of lipid metabolism, glycogen metabolism (von Gierke's disease), aminoacetic acid treatment of myasthenia gravis, pentose nucleotide therapy of agranulocytosis, tyrosinosis, and dimethylphenol treatment of obesity. Other chapters have been conveniently condensed. The book is especially designed for the medical student receiving clinical instruction and the physician who received little or no special instruction in the medical application of biochemistry. The book is a most instructive and concise volume on biochemical work that is of medical interest. It is a simple and readable presentation that serves a most useful purpose for the practicing physician and the advanced student of medicine.

Maladies Infectieuses. Leçons cliniques professées à l'Hôpital Claude Bernard. Par A. Lemerle, professeur à la Faculté de médecine de Paris. Paper. Price 60 francs. Pp. 407 with 23 illustrations. Paris: Masson & Cie, 1935.

This is a collection of clinical studies of a variety of conditions of infectious origin. There are twenty-three lectures or chapters. Among the topics considered may be mentioned tetanus, brucellosis, Rocky Mountain spotted fever and 'fièvre boutonneuse' observed in Paris, infectious nephritis, certain pneumococcal, staphylococcal, streptococcal and meningococcal infections, and unusual cases of septicemia. The presentation is clear and precise and illustrates well the traditional forms of French clinical teaching.

Mother Marianne of Molokai. By L. V. Jacks. Cloth. Price \$2. Pp. 203 with one portrait. New York: Macmillan Company, 1935.

To one interested in leprosy, particularly the Hawaiian story, this book, published approximately 100 years after the birth of Barbara Kopp, retells the tragedy of the disease during the later days of the kingdom and of the early American acquisition, chronicling much of the same material as was recorded in "Damen of Molokai" and "The Samaritans of Molokai" introducing in greater detail, however, the third great ecclesiastical character, Mother Marianne. Mother Marianne Kopp, with six other Sisters of the order of St. Francis, landed in Honolulu Nov. 8, 1883, and almost immediately began the arduous duties of bodily and spiritual ministrations to the theretofore made quately cared for lepers, beginning work first among those segregated near Honolulu. Five years later she proceeded with two Sisters to the large settlement at Molokai where, until her death on Aug. 9, 1918, she devoted her life unstintingly to service among the lepers. The book, while biographic in character, leaves the reader with a sense of having met the leading personality only in the pages.

Medicolegal

Harrison Narcotic Act. When Prescribing Is Selling, Entrapment, Expert Testimony, Evidence.—The defendant, a physician practicing in Oklahoma City and duly registered with the United States collector of internal revenue, was convicted in the district court of the United States for the western district of Oklahoma, under the Harrison Narcotic Act of selling morphine by means of prescriptions not issued in good faith. He appealed to the circuit court of appeals, tenth circuit.

One count in the indictment charged that the defendant wrote a prescription with intent that his patient should through it obtain the prescribed narcotic drug from a pharmacist. The count did not charge, however, that the patient obtained that drug from any source. The trial court said the circuit court of appeals, erred in overruling the defendant's demurrer to this count. The mere writing of a prescription with intent that the person to whom it is given shall obtain the opiate prescribed is not a violation of the statute. Acquisition of the opiate is required to constitute a completed offense.

Another count charged the sale of a narcotic drug to a patient but the undisputed proof showed that not she, but her husband, received the prescription and obtained the drug. Because of that variance between the charge and the proof, the trial court should have sustained the defendant's motion for a directed verdict of not guilty on that count.

A federal narcotic agent who had obtained three prescriptions from the defendant testified that he had advance information concerning the sale of prescriptions by the defendant, which information he had obtained through conversations with addicts. The admissibility of his testimony was challenged, on the ground that it was hearsay. The trial court itself asked the question that elicited the answer to which exception was taken. The question was asked, as the court explained at the time in order to ascertain whether entrapment of the defendant was involved. The truth or falsity of the information that the narcotic agent received and testified to was not an issue and was not drawn into question. Whether the narcotic agent had or had not received such information said the appellate court was a proper subject of proof in order to determine whether the sales to him were made in consequence of a decoy to ensnare the defendant, even though he was otherwise innocent, into the commission of a crime. This is a matter that may be investigated on the court's own motion at any stage of the proceedings. Proof that an innocent person has been entrapped into a violation of law requires that the prosecution be ended. It is against public policy to convict one on evidence obtained in that manner.

After the physician-defendant had testified that he had examined the several persons named in the indictment, to whom he had given prescriptions for narcotic drugs that in his opinion they were suffering from disease, and that he gave the prescriptions to relieve their condition, he proffered the testimony

of three physicians, to show that under the circumstances shown by his records they considered his prescribing of morphine good professional practice. One such witness was asked whether in his opinion a person addicted to the use of morphine is a diseased person. The trial court, however, declined to permit the question to be answered, saying that "the statute prescribes the diseases for which morphine may be prescribed that it expressly provides that merely being an addict is not a disease, and that the question was not one for expert testimony." Another of the defendant's expert witnesses was asked whether he considered it good professional practice to prescribe 10 grains of morphine for a patient on his first call at the office and on his statement that he had been using only 2 or 3 grains daily. Objection by the prosecution was sustained by the trial court, on the ground that the circumstances under which morphine could be supplied was one of law, not for expert opinion. The third of the defendant's expert witnesses testified that he considered addiction to the use of morphine a disease and that it is accompanied by pain. He was then asked whether in his opinion such pain would warrant the administering of morphine for its relief. On objection being made the court allowed the witness to answer the question but stated that the jury would be instructed that administering morphine under such circumstances is prohibited by law, that the statute specifically provides that it may not be given merely for the purpose of relieving pain incident to the condition of an addict. The circuit court of appeals, however, found that the trial court had incorrectly stated the law and unduly circumscribed the testimony. The statute does not prescribe the diseases for which morphine may be supplied. Regulation 85 issued under the provisions of the Harrison Narcotic Act forbids the giving of a prescription to an addict or habitual user of narcotics not in the course of professional treatment but for the purpose of providing him with a sufficient quantity of a narcotic drug to keep him comfortable by maintaining his customary use. Neither the statute nor the regulation precludes a physician from giving an addict a moderate amount of drugs in order to relieve a condition incident to addiction, if the physician acts in good faith and according to fair medical standards. Expert testimony with respect to recognized medical standards and methods of treating patients, such as those for whom the prescriptions were furnished, was admissible because of its bearing on the intent and purpose with which the prescriptions were issued. If the defendant's conduct conformed to fair medical standards, it would indicate good faith; if not it would suggest the dispensing of narcotics for commercial reasons.

A narcotic agent testified with respect to three 'sales' to him that he did not at the time of those 'sales' say or indicate to the defendant that he the agent was an addict, that he said he wanted a prescription, that no physical examination of him was made, and that the prescription was readily furnished on payment for it at the rate of \$1 per grain of the drug prescribed. According to the testimony of the defendant, however, the agent was in a serious physical condition when he came to him, unshaven, unkempt, nervous, and with water running from his eyes. A careful physical examination was made, having particular reference to his pulse, heart beat and nerve reflexes. That the narcotic agent, posing as a patient, confessed that he was an addict using about 2 grains of morphine daily and asserted that he was in great bodily pain. The defendant, according to his testimony, believed that it was necessary to provide morphine for his patient by means of a prescription, to relieve his suffering, and he did so then and on two subsequent visits.

In instructing the jury the trial court intimated that the narcotic agent had no motive for making a false statement and told the jury that it might give to his testimony the same weight and credibility that it would give to the testimony of any other person under similar circumstances. But concerning the physician-defendant, the trial court said:

On the other hand you may in giving consideration to the weight and credibility of the testimony of the defendant you may consider the fact that he is defendant in this case. He has the legal right to be heard in his own behalf and it is your duty to give to the testimony such weight and credibility as you believe under all the circumstances it is entitled to, but, as indicated above you may take into consideration the fact that he is the defendant and that he is charged with a serious offense and you may consider whether or not if the defendant is not

guilty what statement he would likely make, and on the other hand you may take into consideration the fact that if he were guilty what kind of a statement he would make, and is his interest in this case such as would lead him to make an untrue statement to secure his acquittal.

The instruction by the trial court, said the circuit court of appeals, went an arrow's flight beyond the permitted bounds of fair and helpful analysis of the evidence, or comment on it, as an aid to the jury in arriving at a just verdict. It told the jury that there was no motive for the narcotic agent to testify falsely but that there was such a motive on the part of the defendant and intimated in a pointed way that false testimony might be expected from him. This was argumentative and prejudicial.

The prosecution urged that this error of the trial court could not be reviewed by the appellate court, because the defendant had taken no proper exception to the judge's instruction. The circuit court of appeals, however, took a different view of the matter, saying:

A general exception was taken to the charge as a whole but no special exception was directed to any particular part of it. Ordinarily alleged errors occurring during the trial of a criminal case must be appropriately called to the attention of the trial court thus affording an opportunity to correct them; otherwise they are not reviewable on appeal. But an appellate court may correct a serious error involving the life or liberty of an accused in a criminal case although the error was not challenged and preserved for review by proper objection, exception or assignment.

If appellant issued the prescriptions in good faith as a physician believing Bridges [the narcotic agent] to be a bona fide patient for the purpose of curing disease or relieving suffering he was not guilty.

His own testimony was submitted in an effort to establish that fact, and in the very nature of things it was the focal point of his defense. The instruction segregated the testimony and emptied it of effect. We think the error was sufficiently serious that it should be corrected even though no specific exception was taken at the time.

The judgment of the trial court was reversed and the cause remanded for a new trial.—*Strader v United States*, 72 F (2d) 589.

Malpractice Expert Testimony Not Necessary to Support Verdict—The physician-defendant administered roentgen treatments for ringworm on his patient's hand. The first two treatments were followed by abnormal redness of the hand and forearm. During the third treatment the arm pained so much that the patient could not hold it still, but despite her complaints the physician-defendant continued the treatment. When this treatment was finished he told her not to return for other treatments, as he was leaving the city. A burn resulted and the patient was unable to do work of any kind for some weeks and she was forced to consult another physician. She brought suit against the physician who had administered the roentgen treatment.

The patient, as plaintiff, produced no medical expert witness to testify in her behalf, but at the time of the trial, two years after the burns had been inflicted, she had not yet fully recovered the use of her hand and arm and the scars on them were submitted to the view of the jury. On behalf of the defendant a motion was made in effect for a directed verdict. It was contended that, since his liability depended on whether he had or had not exercised proper skill and care, the testimony of medical experts was essential to the plaintiff's case, and she had produced none. The trial court apparently directed a verdict in his favor, and from the judgment entered on it the patient appealed to the Supreme Court of Appeals of West Virginia.

The Supreme Court of Appeals, in reversing the judgment of the lower court and ordering a new trial, said that while the testimony of medical experts is ordinarily necessary in malpractice actions, there are situations in which there is such a want of skill as to dispense with the need for such testimony. The condition of the plaintiff's hand and arm at the time of the trial, its condition immediately following the third treatment, the continuation of treatment by the physician-defendant after knowledge of burning, and his apparent abandonment of the patient, were all circumstances, the court thought, that would have warranted a jury's inferring want of care on his part notwithstanding the absence of expert medical testimony. The trial court erred in not allowing the jury to pass on the issues in the case.—*Buskirk v Bucklev (IV Va)*, 176 S E 603.

Society Proceedings

COMING MEETINGS

Colorado State Medical Society Estes Park September 57 Mr Harvey T Sethman 537 Republic Building Denver Executive Secretary
National Medical Association New Orleans Aug 11 17 Dr C A Lanon, 431 Green Street South Brownsville Pennsylvania Secretary
Northern Minnesota Medical Association Duluth Aug 12 13 Dr Oscar O Larsen Detroit Lakes Secretary
North Pacific Pediatric Society Seattle, August 9 10 Dr F H Douglass 509 Olive Street Seattle Secretary
Utah State Medical Association Logan, September 57 Dr George N Curtis Judge Building Salt Lake City Secretary
Washington State Medical Association Everett Aug 12 14 Dr Curtis H Thomson, 1305 Fourth Avenue Seattle Secretary
Wyoming State Medical Society Lander Aug 12 13 Dr Earl Whedon 50 North Main Street Sheridan Secretary

MISSOURI STATE MEDICAL ASSOCIATION

Seventy Eighth Annual Meeting Held in Excelsior Springs Mo
May 6 7 8 and 9 1935

DR. T. C. RYLAND, Lexington, Mo., in the Chair

Complications After Operation for Rectal Fistula

DR. WARREN R. RAINEY, St. Louis Surgical proctologists who have a large number of patients with tuberculosis have observed that in many instances the first indication of tuberculosis is the formation of a rectal abscess and fistula, which is followed by active lung tuberculosis. As a result there is an erroneous idea in the mind of the public that operations for rectal fistula may result in tuberculosis. Perirectal glands high in the perineum occasionally become involved by tuberculosis and break down, as do glands in the neck. Fistulous tracts are formed, which present and discharge about the perineum. Unfortunately many such patients are operated on with the idea that the fistula has a connection with the rectum, and in an effort to find an internal opening into the rectum an overzealous surgeon may force a probe through the rectal mucosa and complicate what was originally a tuberculous sinus. Operation on this type of sinus rarely ever results in a cure. Such sinuses occasionally are secondary to a tuberculous seminal vesiculitis. Most failures following operation for simple rectal fistula are apparently the result of incomplete surgery or a lack of knowledge of anatomic and pathologic development in a rectal fistula. The failure is the result of not having located the internal rectal opening. Incontinence most frequently follows operation for perirectal abscess when the rectal sphincter is cut across at the time the abscess is evacuated. Rectal fistulas occurring in the anterior circumference of the anus in the female present a great hazard when completed in a single operation. A low pilonidal cyst sinus may be mistaken for a rectal fistula.

Developments in Renal Surgery

DR. OSWALD S. LOWSLEY, New York A new operation for the repair of a nephrostomy wound after removal of stone in the kidney pelvis uses ribbon gut technic, which consists of passing the ribbon gut through the fibrous capsule of the kidney with a flat needle specially designed for the purpose, and after the application of a thin layer of fat over the bleeding points of the kidney cortex the ribbon gut is tied, causing sufficient pressure to control hemorrhage and not enough pressure to cause necrosis. The ribbon gut is absorbed within three weeks and the repair perfected, thus doing away with the old fashioned mattress sutures, which were so destructive of kidney cortex. In a new nephropexy operation, chrome ribbon gut is fixed in position around each pole of the kidney. Two of the loose ends are tied together. The other needle-studded end of the upper ribbon gut is passed above the twelfth rib and tied in position, elevating the kidney to the desired location so that the ureter is on a slight stretch. The ribbon gut around the lower pole is then attached to the quadratus lumborum muscle thus aiding in the fixation of the previously movable kidney. Repair of ruptured kidney is done by means of pads of fat and ribbon gut placed in any desired position with a flat needle.

Urinary Incontinence

DR. D. K. ROSE, St. Louis The mechanism of normal urination may be divided into seven steps (1) gradual filling, until (2) a mild involuntary bladder wall contraction is instituted by

weight, (3) stimulating an alinement of the internal and external sphincter openings, (4) associated with a contraction of the trigonal muscle, (5) urine entering the posterior urethra flows through the entire length of the urethra afferently, stimulating the bladder to forceful contraction, (6) which by thickening the wall increases the force of the stream until the bladder is emptied, and (7) terminal ejections, emptying the bladder and urethra and leaving a relaxed bladder wall and firmly closed internal sphincter. The chief factors in the act of urination are the expulsion force of the bladder wall, the resistant power of the sphincters, and cerebral inhibition. Cystometric studies show that incontinence or retention of urine is the result of an imbalance between expulsive bladder wall force and the resistant power of the sphincters under normal or abnormal cerebral control. Such imbalance may be neurogenic or myogenic in origin. If neurogenic it may be secondary to central or peripheral nerve change. If myogenic (that is, primary muscle change) it is due to a functional abnormality in the bladder wall or sphincter musculature as a result of some form of prostatectomy or of tumor, fibrous tissue change, outside pressure or foreign body, but with a normal nervous system. By means of cystometrograms the basic alterations can be estimated and therapy instituted to reestablish a normal muscle balance between bladder wall and sphincter tone.

Heart Disease in Children

DR. HARRY M. GILKEY, Kansas City, Mo. From January 1924 to January 1934 at the Children's Mercy Hospital in Kansas City, Mo., my associates and I have cared for 558 children suffering from chorea rheumatic fever and its accompanying cardiovascular damage. We have attempted to study the familial inheritance and incidence, age of primary infection, previous contagion, seasonal incidence of primary infection and reactivation, colds, incidence of tonsillitis, results of tonsillectomy, removal of the foci of infection, length of stay in the hospital, age at which the signs of circulatory insufficiency developed, the cause of death and conditions found post mortem.

Tonsillitis and rheumatic fever play a far more important role in the etiology of endocarditis than does chorea. Uncomplicated chorea rarely had a resultant endocarditis.

Ninety per cent of the chorea patients with rheumatic arthritis developed endocarditis. Tonsillectomy had no effect on the course of chorea, but tonsillectomized patients less frequently developed endocarditis. Psychic trauma was intimately associated with the onset of chorea.

The actual degree of valvular disease is not always important and is not a prognostic point of great importance as compared to the virulence of the infection, the resistance of the host and the number of reactivations.

Although we have no positive proof that the routine removal of tonsils prevents primary manifestations or minimizes reactivations of rheumatic fever, we believe that such a procedure plus a careful study of the sinuses are justified in the type of child included in this study.

Measures to protect children with rheumatic heart disease from the common cold and other infections of the respiratory tract in late winter and early spring, especially those from 6 to 10 years of age, when primary manifestations and reactivations are most apt to occur, is the best form of prophylaxis.

The use of intravenous preparations of hemolytic streptococci with the hope of lessening the hypersensitivity is in the experimental stage but offers much promise.

Quinidine Sulphate Its Actions and Uses

DR. PETER T. BOHAN, Kansas City, Mo. During the past two years, quinidine has been prescribed for seventy office patients. No untoward results have been observed. It has been used to lessen or eliminate extrasystoles, the tachycardias, and paroxysmal auricular fibrillation and flutter. The dosage was 3 grains (0.2 Gm.) from two to five times daily. Patients were advised to discontinue the drug for two or three days from time to time and to observe the effect. The results indicate that quinidine is the most effective available remedy to lessen myocardial irritability. Its use in established fibrillation is questionable. It is definitely indicated in all cases of myocardial infarction to prevent sudden death due to ventricular fibrillation.

The Differential Diagnosis and Treatment of Chronic Appendicitis

DR WARREN H COLE, St Louis Appendectomy for relief of so-called chronic appendicitis should be performed only after a thorough study of the patient's symptoms and signs has eliminated the possibility that another disease may be producing the symptoms. In general, the mechanisms producing the symptoms in this disease may be classified into three groups: (1) obstruction of the lumen by fecalith or stricture, (2) kinking or traction on the organ by adhesions, and (3) sympathetic neuromas. The pain occurring in "chronic" appendicitis or "interval" appendicitis occurs in attacks lasting a few days and recurring at varied intervals. The pain does not radiate posteriorly or downward. Tenderness is constant over the area of pain but is confined to this region except perhaps for a mild tenderness over the liver edge. The pain is mild but is often so distressing as to be almost totally disabling. The presence of fever, vomiting, headache, backache, and pains in the chest or different parts of the abdomen usually contraindicate operation on the grounds of inaccuracy of diagnosis. Distress in the epigastrium with relief by eating or ingestion of alkalis, as is encountered in peptic ulcer, is not infrequently a part of the manifestations of chronic appendicitis. The most common diseases that are confused with this appendiceal lesion are nephropathy, renal calculus, spastic colitis, oophoritis, chronic salpingitis, chronic cholecystitis, and tuberculosis or carcinoma of the cecum. If the pain is present only during menstruation or is much more pronounced at this time, the explanation may lie in disease of the adnexal region. The urine must be examined on numerous occasions. Roentgen examination with the barium meal may be extremely helpful in revealing fecaliths or stricture, but interpretation is difficult and should be attempted only by a trained roentgenologist. The presence of leukocytosis if caused by an appendiceal lesion is indicative of acute appendicitis and not the "chronic" type.

Tumors in the Head of the Pancreas The Value of Cholecystenterostomy

DRS W T COUGHLIN and J M MCCAUGHAN, St Louis This paper is based on thirty-four cases of carcinoma of the pancreas collected from the combined records of St Mary's Infirmary, St Mary's Hospital and Firmin Desloge Hospital of St Louis. The total number of hospital admissions during the ten year period of this report was 67,991. Of these thirty-four patients there were seventeen who were subjected to cholecystenterostomy and seventeen others, nine of whom were not operated on at all and eight who were subjected to various other surgical procedures, such as gastroenterostomy, cholecystostomy and simple exploration with immediate closure of the abdomen as soon as the nature of the lesion was evident. Our report calls attention to the value of internal biliary drainage in malignant or inflammatory obstructions of the head of the pancreas, even though the incidence of such lesions is relatively low, because an analysis of this group of patients obtained from the case records of these three large general hospitals indicates a need for greater emphasis on the importance of this procedure. We feel that external biliary drainage in such patients is deplorable and yet the impression gained from discussing this matter with physicians is that external biliary drainage for the relief of biliary obstructions originating from tumors of the head of the pancreas is not infrequent.

Diagnosis and Surgical Management of Cancer of the Stomach

DR CLAUDE J HUNT, Kansas City Mo About one third of all cancers occur in the stomach. If this annual death rate is to be reduced, it must come through early diagnosis and early operative removal. Reports by Gatewood and Alvarez show that patients present themselves for treatment on an average, from six to ten months after the beginning of gastric symptoms obviously too late in many cases for resection. Many early diagnoses are overlooked because the seriousness of the complaint was not suspected or recognized at the initial examination and the one method of making an early diagnosis was neglected, namely, a careful roentgenologic study. Again when the condition is diagnosed early enough to warrant exploration operation is often not insisted on and the patient is deprived of the only means of relief or possible cure. This attitude concerning the

necessity of operation is due largely to the lack of personal contact with the temporary or more extended beneficial results of radical resection for gastric cancer. To those with even a small experience in this type of surgery the results have been so beneficial, as measured in comfort and extended life, that the operation has been well justified. Gastric surgeons have placed the association between gastric ulcer and subsequent malignancy at from 20 to 25 per cent. Such frequent relationship is denied by pathologists. Cancer does not develop in normal tissue. Some preexisting abnormality or irritant is usually present. Benign lesions, as localized areas of mucosal hyperplasia, papillomas, adenomas and polypi, are much more frequent than formerly suspected and are predisposing factors in malignancy. Horsley has emphasized such relationship and Miller, Eliason and Wright have found malignant cells present in 35 per cent of a series of apparently benign lesions of the stomach found at autopsy. Confinement to the stomach does not long remain, however. Warwick reported forty-three cases in a series of 176 fatal cases of cancer of the stomach in which the disease was still confined to the stomach, death had been due to perforation and peritonitis. The early diagnosis is based on a competent roentgen examination, as there are no signs or symptoms distinctive of early gastric malignancy.

Early Diagnosis in Abdominal Diseases

DR. FRED W BAILEY, St. Louis The intra-abdominal diseases that boast a high yet pregnable mortality may be briefly arraigned: 1 All forms of cancer, 2 Gastric, duodenal or intestinal ulcer, 3 Diverticulitis, 4 Intestinal obstruction resulting from (a) neglected hernias, (b) postinflammatory or postoperative adhesions, (c) pelvic infection, (d) appendicitis, (e) diverticulitis, (f) postoperative ileus, (g) malignant conditions, and so on, 5 Neglected appendicitis, 6 Hepatic infections, bile duct and gallbladder disease, 7 Pancreatic disease, primary or secondary to group 6, 8 Traumatic injuries of the abdomen, penetrating or nonpenetrating, 9 Inefficient pre-operative preparation and postoperative care rank high as mortality promoters in all types of abdominal disease.

The time factor in diagnosis and treatment of acute progressive abdominal lesions, threatening rupture of a viscus and peritonitis, is most essential as a preventive in mortality. Not all abdominal diseases are demonstrable early enough to make preventive therapy and surgery applicable 100 per cent, yet, by the aid of such lay education as organized medicine can ethically disseminate, early recognition of threatened disease would make medical and surgical control practical and efficient as life saving measures. The mortality in abdominal diseases can be reduced thereby not less than 75 per cent. Sixty-six thousand deaths from abdominal cancer alone in the United States in 1930, an ever increasing mortality in acute appendicitis and many other humiliating records seem to justify a renewed agitation for the earliest possible diagnosis in abdominal diseases.

Unusual Case of Foreign Body in the Abdomen

DR. ROLAND HILL, St Louis A well developed married woman, now 64, had had a catheter inserted into the uterus in 1901 to produce an abortion. An abortion promptly followed but the catheter never passed. From this time on the patient complained of low abdominal distress which became aggravated as time passed. In 1927 she consulted Dr Frank D Gorham of St Louis, who made a physical examination. During the gastro-intestinal roentgen examination it was revealed that the catheter had perforated the uterus and was lying in the pelvis in close proximity to the bladder. The patient had lost considerable weight and suffered a great deal from indigestion and pain in the abdomen. The stool contained much mucus and there was an unusual loss of blood at the menstrual period. The catheter was removed by low abdominal operation. When the abdomen was opened it was found to be strongly adherent to the peritoneum of the pelvis and also to the small bowel for about 3 inches as though it were trying to ulcerate into the bowel. On removal, the catheter was found to be of the gum elastic variety and 14 inches in length. All adhesions were carefully separated, the abraded peritoneum repaired and the abdomen closed in layers. Following this operation there was complete relief for two years and then abdominal distress began

and culminated in intestinal obstruction in six months. For this she was operated on by a physician in her home town. A few months later she came in again and I did a second operation, separating all adhesions. Complete relief followed, but she returned in another year with the same condition. In all, five subsequent operations have been necessary. In one, 18 inches of bowel was removed. Amniotic fluid has been introduced to prevent adhesions and in the second to the last operation a switching was made around a bad area which was thus rendered silent. This gave relief for nearly three years. She gained as much as 27 pounds (12 Kg.) but returned recently with great loss of weight, marked indigestion and great pain. The abdomen was opened and the silent area was found to be functioning somewhat. Dense adhesions to the abdominal wall were separated. She is improving rapidly and has returned to her home.

Medical Care for the American People

DR R. G. LFLAND, Chicago. Medicine has constantly adhered to certain scientific and ethical standards, self imposed and designed to protect the welfare of the people. It is in the spirit of warning against the methods of medical practice that will destroy the quality of medical care that medicine has repeatedly recorded its opposition to all forms of sickness insurance and state medicine proposed, controlled, operated and subsidized by the state. All over this country in counties and in cities, experiments in relationship to hospitals and to industry are now going on for saving against the costs of hospital care and against the costs of sickness. The medical profession has never objected to such experiments provided they are carried out in such a manner as to protect both the patient and his doctor against exploitation and to maintain the quality of medical service. Physicians have recognized the necessity of giving to all the sick the right kind of medical care. They have always done it and there is no reason to believe that they will fail to do their duty and to maintain their ideals in the future.

Pneumothorax Treatment of Lobar Pneumonia

DR JOHN J. HAMMOND, St. Louis. Of ten cases of lobar pneumonia, one terminated fatally. One case presented crises definitely associated with the pneumothorax. Symptomatic relief was obtained in practically 100 per cent as far as pain was concerned, and in seven of the ten cases in regard to dyspnea. The one death reported was not thought to be related to the injection of air as it followed this by twelve days and roentgenograms taken in the interim showed what was apparent improvement in the chest. The only complication or sequela noted was pleural effusion, and this was present in about 60 per cent of the cases, only one requiring tapping and none going on to suppuration. The general appearance of comfort following the injection of air was almost 100 per cent. Some of the patients requested further injections because of the marked relief of pain they experienced. I believe that the procedure has a place in the treatment of unilateral cases in conjunction with and not to the exclusion of other forms of therapy. In this series, pneumothorax was the only form of therapy employed other than symptomatic treatment. The use of serums and oxygen tents was out of the question, owing to their expense and to the fact that the City Hospital budget did not include these valuable therapeutic measures.

Diagnosis and Nonsurgical Treatment of Bronchiectasis

DR SAMUEL H. SNIDER, Kansas City, Mo. Probably one of the chief causes of bronchiectasis is an inherent weakness in the bronchial tree. Other factors are age, repeated respiratory infections with accumulation of secretions in the lower bronchial tree, putrefaction and fermentation of retained secretion, loss of ciliary action in the bronchial tree, and childhood type tuberculosis. The chief of these factors is repeated infections of the lower respiratory tract, often resulting from chronic or recurrent nasal sinus infection. The symptoms of bronchiectasis are often difficult to distinguish from those of simple bronchorrhoea. The picture is one of cough with bouts of profuse expectoration. In advanced bronchiectasis the pus may be very fetid and there are likely to be bouts of fever. Hemoptysis occasionally occurs in bronchiectasis. The physical signs are usually found in the lower part of the chest while those of tuberculosis are usually restricted to the upper part. Often considerable bronchiectasis exists without physical signs. Roentgenograms are invaluable

in confirming the diagnosis, and injections of iodized oil may be necessary to make the diagnosis clear. Iodized oil should be used with extreme caution when tuberculosis may exist. Repeated sputum examinations for tubercle bacilli should be made. The organisms usually found in bronchiectatic sputum are pneumococci, streptococci, *Bacillus fusiformis* and *Spirillum actinotum*. For treatment, the dilated bronchial tree may be regarded as a bottle with its mouth upward. The first objective is to dilate the bronchial tree, thus relieving the obstruction to drainage. This may be done with fumes of menthol or camphor or with epinephrine or ephedrine. Sometimes the bronchoscope becomes necessary. The second principle of treatment is to make the secretion less viscid. This is done with large doses of ammonium chloride or potassium iodide. The third principle is to invert the bottle, that is, give the patient the proper posture for drainage. Surgical treatment is reserved for those cases which have reached a stage at which medical treatment will not accomplish the desired relief.

Treatment of Diseases of Nasal Sinuses in Young Children

DR L. W. DEAN, St. Louis. The nasal sinuses in infants and young children are very precocious. It is most important in every case treated to know whether or not a given sinus is present and if present whether, on an anatomic basis, it has clinical significance. The most valuable information to be derived from a roentgenogram is the size of the various sinuses. The difficulty of differentiating between allergic and purulent sinusitis can best be solved by a careful clinical study and a cytologic investigation of the nasal discharge. Most infections of the nasal sinuses are due to allergic or nutritional disturbances. Occasionally a very virulent organism affects the sinuses in a normal child. In the laboratory it has been shown that nasal sinusitis can be experimentally produced by certain deficient diets. These things form the basis for treatment of uncomplicated purulent nasal sinus conditions in this class of cases. The essential thing in the treatment of acute purulent nasal sinusitis in infants and young children is bed rest, diet, the use of weak solutions of vasoconstrictors and some mild antiseptic in the nose. Chronic nasal infections without systemic complications are treated by eliminating allergic factors, removing infected lymphoid tissue from the pharynx, correcting conditions blocking the ostia of the sinuses, hygiene and outdoor play, an abundance of sunlight, and nutritional and vaccine therapy. When there is a systemic condition that demands rapid control of the infection, simple intranasal drainage operations may be indicated.

Treatment of Chronic Arthritis

DR R. A. KINSELLA, St. Louis. Of the two chief forms of arthritis with which the clinic is concerned, the rheumatoid type is characterized by its occurrence at an earlier age, the multiplicity of articular involvement and the predilection for small joints while avoiding the terminal joints of the fingers. Pain and swelling, stiffness and weakness are the common symptoms. The degenerative type can be visualized in the robust, often obese subject past middle age. This type exhibits predilection for the larger joints which are usually the chief weight-bearing joints. Redness and swelling are not common but when present usually have a monarticular arrangement and may represent focal infection. The treatment of the first type is unsatisfactory though important and useful. The treatment of the second type is successful. The treatment of the first type includes a utilization of all the measures available in physical therapy and orthopedic adjustment. In the treatment of degenerative arthritis the contribution of the orthopedist is most important, and this often begins with proper support of the arches of the feet. When evidence of inflammation exists it is usually not difficult to discover an actively inflamed area in the body the treatment of which is beneficial to the condition in the joint. The patient with rheumatoid arthritis continues to visit the clinic, the patient with degenerative arthritis is frequently discharged after a few months.

Hereditary Blindness in Missouri

DR. HARVEY D. LAMB, St. Louis. Among the pupils attending the Missouri School for the Blind in St. Louis during the last twelve years 38 per cent lost their sight from hereditary disease.

which represents a considerable increase over previous periods. Since hereditary disorders in the same individual are prone to appear in multiples, most of these pupils with hereditary blindness are mentally deficient. The presence of the latter condition increases the difficulty of their education to a tremendous degree. The inevitable procedure for the prevention of all hereditary disease must be sterilization. Simple tables were made listing the number of the pupils at the state school for the blind for each cause of hereditary disease of the eyes, as to vision for each such cause of blindness the percentage of hereditary blindness for each three year period from 1905, and the amount of hereditary blindness from communities of different sizes in Missouri. These tables were based on the ocular examination of 692 pupils in attendance at the school during the last thirty years. Of this number 217, or 31 per cent, were blinded as the result of faulty heredity.

The Changing Practices in Infant Feeding

DR. FRANK C. NEFF, Kansas City, Mo. In recent years there has been a rapid increase in the number of commercial foods for infants. The physician's office is abundantly supplied with samples. Advertising of some has extended to the radio. Professional and lay advisers of young mothers seem to believe that artificial feeding is safe and more convenient than attempting to nurse. On the other hand, emphasis has recently been placed on the fact that breast-fed infants have fewer infections. Careful methods of measuring the intake of breast milk in the hospital nursery show that most infants can be fed successfully on the breast if artificial food is kept away. Premature infants can now be cared for in an improved way with the air conditioned as to both temperature and humidity. Skilled nursing is necessary to avoid dangers such as overfeeding and aspiration of food. Breast milk and acidified evaporated milk have been found satisfactory if administered by special methods suited to the infant who may be too weak to nurse. So-called colic is not a feeding disturbance and calls for no change in formula. Quiet surroundings and sedatives are suggested. The wet nurse has become less expensive, since the milk is expressed, and there is no longer the problem of caring for an additional member in the home. A great change has occurred in the past few years through the use of concentrated milk formulas instead of excessively watery mixtures. Souring by various methods is a common procedure. Many types of sugar are available for addition to the formula with the tendency to use convenient and inexpensive types. Fresh milk is now successfully enriched in antirachitic vitamin, as is also canned milk. The evolution of feeding will not stop with present knowledge. Earlier weaning with addition of semisolid foods has advanced to a degree unbelievable a few years ago. While the feeding of infants has been greatly simplified, there has been much other improvement in this field of dietetics and thereby in infant welfare.

The Preliminary Stage of Labor

DR. BUFORD G. HAMILTON, Kansas City, Mo. One of the frequent questions asked by the expectant mother is "How shall I know when I am in labor?" This is not easy to answer. With a patient in suspected labor when I have seen the patient and made the usual examination I frequently cannot be certain that she is in labor. There may be pain with changes in the station and the condition of the cervix but there may not be continuous and progressive dilatation of the cervix. Many of my patients have a period in which little progress is made. It is this period in which the patient has pain with limited progress that I have designated as the preliminary stage of labor. I have attempted in office and hospital records to keep data on the duration of labor. Invariably my associate or intern has asked "When shall I say labor started or when would you say was the beginning of the first stage of labor?" I have asked the same question of interns from the many medical schools over the United States and with few exceptions different answers have been given. I am led to conclude that mechanical intervention, such as bags rupturing the membrane or giving castor oil and quinine, is contraindicated in this period. In each patient the judicious use of sedatives and waiting determines the successful outcome. I also believe important the education of patients in the antepartum period in the fact that such conditions are seen and that this period is often a part of the

picture of childbearing. The work of Calkins in estimating the force of pain and the character of the cervix is important in determining whether a patient is in labor. When continuous or progressive dilatation of the cervix can be determined, I should say that true labor has begun.

Physical Factors in Development of the Psychoses

DR. G. WILSE ROBINSON, Kansas City, Mo. The author emphasizes that all psychoses have a physical basis. So long as the brain functions in its normal manner, the mind manifests itself in its normal manner. Disordered brain activity in the majority of the psychoses is due to anatomic alteration of brain structure through disease of the brain, neoplasm developing within the skull, or trauma, or through intoxication by drugs, metals or alcohol.

Pernicious Anemia

DR. GEORGE E. KNAPPENBERGER, Kansas City, Mo. Pernicious anemia affects the blood-forming organs, the digestive tract and the nervous system. Achylia gastrica is the earliest and most constant sign of the disease. It is a deficiency disease, i. e., a lack of a specific factor present in normal gastric juice produced in the acid glands in the pyloric region through an enzyme reaction between the specific factor and some unknown factor in the normal diet. It is then stored in the liver and utilized as needed. The diagnosis is made on three cardinal signs: achylia gastrica, anemia and spinal cord degeneration, any two being sufficient for a diagnosis. The alcohol fractional test meal is sufficiently reliable for the clinical diagnosis of achylia. Histidine is unnecessary and at times dangerous. The anemia is usually of the macrocytic type. All the blood elements are reduced. The neurologic changes are degeneration of the lateral and posterior columns in the spinal cord, the signs varying from a loss of vibratory sense to ataxia or complete paralysis. The treatment is liver and stomach extract, orally or parenterally, the latter if the blood count is very low. The microcytic type needs iron also. Hydrochloric acid is useful to control diarrhea or flatulence but is not helpful as a routine. Refractory cases are encountered but large doses of liver will reduce this number. Blood transfusions are helpful only in the first two weeks or before the hematopoietic response of the liver has become apparent in the peripheral blood. The neurologic symptoms are often improved by treatment, but the physical signs are usually not altered. Failures in treatment can often be ascribed to insufficient treatment.

Complications of Appendicitis, with a Review of Six Hundred Cases

DR. JOHN WALKER STEWART, St. Louis. In 600 operative cases of appendicitis there was an average mortality of 13 1/2 per cent. There were 205 acute cases with seven deaths, a mortality of 3.419 per cent. Three of these patients were moribund on admission and operation. There were 250 sub-acute and chronic cases with no mortality. There were 135 appendectomies incidental to other operations, with a 2.222 per cent mortality. Fatal complications were: 1. Spreading peritonitis in twenty-eight cases, eighteen in the gangrenous type of appendicitis, nine in the acute purulent type, one in gangrenous Meckel's diverticulitis. Four cases were fatal. 2. Liver abscess with pyelophlebitis, present in one case in 600; the patient died. 3. Mesenteric thrombosis, present in one acute case, which was fatal. 4. Obstruction four months after appendiceal abscess drainage, on flare up of the appendix left in situ at the first operation with appendectomy and ileostomy. The mortality was 100 per cent. 5. Two cardiac deaths. Nonfatal complications were secondary peritoneal abscess in two cases, abscess of the abdominal wall in two cases, postoperative hernia in six cases, infections of the kidney pelvis in ten cases, thrombosis of one or both long saphenous veins with uneventful convalescence in four cases and blood in the stool postoperatively in five cases, one in an intussusception case in which the appendix had been strangulated and gangrenous. These 600 patients were operated on by the same operator in ten different hospitals. The technique and postoperative treatment were the same. The low proportion of complications was attributed to the use of gas anesthesia, prone position in drainage cases, free administration of intravenous fluids, withholding of food until subsidence of flatulence, and adequate use of narcotics in the first forty-eight hours after operation.

Schüller-Christian's Disease

DR. JOSEPH DAUKSIS, Excelsior Springs, Mo. In a review of the literature since 1931, a total of 123 cases conforming to the symptom complex of Schüller-Christian's disease have been found. A new case, the one hundred and twenty-fourth, is reported. A white man, aged 37, seen Nov 17, 1934, complained of constant headache and of a buzzing in his head following an injury about three months prior. History revealed symptoms of diabetes insipidus dating back to 1918. Soft spots in the top of the head had been present for about ten years. Examination showed a mildly prominent right eye, bony defects in the skull and a mild diabetes insipidus. Roentgen examination confirmed the presence of the skull defects and also showed a sella turcica that was shallow, with absent anterior clinoid processes. The blood cholesterol was increased to 235 mg per hundred cubic centimeters. The patient was referred to the radiologist for roentgen therapy. Analysis of the group of cases did not show any definite relationship to trauma and infection. Race and geographic distribution played no part and there was no familial tendency. The male sex was found more susceptible in the ratio of 2:1, and the age incidence was the greatest in the second, third and fourth years, though adult cases were not uncommon. The mortality of the group was 24 per cent. An increased blood cholesterol was reported in twenty-seven of thirty-nine cases. Defects of bones of the skull were present in 72 per cent, diabetes insipidus in 58 per cent, skeletal involvement excluding the skull in 48 per cent, exophthalmos in 44 per cent, skin lesions in 35 per cent, endocrine disturbances in 20 per cent, gingivitis and falling teeth in 18 per cent, and visceral involvement in about 10 per cent. Treatment has been of three varieties: dietary, glandular and roentgen therapy. The most promising results have been obtained with roentgen therapy.

Encephalitis Cases Causing Confusion in Diagnosis During the St. Louis Epidemic of 1933

DR. G. O. BROWN, St. Louis. Between July 1 and Nov 1, 1933, 129 typical cases of encephalitis were treated at Firmin Desloge Hospital in St. Louis. In the same period twenty additional cases were referred to this institution with a provisional diagnosis of encephalitis. The more careful study of these cases either established an entirely different diagnosis or at least rendered the original diagnosis doubtful. Since most of these cases had a preliminary examination by physicians who were seeing daily large numbers of true cases of encephalitis, it is obvious that the clinical picture must at least have had a strong resemblance to that of encephalitis. The most common conditions causing confusion were malaria and typhoid, especially when these were accompanied by marked cerebral symptoms. It is important to note that in some cases of these infections spinal fluid examinations revealed changes similar to those of encephalitis. The finding of malaria parasites and the response to quinine established the diagnosis of malaria. The bacteriologic observations and subsequent course served to differentiate typhoid. Tuberculous meningitis was differentiated by the low spinal fluid sugar and subsequently by a positive guinea-pig inoculation. Streptococcal meningitis yielded the causative organism in the spinal fluid in direct smear and also presented a much higher cell count than was noted in any case of encephalitis. Syphilis of the central nervous system was a confusing factor in several cases. Cerebral arteriosclerosis, alcoholism, epilepsy, pneumonia, ulcerative colitis and liver abscess caused confusion in other cases. The most important single laboratory examination in the differential diagnosis is undoubtedly the careful study of the cerebrospinal fluid. For study of doubtful cases during convalescence the virus neutralization test is of great value in definitely establishing the type of encephalitis present. Use of this test in some cases in this group demonstrates its clinical applicability.

Clinical Manifestations of Anorectal Disease

DR. GEORGE H. THIELE, Kansas City, Mo. Anorectal examination is often neglected because of failure either to elicit symptoms referable to the anorectum or to recognize the relationship between the symptoms and anorectal disease. It is felt therefore, that a discussion of the clinical manifestations of rectal disease may provide an impetus for more frequent anorectal examination as a general diagnostic procedure. Nervous,

gastro-intestinal, genito-urinary and rheumatic symptoms if looked for, are to be found in most patients with anorectal disease. These symptoms are often not associated with rectal disease by the patient, and, not associating them, he often does not regard such symptoms as slight itching or irritation of the anus as of sufficient importance to warrant mentioning to his physician. Such symptoms were found in seventy of a group of 225 consecutive cases from private practice. One feels that the incidence would be much higher in clinic cases, in which rectal examination is easily available and done more as a routine procedure. These symptoms fall quite naturally into four groups: gastro-intestinal, nervous, genito-urinary and rheumatic. They are produced either as nervous reflexes or as manifestations of focal anorectal infection. Symptoms occurred 227 times in seventy patients, 143 (63 per cent) were cured, 57 (25 per cent) were improved, 12 (5 per cent) were unimproved and 15 (6 per cent) were not recorded in the progress records of the patients. When such symptoms are encountered, a thorough anorectal examination should be made. Digital examination alone is not sufficient, as many of the lesions in the anorectum are not palpable.

An Institutional Outbreak of Shiga Dysentery

DR. T. S. LAPP, Fulton, Mo. In the institutional outbreak of Shiga dysentery, comprising ten cases, the Shiga bacillus from one case was identified by its non-acid forming properties in mannite and its agglutination by Shiga agglutinating serum. A patient working in the dining room in the ward in which the epidemic occurred was thought to be a carrier of the Shiga bacillus. This was determined by his serum agglutinating a stock culture of Shiga bacilli in a titer of 1:100. Autopsy in one case in which death occurred during the acute phase of the disease revealed an acute catarrhal inflammation of the colon and ileum with ulcerations of the sigmoid. The regional mesenteric lymph glands were enlarged. Autopsy in a second case, in which death occurred a year after recovery, revealed that the colon was bound down throughout its entire course by bands of adhesions, which were more pronounced at the hepatic and splenic flexures. There was a wide variation noted in the symptoms presented in these cases. The majority occurred in patients over 50 years of age. Some were extremely toxic and had large quantities of blood in the stools, others were of a milder nature and were ill only a few days. There were three deaths, giving a mortality rate of 30 per cent. Isolation precautions were observed in all cases. They were treated with polyvalent antidyenteric serum. Symptomatic and supportive treatment was given as indicated.

Ocular Tuberculosis

DR. C. S. O'BRIEN, Iowa City. Tuberculosis of the eye, especially of the uveal tract is common, although it is frequently unrecognized. Frequently focal infection in the teeth, tonsils, sinuses or other structures is regarded as a cause of an ocular inflammation that really has its origin in a latent or arrested tuberculous focus. Tuberculosis of the eye is usually secondary to a latent primary focus in the chest, glands, bones or joints. The inflammation in the eye may be allergic in nature and arise as a result of hypersensitivity to tuberculinoprotein, which is disseminated from the primary focus, or it may be the result of actual invasion by tubercle bacilli that have been carried from the primary focus through the blood stream. Diagnosis is often difficult, since this type of inflammation occurs in an apparently healthy person. The latent primary focus is rarely recognizable on physical examination, and it is only by roentgenograms that evidence of old calcified primary lesions is found. The ocular inflammation is usually insidious, pain and congestion are mild or absent, there is a tendency toward slow progression, and relapses are frequent. In uveal tuberculosis, other parts of the eye often become involved. Tuberculin is a useful diagnostic agent, but it must be used carefully and in an intelligent manner. Syphilis, focal infections, sympathetic ophthalmia, glioma and rare conditions such as ophthalmia nodosa are to be considered in the differential diagnosis. Treatment is similar to that for tuberculosis in any situation, i. e., removal of foci of infection, proper diet, ultraviolet rays or sunshine, fresh air, and periodic rest. Tuberculin is often of apparent benefit; it is to be administered in small doses over a long period.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

58:355-540 (May 15) 1935 Partial Index

Studies on the Main Posterior Lymph Channels of the Abdomen and Their Connections with Lymphatics of Genito-Urinary System. Alice E. Parker. Denver.—p. 409.

Reaction of Omental Tissues to Trypan Blue Injected Intraperitoneally with Especial Reference to Interrelationships Between Cell Types. J. S. Latta and D. I. Rutledge. Omaha.—p. 481.

American Journal of Clinical Pathology, Baltimore

5:173-260 (May) 1935

Use in Wassermann Reaction of Uniform and Stable Dehydrated Complement. H. Eagle, Philadelphia. H. Strauss and R. Steiner.—p. 173.

Pathologic Changes Resulting from Excess and Deficient Secretion of Ductless Glands. A. M. Young. Cleveland.—p. 180.

*Unfavorable Reactions Due to Antirabic Treatment. Three Cases. F. C. Hodges. Huntington. W. Va.—p. 211.

Withdrawal Aleukocytosis in Experimental Peritonitis. C. A. Pons. J. M. Gannon and W. P. Belk. Ardmore, Pa.—p. 225.

Initial Lesion in Treponematosis Framboesiana. C. S. Butler. Brooklyn.—p. 231.

*Relationship Between Oxyuriasis and Appendicitis. Margaret Warwick. Buffalo.—p. 238.

Familial Shift to Left of Granular Leukocytes. R. F. Peterson, Butte Mont.—p. 249.

Adapter for Sheard Sanford Photometer. A. S. Giordano. South Bend Ind.—p. 253.

Reactions Due to Antirabic Treatment—Hodges states that paralytic accidents develop in about 0.0028 per cent of persons who receive the antirabic inoculations. These are ascending paralysis of the Landry type, with a mortality of 30 per cent, dorsolumbar myelitis, with a mortality of 5 per cent, and monosymptomatic paralyses (facial palsy, an arm or leg or a single muscle, sphincter disturbance) with no mortality. These symptoms are manifest during or soon after treatment, usually between the eleventh and twentieth day, whereas rabies usually begins from the fortieth to the sixtieth day. Possibilities of antirabic accidents should be borne in mind when giving the treatments. Precautions to be observed are to keep the patient as near rest as possible during the treatment and, on the appearance of the paralytic accident, to stop the treatments at once. Whether to resume them or not depends on the relative dangers of the accident and the risk of the development of rabies. Three cases of paralytic accident are discussed, two of which resulted in death. The first patient was a man with an ascending paralysis of the Landry type, finally involving the medulla on the thirteenth day of treatment by antirabic inoculations. He was not bitten by a rabid animal, only the saliva coming in contact with the unbroken skin of his hands. The second patient was a boy, aged 4, who developed meningo-encephalitis beginning six weeks after treatment and who died twenty-one weeks after the bite of a rabid dog. The duration of the illness was three months. There was no antecedent acute illness which may have caused encephalitis. The third patient was a male laborer, whose reaction was of the dorsolumbar myelitis type.

Oxyuriasis and Appendicitis—Warwick reports that oxyuriasis was found in 19 per cent of 2,344 appendixes examined. No distinguishing symptoms were caused by the parasite which differentiated its presence in the appendix from inflammation of that organ. It seems probable that the presence of the parasites in empty lumens may cause painful contractions of the muscular wall which may simulate the symptoms of appendicitis. The average age of the patients was 18 and varied from 6 to 34 years with 60 per cent more than 16 years of age. Females were affected in 93 per cent of the cases. Oxyuriasis was rarely

associated with a temperature elevated above 100 F. A leukocytosis was present in 42 per cent of the nineteen cases in which a count was done, but there was no appreciable eosinophilia. No characteristic lesions that could be attributed to the presence of the parasites were found in any of these cases. After removal of the organ the parasites may penetrate the wall of the appendix, but apparently not before.

American Journal of Diseases of Children, Chicago

49:1105-1398 (May) 1935

Primary Pulmonary Tuberculosis in Childhood. A. Wallgren. Gothenberg, Sweden.—p. 1105.

Atlanto-Axial Dislocations Unassociated with Trauma and Secondary to Inflammatory Foci in the Neck. J. H. Hess, I. P. Bronstein and S. M. Abelson. Chicago.—p. 1137.

*Eruptive Fever with Stomatitis and Ophthalmia. Atypical Erythema Exudativum Multiforme (Stevens-Johnson). G. J. Ginandes. New York.—p. 1148.

New Device for Footprinting and Heelprinting Without Soiling the Feet. L. Bivings. Atlanta, Ga.—p. 1161.

Classification of Weak Feet in Children and Method of Analyzing Footprints and Heelprints. L. Bivings. Atlanta, Ga.—p. 1164.

Capillary Development and Its Relation to Intelligence of Children with Mongolism. S. D. Leader and M. Grozin. New York.—p. 1169.

Blood in Stools of the New Born. Unexplained Symptom. L. H. Smith. Portland, Ore.—p. 1177.

Contour of the Chest in Children. IV. According to Nationality. S. A. Weissman. Minneapolis.—p. 1180.

Value of Increased Supply of Vitamin B₁ and Iron in Diet of Children. Paper II. J. R. Ross and Pearl Summerfeldt. Toronto.—p. 1185.

Reduction of Methylene Blue by Blood of Young Infants. C. H. Smith. New York.—p. 1189.

Anemia of Premature Infants. II. Comparative Study of Blood Iron and Hemoglobin Values in Premature Infants. A. F. Aht. Chicago.—p. 1204.

Phosphatase Studies on Biopsy Tissue in Progressive Myositis Ossificans. Report of Case. W. E. Wilkins, E. M. Regen and G. K. Carpenter. Nashville, Tenn.—p. 1219.

*Infectious Mononucleosis. I. Davidsohn. Chicago.—p. 1222. Growth and Basal Metabolism. IV. Changes in Basal Metabolism of Children During a Year. I. Nakagawa. Tokyo, Japan.—p. 1232.

Carbohydrate Metabolism. III. Relation of Salt and Water to Oxidation of Dextrose. J. A. Johnston and J. W. Maroney. Detroit.—p. 1240.

*Eosinophilia in Scarlet Fever. II. General Considerations. S. Friedman. Boston.—p. 1256.

Eruptive Fever with Stomatitis and Ophthalmia—Ginandes reports a case of an eruptive fever with cutaneous, buccal and ocular lesions similar to those of the two cases described by Stevens and Johnson (*Am J Dis Child* 24:526 [Dec.] 1922) as instances of a new clinical entity. Similar cases described by Rutherford and by Wheeler are discussed. The literature is reviewed, and the striking resemblance of these cases to certain others reported as instances of atypical erythema exudativum multiforme (Hebra) is pointed out. The suggestion is made that all these strikingly similar cases be considered as belonging to one group. The exact classification and nomenclature of such a group are left open for further study and investigation. If the term 'erythema exudativum multiforme' is to be retained, it is suggested that the name "Stevens-Johnson" be substituted for "Hebra" in order to emphasize the unusual features of this disease.

Test for Infectious Mononucleosis—Davidsohn says that finding an elevated titer of agglutinins for sheep red blood cells in a person who has not recently received an injection of horse serum and who presents a clinical and a hematologic picture suggestive of infectious mononucleosis indicates with a high degree of probability the presence of infectious mononucleosis. The test also offers a reliable means of a specific diagnosis that has not been available heretofore. The test will be valuable in differential diagnosis, particularly for the exclusion of early cases of acute leukemia. Such errors in differentiation have been made. There are cases of infectious mononucleosis with abdominal symptoms which resemble closely an attack of acute appendicitis. The author's case was of this nature. The test may eliminate the need for operative intervention if such a possibility is kept in mind. It seems probable from certain reports in the literature that cases of infectious mononucleosis with severe anginal lesions are mistaken for cases of diphtheria, and the patients are treated for that disease. In all these cases the diagnosis of infectious mononucleosis by means of a positive serologic test will enable one to eliminate unnecessary thera-

peutic procedures. A technic of agglutination is suggested which is preferable to the older method because it permits the reading of results at the end of two hours and is more sensitive.

Eosinophilia in Scarlet Fever—Friedman has analyzed the results in 100 cases of scarlet fever. The cases were divided according to the degree of intensity of the exanthem on the patient's admission. Type of rash: very mild, grade 1, mild, grade 2, moderate, grade 3, bright, grade 4, and intense, grade 5. The maximal eosinophil count attained in each case was compared with the degree of exanthem. The patients with the more intense rashes did not show the highest eosinophil counts. If anything, the counts were distinctly lower. Thus, Br's conclusion is erroneous and cannot be used as evidence in favor of Naegeli's theory of the nature of the eosinophilia in scarlet fever. However, the greatest objection to attributing the eosinophilia either to allergy or to the exanthem arises from the presence of the secondary eosinophilia. The author believes that the eosinophilia in scarlet fever is a manifestation of the formation of antitoxin in the body during the course of the disease. The primary rise begins to be evident when the condition of the patient is obviously ameliorated, in other words when sufficient antitoxin has been formed to combat successfully the toxin of the organism of scarlet fever. The free antitoxin in the blood exerts a chemotaxis for eosinophils, thus producing eosinophilia in the circulating blood.

American Journal of Hygiene, Baltimore

21: 483-684 (May) 1935

- Yaws in Jamaica** I. Epidemiologic Study of Two Rural Communities. T. B. Turner, New York, and G. M. Saunders, Kingston, Jamaica. B. W. I.—p. 483.
- Id.** II. Plan of Control Based on Treatment. T. B. Turner, New York, G. M. Saunders, Kingston, Jamaica, B. W. I. and H. M. Johnston, Jr.—p. 522.
- Note on Poliomyelitis, Diphtheria and Scarlet Fever Antibodies in Serum from the Philippines**. J. A. Doull, Cleveland, N. P. Hudson, Chicago, and R. C. Hahn, Elyria, Ohio.—p. 540.
- Incidence of Tuberculous Infection in Some Rural Communities in Michigan**. J. D. Aronson, Philadelphia.—p. 543.
- Individual as Factor in Antidiphtheria Immunity**. III. Amounts of Natural Antitoxin Possessed by Adult People. J. V. Sugg, New York, L. V. Richardson, Nashville, Tenn., and J. M. Neill, New York.—p. 562.
- Id.** IV. Adult Persons with High Natural Levels of Antitoxin. J. M. Neill, J. V. Sugg, New York, L. V. Richardson, Nashville, Tenn., R. A. Mosley, and E. L. Gaspari, Toledo, Ohio.—p. 571.
- Group Infection and Immunity During Scarlet Fever Epidemic in a Boys School**. B. Zuger, Brooklyn.—p. 583.
- Selective Mortality in Childhood**. C. E. Palmer and W. M. Gafafer, Baltimore.—p. 608.
- Age Incidence of Specific Types of Respiratory Attacks During Epidemic and Nonepidemic Periods**. S. D. Collins and Mary Gover, Washington, D. C.—p. 613.
- Tapeworm Studies**. I. Restricted Pasture Sources of Moniezia Infection in Sheep. N. R. Stoll, Princeton, N. J.—p. 628.
- Minor Respiratory Diseases as Observed During Influenza Epidemic of 1928-1929 and in a Nonepidemic Period**. W. H. Frost, Baltimore, and V. A. Van Volkenburgh, Baltimore.—p. 647.
- ***Typhoid Fever Among Household Contacts with Especial Reference to Vaccination**. G. H. Ramsey, Albany, N. Y.—p. 665.

Typhoid Among Household Contacts—Ramsey studied the incidence of typhoid among household contacts of sporadic cases. The secondary attack rate among susceptible contacts of all ages was found to be 7.03 per cent. Children were more severely affected than adults, men and women were attacked with almost equal frequency. An apparent reduction of 33 per cent in secondary case incidence occurred in families in which the primary patient was removed to a hospital as compared with families in which the primary patient remained at home. The secondary attack rate among household contacts living in places of less than 10,000 population was three times higher than the rate among contacts in places of 10,000 or more inhabitants. Among household contacts who used well water and lived on premises with cesspools or privies the secondary attack rate was three times higher than the rate among contacts served by public water supplies and sewerage systems. Both among household contacts of primary patients remaining at home and primary patients sent to the hospital, reductions of 75 per cent from the expected secondary case incidence were observed among contacts who had received three doses of vaccine subsequent to the onset of the primary case.

American Journal of Ophthalmology, St. Louis

18: 409-502 (May) 1935

- Pathogenesis of Some Intra Ocular Osseous Tissue**. True Metaplasia in the Eye. II. D. Lamb, St. Louis.—p. 409.
- Factor in Production of Divergence Increase with Near Vision**. F. H. Haessler, Milwaukee.—p. 419.
- Chalazion**. Lipogranulomatosis. A. Hagedoorn, Amsterdam, Holland.—p. 424.
- Studies of Retinopathies**. II. Essential Hypertension. III. Diffuse Glomerular Nephritis. Correlation of Retinal States with Blood Pressure, Renal Functional Status, etc. E. B. Gresser, New York.—p. 426.
- The Fundus Oculi in Diabetes Mellitus**. M. L. Folk and S. Soskin, Chicago.—p. 432.
- External Canthal Ligament in Surgery of the Lower Lid**. H. R. Hildreth, St. Louis.—p. 437.
- Two Unusual Cases of Unilateral Exophthalmos**. One with Optic Atrophy. H. C. Donahue, Boston.—p. 439.
- Argyll Robertson Syndrome Occurring with Pituitary Tumors**. Report of Two Cases. C. W. LeFever, Philadelphia.—p. 442.
- New Instrument for Determination of Depth Perception**. Preliminary Report. A. W. Loy, Mare Island, Calif.—p. 447.
- ***Epinephrine Bitartrate**. Uses Other Than in Treatment of Glaucoma. F. C. Cordes and D. O. Harrington, San Francisco.—p. 451.
- Oculoglandular Tularemia**. II. G. Merrill and L. W. Oaks, Provo, Utah.—p. 453.

Epinephrine Bitartrate—In addition to its action of lowering tension in chronic simple glaucoma, Cordes and Harrington have found epinephrine bitartrate useful as a mydriatic for: (1) examination of the fundi in eyes with high normal tension, (2) examination of the fundi in glaucomatous eyes which are under the influence of a miotic, (3) powerfully dilating the pupil with the separation of posterior synechia in cases of old or neglected iritis and (4) dilating the pupil during the operation for congenital, soft, membranous or traumatic cataract. The marked vasoconstrictive action of the drug, which exceeds that of epinephrine, makes it an ideal hemostatic in the removal of chalazias, in cyclodialysis and in the operation for retinal detachment, in which a dry field is essential.

American Journal of Surgery, New York

28: 191-530 (May) 1935

- Presidential Address**. Progress in Surgery. F. K. Boland, Atlanta, Ga.—p. 193.
- Experience with Appendicitis in College Students**. F. Robertson, Durham, N. C.—p. 201.
- Ureteral Transplantations**. Modifications of Methods. A. G. Brenizer, Charlotte, N. C.—p. 210.
- Treatment of Vesicovaginal and Uterovaginal Fistula**. W. E. Lower, Cleveland.—p. 234.
- Spontaneous Intraperitoneal Perforation of Bladder**. H. W. Cave, New York.—p. 242.
- Nephrolithiasis**. G. R. Livermore, Memphis, Tenn.—p. 253.
- ***Ray Carcinoma of Both Hands**. E. H. Ochsner, Chicago.—p. 2/3.
- Essential Requirements in Training of Neurosurgeon**. E. Sachs, St. Louis.—p. 277.
- ***Cerebral Lesions Postmortem in Mentally Defective Children**. C. Bagley, Jr., Baltimore.—p. 282.
- Spinal Extradural Cysts**. E. P. Lehman, University, Va.—p. 307.
- Penetrating Wounds of Cerebellum**. H. L. Foss, Danville, Pa.—p. 323.
- Chronic Subdural Hematoma**. Diagnosis and Treatment. C. C. Coleman, Richmond, Va.—p. 341.
- Surgical Treatment of Retinitis Pigmentosa**. H. H. Kerr, Washington, D. C.—p. 364.
- Davidson Tannic Acid Treatment of Burns**. Ten Year Results. R. D. McClure and C. I. Allen, Detroit.—p. 370.
- Emphysematous Gangrene of Abdominal Wall Following Acute Intra Abdominal Infections**. Report of Twelve Cases. H. A. Gamble, Greenville, Miss.—p. 389.
- ***Shotgun Wounds of the Abdomen**. Report of Experimental Work. B. C. Willis, Rocky Mount, N. C.—p. 407.
- ***Repeated Resections for Intussusception Due to Familial Tumors of Small Intestine with Remarks**. W. D. Haggard and W. O. Floyd, Nashville, Tenn.—p. 428.
- Jejunal Ulcer**. D. C. Balfour, Rochester, Minn.—p. 439.
- Chronic Cystic Mastitis**. Further Report on Nature of Process. J. S. Rodman, Philadelphia.—p. 452.
- Tuberculosis of Breast**. Report of Eight Cases. J. L. McGehee and H. C. Schmeisser, Memphis, Tenn.—p. 461.
- Permanent Results of Irradiation for Inoperable Cancer and Remarks on Irradiation as Preoperative Treatment in Operable Cancer of the Breast**. J. C. Bloodgood, Baltimore.—p. 490.
- Endamoeba Histolytica**. Incorrect Diagnosis and Treatment. Potential Surgical Catastrophe. E. P. Hogan, Birmingham, Ala.—p. 498.

Röntgen Carcinoma of Both Hands—Ochsner has seen twenty roentgen carcinomas: one of the neck, the result of roentgen therapy for tuberculous glands; one of the face, following roentgen treatment of an extensive lupus; one following a roentgen burn of the abdominal parietes; and seventeen of the hands of radiologists. Fourteen have succumbed to generalized cancer.

cachexia or hemorrhage due to extension of the process into a large vessel. Four are living and apparently well after excision, for periods varying from four to twenty nine years. Two are still under treatment. In cases in which there is a thick layer of subcutaneous tissue, complete excision whenever possible is the procedure of choice. The three, in which this operation was possible, have apparently recovered permanently. In only one instance of amputation of fingers or hands has he seen what appears as a permanent cure. This was in a patient in whom only one finger was involved. The others of this type have ultimately succumbed from recurrences, a number of them after multiple amputations. The patient, whose history he reports, would he believes, have had little chance of complete recovery except by amputation of both upper extremities above the wrists, and even then, in view of past experiences in like conditions, the outcome would have been extremely doubtful. Instead with the treatment he received (colloidal gold with tincture of iodine), he has had nearly normal use of his hands, no discomfort and at least a fair prospect of ultimate complete recovery.

Cerebral Lesions in Mentally Defective Children.—Bagley discusses the importance of accurate diagnosis of the type of cerebral lesion present in mentally defective children from a postmortem study of eight brains of such patients aged from 4 months to 34 years. Whether the lesion is congenital or acquired is of great importance. In the former one should attempt to determine whether there is a true hereditary condition or whether the defect was acquired during intra-uterine life. Since the lesion in many of the postnatal cases is acquired at birth, it is often difficult to differentiate them from congenital cases. However, in the majority of the acquired cases there is a sudden onset of symptoms which, when coupled with the history of an etiologic factor makes differentiation possible. The etiologic causes in hereditary cases are syphilis, chronic alcoholism, consanguinity and familial mental deficiency. Inflammation and trauma are by far the most important causes in the acquired cases, whether they be prenatal or postnatal. Of the cases included in this report cerebral inflammation during infancy was the etiologic factor in three. Two died within a few months, the third lived to the age of 34. In the fourth case the child had a hemorrhage at birth and was ill until the seventh month when it died. The fifth patient had an injury in the posterior part of the longitudinal sinus during birth with a moderate amount of bleeding over the cortex and stenosis of the longitudinal sinus at the site of the injury. The sixth and seventh patients had amaurotic family idiocy and represent the hereditary lesions. The last patient had hydrocephalus with an almost complete absence of the cerebral cortex secondary to occlusion of the aqueduct of Sylvius. This case probably represents an acquired intra-uterine inflammatory lesion. The possibility of surgery must be recognized in some cases, and likewise the surgical limitations must be realized and adhered to, for these unfortunate patients have often been the subject of unfair treatment at the hands of the overzealous surgeon. Blood, whether it is diffused in the cerebrospinal fluid or in the form of a clot which produces symptoms should be removed at the earliest possible moment by lumbar puncture or craniotomy. Patients in whom the blood has not been removed early may be helped by operation if it is undertaken before the secondary meningeal and cerebral changes are far advanced. Surgery has nothing to offer in the nonsuppurative cerebral inflammatory conditions.

Shotgun Wounds of the Abdomen.—Willis urges that, in scattered abdominal shotgun wounds all points of entrance be surgically cleaned and properly dressed and recommends the following prophylactic doses of antitetanic and perfringens serum, absolute rest in bed, sufficient opiate to depress respiration to 12 or 14 per minute, nothing by mouth, phlebotomy of 1,000 cc. of 5 per cent dextrose three times a day or Herndon's continuous phlebotomy, repeating the antitetanic serum on the fifth day and continuing oral starvation for from six to ten days, depending on the condition of the patient and the size of shot. Should more fluid be desirable, hypodermoclysis or intravenous injection can be used. In none of his surviving patients did a serious hemorrhage or abscess develop but these may occur therefore the patient should be carefully watched

and the abdomen examined from time to time. Enemas should not be given since fluid may be forced through perforations. The treatment of massive wounds must largely remain an immediate surgical procedure since in this type large holes are torn in the intestine, sometimes with complete severance. After operation these patients may be treated along the same lines as those with scattered wounds. The author has done experimental work on twenty-five dogs. From his experimental and clinical experience he is convinced that patients with scattered shotgun wounds should rarely be operated on, and then only for drainage of abscess or in the hope of controlling active hemorrhage.

Intussusception Due to Familial Tumors of Small Intestine.—Haggard and Floyd believe that the phenomenon of familial intussusception is well illustrated in the case that they report. The father had four operations for obstruction, three due to neoplasms, the last being a malignant degeneration of a polyp in the colon. His daughter had two operations for obstruction due to benign growths, while the son (the case reported) had three resections for intussusception from polyps, making a total of nine resections in three members of the same family seven of which were for benign neoplasms of the small intestine, one for obstruction by band and one for carcinoma. Intussusception in adults is chiefly and in children often caused by neoplasms. When an intussusception is reduced, the segment should be carefully examined for an intraluminal causative tumor and others should be looked for. When operation is done for colic-like abdominal pain and the condition of the appendix, gallbladder or pelvic or other organs does not explain the symptoms, intestinal tumors should be looked for.

Archives of Internal Medicine, Chicago

55 709-872 (May) 1935

- Further Study of Tuberculosis Among Medical and Other University Students: Occurrence and Development of Lesions During the Medical Course. H. W. Hetherington, F. M. McPhedran, H. R. M. Landis and E. L. Opie. Philadelphia—p. 709.
- Diuresis Following Administration of Salyrgan. Its Effect on Specific Gravity, Total Nitrogen and Colloid Osmotic Pressure of Plasma of Normal and of Edematous Dogs. A. H. Bryan, W. A. Evans, Jr., M. N. Fulton and E. A. Stead, Jr. Boston—p. 735.
- Pituitary Basophilism. Report of Case. J. H. Lawrence and H. M. Zimmerman. New Haven, Conn.—p. 745.
- *Cardiac Pain. Presence of Pain Fibers in Nerve Plexus Surrounding the Coronary Vessels. L. N. Katz, W. Mayne and W. Weinstein. Chicago—p. 760.
- *Mushroom Poisoning (Mycetismus). Report of Four Cases. J. B. Vander Veer and D. L. Farley. Philadelphia—p. 773.
- *Habitual Hyperthermia. Clinical Study of Four Cases with Long Continued Low Grade Fever. H. A. Reinmann. Minneapolis—p. 792.
- Initial Attacks of Rheumatic Fever in Patients Over Sixty Years of Age. E. B. Ferris, Jr. and W. K. Myers. Boston—p. 809.
- Notes on Pernicious Malaria. W. H. Kelley and V. P. Sydenstricker. Augusta, Ga.—p. 818.
- *Persistent Abnormalities (Wassermann Fastness) of Spinal Fluid in Treated Neurosyphilis. Their Prognostic Import. M. J. Goodman and J. E. Moore. Baltimore—p. 826.
- Fat Absorption. Its Value as an Index of Function of the Liver. M. Sullivan and J. A. B. Fershtand. New Orleans—p. 834.
- Diseases of the Heart. Review of Contributions Made During 1934. A. Graybiel and P. D. White, Boston—p. 842.

Cardiac Pain.—Katz and his associates confirm the observation of previous workers that occlusion of the coronary vessels and the surrounding tissue in the unanesthetized dog gives rise to a response resembling an anginal attack. The response from this procedure is similar to that obtained on compressing a superficial somatic sensory nerve, save for the inability of the animal to locate the site of irritation. The authors' results show that this response is due not to the occlusion of the coronary artery but to stimulation of afferent fibers located in the nerve plexus surrounding the vessels. The evidence for this is: 1. Occlusion of a carefully isolated strip of the coronary artery caused no response, but a definite response was obtained when the undissected coronary vessels above and below this point were compressed. 2. Destruction of the nerve plexus with phenol and alcohol abolished the response to compression, but the response was still positive when a region above the phenolized area was stimulated. 3. Complete preliminary occlusion of the carefully isolated coronary artery did not prevent a positive response to compression above or below this point. 4. Pericardial tamponade following bleeding from a ruptured coronary artery caused syncope, but no "anginal"

response Positive responses occur only when the region about the coronary vessels is compressed The rest of the myocardium and epicardium is insensitive to stimulation by pressure Ischemia of the myocardium is one of many mechanisms operating on the nerve endings and nerve fibers which may give rise to anginal attacks

Mushroom Poisoning—Vander Veer and Farley state that nearly all the severe cases of mushroom poisoning (mycetismus) in this country result from the ingestion of one of the varieties of the genus *Amanita* These cases may be divided into 'rapid' and 'delayed' types The rapid type of poisoning occurs within from one to three hours after ingestion of fungi of the *Amanita muscaria* group, and is characterized by excessive salivation, perspiration and lacrimation Nausea vomiting, severe abdominal pains and diarrhea occur The pupils are contracted Convulsions and coma are seen in the severe cases The mortality is low and the patients respond well to the proper treatment The delayed type of mycetismus results from the ingestion of mushrooms belonging to the *Amanita phalloides* group The onset is delayed until from six to fifteen hours or more after ingestion of the fungi Abdominal pains are severe, and nausea and vomiting may be extreme Diarrhea is nearly always present The patients are prostrated from the onset Jaundice nearly always occurs and renal damage is frequent Symptoms resulting from damage to the central nervous system are usually present The mortality in this type of poisoning is at least 50 per cent Extremely ill patients, even those with marked nervous symptoms deep jaundice and evidence of renal damage, may recover completely Care should be taken to keep the patients at complete rest until recovery is assured In the rapid type of mycetismus the early onset of vomiting and diarrhea is of value in removing the poisonous fungi from the gastro-intestinal tract No attempt should be made to alleviate these symptoms If the stomach is not completely emptied, gastric lavage should be carried out with saline solution or an emetic should be given A saline purge may be left in the stomach after it has been irrigated, or the cathartic may be administered by mouth to aid in emptying the lower portion of the gastro-intestinal tract Atropine sulphate should be given at once hypodermically in all cases in which there is evidence of the action of muscarin In the patient who shows symptoms of collapse caffeine strychnine and epinephrine should be given in full doses in order to tide him over the acute stage, after which recovery occurs rapidly The late onset of symptoms in the delayed type of mycetismus allows the fungi to be well down the gastro-intestinal tract before symptoms appear Emetics and gastric lavage should be employed at once to make certain that the stomach is empty Thorough purging is especially important to empty the ileum and colon quickly High enemas may be given All the patients who are known to have eaten the same fungi, but in whom symptoms have not appeared, should undergo emptying of the gastro-intestinal tract at once Relapse with a fatal issue is not uncommon in patients who have been ill several days and who are apparently improving Opiates are usually indicated and should be given hypodermically for the relief of the severe abdominal pains and delirium and in order to induce sleep A liquid diet with high carbohydrate content should be given when possible because of the hepatic and renal damage Intravenous administration of dextrose in physiologic solution of sodium chloride is of value for patients with marked and persisting gastro-intestinal symptoms A 10 per cent dextrose solution should be used and from 500 to 1,000 cc given every six to eight hours Physiologic solution of sodium chloride given subcutaneously or tap water rectally may prove of value by increasing the intake of fluids The presence of shock and circulatory collapse should be combated by the usual methods The external application of heat and the use of caffeine, strychnine and epinephrine (in full dosage) may be indicated The use of an antitoxin serum has been advocated in this type of poisoning and has been used in France and Germany There is no similar antitoxin available in this country

Habitual Hyperthermia—Reimann failed to find any organic basis for low grade fever known to have existed in four patients for at least twenty one six, seven and fourteen years respectively Analysis of the temperature records of

these patients indicates that in each the range fell within the limits of normal The temperature in certain normal persons may be regulated slightly above the usually accepted normal level and in some persons of a neurotic nature the elevated temperature is one of the signs of their abnormal constitutional type together with other evidence of vasocardiac and nervous instability Persons of this nature are not rare The condition should be regarded as a neurosis or as habitual hyperthermia only after thorough and prolonged examination fails to reveal an organic basis There are no infallible criteria for determining a diagnosis Each case must be regarded individually Certain data helpful in establishing a diagnosis are discussed The picture must be considered as a whole, with especial emphasis on the constitutional type of the person, the nature of the symptoms and signs, the constancy of the temperature, the absence of evidence of infection or other organic disease the constancy of weight, the normal metabolism and the response to antipyretic and narcotic drugs

Abnormalities of Spinal Fluid in Treated Neurosyphilis—Goodman and Moore present a study of the incidence of clinical progression or relapse after prolonged treatment in 212 patients with neurosyphilis A comparison is made between two groups ninety-five patients for whom the reaction of the spinal fluid remained persistently positive and 117 for whom the positive reaction was reversed by treatment In the groups as a whole, clinical progression occurred in 22 per cent of the Wassermann fast patients and in only 7 per cent of those with reversed reactions Limiting the study to patients treated for two or more years, subsequent progression occurred in 12.5 per cent of the Wassermann fast group and in 4.8 per cent of the group with reversed reactions Progression or relapse is more common in patients with parenchymatous neurosyphilis (tabes and dementia paralytica) than in those with nonparenchymatous types of neuraxis involvement Even in a patient with apparently nonparenchymatous neurosyphilis the subsequent relapse, if one occurs, is likely to be similar to dementia paralytica Of thirty-one patients who received induced fever therapy (chiefly malaria) subsequent progression or relapse occurred in only two While there is a more definite relationship between the clinical outcome and the reaction of the spinal fluid in neurosyphilis than between the reversal or the fastness of the Wassermann reaction of the blood in various forms of late syphilis not involving the nervous system, a persistently positive reaction of the spinal fluid does not indicate the inevitability of subsequent progression or of relapse nor can the rate or completeness of reversal of the reaction be used as the sole guide to the optimal duration of treatment in cases of neurosyphilis

Archives of Otolaryngology, Chicago

21: 507-632 (May) 1935

- *The Pathology of Radium Burns M G Lynch Boston—p 507
- Spontaneous Pneumothorax Coincident with Esophagoscopy Report of Two Cases G G Carroll Rochester N Y—p 515
- Immunologic Aspect of Electrosurgery in Rhinology L J Silvers New York—p 527
- Infections of the Neck F Z Havens Rochester Minn—p 536
- Descending Bony Facial Canal in Relation to Complications of Mastoidectomy E F Ziegelman San Francisco—p 542
- *Influence of Middle Ear on Labyrinthine Pressure H Kobrak Chicago—p 547
- Tracheobronchial Aspiration of Buccopharyngeal Secretion During Ether Anesthesia Immediate Postoperative Bronchoscopic Study of Twenty One Patients G Lowenthal Cincinnati—p 561
- Surgical Method for Prevention of Thrombophlebitis of Cavernous Sinus Report of Case J Browder and M C Myerson Brooklyn—p 574

Pathology of Radium Burns—Lynch classifies the stages in the development of a radium burn into three main divisions 1 The stage of engorgement followed by an increase in the number of polymorphonuclear leukocytes and their migration to the surrounding tissue. Associated with this is an increase in the blood flow in this area 2 The stage of constriction of the vessels followed by edema of the endothelial lining injury to the vessels of the walls and thrombosis The flow of the blood at this stage is slow, the capillaries have become thrombosed or have been occluded owing to the edema of the walls and the larger arterioles and arteries are the only vessels that are functioning 3 As a direct result of the

second condition and a later injury to the larger vessels necrosis of the tissue, which takes place owing to the loss of blood supply

Influence of Middle Ear on Labyrinthine Pressure—

The studies of Kobrak show that changes in the pressure in the middle ear are transferred to the labyrinth. The smallest change in pressure that was necessary to produce a movement in the labyrinthine fluid in rabbits was approximately 0.3 cm of water. The changes of pressure in the middle ear that occur during life (swallowing, coughing, sneezing and Valsalva's experiment) are equal to or greater than those which were found to be necessary in order to cause a movement of the labyrinthine fluid. Extremely small changes in pressure in the middle ear do not produce changes in the acoustic reflex of the tensor tympani muscle. Greater changes in the pressure in the middle ear, either positive or negative, produce a decrease in the degree of the contraction. The resistance in the aqueductus cochleae may be dependent on the frequency of a periodic change in the pressure. The fluid of the inner ear can be displaced by the contraction of the intrinsic muscles of the ear. A tetanic contraction of the tensor tympani muscle caused by nicotine produces a strong movement of the labyrinthine fluid. Clinically, from the diagnostic standpoint, the author believes that diseases of the inner ear may be due not only to organic lesions in the labyrinth, as is assumed for the classic Ménière syndrome, or to changes in the blood supply (angiopathic Ménière syndrome) but also to alterations in the pressure in surrounding parts (middle ear, intracranial cavity). The symptoms seen in Krassing's experiments may be referred to the changes seen in the present experiments and to the development of the Ménière symptoms after inflation as instances of a "tympagogenic" Ménière disease, or "tympagogenic labyrinthopathy". It would be worth while to include these possibilities of disease of the labyrinth when making a differential diagnosis. Therapeutic results may be obtained by influencing the labyrinth from without by means of procedures carried on in the middle ear. This type of treatment has been tried. For instance, Krabowski treated patients with Ménière's disease by inserting a Siegle speculum in the outer ear. By means of movements of the whole ossicular chain he attacked the labyrinth and produced a favorable effect.

Journal of Biological Chemistry, Baltimore

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- Nature of Difference in Phospholipid Content of Oxalated and Heparinized Plasma L. H. Schmidt, Cincinnati—p. 449
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- Concentrations of Lactic Acid in Blood and Liver of Rabbits Phyllis A. Bott and D. W. Wilson Philadelphia—p. 463
- Measurement of Hydrogen Ion Concentration and Acid Neutralizing Power of Saliva B. C. Soyenko and C. F. Hinck Jr. New York—p. 467
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- Application to Colorimeter of Schoenheimer and Sperry Method for Determination of Total and Free Cholesterol F. Fitz, New York—p. 523
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- Effect of Thyroid and Thyroxine on Concentration of Creatine in the Heart Muscle Liver and Testes of the Albino Rat M. Bodansky Galveston Texas—p. 615
- New Method for Separation of Sterols from Vitamin D Containing Materials S. Natelson and A. E. Sobel New York—p. 667
- Determination of Inorganic Sulphate in Serum of Normal Persons W. S. Hoffman and Rose Cardon Chicago—p. 717
- Some Analyses of Sample of Bence-Jones Protein H. O. Calvery and R. H. Freyberg Ann Arbor Mich.—p. 739

Chemical Nature of Hematopoietic Substance in Liver

—Dakin and West describe the preparation from commercial liver extract of products clinically active in causing remission in pernicious anemia. The method is based on the removal of much relatively inactive material by precipitation with

alcoholic calcium acetate, followed by precipitation of the active material with Reinecke acid. Subsequent purification is effected by salting out the active material with ammonium sulphate and later by the use of either magnesium sulphate, sodium chloride or flavianic acid. About 30 mg of the product caused a perceptible reticulocyte response in suitable pernicious anemia patients, while 80 mg has given a maximal response. Under suitable conditions, substantially the whole of the active material is precipitable by ammonium sulphate, since none could be recovered from the filtrate. Precipitation in the magnesium sulphate is quantitatively less complete. The yield of purified product approximates 1 per cent of the dry liver extract. The clinical activity of the product is readily abolished by exposure to cold 0.5 normal solution of sodium hydroxide and by boiling for one hour with 0.5 normal solution of sulphuric acid and also by salts of heavy metals. Exposure to alkali involves extensive racemization. On hydrolysis of the active material an aminohexose similar to glucosamine but not definitely identified as such, was obtained and lysine, arginine, glycine, leucine, hydroxyproline and aspartic acid were present in all the preparations obtained so far.

Journal of Lab and Clinical Medicine, St. Louis

20:785-894 (May) 1935

- Blood Groups Theory and Medicolegal Application P. Levine Madison Wis.—p. 785
- The Intestinal Toxemia Syndrome Treatment with Kaolin C. A. Mills Cincinnati—p. 801
- Juvenile Paratyphoid Neurosyphilis Studies IX Laboratory Findings W. C. Menninger Topeka Kan.—p. 806
- Blood Iodine Studies V Blood Iodine After Total Thyroidectomy in Man G. M. Curtis, L. E. Barron and F. J. Phillips Columbus Ohio—p. 813
- *Van den Bergh Reaction (Ring Test Technique) and Hemoglobin Bilirubin Interrelation in Icterus Neonatorum N. W. Elton Reading Pa.—p. 817
- Rheumatoid Arthritis and Its Treatment by Gold Salts Results of Six Years Experience J. Forestier Paris France—p. 827
- Transnodal Treatment of Taenia Saginata Infestation M. Golob New York—p. 841
- *Weight Reduction with High Protein Diets L. K. Campbell Chicago—p. 843
- Concentration of Indoxyl Compounds (Indican) in Blood H. Sharlit New York—p. 850
- Urinary Sulphur in Chronic Nonspecific Arthritis B. D. Senturia St. Louis—p. 855
- Studies in Bacteriophage II Methods of Maintaining and Testing Patency of Bacteriophage Helen Zaytzeff Jern and F. L. Meleney New York—p. 862
- Malaria Studies in Greece Modification of Uhlenhuth Weidanz Precipitin Test for Determining Source of Blood Meals in Mosquitoes and Other Insects J. B. Rice and M. A. Barber Cavalla Greece—p. 876
- Note on Fixation of Smears for Bacteriologic Study Florence L. Evans New Orleans—p. 883

Van den Bergh Reaction in Icterus—In twenty-four full term infants, Elton examined 131 specimens of blood at frequent intervals during the first ten days of life to determine the character of the van den Bergh reaction by the ring test technique and to correlate blood bilirubin and hemoglobin changes during the course of icterus neonatorum. The positive van den Bergh reaction was found to occur in 36 per cent of all specimens during the second to the tenth day and to attain a maximal frequency of 55 per cent on the sixth day. Since the most complete studies reported in the literature on variations in erythrocyte counts and hemoglobin values in the new-born show that a relative or absolute polycythemia develops after birth and usually within the first two days of life, and since during the same period the bilirubin level is rapidly rising in the blood, the postulation of excessive blood destruction as the underlying cause of icterus neonatorum does not appear reasonable. Partial anoxemia induced by the patency of the ductus arteriosus and a disturbance of liver function induced by the patency of the ductus venosus Arantius provide rational explanations of the transient polycythemia and jaundice during the early neonatal period as two independent phenomena. No correlation has been found in the data derived from this investigation supporting the assumption that blood destruction is a factor of any appreciable significance in the etiology of icterus neonatorum. The levels of bilirubin and hemoglobin in the blood tend to rise and fall together, although at times they are

subject to erratic fluctuations. The patency and closure of the ductus venosus are presented as the logical factors in the etiology, intensity, duration and termination of this icterus.

Weight Reduction with High Protein Diets—Campbell has observed an average loss of weight of from 1½ to 6 pounds (0.5 to 3 Kg) per week in twenty-seven subjects having non-pathologic obesity during a period of from four to fifty weeks. The diets were of the high protein type containing approximately 2 Gm of protein per kilogram of ideal body weight. The caloric value of the diets was from 20 per cent above to 39 per cent below basal maintenance. However, most of the diets afforded a caloric value of about 20 per cent below basal requirements. The patients maintained excellent health, continued all their normal activities and had an increase of energy as the weight decreased. The large amount of lean meat and vegetables prevented the hunger of which most individuals complain during weight reduction on low protein diets. There were no changes in the kidney function or blood pressure during any period of the observation. Nitrogen balance was maintained at all times. The caloric expenditure afforded by the high protein diet in one case was 7 per cent above that of an isocaloric high carbohydrate diet.

Journal of Nervous and Mental Disease, New York

81: 489 612 (May) 1935

- Juvenile Paretic Neurosyphilis. Studies. III. Developmental History Including Mental and Physical Growth. Trauma and Convulsions. W C Menninger Topeka Kan.—p 489
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Kansas Medical Society Journal, Topeka

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Laryngoscope, St Louis

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Maine Medical Journal, Portland

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New England Journal of Medicine, Boston

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- *Relationship of Coronary Arteriosclerosis to Auricular Fibrillation with Especial Reference to Term 'Arteriosclerotic Heart Disease.' M G Brown Boston.—p 963
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Study of Heart Disease Among Veterans. III. Hereditary and Familial Factors in Causation of Cardiovascular Disease. P B Matz Washington D C.—p 977

Coronary Arteriosclerosis and Auricular Fibrillation.—

Brown made a study of all cases coming to necropsy during a period of twenty years that showed auricular fibrillation, exclusive of those with known rheumatic valvular disease. Particular attention was paid to the relation between this irregularity and disease of the coronary arteries. Hypertension was an etiologic factor in 79.3 per cent of the cases with permanent fibrillation and in 86.5 per cent of the cases with transient fibrillation. Significant disease of the coronary arteries, although fairly frequent among those with hypertension, was not common as the sole factor in the development of permanent auricular fibrillation. Angina pectoris and coronary thrombosis were comparatively rare in patients who had had auricular fibrillation. There was a group of nine cases classified as of undetermined etiology that did not present significant coronary artery disease or known previous hypertension. There were nine cases showing other forms of heart disease, such as pericarditis and unrecognized stenosis of one of the valves. Finally there were an additional fifteen instances of auricular fibrillation showing no disease of the heart, in five of which there was hyperthyroidism. Men predominated over women in a proportion of two to one and the ages ranged from 39 to 89 with the majority between the years 50 to 70. The heart weight was greater in the men and with permanent fibrillation than in the women or with transient fibrillation. Although congestive failure was the most common cause of death it is of interest that pulmonary infarction was quite frequent and renal insufficiency rare. Evidence is presented that marked peripheral sclerosis of itself need not be an indication that the coronary arteries are sclerosed or that the efficiency of the heart is in any way altered. This suggests that the term arteriosclerotic heart disease should be given up entirely or clarified in its expression.

Northwest Medicine, Seattle

34: 149 190 (May) 1935

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Heart Disease in the Pacific Northwest Analytic Study of Mortality and Morbidity, with an Analysis of Five Hundred and Fifty Six Private Cases R L King Seattle—p 154
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Tularemia Deer Fly Fever Report of Two Cases One with Endocarditis and Necropsy Findings J W Sugden Salt Lake City—p 167
Large Quantities of Fluids Intravenously Principles and Practice for Their Use C R Jensen Seattle—p 169
Sporadic Occurrence of Bilharziasis in Washington A H Peacock and W L Voegtlin Seattle—p 171
Intrapulmonary Infection of Bronchogenic Origin C J Johannesson Walla Walla Wash—p 176
Stricture of the Ureter in Children Report of Case E S Pomeroy Salt Lake City—p 178

Pennsylvania Medical Journal, Harrisburg

38: 569 674 (May) 1935

- Treatment of Bladder Tumors G G Smith Boston—p 569
Treatment of Peripheral Vascular Disease by Means of Alternate Negative and Positive Pressure E M Landis Philadelphia—p 579
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Importance of Correcting Muscular Imbalance in Relief of Asthenopia L F Appleman Philadelphia—p 588
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Public Health Reports, Washington, D C

50 663-694 (May 17) 1935

- Destruction of Mosquitoes in Airplanes Preliminary Note C L Williams and W C Dreessen—p 663
Studies of Sewage Purification II Zoogaea Forming Bacterium Isolated from Activated Sludge C T Butterfield—p 671

Radiology, Syracuse, N Y

24 521 650 (May) 1935

- Xanthomatosis Involving Bone (Lipoid Histiocytosis) Case Reports and Roentgen Findings L A Smith Indianapolis—p 521
Treatment of Hyperthyroidism by Roentgen Irradiation of Pituitary Gland J Borak Vienna Austria—p 535
*Role of Force of Gravity in Pneumothorax Cavity Including a Discussion of Selective Collapse E Korol Lincoln Neb—p 550
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Semiautomatic Implant Cutter W Stenstrom and C E Nurnberger Minneapolis—p 562
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Schüller-Christian Disease After X-Ray Therapy Living and Under Observation Eleven Years M B Radding New York—p 591
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Roentgen Aspects of Sympathetic Neuroblastoma Report of Two Cases A Hartung and S R Rubert Chicago—p 607
Fanny Bones of Human Head Viewed in the Light of the Co(s)mic Ray H T Harrison Little Rock Ark—p 616

Xanthomatosis Involving Bone—Smith presents the case histories and roentgen observations of two patients with Schüller-Christian's disease and one with a metastatic hypernephroma associated with xanthomatous changes. The latter exemplifies a condition not unusual but readily confused with bone tumors of simple xanthomatous nature much more benign and of much rarer occurrence. One of the Schüller-Christian cases presented a marked but temporary osteosclerosis surrounding one bone lesion the entire area being later filled with

normal bone. Both patients with Schüller-Christian's disease now appear clinically well, one spontaneously after extensive operative treatment and the other after radium therapy. The classification, roentgen studies, differential diagnosis and radiation therapy of the various xanthomatous lesions affecting bone are discussed and the literature is reviewed. The roentgen observations are often of greater importance in diagnosis than the histologic, particularly in Schüller-Christian's disease after the earlier stages.

Force of Gravity in Pneumothorax Cavity—Korol states that under normal conditions the lung is but slightly stretched by its own weight, largely because of atmospheric pressure holding the lungs against the parietal pleura in opposition to gravity. The lung is also protected from excessive stretching by the heart and abdominal viscera. After the induction of pneumothorax, the lung sinks toward the bottom of the pleural cavity by its own weight. In case of mediastinal or diaphragmatic adhesions, the heart and abdominal viscera exert traction on these adhesions, sometimes tearing them. The lung moves about freely in the pneumothorax cavity during changes of posture. In roentgenograms taken in the erect position the air bubble appears on the top of the lung producing an illusion of selective collapse, and in roentgenograms made in the knee-chest position the air readily shifts toward the diaphragmatic region in accordance with the laws of gravity and inertia. The weight of the lung may kink one or more of the lobar bronchi, producing massive atelectasis. If the bronchial lumen is but partly occluded there will result obstructive emphysema and enlargement of the cavities in the lung treated by pneumothorax.

Tennessee State Medical Assn. Journal, Nashville

28 175 216 (May) 1935

- Role of Physical Therapy in Medicine A J Kotkin St Louis—p 175
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FOREIGN

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British Journal of Experimental Pathology, London

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- Mechanism of Immunity to Filtrable Viruses. III. Role of Leukocytes in Immunity to Vaccinia A. B. Sabin —p 158
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- *Preparation and Testing of Elementary Body Suspensions from Vaccinia Filtrates and Their Possible Use in Smallpox Prevention G. H. Eagles —p 181
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Comparison of Effects of Beta Rays of Radium—Baker compared quantitatively the destructive effects of the beta rays of radium on *Bacillus coli*, *Staphylococcus aureus*, bacteriophage, filtrate of Rous sarcoma no. 1 tetanus toxin, *Bacillus anthracis* spores, hemolytic amoebocyte guinea-pig complement trypsin and lysozyme. The Rous sarcoma agent falls within the bacterial group as regards susceptibility to destruction by beta rays. On the other hand, tetanus toxin also falls within this range, so that it is obviously not possible to deduce that the Rous agent is a living organism. On the other hand the ferments so far examined are much more resistant to destruction than the most resistant organism tested (anthrax spores). Recent work by Northrup on the destruction of crystalline pepsin by beta rays has shown that the loss of activity parallels the disappearance of protein nitrogen from the solution. This together with its high resistance to destruction, suggests that a relatively gross alteration of the molecule is necessary in order to destroy the activity. Trypsin is less resistant than the other ferments examined but it still requires from twenty-five to fifty times the dose necessary in the case of the Rous agent and at least ten times the dose for anthrax spores. In these experiments the trypsin was diluted and at pH 7.5. Strong trypsin in the acid state showed no evidence of any destruction with ten times the maximal period of irradiation. Although these results do not afford evidence as to the living nature of the Rous sarcoma agent, they do point to the fact that it differs widely in its make-up from the ferments so far examined. It appears, therefore, very improbable that this agent is a ferment in the accepted sense of the term.

Use of Elementary Body Suspensions from Vaccinia Filtrates in Smallpox Prevention—Eagles advances the possibility of elementary body suspensions as an alternative to other vaccine materials. These suspensions prepared from dermal lapine, represent the virus in its purest form, and they survive for long periods without serious deterioration in infectivity when stored in a cold room. Plain broth or physiologic solution of sodium chloride with the addition of a small amount of plain agar as a suspending medium exert a beneficial effect in conserving their potency. The suspensions possess the advantage over filtrates, which themselves keep extraordinarily well of consisting of practically pure virus particles, the serum proteins from the pulp having been to a large extent eliminated. The reactions produced by these suspensions of elementary bodies do not vary from those obtained with ordinary lymph as judged by animal tests. They are neutralized by vaccinia-immune serums and call forth an immunity response in rabbits shown by agglutinin production and by the fact that inoculated animals are later immune to an injection of lymph. This occurs

whether the intradermal or scarification method of inoculation is used. At present practically all human vaccinations for smallpox are made into the scarified skin. There is some hesitation to adopt the intradermal method. Yano (1934) used vaccine purified by adsorption and elution, having a strength of 1,000 minimal eruptive doses as determined by intracutaneous injection in rabbits. Altogether 613 persons were vaccinated subcutaneously, 0.3 cc being used as a dose for infants and 0.5 cc for adults. The series comprised primary and secondary vaccinations, as well as vaccinations on adults who had been vaccinated at least twice previously. Revaccination by the percutaneous route always gave negative reactions, and, although the time period following the subcutaneous vaccinations was not sufficiently long to warrant a conclusive opinion on the duration of immunity, there was nothing to suggest that it would prove less durable than that elicited by ordinary percutaneous vaccination. No mention was made of the incidence of complications contraindicating the use of the subcutaneous route. Suspensions of elementary bodies should lend themselves to vaccination whatever technique is employed, but would appear by virtue of their sterility and purity, to be particularly suitable for intradermal or subcutaneous inoculations. The ultimate test however, must be their behavior in routine human vaccination.

British Journal of Surgery, Bristol

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- Progressive Postoperative Gangrene of Skin A. M. Stewart Wallace —p 642
- Adenoma of the Duodenum B. R. Sworn and J. Menton —p 647
- Measured Dosage in Radium Treatment of Carcinoma of Urinary Bladder R. G. Hutchison —p 663
- Interinnomino Abdominal (Hind Quarter) Amputation G. Gordon Taylor and P. Wiles —p 671
- Pathology of Congenital Genu Recurvatum D. S. Middleton —p 696
- Observations on Fistula in Ano in Relation to Perianal Intramuscular Glands. Reports on Three Cases C. Gordon Watson and H. Dodd —p 703
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- Osteo Arthritis of the Hip Joint T. P. McMurray —p 716
- Pathogenesis of Paget's Disease of Nipple and Associated Lesions. R. Muir —p 728
- Paraplegia in Pott's Disease with Especial Reference to Pathology and Etiology R. Weeden Butler —p 738
- Pott's Paraplegia. Prognosis and Treatment H. J. Seddon —p 769
- Skeletal Lipoid Granulomatosis (Hand-Schneller-Christian's Disease) J. Fraser —p 800
- Unusual Case of Bone Regeneration After Complete Diaphysectomy on Two Occasions J. W. S. Blacklock and W. Rankin —p 825
- Treatment of Spasmodic Dysphagia by Sympathetic Denervation. L. Rogers —p 829
- *Osteo-Arthritis in Dorsal Intervertebral Joints. Study in Morbid Anatomy L. R. Shore —p 833
- Polyspondylitis Marginalis Osteophytica L. R. Shore —p 850
- Sympathectomy in Treatment of Achalasia of the Cardia G. C. Knight —p 864

Fistula in Ano and Perianal Intramuscular Glands—Gordon-Watson and Dodd say that deep intramuscular perianal glands probably are vestigial and often lose connection with the anal canal by obliteration of the ducts during development. In some instances when the duct is patent infection from the anal canal takes place, in other instances infection may occur in the glandular substance when there is no direct communication with the anal canal or when the orifices of the ducts have become blocked by congestion of the mucosa and submucosa. On occasions when one of these glands has penetrated to the deep surface of the levator ani it may explain the development of a perirectal abscess and fistula. The presence of these deep glands emphasizes the importance of a careful search for a rectal opening when a supposed blind external fistula is being dealt with. A chronic origin of anal fistula may well be the truth in some cases should a mild infection of a perianal gland occur and the existence of a patent duct permit drainage into the anal canal. In the absence of a patent duct the infection of the perianal glands may be responsible for many of the abscesses which arise for no apparent reason. The existence of these perianal glands often with patent ducts leading into the rectum the tuberculous origin of many fistulas and the fact that malignant changes sometimes occur in fistulous tracts combine to emphasize the importance of histologic examination when operating for fistula in ano. Obviously it can happen only

occasionally, and then in the case of a recently formed abscess or fistula, that the epithelium of these glands and their ducts lining either abscess or fistula is recognized histologically. Once such a case has become chronic, granulation tissue will have replaced the epithelium, and the real origin becomes obscured.

Pathogenesis of Paget's Disease of the Nipple—Muir discusses intraduct carcinoma and its intra-epithelial mode of spread in Paget's disease. Intraduct carcinoma is a common chronic disorder which precedes the cancer age by a considerable period. It often breaks through the normal confines of the ducts and gives rise to ordinary carcinoma, but may exist for a long period without doing so; occasionally it leads to the relatively uncommon condition of Paget's disease. In the modes of spread of intraduct carcinoma the malignant change may arise in multiple foci, when the epithelial cells have assumed the neoplastic character, they may grow in masses within the ducts and come to form a sort of injection of them or a spread of cells with malignant properties in relatively healthy epithelium—the intra-epithelial spread of carcinoma. By intra-epithelial growth is meant the invasion of normal epithelium by cancer cells; the latter grow within the epithelium and destroy it to a varying extent the epithelium playing a passive part. The cancer cells may occur in masses in the invaded epithelium or they may be disseminated and occur singly, the latter condition being apparently due to their wandering in the epithelium. 1 Carcinoma may start in an epithelium and grow within it. The cells of the growth present different morphologic features and there may be aberrations in type. The growth often goes on for years, occasionally infiltration of the cutis vera follows, an epithelioma, a basal cell carcinoma or a growth of other type resulting. 2 A malignant growth infiltrating the cutis may invade the epidermis and spread within it. Carcinoma of the breast may occasionally invade the epidermis in this way, and the invading cells then behave in a fashion analogous to what is seen in Paget's disease. 3 The epidermis of the nipple may be invaded by cells of an intraduct carcinoma in the upper part of a duct of the nipple—the route of spread in this case is intra-epithelial throughout. This the author believes to be the ordinary mode of origin of Paget's disease. The intra-epithelial mode of spread occurs in the epithelium of the ducts and acini as well as in the epidermis of the nipple—the Paget cells are cancer cells growing in non-neoplastic epithelium. Paget's disease occurs only when the intraduct carcinoma is present in the upper portions of the ducts in the nipple and is due to the spread of the cancer cells from the ducts to the epidermis by the intra-epithelial route. Intraduct carcinoma in this situation is relatively uncommon, and hence Paget's disease is somewhat rare. Much more frequent is the occurrence of intraduct carcinoma in the ducts within the breasts, and then the ordinary result is a direct breaking through of the cells with the production of an ordinary infiltrating carcinoma. Intraduct carcinoma may lead to one or both lesions and thus Paget's disease may precede or may follow ordinary mammary carcinoma, or again may develop without the occurrence of the latter.

Osteo-Arthritis in Dorsal Intervertebral Joints—Shore states that osteo-arthritis of the small synovial joints of the vertebral column is to be distinguished from osteo-arthritis of the spine. In the pathologic anatomy of osteo-arthritis there are three stages of development. In the first the disease is indicated only by a fringe of osteophytes around the normal contact area; in the second by a zone of porous bone which separates the original contact area from a peripheral fringe of osteophytes and in the third stage all traces of the original contact area are lost and the surface may be grooved, polished and greatly deformed. The distribution of osteo-arthritis in the dorsal intervertebral joints which has not previously been recorded is set out in graphic form, and certain zones of special incidence are observed. The lumbodorsal outcrop is interpreted as the result of weight bearing in the joints of the dorsiflexed lumbar column and the absorption of the lower thoracic vertebrae into the lumbar curve as lordosis is established. By dorsocervical outcrop is suggested that in the main this outcrop is the result of the use of the upper limbs by movements of dorsiflexion transferred from the limbs to the thoracic skeleton and by associated action of the erector spinae muscle. This outcrop presents two peaks of higher incidence. 1 At the joint between the fourth

and fifth thoracic vertebrae is found the upper thoracic peak. It is suggested that this peak is due to dorsiflexion, which is a normal feature of inspiration accentuated with the onset of lordosis and kyphosis. 2 The cervicodorsal junction is marked by a cervicodorsal peak. It is suggested that the explanation lies in the powerful urge to keep the head upright in spite of kyphotic changes in the thorax. Columns greatly deformed with kyphosis often show that the head and neck are borne upright in spite of great postural difficulties. The cervical outcrop is probably due to weight bearing in the joints of the already dorsiflexed cervical vertebrae. Osteoarthritis in the anterior atlanto-axoid joint was found in about one-third of the columns that exhibit osteo-arthritis elsewhere in the dorsal intervertebral joints.

Irish Journal of Medical Science, Dublin

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Fractured Hips Snags and Pitfalls W. Doolin—p. 152
Resection of Presacral Nerve and Inferior Mesenteric Ganglion for Dysmenorrhea Complicated by Severe Constipation (Achalasia of Pelvic Rectal Sphincter) D. J. Cannon—p. 168

Journal Obst & Gynaec of Brit. Empire, Manchester

41 333-508 (June) 1934

- Critical Study of Results of One Hundred and Twenty Two Consecutive Hysterectomies C. H. G. Macafee—p. 333
*Bilirubin Excretion Test of Liver Function in Pregnancy C. F. Sullivan, W. P. Tew and E. M. Watson—p. 347
Biology of the Vagina in the Human Subject R. Cruickshank and A. Sharman—p. 369
Origin of Columnar Epithelium in the Graafian Follicle and Its Relation to Histogenesis of Ovarian Cysts D. H. MacLeod—p. 385
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*Ligature of Open Abdominal End of Fallopian Tube in Cases of Incipient Salpingo-peritonitis J. Elgart—p. 396
Carcinoma of Cervix Uteri in Pregnancy and Labor I. Wertheim's Operation at Term Without Cesarean Section C. Oldfield—p. 400
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Spontaneous Rupture of Pregnant Uterus Report of Case H. D. De So—p. 406
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Uterus Bicornis Unicollis Atresia of Internal Os Retained Menses Hysterectomy A. H. Coleman—p. 412
Abortion and Sterility L. I. Bublitschenko—p. 414
Hydatidiform Mole in Young Primigravida P. C. Daw—p. 420

Liver Function in Pregnancy—During an investigation of liver function by means of the bilirubin excretion test of von Bergmann in pregnancy and its complications, Sullivan and his associates observed that during the first half of normal pregnancy the liver function is unimpaired but during the second half of normal pregnancy evidence of disturbed function can be demonstrated in at least 30 per cent of cases. The cause of the impaired excretory power of the liver during the later stages of normal pregnancy is undetermined, but the fact of its existence renders the interpretation of hepatic efficiency tests in abnormal cases difficult. Toxic patients with signs of renal insufficiency tend to show less retention of injected bilirubin than those with normal kidney functions. Thus, to some extent at least, it is possible to differentiate the toxemias of pregnancy into nephritic and hepatic types. So far as the bilirubin excretion test is concerned there is not sufficient difference between the changes in toxic patients and the results obtained in normal women during the later months of pregnancy to be of practical significance. In certain instances however especially during the early stages of pregnancy or in cases of extreme toxemia, the test may supply information of clinical importance. That the impairment of liver function which occurs during pregnancy, both normal and abnormal is of a temporary nature is indicated by the tendency for the results of the bilirubin excretion test to return to normal following termination of the pregnancy.

Ligature of Fallopian Tube in Incipient Salpingo-peritonitis—Elgart states that ligature of the open abdominal end of the fallopian tube in salpingitis prevents the escape of pus

into the abdominal cavity. If the acute abdominal condition is combined with a vaginal discharge, he performs a laparotomy with an 8 to 10 cm medial or paramedial incision in the hypogastrium. After the appendix has been removed the fallopian tube is massaged gently and, if pus is expressed, he then ligates and removes its abdominal end near the fimbriae and disinfects the remaining part of the tube with iodine. The end of the tube should be severed about 0.5 cm. from the ligature to prevent the latter from becoming loose. Ligature of the remaining tube should be performed only when a discharge of pus is present. In two patients who had a profuse discharge of pus, he also invaginated the ligated ends of the tubes but believes that this is unnecessary. The pelvis should be thoroughly cleansed before the abdomen is closed. Only a thin subcutaneous drain is necessary. The author points out that his method does not replace the resection of a chronic closed pyosalpinx (sactosalpinx) and is indicated only in a patient whose tube is for the first time acutely inflamed and at the beginning of her illness. Later, if desirable, the ligated and invaginated abdominal end of the tube can be rectified by a salpingostomy. He believes that the operation is practically safe, since of the fifty cases of incipient salpingoperitonitis that he has operated on not one has proved fatal. Fever, vomiting and pains disappear as a rule on the second or third day after the operation. In only one case did peritonitis spread into the abdomen, and that was when the fimbriae were cut too close to the ligature so that it later became loose. The subsequent development of a closed pyosalpinx (sactosalpinx) rarely follows ligature of the abdominal end of the tube because the pressure of the pus in the tube keeps patent the canal leading to the cavity of the uterus. Impermeability of the lumen of the tube between its ligated end and the cavity of the uterus is distinctly lessened. The ligature of the tube also protects the patient against subsequent extra-uterine pregnancy.

Journal of Physiology London

84: 111 222 (May 13) 1935

- Local Adaptation to Flicker and Its Relation to Light Adaptation L. A. Riddell—p. 111
Effect of Estrin on Uterine Reactivity and Its Relation to Experimental Abortion and Parturition J. M. Robson—p. 121
Synergism Between Estrin and Oxytocin G. F. Marrian and W. H. Newton—p. 133
Action of Estrin on Uterus of Hypophysectomized and of Pregnant Rabbit J. M. Robson—p. 148
*Resistance to Inspiration: Its Effects on Respiration in Man Esther M. Killick—p. 162
Factors Affecting Blood Glycolysis in Vitro and in Vivo F. Y. Hsu—p. 173
Nerve Impulses from Branchial Pressure Receptors in the Dogfish L. Irving D. Y. Solandt and O. M. Solandt—p. 187
Variation in Sensitivity of Different Species of Monkeys to Estrin S. Zuckerman—p. 191
*Pseudoparturition in the Mouse and Relation of Placenta to Post partum Estrus W. H. Newton—p. 196
Properties of Human Seminal Plasma M. W. Goldblatt—p. 208
Modification of Krogh's Micromethod of Gas Analysis J. A. Campbell and H. J. Taylor—p. 219

Resistance to Inspiration—Killick states that there is a limit to the power of suction that can be exerted during inspiration by any individual. Within the limit thus set by the capacity of the individual, the pressure head available to draw air through the resistance (i. e., the suction) can be varied according to the resistance and the rate of air flow necessary to provide adequate lung ventilation. When this limit is exceeded either by an increase in the resistance or by the increase in the ventilation necessary during muscular exertion adequate pulmonary ventilation becomes impossible and symptoms of distress are experienced. The effect of an inspiratory resistance on the type of breathing is variable, the most frequent response being slowing and deepening of the respiration. In certain subjects, however, this increased depth of respiration is not observed. Whatever the initial response, there is a general tendency as the resistance interposed or the work done by the subject is increased for the breathing to become less deep and more frequent. Analysis of samples of expired and of alveolar air showed that the most constant alteration in the respiratory exchange while breathing through an inspiratory resistance was failure of adequate carbon dioxide elimination. The important factors in bringing about the respiratory failure

which eventually results from breathing through an excessive resistance, are fatigue of the respiratory muscles and retention of carbon dioxide.

Journal of Tropical Medicine and Hygiene, London

38: 105 116 (May 1) 1935

- Artificial Sources of Schistosome Infection and Cure of Patients F. G. Cawston—p. 105
Immunization Against Trypanosomiasis C. Schilling—p. 106
New Oxidizing Enzyme M. Ghiron—p. 108

Lancet, London

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- Maternal Mortality E. H. Holland—p. 973
Continuous Drip Blood Transfusion with Case Records of Very Large Transfusions H. I. Marriott and A. Hekwich—p. 977
*Some Problems of Inflammation Related to Surgery V. Menkin—p. 981
An Arm Bath at Rising Temperature for Relief of Vascular Hypertension R. F. Fox—p. 984
Skin Sensitivity to Bichromate C. E. Hercus and H. D. Purves—p. 985

Inflammation Related to Surgery—Menkin discusses the relationship of inflammation to immunity and states that powerful necrotizing irritants produce as a result of an increase in capillary permeability and of lymphatic damage, an extremely prompt reaction, perhaps best termed fixation. By this process consisting in the rapid formation of a network of fibrin and of thrombi in lymph channels the area of injury is mechanically circumscribed and the dissemination of the irritant is prevented. *Staphylococcus aureus* is an example of such a bacterial irritant. Aleuronat is a chemical irritant of similar potency. Mild irritants on the other hand produce only a delayed reaction thus allowing relatively free penetration of the irritant into the circulation for a considerable interval of time. Occlusion of the draining lymph passages in such instances often takes place as late as two days subsequent to the inoculation of the irritant. Hemolytic streptococci exemplify this type of irritant. Another instance has been recently demonstrated by McMaster and Hudack, who showed that from twenty-four to forty-eight hours following a mere skin incision or a mild burn lymph drainage is increased. Subsequently the rate of flow is diminished. In relatively large suppurating or acutely inflamed areas the reaction of fixation may occur as early as thirty minutes after the injection of an irritant. This prompt response allows a definite interval of time for the relatively sluggish leukocytes to assemble for phagocytosis at the site of inflammation. The polymorphonuclear cells appear first and are displaced subsequently by the macrophages. This cytologic sequence is apparently conditioned by changes in the local hydrogen ion concentration. The reaction of fixation by circumscribing the irritant in the earliest phase of the acute inflammatory reaction plays a definite part in immunity, for it protects the organism at the expense of local injury. The disastrous effects resulting from untimely surgical intervention with such an effective inflammatory barrier are encountered, for example, in the *staphylococcus* or the anthrax carbuncle.

Chinese Medical Journal, Peiping

40: 293 396 (April) 1935

- Recent Developments in Artificial Pneumothorax Its Complications and Complementary Measures Y. D. Tan—p. 293
*Survival Growth and Flagellation of *Leishmania Donovanii* in Presence of Contamination with Bacteria Lily S. Zia and C. T. Teng—p. 304
Treatment of Leprosy from Public Health Point of View J. L. Maxwell—p. 313
Distribution of Calcium in Leafy Vegetables P. C. Hsu and W. H. Adolph—p. 325
*Relative Value of Urea Stibamine and Neostibosan in Treatment of Kala Azar C. U. Lee and C. F. Chu—p. 328
Observations on Diphtheria Immunization with Single Injection of Alum Toxoid D. G. Lai—p. 340
Mycologic Study of Case of Otitomycosis T. L. Chin—p. 346
Sterilization Per Vaginam Susanne R. Parsons—p. 350
Evipan Sodium Anesthesia Record of One Hundred Consecutive Cases A. W. Woo—p. 352
Evipan Sodium as an Intravenous Anesthetic for Minor Surgical Operations H. K. Wang—p. 357

Leishmania Donovanii in Presence of Bacteria—Zia and Teng show that *Leishmania-Donovani* is able to survive, grow and flagellate in the presence of viable *Staphylococcus*

aureus, *Streptococcus haemolyticus* and *pneumococcus* type I and an undetermined type of *pneumococcus*. The Leishman-Donovan bodies may flagellate in the medium used after being associated with these bacteria for forty one hours. The resulting flagellates were able to live together with these bacteria for from ten to twenty-four days in the original tube and without subculture. The contaminating bacteria were recovered from the respective tubes at the time when the flagellate growth was most abundant. These various types of bacteria represent the kinds of bacteria with which leishmania may come into contact when discharged from the body of the host. *Staphylococcus* is ubiquitous and has been accused of being the most inimical to the leishmania. If Leishman-Donovan bodies can survive, grow and change to the flagellate form when associated with rich cultures of these bacteria, it seems likely that they may easily withstand contamination with other organisms. The results show that contamination with *Staphylococcus aureus*, *Streptococcus haemolyticus* and the *pneumococci* did not have any significant influence on the time required for the Leishman-Donovan bodies to flagellate. Neither had it any effect on the relative number of the flagellates. The authors' experiments in which *Leishmania Donovan* resists *in vitro* the presence of common gram positive organisms lend additional support to the hypothesis that the infectious agent of kala azar may be transmitted at least in some cases, through the agency of the secretions from the upper respiratory and upper alimentary tracts. When the contaminating organism was *Bacillus coli*, no flagellation was detected in either of the tubes. Forty-one hours after inoculation, when the other tubes were showing Leishman-Donovan bodies with beginning flagellation, and in some of these there were already a few actively motile flagellates there were only degenerating Leishman-Donovan bodies in the tubes contaminated with *B. coli*. The chromatin material in the parasites was pyknotic and the cells were shrunken. Six hours later no Leishman-Donovan bodies could be found, nor were there any flagellates. The authors suggest that under ordinary circumstances the Leishman-Donovan bodies discharged from the body through the lower alimentary tract are quickly destroyed by the ever present *B. coli*. But if the duration of the association of these two in the lower intestinal tract is shortened by increased peristaltic movements as in dysentery or diarrhea or if the parasites are protected by flakes of mucus, it would seem reasonable to think that the Leishman-Donovan bodies may survive and may serve as a source of infection.

Value of Certain Drugs in Treatment of Kala-Azar.—After treating sixty-three cases of kala-azar with a urea derivative of para-amino phenyl stibinic acid (urea stibamine), ninety-five cases with para-amino-phenyl-stibinic acid diethylamine (neostibosan) and eighteen cases with more than one drug at different times Lee and Chu conclude that 1. An adequate course of treatment with para-amino-phenyl-stibinic acid should consist of a dose from 1 to 15 Gm for children and from 15 to 25 Gm for adults. With para-amino-phenyl-stibinic acid diethylamine the dosage should be from 15 to 25 Gm for children and from 4 to 5 Gm for adults. 2. Para-amino-phenyl stibinic acid is not a pure chemical compound and has a varying antimony content, while para-amino phenyl stibinic acid diethylamine is a well standardized single chemical compound. In their therapeutic value in kala azar para-amino-phenyl-stibinic acid is definitely more potent but at the same time more toxic than para-amino-phenyl-stibinic acid diethylamine. 3. Patients treated with either of these drugs must be observed for at least seven months a year if possible before cure can be pronounced. This is more important with patients treated with para-amino-phenyl-stibinic acid diethylamine than with those treated with para-amino-phenyl stibinic acid. The recovery of parasites from a spleen or liver puncture one month after the completion of a course necessitates prompt institution of further treatment. 4. Future improvement in the chemotherapy of kala-azar lies in the production of an organic pentavalent antimony compound as well standardized and non-toxic as para-amino-phenyl-stibinic acid diethylamine, but possessing the high therapeutic potency of para-amino phenyl-stibinic acid.

Annales de Médecine, Paris

37: 385-464 (May) 1935

- *Changes of Pancreas in Diabetes Mellitus M Labbé and Mircea Pétersco—p 385
Experimental Study of Coronary Circulation in 'Whole Animal R Leriche and R Fontaine—p 407
Mediastinal Pulmonary Cancer with Complete Arrhythmia C Lanbry V Aitoff and Lequime—p 424
Disorders of Myocardial Functions I Fractional Systoles R Lntembacher—p 438
Search for Tubercle Bacilli in Patients with Chronic Polyarthritis F Coste A Saenz and L Costil—p 447

Pancreatic Changes in Diabetes.—Labbé and Petersco found that the histologic changes in the pancreas in diabetes mellitus were diverse. Outside of bronze diabetes, in which the insular and acinous changes are marked and the hemosiderin formation is added to the diabetic lesions, they found it impossible to establish a relation between the clinical type of diabetes and the character or intensity of the changes. It seemed only that the islet sclerosis were more often encountered around middle age, while the hydropic and pycnic degenerations of the islet epithelial nuclei were found especially in young diabetic patients. There are cases of diabetes without pancreatic lesions or with lesions so minimal that one cannot attribute the disorder of the sugar metabolism to them. These cases showed no clinical peculiarity during life which might distinguish them from others. The explanation is uncertain and there is insufficient evidence for either assuming a cerebral center, disorders of other endocrine glands, or an inactivation of a normal pancreatic secretion. The authors are more inclined to believe that the histologic lesions are not always a reliable index of the functional state of the organ and that histology is a less important index than physiology in assessing the functional value of the pancreatic apparatus. It is possible that histologic technic will be perfected to such an extent that the exact physiologic value of the cells can be determined, but this desideratum has not yet been reached.

Archives de Médecine des Enfants, Paris

38 261-324 (May) 1935

- Tumor of Rathke's Pouch Craniopharyngiomas A Carrau and C M Barberousse—p 261
*Therapeutic Action of Lumbar Puncture in Sydenham's Chorea R A Khersonsky—p 275

Lumbar Puncture in Chorea.—Khersonsky made lumbar punctures on twenty-five patients with Sydenham's chorea. In two cases the puncture was repeated two and three times. They were made with the patients recumbent and with a needle of a caliber not larger than that usually employed with a syringe of 10 cc capacity. From 8 to 10 cc of spinal fluid was withdrawn. Effectiveness was judged by the decrease in intensity and frequency of the involuntary movements and by the degree of disappearance of the so called minor signs. The patients received both before and after the punctures the usual medical treatment, consisting of sodium salicylate and solution of potassium arsenite by mouth. Improvement was recorded only if it occurred within the first five days following the withdrawal of spinal fluid. Twelve of the twenty-five patients were markedly improved, while thirteen were unaffected. Of the ten serious cases improvement resulted in six, and of the fifteen mild cases six were improved. Thus the more serious cases showed a higher percentage of improvement. The therapeutic effect may be due to reflex increase of the permeability of the blood-brain barrier thus allowing an easier penetration of antibodies and salicylates into the nervous system. From the symptomatic angle, the favorable effect of lumbar puncture does not affect relapses or protect against cardiac complications.

Presse Medicale, Paris

43 841-856 (May 25) 1935

- Cushing's Syndrome with Spasmodic Paraplegia G Giraud J Marégarot and P Rimbaud—p 841
*Amphoric Breathing in Therapeutic Pneumothorax Warembourg and Roose—p 843

Amphoric Breathing in Pneumothorax.—Warembourg and Roose investigated the variability of acoustic signs in therapeutic pneumothorax and directed their work toward the elucidation of amphoric breathing and the effect on this sign of

bronchopleural communication, intrapleural pressure, the quality of the retracted lung stump and the state of the pleural coat. From the clinical study of thirty-eight patients they concluded that bronchopleural communication is not necessary for the appearance of amphoric breathing and that it has little influence on this sign. There exists, however, an optimal pleural pressure for the appearance of amphoric breathing. In the transmission of vibrations from the glottis by way of the lung stump, the noncollapsed tuberculous areas of this stump seem to play a dominant part, especially if endowed with expansible properties. A tortuous pleural cavity tends to suppress the amphoric breathing. Finally the individual differences of each case may give rise to all possible combinations of factors. It is thus advisable to consider them statistically rather than individually in order to obtain significant results.

Policlínico, Rome

42: 325 388 (June 1) 1935 Medical Section

- Streptococci from Focal Infection Their Serologic Specificity B Malacrea and D Belleli —p 325
- Uric Acid in Diseases of Kidney I Concentration and Dilution Power of Uric Acid and Influence of Posterior Pituitary Hormone on Uric Acid in Diffuse Renal Diseases with Insufficiency in Normal Conditions and in Arterial Hypertension F Marcolongo and O Maestri —p 330
- *Parathyroids and Carbohydrate Metabolism Action of Parathyroid Extract on Glycemic Curve and on Glycosuria in Diabetic Patients A. Ferrannini —p 366
- Test of Hepatic Function by Means of Increase of Amino Acids G Lazzaro and G Marotta —p 379

Parathyroids and Carbohydrate Metabolism—Ferrannini studied the action of parathyroid extract on the glycemic curve and on the glycosuria of patients presenting different stages of diabetes. In normal subjects the parathyroid extract lowers the glycemic rate during fasting and increases carbohydrate tolerance. The action of the parathyroid extract on the glycemic curve, when compared with that of epinephrine is almost like that of insulin. In diabetes the parathyroid extract lowers the glycemic curve and the glycosuria on fasting. Following intramuscular administration of 1 cc. of parathyroid extract, the author obtained in ten cases examined a clear hypoglycemic effect, slightly lower than that determined by insulin. In five diabetic patients the author studied the glycemic curve and the rate of glycosuria after injecting parathyroid extract and insulin one hour apart. He observed that the parathyroid extract when administered with insulin may increase the hypoglycemic action of the insulin, may scarcely modify it, or may slightly inhibit it. There is no doubt about the insulin-like action of parathyroid extract in normal subjects and in diabetic patients. The parathyroid extracts act by way of the parasympathetic system, since the parathyroids with the pancreas and other endocrine glands form part of the endocrine sympathetic group of glands that preside over anabolic processes. The author suggests the existence of a functional synergism between the parathyroids and the pancreas in relation to carbohydrate metabolism.

Semana Médica, Buenos Aires

42: 1405 1480 (May 16) 1935 Partial Index

- Cyanosis in Congenital Malformations of Heart P Cossio and J Berconsky —p 1405
- *Internal Milieu in Diphtheria D González I Natin and Cornelia da Rin —p 1419
- Pharyngo-Esophageal Diverticulum Technique for Surgical Treatment D del Valle A Yódice and A Marano —p 1427
- *Participation of Central Ganglions in Epilepsy J L Hanón —p 1433
- Abdominal Purpura of Appendicular Type in a Hemophilic Patient C Masti —p 1445

Internal Milieu in Diphtheria.—González and his collaborators studied the prognostic value of the biochemical changes of the blood in diphtheria. They made determinations of the urea, dextrose, cholesterol, phosphorus, chlorides, calcium and creatinine in the blood, as well as of the pH of the blood. For the estimation of the results the authors place the patients into three groups, according to the type of diphtheria they suffer: common, submalignant and malignant diphtheria. The authors conclude that urea in the blood increases in complicated forms of the three groups. The prognosis depends on the quantity of urea in the blood as related to the clinical form of diphtheria. In the same type of diphtheria the higher the

uremia the graver the disease, but the prognosis is better in patients suffering from the common and submalignant types of diphtheria and giving 1 Gm of urea per thousand grams of blood than in those suffering from the malignant form and giving less than that quantity. Urea in the blood amounts to 4 Gm per thousand grams of blood, or even more, only in malignant diphtheria, in which the prognosis is based on the type of the disease rather than on the quantity of urea in the blood, which may become even normal in cases in which the disease follows a fatal evolution. The alterations in the glycemia and cholesteremia are neither constant nor intense, their changes are not parallel and have no prognostic value. They indicate the presence of metabolic organic or functional disturbances of which they are not the etiologic agents and which do not improve by the administration of dextrose, insulin and cholesterol. The slight variations of calcium, of phosphorus and the pH of the blood in diphtheria have no prognostic value and the creatinine does not change. Hypochloremia that exists in the acute period bears no relation to uremia. Hyperuremia has no peculiar characteristics, and its prognostic value is the same as in any other infectious disease.

The Basal Ganglions and Epilepsy—Hanón believes that epileptic fits are due to ischemia of the cortex and of the basal ganglions of the brain originating in a transient cortical and ganglionic arterial vasoconstriction of sympathetic origin. Ischemia modifies the humoral environment of the cells that react with the production of nervous stimuli and with a reflex hyperexcitability on the distant and neighboring cerebral centers. The simultaneous production of nervous stimuli from the frontal, parietal, rolandic, temporal and striated nuclei (in different proportions) determines the onset of the tonic phase of the epileptic fit. When the arterial spasm subsides or disappears, the stimuli from the rolandic area are predominant and determine the production of the clonic contractions. The author bases his theory on the therapeutic results of sedatives (phenobarbital, bromides and borates) given in epilepsy and on the presence of anatomic lesions in the basal ganglions found at necropsy of five epileptic patients. In these cases the ganglions proved the previous existence of recurrent vascular and nutritional alterations.

Deutsche medizinische Wochenschrift, Leipzig

61: 781 820 (May 17) 1935 Partial Index

- Gonadal Hormones Their Characteristics Chemical Composition and Artificial Production A Butenandt —p 781
- *Postoperative Cerebral Edema H Hoff and L Schönbauer —p 786
- Water Economy and Acid Base Equilibrium F Hoff —p 789
- *New Method for Treatment of Diphtheria Bacilli Carriers G Paschlaw —p 791

Postoperative Cerebral Edema—Hoff and Schönbauer say that cerebral edema is one of the most serious problems that develop following operations for tumors of the brain, and one of the chief causes of cerebral edema is preliminary roentgen irradiation. The authors are convinced that, when the cranium is closed, roentgen irradiation of cerebral tumors is inadvisable. Moreover, if, as is usually the case, surgical treatment becomes necessary, the conditions for the operation become more unfavorable, because valuable time has been lost and the danger of edema is greater. Roentgen therapy was likewise of little avail in cases in which a glioma was found that could not be completely removed. The authors observed favorable results in only four out of a total of 120 cases of glioma. In some cases they gained the impression that the tumor grew more rapidly under the influence of roentgen therapy. The four cases that responded to roentgen irradiations were blastomas of the medulla, and the authors think that the success of the postoperative roentgen irradiation depends on the type of tissue of which the tumor consists. Irradiation with radium likewise proved of little avail in the postoperative treatment of gliomas. The authors reasoned that, if cerebral edema is a form of exudative inflammation, it should yield to the measures suggested for exudative inflammation. Starting from the idea that amidopyrine reduces the permeability of the vessels, Eppinger suggested large doses of that substance for the treatment of exudative inflammations. The authors applied this suggestion to the treatment of cerebral edema, irrespective of whether it was a postoperative condition or was induced by roentgen rays.

They administered daily from 3 to 5 Gm, either by mouth or by rectum, and found this measure highly effective. Encouraged by the results, they resorted to the administration of large doses of amidopyrine also in cases of encephalitis and obtained good results during the acute stage. In hemorrhagic arachnoiditis amidopyrine proved highly effective, but it was not in the sequels of encephalitis and in poliomyelitis.

Treatment of Diphtheria Bacillus Carriers—Paschla treated children, carriers of diphtheria bacilli, with a tincture having the following constituents: 11 per cent formaldehyde, 20 per cent rhodan alkali, 2 per cent gelatin, 15 per cent brandy, 1 per cent oil of peppermint, and distilled water to make 100. To counteract the diphtheria bacilli harbored in the pharynx, the children gargled twice each day with a 1:50 or a 1:75 solution of the tincture (20 drops for half a glass of water). However, for the disinfection of the nose, a higher concentration had to be used, a 1:20 or even a 1:10 solution. Drop instillation proved ineffective for nasal administration, but treatment by means of tampons, saturated with a 1:10 solution and introduced twice daily, was highly effective. The author employed the tampon treatment in thirty-four diphtheria bacillus carriers, ten of whom had nasal diphtheria. The time required for clinical cure varied between three and sixteen days, the average being six days.

Deutsche Zeitschrift für Chirurgie, Berlin

245: 93-172 (May 11) 1935 Partial Index

Preservation of Peritoneum in Acute and Chronic Disease as Influenced by Irradiation with Laparophoslamp O. Hoche—p. 93

*Observations on Patients Submitted to Gastric Operations F. Jaeger—p. 102

Disturbances in Convalescence from Aseptic Operations on the Knee With or Without an Infectious Factor K. H. Magoley—p. 115

Physicochemical and Biologic Changes in the Blood and Tissues in Stasis Y. Ohmura—p. 132

The Existence and Resistance of Soil Spores with Particular Attention to the Question of Sterilization of Instruments Konrich—p. 141

*Complications from Continued Intravenous Transfusion J. Müller—p. 149

A Follow-Up Study of Gastric Operations—Jaeger reports a follow-up study of 400 patients in whom one or more surgical interventions for the cure of ulcer disease failed to bring about relief from symptoms. In 166 of these a "corrective operation" had to be performed. The operative procedure calling most frequently for a secondary corrective operation was gastro-enterostomy. The most frequently instituted corrective procedure was the Billroth II operation. The acid values of the stomach contents were effectively lowered by gastric resection, whereas the emptying time was approximately the same after all types of operative procedure. It was most satisfactory, however, after the Billroth I operation. The author is opposed to gastro-enterostomy because of the frequency of occurrence of the marginal peptic ulcer as well as because of its inability to influence the mechanism of acid production. This operation should be reserved for cases of pyloric stenosis or when special indications exist. The Billroth I or the Billroth II operation of partial gastric resection is advised as the procedure of choice whenever possible.

Complications Arising from Intravenous Drip—According to Müller the continued intravenous drip has been in use in Fritz König's (Würzburg) clinic for the past three years. The method was adopted in desperate cases as the last resort. The results were encouraging, as 33 per cent of cases of that type were saved. The author however is aware of certain dangers inherent in the method itself. The complications caused by the method are thrombosis at the site of transfusion and pulmonary embolism. Considerations of the dangers to be avoided in the employment of the method led the author to the following conclusions: 1. The continued intravenous drip is contraindicated in the presence of cardiac and pulmonary disturbances as well as in the presence of nephritis or after a nephrectomy. 2. Because of the danger of thrombosis and infection, the duration of transfusion must be limited and the transfusion renewed only in exceptional cases. The procedure should not be used for the immediate postoperative shock that can be handled by simpler means but should be reserved for the critical condition arising on the fourth, fifth or sixth day as the result of loss of vascular tonus occasioned by the post-

operative breaking down of albuminous bodies. Addition of foreign albumins, such as the various serums, is contraindicated because of the possibility of protein shock. Painstaking asepsis at the site of transfusion diminishes the danger of thrombosis.

Deutsches Archiv für klinische Medizin, Berlin

177: 461-572 (May 15) 1935 Partial Index

*Problem of Regular Changes of Blood Protein in Multiple Myeloma Significance of Blood Protein Bodies for Takata's Reaction in Blood W. Gros—p. 461

Serous Infarct Pleurisy O. Gsell—p. 475

Bactericidal Action of Human Serum in Internal Diseases E. Kestermann—p. 486

Senry in Addison's Disease and Evaluation of Catalase Index in Adrenal Insufficiency L. Norpoth—p. 499

Blood Protein in Multiple Myeloma and Takata's Reaction—Gros gives the histories in two cases of multiple myeloma. The behavior of one of these cases differed from that of the cases recorded in the literature. A hyperproteinemia was present, which was not, as in the other cases, caused by euglobulin but by pseudoglobulin I and II, respectively. The assumption that the hyperproteinemia in multiple myeloma is entirely due to an increase in euglobulin does not seem to tally with these facts. In this connection the author discusses the dependence of the different protein fractions on the stage of development of the myeloma. On the basis of this case and of the other cases that have become known thus far, he shows that different groups of symptoms have a relationship to the disturbance of the protein metabolism in myeloma. These differences are not caused by the abnormal anatomic nature of the cells. In accordance with this, the author advances the theory that a formerly unknown functional disturbance of a certain group of cells of the bone marrow is responsible for this change in the protein metabolism. In the course of further studies he obtained a positive Takata reaction in the blood of the myeloma patients. In spite of careful functional tests of the liver, he was unable to detect hepatic disturbances and he deduces from this observation that myeloma with its hyperproteinemia is another disorder, in which the Takata reaction cannot be considered a specific test for cirrhosis of the liver. He discusses the significance of the serum protein bodies for the development of the Takata reaction and on the basis of analyses of the serum protein bodies in cirrhosis of the liver and in myeloma, he suggests that, if the Takata reaction is solely dependent on deviations of the serum protein bodies, the alterations in the albumin globulin ratio with increase in the pseudoglobulin (the increase in pseudoglobulin I probably being sufficient) are probably decisive for the outcome of the reaction. A positive reaction is obtained also when euglobulin and pseudoglobulin I are increased. In the latter case the flocculation zone shifts to the side of the higher concentration.

Jahrbuch für Kinderheilkunde, Berlin

144: 255-310 (May) 1935

New Results of Studies on Physiologic Activity of Brain of Children N. I. Krasnogorski—p. 255

*Studies on Occurrence and Behavior of Sudanophil Leukocytes in Normal Nurslings and in Sick Children L. Moschkowitz—p. 278

Severe Intracranial Hemorrhages That Develop During Spontaneous Deliveries and During Cesarean Operations A. Ehergenyi—p. 291

Occurrence of Sudanophil Leukocytes in Children—Moschkowitz studied the occurrence of sudanophil leukocytes in sixty-one normal and sick children. He found that sudanophil leukocytes may appear under normal conditions, their upper physiologic limits being at 15 per cent. In normal nurslings he observed an alimentary sudanophilia (following ingestion of a butter and flour gruel and of sweetened condensed milk), which reached its maximum (from 15 to 23 per cent) after two hours. This value is equivalent to the maximum of chylomicrons in breast-fed nurslings. The author further studied the behavior of sudanophils in children with pneumonia and empyema and in a number of other disorders. In eleven cases of pneumonia he always detected an increase in the sudanophils, the percentages being between 20 and 35. In parapneumonic empyemas the increase was even more pronounced (between 20 and 40 per cent), following successful operative treatment of the empyema however the numbers decreased to normal. The increase in sudanophils was especially pronounced in appen-

dicitis and in perityphlitic abscess (from 20 to 52 per cent) Here too the number decreased after appendectomy or drainage of the perityphlitic abscess The examination of eight children with eczema and exudative diathesis disclosed a moderate increase in sudanophils In these children the sudanophilia is probably the result of a disturbance of the fat embolism Observations made in certain disorders of the central nervous system were especially noteworthy When, as it happened here, in a case of postdiphtheric encephalitis and in a case of obstetric cerebral hemorrhage, there is a resorption of anatomically impaired cerebral substance, the leukocytes of the blood stream may become laden with products of fatty decomposition similar to the fat granule cells that are found in the foci themselves The sudanophils were increased (22 per cent) in meningococcal meningitis and there was no increase in tuberculous meningitis A greatly emaciated child with pylorospasm had an increased number of sudanophils (20 per cent) It is probable that in this case the extensive decomposition of tissues increased the fat content of the blood and that the fat was phagocytosed by the leukocytes In a severe case of diabetic coma (blood sugar 1,400 mg per hundred cubic centimeters) 38 per cent of sudanophils were detected Here the sudanophilia was the result of a pure fat phagocytosis, for the blood of these patients contains a great amount of fat (lipemia)

Klinische Wochenschrift, Berlin

14 697 736 (May 18) 1935 Partial Index

Kymographic Studies on Normal and Pathologic Outlines of Ventricles of Pulsating Heart K Heckmann—p 700

Physiology of Nutrition of Tubercle Bacilli H Braun—p 703

*Follicle Maturation Hormone in Urine of Young Men with Defective Sympathetic Nerve System and with Disturbances in Sexual Potency Helene Goldhammer and P Loewy—p 704

*Dependence of Sedimentation Speed of Erythrocytes on White Blood Picture C H Behr—p 706

Aspects of So Called Blood Group Ferment F Schiff and F A Burón—p 710

*Hemorrhagic Hereditary Telangiectasia (Osler's Disease) R Kosiner—p 713

Follicle Maturation Hormone in Urine of Young Men—Goldhammer and Loewy examined the urine of sixty-four men between the ages of 19 and 51 by means of the Aschheim-Zondek test for the presence of the follicle maturation hormone Thirty-two of them had a defective sympathetic nervous system and ejaculatio praecox, and all except two of these were of the leptosomic type. Twenty-one of these, or 65.6 per cent gave a positive Aschheim-Zondek reaction However, of the thirty-two men who did not have a defective sympathetic nervous system and were not leptosomic, twenty-six gave a negative reaction The authors conclude from this that in men who have a defective sympathetic constitution and in whom ejaculatio praecox is a constant sign there exists a primary hyposecretion of the gonads In this connection it is pointed out that Anselmino and Hoffmann detected the synergistic gonadotropic factor in the urine of castrates and of women in the menopause The authors consider it not impossible that in their own studies it was the same factor However, their conclusions regarding the sexual constitution and the general constitution of their cases remain the same, regardless of whether later studies prove that not the follicle stimulation factor of the anterior pituitary-like principle but rather the synergistic factor is increased in the urine

Sedimentation Speed of Erythrocytes and the White Blood Picture—Behr points out that the theory has been advanced that accelerated sedimentation is the result of an alteration of the plasma protein in favor of the globulin-fibrin fraction Numerous tests have proved however, that this theory is erroneous and it has been observed that animal bloods with extremely high fibrin content have an extraordinarily low sedimentation speed Since on the basis of his own studies the author was of the opinion that there is a connection between the sedimentation speed of the erythrocytes and the reacting mesenchyma, he compared the sedimentation speed and the white blood picture of sixty-nine patients At the same time he determined the protein fractions, the rest nitrogen the bilirubin content of the serum and the ratio of erythrocytes to plasma He found that the sedimentation speed of the erythrocytes is not noticeably modified by the plasma protein The sedimentation

speed is accelerated by the reaction of the active mesenchyma, which answers a pathologic irritation by elimination of leukocytes with basophil granules The basophil granules seem closely related to the globulins, and, as regards their morphology, they belong to the thrombocytes

A Case of Osler's Disease—Kosiner describes the history of a woman, aged 53, who asked medical advice on account of diabetes mellitus and heart disease. The family history revealed that she descended from a family with a hemorrhagic tendency At the age of 28 she had had severe epistaxis, and years later "red dots" appeared on the face, which gradually became more numerous and finally involved also the tongue The patient frequently experienced a burning sensation in the tongue, and later red dots appeared on the terminal phalanges of the fingers and there was bleeding from the nail beds In recent years the nasal hemorrhages became more frequent and occasionally there was bleeding from the tongue. The cheeks of the patient showed, almost symmetrically arranged, dotlike telangiectasias branching out into fine vessels Such vascular dilatation and small angiomas were noticeable on the ear and on the lower lip Telangiectasias were found on the lower angle of the nasal septum The tongue showed dark red wartlike elevations on the tip and on the sides and an angioma underneath. Symmetrically arranged angiomas were found in other parts of the body The terminal phalanx of both thumbs was unusually wide and short (brachyphalangia) The family history disclosed that this deformity had occurred in the ascendancy of the patient. On the basis of the histologic aspects, the author concludes that a hereditary degenerative disturbance in the structure of the mesenchyma exists in hemorrhagic hereditary telangiectasia. He points out that the disorder concurs with other hereditary anomalies, such as brachyphalangia and diabetes mellitus

Wiener Archiv für innere Medizin, Vienna

27 1158 (May 6) 1935 Partial Index

Simplified Method for Determination of Basal Metabolism. F G Benedict.—p 1

*Improvement of Therapeutic Action of Blood Transfusion in Sepsis. R Boller and E Fenz.—p 23

Clinical Aspects and Pathologic Anatomy of Multiple Sclerosis of Endocrine Glands. R Boller and A Goedel.—p 41

Pneumonia in Diabetes Mellitus. G Deljananis.—p 97

*Inhibition of Diuretic Action of Coffee by Milk and Milk Products. K Hitzberger and D Roller.—p 133

Improvement of Therapeutic Action of Blood Transfusion—In trying to increase the stimulating action of blood transfusion, Boller and Fenz thought that the behavior of the leukocytes following a blood transfusion would provide a point of attack. Other investigators had observed that the leukocytes decrease immediately after a blood transfusion and do not start to increase again until from three to five hours later In view of the fact that in some cases the donor had higher leukocyte values than the patient, this phenomenon seemed surprising and it was assumed that the leukocytes are stored in the blood depots of the patient and enter the blood stream gradually Since the leukocytes supposedly have an especial significance for the development of bactericidal substances, it seemed possible to increase the action of the transfusion by driving the leukocytes into the blood stream and thus to increase the stimulation of the reticulo-endothelial system The authors injected five hours after a blood transfusion, that is, at the time when presumably the lowest leukocyte values existed, 0.75 mg of epinephrine In the first patient in whom this was done there developed severe chills and high fever In the course of the chills the leukocytes increased to approximately three times the initial number The temperature decreased and two days later the patient was free from fever In a second case the results of the epinephrine injections were even more favorable and the authors decided to employ it in other cases They report the clinical histories of five cases of acute sepsis, in which the combination of blood transfusion and epinephrine injection produced favorable results The combination proved ineffective in cases of chronic sepsis In order to gain a better understanding of the changes that take place in the blood following blood transfusion and epinephrine injection, the authors employed the combination in several cases of blood disease, and they found the same changes that are observable in patients with sepsis

Inhibition of Diuretic Action of Coffee by Milk—Hitzenger and Roller call attention to the widely accepted belief that the addition of milk or cream to coffee inhibits the "harmful" effect. The authors decided to study the diuretic action of coffee in this respect. Persons who submitted to tests received on the first morning 400 cc of water with 30 Gm of sugar and 40 Gm of bread, on the second day they were given 400 cc of black coffee with 30 Gm. of sugar and 40 Gm of bread and on the third morning they received the same as on the preceding day, except that 60 cc of milk was mixed with the coffee. The authors found that on the first day the urine elimination was 205 cc. in four hours, on the second day 510 cc and on the third day 312 cc. This indicates that the addition of milk inhibits the diuretic action of coffee. Nothing definite is as yet known about the causes of this phenomenon, but it has been assumed that the tannic acids of the coffee combine with the proteins of the milk to form compounds the resorption of which is rather difficult, and thus the resorption of the caffeine is retarded. However, the authors question that the caffeine is the chief factor in the diuretic action of coffee and cite experiments proving that other substances in the coffee play a part. They investigated also what substance in the milk exerts the antidiuretic effect. On the basis of their tests they question Starkenstein's assumption that the protein bodies of the milk are chiefly responsible, for they found that the addition of cream to coffee has an even stronger antidiuretic effect. Consequently they believed that fatty substances were responsible, and they found this corroborated by the addition of melted butter, which resulted in the strongest antidiuretic effect. In trying to determine which of the fat like substances in milk and its products exerts the antidiuretic action the authors found that lecithin plays an important part but they are as yet unable to say whether there are still other lipoids involved.

Wiener klinische Wochenschrift, Vienna

48: 609 726 (May) 1935 Partial Index

- Indications for and Results of Extirpation of Spleen in Diseases of Blood E. Ranzi and L. P. Avancini—p 637
Clinical Aspects and Differential Diagnosis of Coronary Thrombosis N. Jagić and O. Zimmermann—p 657
Treatment of Multiple Sclerosis O. Marburg—p 668
*Degenerative Diseases of Vertebral Column R. Kienböck—p 671
*Total Irradiation with Roentgen Rays in Polycythemia Rubra M. Sgalitzer—p 675
Resection for Exclusion or Gastro-Enterostomy as Emergency Intervention in Duodenal Ulcer F. Starlinger—p 681
Transition of Diphtheria Bacilli into Blood Stream and Their Localization in Internal Organs H. Chiari—p 685
*Myasthenia Gravis and Tumor of Thymus E. Gold—p 694
*Cockroaches as Carriers of Disease H. M. Jettmar—p 700
Does Dementia Paralytica Develop By Way of Auto-Antibodies Against Brain Substance? R. Brandt—p 708

Degenerative Diseases of Vertebral Column.—Kienböck thinks that the benign chronic diseases of the vertebral column are not sufficiently known as yet and he describes three of them. In his discussion of Scheuermann's disease he points out that this disorder is essentially a developmental and growth disturbance of the vertebral epiphyses and of the intervertebral disks. The disorder probably begins during childhood, but the symptoms in the form of fatigue and pains as a rule, develop only between the ages of 14 and 16 years and recur again in later life. Roentgenoscopy discloses Schmorl's cartilaginous nodules, that is, projections of the intervertebral cartilage due to defects in the terminal plates also cuneiform vertebrae flat vertebrae and vertebrae that are both wedged and flattened. The patients generally have a slight kyphosis which is frequently combined with scoliosis, but in some instances the normal curvature of the dorsal vertebral column is absent so that it appears like a straight stick. The author discusses deforming spondylarthrosis. His observations disclosed that it frequently develops on the basis of Scheuermann's kyphosis. The symptoms caused by this disorder curvatures and pains frequently do not develop until middle age or even later in life. The process often involves not only the dorsal but also the cervical and lumbar portions of the vertebral column. The changes progress with advancing years. Roentgenoscopy discloses in addition to the changes caused by the arthrosis also the sequels of Scheuermann's kyphosis. There is an anterior beveling of the marginal rims of the vertebrae also peculiar

exostoses, cuneiform vertebrae, flat vertebrae and vertebrae that are wedged and flattened. The pains caused by the deforming spondylarthrosis depend on the site of the principal changes. They may be localized in the neck, occiput, face, shoulders, arms, trunk, the sacral region and the legs (sciatica). These neuralgic pains are caused by the lateral projection of the proliferations and by a lowering of the vertebral bodies with contraction of the vertebral foramina and pressure on the nerve roots. The author stresses that it is erroneous to consider this disorder clinically unimportant, for it may lead to spastic paraparesis or, rarely, to hemiparesis. Moreover, the posteriorly projecting proliferations of the marginal rims may exert pressure on the spinal cord. Traumas may result in the splitting off of the exostoses and in the fracture or bone bridges. Softening of the exostoses may be followed by infectious osteitis or by tuberculosis. The third disorder to which the author gives his attention is porotic kyphosis. This disorder is usually a partial manifestation of a generalized osteoporosis and is accompanied by endocrine disorders, or by obesity or anemia. The porosis involves the entire vertebral column and is progressive. It may be combined with Scheuermann's disease and for this reason the same types of vertebral deformities may appear as in that disorder. However, in addition to these changes there are also biconcave vertebrae (fish vertebrae) and large Schmorl's cartilaginous nodules. Neuralgias are a frequent symptom of this disorder and may be brought about by a false step or by a sudden movement. Spastic paraplegia may develop as the result of the pressure exerted by the deformed vertebrae on the spinal cord.

Total Irradiation with Roentgen Rays in Polycythemia Rubra.—Sgalitzer decided to try roentgen irradiation of the entire body in the treatment of polycythemia rubra, a method that Teschendorf had introduced for the treatment of leukemia. He applies somewhat larger doses than are employed in leukemia. He uses an apparatus which, with 170 kilovolts, with a filter consisting of 0.5 mm of zinc and 1 mm of aluminum, with a tube tolerance of 3 milliamperes and with a focus distance of 30 cm produces the unit skin dose in approximately thirty minutes. He applies the total irradiation from a distance of from 150 to 200 cm, the rays being applied alternately to the dorsal and ventral aspects of the body. Each irradiation lasts about twenty minutes and applies about 25 roentgens to the body surface. The eyes and the genital region are excluded from the influence of the rays by protective covering. The irradiations are given on six successive days, after which there follows a pause of about a week. At the end of this week the blood is carefully examined especial attention being given to the leukocytes to guard against their too drastic reduction. The power of resistance of the leukocytes varies considerably, so that in some cases longer pauses become necessary than in other cases. As a rule, the irradiations should be given in such a manner that the number of leukocytes does not fall below 3000. To achieve this it is necessary to lengthen gradually the pauses between the series of irradiations. The erythrocytes occasionally show at first a temporary increase, but this is soon followed by a reduction that continues for several weeks or even for months. Among the patients in whom the author employed the total irradiation were some in whom the local roentgen therapy had not been entirely successful, while in other cases spleen therapy and other measures had been without success. The general reactions varied greatly, in some patients they were slight while in others they were severe. However the majority of the patients soon felt better in spite of the irradiations. The fatigue, the headaches the rushing of the blood to the head and the other symptoms soon disappeared. The hyperemia of the face was one of the last symptoms to disappear. The author's hope that the total irradiations might effect complete cure was not realized, for relapses occurred after from eighteen months to five years. The results were most lasting in the cases in which the irradiations were carefully distributed over several weeks and in which the blood status had been kept under strict control.

Myasthenia Gravis Pseudoparalytica and Tumor of Thymus.—Gold describes the history of a woman aged 31, who three years before had had a temporary paralysis of the eye muscles which recurred a year later. Otherwise the patient

had been well until eight days before hospitalization, when swallowing and speaking became difficult. The patient was now emaciated and hardly able to sit up in bed. With the exception of a paresis of the right levator palpebrae superior and of the right facial nerve, the cerebral nerves seemed to be free from pathologic changes. She died later with the symptoms of suffocation. The necropsy disclosed in the anterior mediastinum, directly behind the sternum, above the upper portions of the pericardium, a roundish, sharply defined nodule 4 cm. in diameter, and near it there were remnants of atrophic, milk-white thymus tissue. Histologic examination of the nodule disclosed a thymoma. Histologic examinations were made also on numerous muscles and they revealed the presence of foci of infiltration characteristic of myasthenia. The author discusses and evaluates the various theories about the pathogenesis of myasthenia gravis pseudoparalytica. He reaches the conclusion that neither the pathologico-anatomic nor the pathologicophysiology aspects indicate a causal connection between myasthenia gravis and the parathyroids. He was unable to corroborate Marburg's suggestion regarding the existence of a disturbance in the magnesium metabolism. The assumption that myasthenia develops on the basis of a status thymico-lymphaticus could likewise not be supported by the pathologico-anatomic aspects. The author thinks that by searching for and extirpating a tumor of the thymus it may be possible to exert a therapeutic influence on the course of myasthenia gravis and thus contribute also to the clarification of the pathogenesis of the disease.

Cockroaches as Carriers of Disease—Jettmar made bacteriologic studies on two types of cockroaches, *Phyllodromia germanica* and *Periplaneta orientalis*. He first studied the normal intestinal flora of these types of cockroaches and found that it nearly always contains staphylococci and also streptococci, the latter especially in the alpha forms of the viridans type. Later he studied the intestinal contents following artificial infection and found that the infected cockroaches are capable of transmitting pathogenic streptococci. He observed that the excrement of these animals contains viable and highly virulent streptococci for days and even weeks after the infection. In the conclusion he gives advice regarding the extermination of cockroaches.

Zentralblatt für Gynäkologie, Leipzig

59: 1089-1152 (May 11) 1935 Partial Index

*Action of the Urine of Pregnancy on Human Ovaries A. Westman —p. 1090

*Growth and Atresia of Follicle During Pregnancy K. Tietze and R. Wegener —p. 1097

Spontaneous Rupture of Cervix with Fatal Outcome G. Gergely —p. 1111

Action of the Urine of Pregnancy on Human Ovaries—Westman administered a preparation of anterior pituitary-like principle from the urine of pregnancy, the efficacy of which he had verified in tests on rats, before his three patients underwent gynecologic operations. He observed intensive hyperemia, dilated veins and, around the follicles, around the corpora lutea and in the stroma, he found hemorrhages. The endometrium always showed the status characteristic for the corpus luteum phase, except that the blood perfusion seemed to be somewhat more pronounced. He concludes that anterior pituitary-like principle produces in human ovaries the same changes that have been observed in animals, namely, maturation of the follicle, hemorrhage and formation of the corpus luteum, provided sufficiently large amounts are given. In the cases reported here, from 3,600 to 5,000 rat units was administered.

Growth of Follicle During Pregnancy—Tietze and Wegener describe histologic changes that develop in the ovaries in the course of pregnancy. Their observations were made on the ovaries of sixteen women who were operated on during pregnancy either on account of cervical carcinoma or because of peritonitis following attempted abortion. They found that the degeneration of the corpus luteum begins at various periods. It may begin during the second month or only during the last months. The factor that determines the onset of the degeneration does not involve the entire corpus luteum at once but rather develops in foci and progresses slowly. The authors gave their attention chiefly to the follicle apparatus. They observed growth

of the follicle during all periods of pregnancy. They intentionally avoid the term ripening, because they want to restrict that term to the follicles that are brought to ovulation outside the period of pregnancy. Follicles do not ripen during pregnancy and almost never grow beyond the 5 mm. size, for as a rule they become atretic before they have reached this size. The authors gained the impression that follicular growth decreases with the advancement of pregnancy. Nevertheless, there were some cases of advanced pregnancy in which the follicular growth was not lessened. Moreover, there is no connection between the number of follicles and the condition of the corpus luteum. They paid attention also to the luteinization of the theca and gained the impression that it depends on the advancement of the pregnancy, of the degeneration of the follicle and of the atresia of the follicle, that is, it progresses as they do. But, since these factors do not run parallel, manifold pictures may develop. If pregnancy and degeneration of the corpus luteum are advanced, luteinization of the theca may take place even if the follicles are still growing, but not so noticeably. The growing follicle of any size may become atretic and its theca may become luteinized. The authors reach the conclusion that the development of follicle material continues. They are unable to say whether the number of follicles is reduced during pregnancy, but they think it unconvincing that the corpus luteum of pregnancy inhibits formation and growth of follicles. They admit as certain the inhibition of the ripening, however, the development of the follicle up to the 5 mm. size is not inhibited.

Klinicheskaya Meditsina, Moscow

13 467-618 (April) 1935 Partial Index

Nephrosis Problem E. Kastanayan —p. 479

Acidosis of Hepatic Origin I. B. Shulutko —p. 492

Velocity of Circulation in Acute Nephritis O. P. Baranova —p. 498.

Nephritis and Working Capacity N. N. Levitan T. D. Sidrer —p. 503

The Meyer Boetz Method of Treating Pyelitis A. I. Vasiliev —p. 516

*McClure Aldrich Intradermal Test in Detecting Occult Edemas Ya. S. Khentov and V. S. Kurbatov —p. 531

Intradermal Test to Detect Occult Edemas—Khentov and Kurbatov report the results of 249 McClure-Aldrich tests performed in 131 cases made up in groups (1) cardiovascular, (2) renal, (3) infections, (4) malignant neoplasms, (5) endocrine and metabolic and (6) miscellaneous. The test consisted of an intradermal injection of 0.2 cc. of 0.8 per cent physiologic solution of sodium chloride. The resulting wheal is absorbed under normal conditions in from fifty to ninety minutes. The cardiac and renal patients exhibited an acceleration of water resorption proportional to the degree of existing edema. In localizations with pronounced edema the intradermal wheal disappeared in from five to two minutes. Accelerated water resorption in the compensated cases indicates the existence of occult edemas. The test enables one to determine the state of fluids in the organism, whether bound or free. Acceleration of the resorption of the wheal will be noted with the leg lowered if the tissue fluids are in a free state. It will not be affected by lowering the limb if the water is bound. Certain infections affect the water exchange of the tissues, while others do not. Rapid resorption of the wheal in infectious diseases suggests the existence of occult edemas and an increased amount of retained tissue fluids. Malignant neoplasms with their toxemia lead to a preedematous state, e. g., to occult edemas.

Hospitalstidende, Copenhagen

78: 449-476 (April 23) 1935

*Relation Between Spinal Temperature and Rectal Temperature in Psychic and Neuro-Organic Disturbances T. Dalsgaard Nielsen —p. 449—

Evipan Sodium Anesthesia Review of Two Hundred Cases. J. Nordentoft —p. 463

Spinal and Rectal Temperatures in Psychic Disturbances—Dalsgaard-Nielsen reports the results of measurement of the temperature of the spinal fluid in sixty patients of the psychiatric division of Kommunehospital in the spring of 1934. All age groups from 14 to 88 were represented, with fairly equal division between the sexes. Measurements of the spinal temperature, he concludes, have a purely theoretical interest and there seems to be little reason to expect that they will find a place among clinical methods of examination.

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THE DIAGNOSIS AND PROGNOSIS OF EPITHELIAL TUMORS OF THE LARGE BOWEL

CHAIRMAN'S ADDRESS

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It would seem that the chairman's address should deal with a subject which is of interest to gastroenterologists and proctologists alike, and for this reason I have chosen to call or recall attention to the question of the diagnosis and prognosis of epithelial tumors of the large bowel. Tumors actually arising from the bowel epithelium must be differentiated masses projecting into the bowel lumen and are merely covered with bowel mucosa. In cases in which the bowel mucosa covering a mass is normal there is no question, but when the mucosa is ulcerated or when a tumor has broken through the mucosa and is projecting into the bowel lumen, as is sometimes the case with prostatic carcinoma or metastatic nodes in the rectovesical pouch, or culdesac of Douglas, some confusion may arise. Certain tumors arising in the bowel wall, such as lipomas or myxomas, may give this picture, as may masses arising entirely outside the bowel, as in the case of presacral dermoid cysts or meningocele. Likewise inflammatory conditions with ulceration, such as amebic dysentery, ulcerative colitis, tuberculosis, actinomycosis, syphilis, lymphogranuloma inguinale, diverticulitis or inflammatory conditions due to intestinal parasites, may simulate to some degree epithelial tumors. If the existence of these conditions is kept in mind, differentiation is usually not particularly difficult either from the gross appearance of the lesions or from other physical observations and laboratory data.

Tumors of epithelial origin should be considered from several points of view, namely, their malignancy or benignity, their extent of development, and their location. While an epithelial tumor may be malignant from its inception, many remain benign, or malignant changes only occur after a long period of time. There is therefore an overlapping of certain tumors in respect to malignancy and benignity, and one must consider this in giving a prognosis.

I purposely do not intend to spend much time on far advanced lesions. If they are viewed through the proctoscope the diagnosis is usually apparent, and in doubtful cases a biopsy will give the desired information. If the lesion is too high for visualization the patient will usually give a history of passage of considerable

amounts of blood and mucus, diarrhea or increasing constipation, and perhaps loss of weight and the presence of a palpable tumor mass. Occasionally the first sign of trouble is an acute obstruction, and in these cases one is at the mercy of circumstances. When such lesions are suspected, roentgen examination will almost invariably confirm the diagnosis. The prognosis in these cases is always serious, for, because of the advanced stage of the growth or of the general physical condition of the patient, only 50 per cent are suitable for radical operation. The only other condition that should be termed "advanced" is multiple polyposis, or, more accurately, multiple adenomatosis. The growths usually extend low enough to be visualized, and the x-rays will reveal how much of the bowel is involved. Almost certain development of a malignant growth or death from intercurrent disease is the fate of these patients, if untreated. Ileosigmoidostomy followed later by colectomy is the only satisfactory treatment. Tumors in the stump of the large bowel that is to remain are destroyed by coagulation or fulguration. Treatment of this type carries a high mortality and requires long hospitalization, but it is the only method offering a favorable prognosis.

PEDUNCULATED TUMORS

Since both diagnosis and prognosis and the accepted forms of treatment are quite well standardized in these advanced lesions, I want to call attention particularly to those cases in which the lesion is small, the prognosis more hopeful, and the methods of treatment less well agreed on. I will first consider lesions that can be visualized with the proctoscope—in most cases those occurring within the last 25 cm of the large bowel. The earliest symptom that may present itself with small tumors in this location is the passage of small amounts of blood and mucus. Unfortunately even this symptom may be lacking or is overlooked by the patient, and small lesions are often discovered only in the course of routine proctoscopic examination. The fact that in early lesions symptoms are absent or trivial is one of the tragedies of diagnosis in diseases of the bowel. In the diagnosis and prognosis of these small lesions I believe they are best divided according to certain physical characteristics, that is, into the flat lesions and the pedunculated lesions. The majority of the pedunculated lesions are in the beginning at least benign adenomas, or, as they are sometimes called, benign polyps. The term "polyp" I think is unfortunate, since it applies to any pedunculated tumor. The so-called fibrous polyp is usually an adenomatous tumor which through superficial infection and lack of blood supply due to torsion or attenuation of the pedicle has become fibrous, most of the glandular structure being destroyed. It would therefore be better to term this tumor a fibrosed adenoma. When it is seen in this stage of development one can feel sure that any danger of malignancy has

passed and that removal is necessary only for mechanical reasons. In an adenomatous tumor that has not reached the whitened stage of fibrosis, one cannot be sure that malignant changes will not occur or, in fact, may not already be present. The type of pedicle is of some importance in this respect. A thick-stalked tumor set close to the bowel wall and firmly fixed to the deeper layers carries greater potential danger of malignancy than one that has a long pedicle composed chiefly of mucosa. In either case these tumors should be considered at least as precancerous and removed. If microscopic examination reveals no sign of malignancy, there is no cause for further worry. If malignant changes have occurred, prognosis must be more guarded. Fortunately, the majority of these pedunculated tumors show a rather low grade of malignancy and, if there is a long pedicle, simple removal close to the bowel wall usually produces a permanent cure. If the tumor has a thick short pedicle there is greater danger of metastases, but if there is no invasion of the pedicle by the malignant cells the prognosis is still good. These tumors are best destroyed by electrocoagulation or fulguration, the destruction being carried well into the deeper layers of the bowel itself. The possibility of metastases must always be kept in mind, but, since these are unlikely, it is usually better to take this chance and be content with thorough local removal than to accept the operative mortality involved in subjecting the patient to a major surgical procedure.

The only other pedunculated tumor is the so-called villous tumor, characterized by an almost gelatinous appearing growth with many arborescent branches. These tumors have a tendency to become multiple, small tumors studding the wall round a larger one, much like the spacing of condylomata acuminata. The arborescent portion of the "parent" tumor will sometimes adhere to adjacent portions of the bowel wall, becoming organically attached to it. These tumors may degenerate into or be related to the so-called papillary carcinomas. Local recurrences following removal are not uncommon, and it may be necessary to destroy these recurrences several times before they are completely eradicated. They do not, however, form distant metastases. Their behavior is so like that of the condylomata acuminata that it would seem that the two conditions may be similar in character, condylomata acuminata being the result of some stimulation which occurs in squamous epithelium, and villous tumors the result of similar stimulation in the columnar epithelium of the rectum.

FLAT TUMORS

The flat tumors offer a different problem. Benign adenomas must necessarily in the beginning be but small slightly raised areas in the rectal mucosa, which gradually enlarge and become pedunculated. Therefore any flat lesion not more than 0.5 cm in diameter may be the beginning of a pedunculated adenoma. On the other hand the serpiginous type of carcinoma, which spreads by encircling the bowel wall like a rodent ulcer, also begins as a tiny elevated area in the mucosa. I have seen two slight button-like elevations on the bowel wall less than 0.33 1/2 cm in diameter, which on removal proved to be adenocarcinomas. Therefore even in the smallest flat button-like lesion, caution is necessary. A flat lesion as large as 0.5 cm in diameter is most likely a carcinoma, for, if the lesion were a simple adenoma, some evidence of pedunculation would most surely have occurred before the growth reached this width. In considering the flat tumors, two things must be taken into

consideration: their size and whether or not there is fixation to the submucous or muscular coats of the bowel. There is no way to make certain whether or not metastases have occurred, but metastatic involvement is quite likely when the tumor is fixed to the deeper structures. Almost without exception a fixed tumor calls for radical surgery. Fixation seldom occurs before the tumor is 0.5 cm in diameter, and for that reason the majority of tumors up to this size may be removed locally by coagulation or fulguration. On the other hand, tumors of 1 cm or more in diameter are usually fixed and require radical removal. Fixation is not, of course, the only criterion, and I feel that a flat type of cancer larger than 1 cm in diameter, regardless of whether or not it moves freely with the excursion of the rectal mucosa, should call for radical operation. The grade of malignancy of the carcinoma is of importance. The flat type cancer is usually of the higher grades, but regardless of this, with flat button-like tumors I would place the importance of fixation above that of the grade of malignancy.

In these small flat lesions, which are usually symptomless, it may sometimes seem ultraradical to insist on a major surgical procedure, but if there is fixation the physician should unhesitatingly insist on the most radical operation the patient's physical condition will permit. The chances of metastatic involvement of adjacent glands are too great to risk only local removal. When single small tumors occur above the field of proctoscopic visualization there are, more often than not, no symptoms that will make one even suspect the presence of a tumor. The earliest suggestive symptoms are the passage of a little blood or mucus, vague abdominal discomfort, symptoms of "irritable colon," or unexplained diarrhea. In these cases a roentgen examination following a barium sulphate enema and plates after evacuation and following the insufflation of the colon with air will sometimes reveal even these small lesions. I am sure, though that only too often the most careful roentgen examination will fail, and not until the lesion becomes more pronounced will it be found. Once suspected, examination should be repeated at regular intervals until one can be sure that no organic lesion exists. If a lesion so demonstrated proves to be a polyp with a definite pedicle and bleeding is absent or minimal it is permissible to adopt a policy of watchful waiting. If there is doubt, abdominal exploration should be undertaken at once, since the risk of laparotomy is much less than the chance of allowing a malignant lesion to remain. Since the probability of finding a small tumor in this unvisualized portion of the large bowel is not great, the prognosis for tumors in this region is not so good.

CONCLUSIONS

I think, then, that one is justified in drawing several conclusions concerning epithelial tumors of the large bowel.

1. Large epithelial tumors usually give symptoms definite enough to call attention to them. Their diagnosis either above or within the field of proctoscopic visualization is not too difficult and their prognosis is fairly certain.

2. Small epithelial tumors frequently give no symptoms. If low enough to be seen through the proctoscope they can be readily diagnosed, but above this area diagnosis is often impossible.

3. All epithelial tumors except the degenerated fibrous type offer some danger from malignant degeneration.

Some of these tumors, especially the flat button-like lesions, are frequently malignant from their earliest development

4 Because of this danger all epithelial tumors, no matter how small within reach of the proctoscope should be destroyed by electrocoagulation or fulguration, since this is a simple procedure devoid of danger. Small tumors with a definite pedicle, which lie so high in the bowel that they cannot be reached through a proctoscope and would require a laparotomy for removal should be observed periodically and removed at once if there is any sign of activity

5 In some cases as indicated in this paper, one is justified in simple local destruction of small tumors though definitely malignant. Caution should be used in advising this procedure, especially in the case of flat button-like lesions. If one is to apply this method at all in malignant cases, one must be careful not to extend its use too far because of its simplicity or the insistence of the patient. In a questionable case the physician must insist on more radical procedures

1829 Medical Arts Building

EXPERIENCE WITH ERGOTAMINE TARTRATE IN 120 PATIENTS WITH MIGRAINE

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The use of ergotamine tartrate for the treatment of migraine headaches was first reported in 1926 by Maier¹. Since then, a number of articles have appeared recording the results of treatment in single or in small groups of patients. The only large group is that of Tzanck,² who treated 101 patients with favorable results in a large but unstated percentage. A year ago, one of us (W G L³) reviewed the literature and reported the results of parenteral injection in forty-five patients. Additional reports of treatment have appeared as follows: seven patients helped by oral administration (Podolsky⁴), headaches aborted by subcutaneous injection in fourteen of eighteen patients (Brock, O'Sullivan and Young⁵), and in each of nine patients (Logan and Allen⁶). Though the cases reported (including this series) number only 300, the dozen authors who have written on the subject are unanimous that the administration of ergotamine tartrate is effective in the great majority of patients in stopping migraine headaches.

Our experience with ergotamine tartrate now covers nearly three years and a group of 120 migraine patients

From the Department of Neurology of the Harvard University Medical School and the Neurological Unit Boston City Hospital aided by a grant from the Josiah Macy Jr. Foundation

1 Maier H W. L'ergotamine inhibiteur du sympathique étudié en clinique, comme moyen d'exploration et comme agent thérapeutique. *Rev. neurol.* 1: 1104 (June) 1926

2 Tzanck M A. Le traitement des migraines par le tartrate d'ergotamine. *Bull. et mem. Soc. méd. d. hôp. de Paris* 55: 1663 (Nov. 6) 1931

3 Lennox W G. The Use of Ergotamine Tartrate in Migraine. *New England J. Med.* 210: 1061 (May 17) 1934

4 Podolsky Edward. Migraine. *New Therapeutic Approach*. West Virginia M J 29: 173 (April) 1933

5 Brock Samuel, O'Sullivan M and Young D. The Effect of Nonsedative Drugs and Other Measures in Migraine. *Am J. M. Sc.* 188: 253 (Aug.) 1934

6 Logan A H and Allen E V. The Treatment of Migraine with Ergotamine Tartrate. *Proc. Staff Meet. Mayo Clin.* 9: 585 (Sept. 26) 1934

have been treated by us or on our advice.⁷ These have been given a total of several hundred injections for as many headaches and have ingested thousands of tablets.⁸ In enumerating the results, we shall first detail the effects of the first administration of ergotamine and then the results of continued treatment of a smaller group.

The patients in this series all suffered from severe periodic headaches. In addition, they had one or more of the following satellite symptoms: hemicrania, nausea or vomiting, visual disturbances, vasomotor disturbance and malaise. They failed to obtain relief from other drugs or treatment, and each gave a history of migraine in other members of the family. Twenty-three of the patients were males and ninety-seven females.

RESULTS

Of the 109 patients who received the drug by intravenous, intramuscular or subcutaneous injection the result of the first administration was abrupt and complete relief in 90 per cent, slight or temporary relief in 4 per cent, no benefit in 4 per cent and headache made worse in 2 per cent. Of the eleven patients who received medication only by mouth, the first trial was followed by relief in 82 per cent, while 18 per cent were made worse.

Of the whole group of 120 patients, 89 per cent experienced abrupt and complete cessation of the headache with the initial use of ergotamine. The cases in which the treatment was given were chronic, and other forms of therapy had not helped. No other drug or treatment which had been reported in the literature has been effective in such a high proportion of patients with migraine. The results, therefore, are dramatic and conclusive. In ergotamine tartrate, the physician possesses a nonsedative drug which almost invariably aborts even the worst of migraine headaches.

Furthermore, the beneficial action of ergotamine seems to be specific, or nearly so, for headaches of the migraine type. Of forty-five patients with headaches from other causes, only seven noted definite improvement after the intravenous injection of the drug. Indeed, intravenous injection in eighty-three non-migrainous subjects produced headache in six.

Results of repeated treatment are of more importance than those of the initial administration. In general, patients responded to subsequent injection as they did to the initial trial. There were, however, five patients who later failed to obtain the relief experienced at first. Nineteen patients have been followed for more than a year, a few of these having what might be called a "migraine status" with almost continuous headaches. In the others, the attacks before treatment were frequent and severe so that the entire group of nineteen represents a much more than average degree of intractability. All but one of these patients has obtained relief with each injection of ergotamine. In most of the patients the interval between attacks has not been significantly altered, in a few, especially those most severely affected, the headaches have recurred at more frequent intervals, in a number, the attacks have been more widely spaced. In the entire group of 120 patients, ten have had unusually long periods of freedom since treatment was begun. On the whole, we find that headaches aborted by ergotamine tend to recur at shorter intervals, especially in the first few weeks or months of treatment.

7 Ten patients were treated by our colleague Dr. Stephen Maddock.
8 The ergotamine tartrate (Gynergen) used in this investigation was supplied by the Sandoz Chemical Works, Inc.

The joy of the patient over his miraculous relief from headache is often tempered by certain unpleasant symptoms which he may experience. Nausea occurred in 77 per cent and vomiting in 60 per cent of eighty-nine cases in which such a record was made. In a group of thirty-four patients not subject to headaches who received intravenous injections of 0.5 mg., nausea occurred in 50 per cent and vomiting in 24 per cent. After obtaining relief from headaches by the use of ergotamine, most patients experience a sense of fatigue and lassitude, this being an accentuation of the sensation experienced after spontaneous recovery. A few patients complained of muscular pains which wore away with exercise, or of paresthesias or a sense of substernal or precordial oppression. These various symptoms were not experienced by nonmigrainous patients who were given intravenous injections of the drug. Rarely, gastro-intestinal or other symptoms are sufficiently distressing so that the patient prefers the headache to the treatment.

With serious or permanent ill effects we have had no experience. Because ergotamine raises the blood pressure, caution should be exercised in administering it to patients with arterial disease. Pregnancy is not an absolute contraindication according to the evidence collected by Barger⁹ for ergotamine, even in toxic doses, may not produce abortion. In one patient Schimmel¹⁰ injected 25 mg. in a period of thirteen days without causing an abortion. Excessive and long-continued use carries the danger of ergotism. However, the daily injection of 0.5 mg. for a period of months, and the daily ingestion of from 10 to 15 mg. for more than a week has not produced suspicious symptoms.

THERAPEUTICS

When ergotamine tartrate is injected, the usual dose is 0.5 mg. (the contents of a 1 cc. ampule). In some patients a half or even a third of this dose may be effective and should, therefore, be used. One patient required for relief the injection of 1 mg. Only rarely is a second injection required. We principally made use of the intravenous route because experimental observations were being carried on concurrently. This route has the advantage of giving more prompt relief (in from fifteen to thirty minutes instead of in from forty-five to ninety minutes after subcutaneous injection) and more certain relief and there is no pain due to the injection. Intravenous injection, on the other hand, is more likely to be attended by unpleasant symptoms, such as nausea, vomiting or muscle pain. Intramuscular injection is a satisfactory compromise. Our more intelligent patients have been supplied with hypodermic needles and syringes and have managed their own injections.

In the cat, only 30 per cent of ingested ergotamine is absorbed.¹¹ In patients the presence of nausea and vomiting is an added obstacle to absorption from the intestinal tract. This probably explains the relatively slight benefit resulting from the use of tablets taken by mouth. However, in milder cases (as represented by our group of patients who received only oral treatment) beneficial results may be obtained from the 1 mg. tablets. From two to five tablets may be given when the headache begins, followed by one or two at

hourly intervals until 9 or 10 mg. has been taken or relief has been obtained. Two hours or more may elapse between the ingestion and relief. If nausea and vomiting are violent, atropine sulphate in 0.5 mg. doses may be given in addition to the ergotamine. The enteral and paracental routes may be used simultaneously. A 0.5 mg. ampule of ergotamine costs at the present time 30 or 40 cents. On the basis of the ergotamine content, the tablets for oral use cost approximately only one tenth as much. On the basis of therapeutic results, however, we believe that a 0.5 mg. ampule, given intramuscularly, is worth much more than the equally priced five 1 mg. tablets taken orally.

The prevention of headaches by either injection or ingestion of ergotamine may be attempted if the time of the onset of the headaches is predictable. Headaches may thus be postponed or ameliorated but not, except perhaps in mild cases, prevented. It should be emphasized that while ergotamine tartrate is valuable in aborting individual attacks, its use should not take the place of efforts to find and remove the cause or causes of the condition.

THE MECHANISM OF ACTION

The mechanism by which ergotamine tartrate affords relief from migraine headache has not been satisfactorily explained. The occurrence of vomiting appears to bear no direct relationship to the obtaining of relief. Following an intravenous injection, both patients and controls have an increase in systolic and diastolic blood pressure and a decrease in pulse pressure and pulse rate. Investigations thus far carried on in our laboratories indicate that the cerebrospinal fluid pressure is increased, though the rise is less in migrainous than in nonmigrainous patients.¹² The circulatory changes are at their height within a few minutes after the intravenous injection, whereas relief from headache does not begin for from fifteen to thirty minutes. Ergotamine increases the blood flow through the brain¹³ and arm of man and causes concentration of the blood.¹⁴ In the cat, it has no consistent effect on the arteries of the pia but constricts those of the dura and the skin.¹⁵

These results do not in themselves seem adequate to explain the relief obtained from migraine pain. Most authors have suggested that ergotamine paralyzes the motor endings of the autonomic nerves, thus relieving presumed arterial spasm and pain. It might, however, act directly on the sensory fibers of the nerves, especially those supplying the arteries of the brain or dura. The relief obtained from pruritus following the administration of ergotamine is a strong point in favor of the effect on the sensory nerves. However, if this were the case, ergotamine should relieve other types of headache associated with dilatation or contraction of the cerebral arteries, such as headache following an injection of histamine, but this it does not do.

CONCLUSIONS

Ergotamine tartrate was used in 120 patients with migraine headache. The initial trial resulted in abrupt and complete relief from the headache in 107 of these patients. Nineteen patients have used ergotamine for more than a year, and all but one have obtained relief

¹² Pool J. L., von Storch, T. J. C. and Lennox, W. G. The Effect of Ergotamine Tartrate on the Cerebrospinal Fluid and Blood Pressure of Patients During Migraine Headaches. *Arch. Int. Med.* to be published.

¹³ Lennox, W. G., Gibbs E. L., and Gibbs F. A. Effect of Ergotamine Tartrate on the Cerebral Circulation of Man. *J. Pharmacol. & Exper. Therap.* 53:113 (Jan.) 1935.

¹⁴ Lennox, W. G. Unpublished data.

¹⁵ Pool J. L. and Nason, G. I. Cerebral Circulation. XXXV. The Comparative Effect of Ergotamine Tartrate on the Arteries in the Pia Dura and Skin of Cats. *Arch. Neurol. & Psychiat.* 33:276 (Feb.) 1935.

⁹ Barger, George. *Ergot and Ergotism*. London: Gurney & Jackson, 1931.

¹⁰ Schimmel, H. Eignet sich Gynergen zur Unterbrechung der Schwangerschaft? *Monatschr. f. Geburtsh. u. Gynak.* 66:133 (May 24) 1924.

¹¹ Burr, J. H. The Oral Administration of Powdered Ergot. *Quart. J. Pharm. & Pharmacol.* 2:515 (Oct-Dec.) 1929.

on each of the repeated occasions in which ergotamine has been used. In some patients a tendency for the headaches to recur at more frequent intervals or the appearance of unpleasant accompanying symptoms limits the use of the drug. The administration is by intravenous or subcutaneous injection. Ingestion is relatively ineffective. The mechanism by which relief is obtained is as yet unknown.

THE TREATMENT OF PULMONARY TUBERCULOSIS BY ULTRA- VIOLET RADIATION

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This study was undertaken to determine the value of sunlight and artificial radiation in the treatment of pulmonary tuberculosis. The members of the staff of the City of Chicago Municipal Tuberculosis Sanitarium believe that if ultraviolet radiation is of value in the treatment of pulmonary tuberculosis it should not fail in all the active forms and should not be limited in its usefulness only to the least active. In their opinion, if ultraviolet radiation should be used only in selected forms of chronic pulmonary tuberculosis it would be impossible to determine whether ordinary treatment in a sanatorium produces an improvement or whether the ultraviolet radiation is a factor in this improvement. It was decided therefore that, if ultraviolet radiation is of value in the treatment of pulmonary tuberculosis, it should show some definite results in three months' treatment in active cases. These patients should have no fever and no hemoptysis and should be able to walk or ride in a wheel chair to the room where ultraviolet treatment is given.

Karsner¹ recently stated that, in the evaluation of methods used in physical therapy, the value of the treatment is not to be measured by the opinion of the physician but rather by the facts he can demonstrate. In this study we have endeavored to follow the statistical method as given by Karsner to decrease whatever errors might arise by the summation of the opinions of interested observers.

In order to obtain facts and not opinions, all the members of the staff of this institution cooperated. The patients were referred to the physical therapy department for ultraviolet irradiation by the physicians in charge of the wards, the blood examinations and roentgenograms were made before and after the three months' course of treatments. The ultraviolet irradiation was given under our direction according to the Rollier technic, the quality and intensity of the radiation were determined by one of us (H. A. C.) and the results were judged by the clinical staff.

Dr. Sweeney, in charge of the laboratory of the Municipal Tuberculosis Sanitarium, examined the reports of the blood examinations and the roentgenograms made before and after ultraviolet irradiation and commented on them without being informed as to the details of each case or the treatment given. The clinical results were recorded on the patient's clinical charts.

by the ward physicians. It is believed that this method avoided the giving of favorably or unfavorably prejudiced opinions.

In order to check our data further, a series of patients who did not receive ultraviolet treatment were used as controls.

SOURCES OF ULTRAVIOLET RADIATION

Not only is the sun regarded as the source of all energy, but it is also the best of all sources of radiation for ultraviolet therapy. However, owing to climatic conditions, sunlight is not always available for therapeutic use. For example, Tonney, Hoeft and Somers² have shown that in the downtown loop district in Chicago during the months of October, November, December, January and February, the ultraviolet content of sunshine is seldom strong enough to provide a minimum erythema dosage. They have also shown that sunshine in that district contains much less ultraviolet radiation than at points outside the congested district, such as the south side of Chicago near Lake Michigan or the Indiana dunes district. Hence, if therapeutic ultraviolet radiation is desired in the winter-time, Chicago physicians are obliged to use some form of artificial radiation instead of natural sunlight. Solariums made of special glass would probably not suffice. In this work we employed artificial radiation during all the months of the year except three—June, July and August. Our source was a large carbon arc lamp, 60 ampere capacity, with C carbons, the cores of which were impregnated with iron, nickel, aluminum and silicon. Polymetallic carbons make the ultraviolet component of the radiation richer than it would be with carbon alone. The spectral intensity curve for carbons impregnated with metals is given by Coblentz.³

MEASUREMENT OF ULTRAVIOLET RADIATION

Ultraviolet Meters—Fairly accurate instruments have been developed recently for measuring the ultraviolet component of artificial radiation emanating from quartz mercury arc (high vapor pressure) lamps and from the carbon arc. One convenient instrument consists essentially of a light-sensitive cell mounted behind a glass filter which permits radiant energy of wavelengths between 2,500 and 4,000 angstroms to pass. This light cell is connected to a sensitive micro-ammeter, and when the cell is in the presence of radiant energy a current is generated, which is measured by the ammeter. This meter is available in two forms—an indicating and a recording type. It appears to be quite satisfactory for measuring radiation from mercury vapor arc (high vapor pressure) lamps and from the carbon arc. This meter is not recommended by the manufacturer for measuring the ultraviolet radiation in sunlight.

Another instrument we employed consisted of a light-sensitive photocell with a direct current rectifier for energizing it, a relay tube and an indicator. The principle of operation is that the photocell, sensitive to certain bands of waves in the light spectrum, allows a minute electric current to pass when it is exposed to radiation. This current is proportional to the ultraviolet radiation energy in the particular band of the spectrum that is used. The small current charges a small condenser, which is connected in parallel to a relay tube.

Aided by a grant from the Council on Physical Therapy to the City of Chicago Municipal Tuberculosis Sanitarium.
¹ Karsner, H. T. and Goldblatt, Harry. Evaluation of Methods Used in Physical Therapy. J. A. M. A. 100: 1495 (May 13) 1933.

² Tonney, F. O., Hoeft, G. L. and Somers, P. P. Loss of Actinic Intensity in Urban Sunshine Due to Air Pollution. J. Prev. Med. 4: 139 (March) 1930.
³ Coblentz, W. W. Sources of Ultraviolet and Infra Red Radiation Used in Therapy. J. A. M. A. 103: 183-188 (July 21) 254-257 (July 28) 1934.

Every time the condenser is fully charged, the relay tube "spills over," discharging the condenser and sending an impulse to the recorder. The stronger the ultraviolet energy, the faster the condenser charges and discharges. The counter is calibrated in units of radiation energy. The device used was an experimental model and, as such, did not give the satisfaction that might have been expected in a perfected commercial product. One objection to this unit was that it was not practical to measure the entire ultraviolet content of the spectrum because the photocells responded only to certain bands of waves. This unit therefore, did not render complete satisfaction as a measuring instrument of the ultraviolet energy of sunshine.

The third meter was of similar construction making use of a photo-electric cell microgalvanometer, two transparent filters and a battery. Two readings were taken each time the source was metered—first with one filter in front of the tube and then the other. Finally, by means of an empirical formula the ultraviolet energy was calculated in units of radiation energy. The meter was not used for measuring sunlight.

TABLE 1 — Intensity of Ultraviolet Radiation from a Large Carbon Arc Lamp

	Current Dosage Amperes	Distance Inches	Average Meter Reading Microwatts	Microwatts per Square Centimeter
Bed 1				
Knees	60	65	30	347.1
Abdomen	60	70	24	213.6
Bed 2				
Knees	62	65	43	382.7
Abdomen	60	70	29	255.1
Bed 3				
Knees	64	65	32	244.8
Abdomen	61	70	24	213.6
Bed 4				
Knees	62	65	38	338.2
Abdomen	62	70	25	240.2

Another method was the use of chemically pure zinc sulphide mixed in a small mortar with a few drops of solution of zinc acetate and ground to a smooth soft paste. This paste is pressed flat between a piece of glass and a piece of transparent quartz. The glass and the quartz plate are held together by rubber bands and exposed to the sunlight with the quartz uppermost. After an exposure of one, two or three minutes, the change in color is matched with the color chart.⁴ This method requires an experienced eye to judge the change in hues, since the various shades of gray are difficult to distinguish and was discarded because it was inconvenient for the ordinary nurse giving these treatments to use it.

Another meter operating on the color-changing method was employed. This photochemical ultraviolet meter consists of a solution of leukocyanide of triphenylamine dye sealed in a transparent tube. The tube is mounted in a light-tight box, which can be opened and exposed to the sunshine. The dye is colorless in the dark but turns pink temporarily when exposed to short wavelength ultraviolet radiation. The pink is reduced to a neutral gray by insertion of green filters of different densities. These are calibrated in intensities from 0 to 9 and are calibrated arbitrarily in terms of microwatts per square centimeter to indicate the intensity and the corresponding time of exposure necessary to produce a minimum perceptible erythema. Since this unit depends on the ability of the observer to distin-

guish a neutral gray and also on his ability to time the intervals between readings correctly, it was not considered a very satisfactory instrument.

Heliotherapy—All the aforementioned instruments were used at one time or another in an attempt to measure the ultraviolet component of sunlight, but they could not be relied on for that purpose. The photo-electric cells, for example, were sensitive to infra red radiation and, on many days when the sky appeared clear, the reading indicated that there was less ultraviolet energy than on a foggy or hazy day. The instruments composed of photo-electric cells were discarded as inaccurate for measuring the ultraviolet radiation in sunlight. The color-changing instruments were too difficult to manipulate and read. Thus, many errors were introduced in the observations. Although the photo-electric cell meters were inaccurate, they were used and certain observations of value were recorded that facilitated the work. For example, it was observed that in the course of a forty minute treatment, the radiation intensity of the sun varied widely owing to such factors as the sun's change of position, dust, clouds and visibility, and usually the conditions necessitated a change in the time of exposure which would be quite different from that contemplated at the beginning of the treatment. These changing atmospheric conditions introduce obstacles which make the control of dosage factors quite impossible. A meter that would faithfully record all the therapeutically useful ultraviolet energy in sunlight and at the same time integrate the energy with respect to time would be the ideal instrument.

The large carbon arc lamp employed in this investigation was tested for intensity with a sensitive photo-electric cell and a galvanometer. The readings were quite accurate since the meter was calibrated to measure the ultraviolet radiation from a carbon arc and are given in table 1.

DOSAGE

Our experience in these cases confirms Laurens's⁵ statement that it is becoming more and more evident that aside from knowing whether a lamp emits sufficient ultraviolet energy to be of clinical value and knowing about how long an irradiation with it will produce a desired degree of erythema, a modern dosage meter in practical heliotherapy has no value. The important consideration is the individual patient and his reaction, and the dosage is modified accordingly. As the erythematous response is the only physiologic reaction that can be easily judged for each patient, our dosage technic was the use of a modified Rollier method to secure a faint erythema over increasing areas of the body starting at the feet.

The feet were uncovered the first day for five minutes for exposure to the direct sunlight. On the second day the legs to the knees were exposed for five minutes and the feet ten minutes. The third day the thighs were uncovered for five minutes, legs ten minutes and feet fifteen minutes, fourth day abdomen five thighs ten, legs fifteen and feet twenty minutes, fifth day chest five, abdomen ten, thighs fifteen, legs twenty and feet twenty-five minutes. These exposures were given in the sunlight to both the front and the back of the body in all instances once daily. The time stated represents half of the total exposure, that is, the total for the feet the first day was ten minutes. With

⁴ Clark, Janet H. The Zinc Sulphide Method of Measuring Ultraviolet Radiation and the Results of a Year's Observations on Baltimore Sunshine. *Am J Hyg* 9: 646 (May) 1929.

⁵ Laurens, Henry. Factors Influencing the Choice of a Source of Radiant Energy. *J A M A* 103: 1447 (Nov 10) 1934.

the carbon arc lamp the exposures were started with two minutes to the feet and increased one minute daily as previously described. As soon as the whole body had received a faint erythema from the daily sunlight or carbon arc treatments, the irradiations were given every other day.

The pigment produced in the skin by sunlight and the carbon arc are nearly alike—a brown to red brown. Many observers believe that an increased production of pigment means an increased tendency to healing. Our sixty patients showed increased pigmentation of the skin, but this bore no relation to the improvement or lack of it.

DANGERS

An analysis of the cases treated with ultraviolet radiation at the Municipal Tuberculosis Sanitarium shows that the ill effects which may follow such treatment have been exaggerated, provided the dosage of ultraviolet radiation is carefully given. The generally listed dangers are

1 *Dangers of Reactivation of a Quiescent Disease*—Many of our patients came with the statement that their physicians had told them that they should never expose their chests to ultraviolet radiation as it would make the pulmonary condition worse. There are no data in the literature to substantiate such a statement. All our patients were exposed by the Rollier technic until the whole body was exposed. In no case was there any reactivation of the pulmonary disease.

The average penetration of the radiant energy from the part of the spectrum used in ultraviolet irradiation with sunshine or a carbon arc lamp is far ultraviolet, 0.1 to 0.5 mm, near ultraviolet, 0.5 to 1 mm, visible light, 1 to 5 mm, and near infra-red, 5 to 10 mm. Therefore the penetration of ultraviolet rays is so slight that it can have no direct action on the lungs. It is known that ultraviolet radiation between 2,900 and 3,130 angstroms activates ergosterol in the skin so that an active antirachitic substance is formed. This does not mean that ultraviolet radiation may not have other beneficial effects or potentialities for harm. But the exposure of the chest in general ultraviolet treatment can have no harmful effect unless there is an overdose of ultraviolet radiation, and the same effect could be produced by an overdose on the other parts of the body with the chest covered.

Sonne's work on the action of the spectrum of sunlight and the carbon light shows that during irradiation with the highest endurable intensity of visible energy the temperature of the skin is 43.8 C (110.8 F), at a depth of 0.5 cm with visible rays it is 47.7 C (117.8 F). There would be a real danger in cases of pulmonary tuberculosis if the patients were exposed to sunlight at low levels during the noon hours or too near a carbon arc lamp, but our patients were exposed to sunlight in the earlier morning hours and at a distance of 6 feet (183 cm) from the carbon arc, so there was no possibility of producing the rise of temperature subcutaneously, as was shown when patients were exposed to the highest endurable intensity of radiant energy.

2 *Danger of Disseminating Infection*—There are reports in the literature of the dissemination of pulmonary lesions by ultraviolet radiation used in the treatment of pulmonary tuberculosis. Our series of cases showed no such unfavorable results. Some of the patients became worse and the disease spread but it was not believed by the ward physician that the ultraviolet irradiation had disseminated the infection.

3 *Hemoptysis*—In our series four patients showed hemoptysis (blood-streaked sputum). All these had had this symptom previously, and the physician in the ward would not attribute it to the ultraviolet irradiation. In our analysis of the literature only eight of the seventy observers of the use of ultraviolet radiation reported hemorrhages, and these observers did not give an accurate statement of the dosage administered. Our conclusions are that carefully given ultraviolet radiation entails no dangers from hemoptysis.

4 *Progressive Tuberculosis and Focal Reactions*—Observers have reported in cases of uncomplicated pulmonary tuberculosis with fever, although not rapidly progressive, the development of focal reactions during ultraviolet irradiation. Mayer⁶ states that (1) uncomplicated active pulmonary tuberculosis with high temperature even though not rapidly progressive is a contraindication to ultraviolet irradiation and that (2) in uncomplicated cases of pulmonary tuberculosis in which the disease process is not yet quiescent and may be accompanied by slight or moderate elevation of temperature, ultraviolet irradiation if employed at all should be used with the greatest caution. In our cases ultraviolet irradiation was used only in cases in which there was slight fever or none at all, and, if the temperature went to 100 F, treatment was stopped until it returned to its former level. Therefore there were no focal reactions in this series.

RESULTS

Underwood⁷ gives Kayser of Vienna the credit for being the first to use artificial light for pulmonary tuberculosis, in 1902. An analysis of the literature since that time shows that there is an extraordinary diversity of opinion as to the merits of this treatment. An analysis of the literature shows that, of seventy competent observers, forty-six had favorable and twenty-four obtained poor results or none at all with ultraviolet radiation in the treatment of pulmonary tuberculosis. The detailed analysis is not given here because of lack of space but will be furnished on request.

Blood Examinations—It was believed that the information that could be obtained from the examination and correct interpretation of the blood was an objective fact that could be used as an aid and as a substitute for personal opinion in evaluating the effects of ultraviolet radiation in these cases of pulmonary tuberculosis.

Red Cells and Hemoglobin—In a review of the literature on the effect of ultraviolet radiation on the blood out of twenty-seven reports fourteen investigators found the red cells and hemoglobin value increased and thirteen found no effect following general ultraviolet irradiation.

In our series of cases there was no suggestion that ultraviolet radiation had any influence on red cells and hemoglobin in cases of advanced pulmonary tuberculosis.

The red blood cells showed an increase in seventeen and a decrease in thirteen of the thirty cases of pulmonary tuberculosis treated. The average increase was 485,000 and the average decrease was 397,000. In the control series fourteen showed an average increase of 594,000 and sixteen showed an average decrease of 407,000.

6 Mayer, Edgar. *Clinical Applications of Sunlight and Artificial Radiation*. Baltimore: Williams & Wilkins Company, 1926.
7 Underwood, E. A. *Treatment of Tuberculosis by Light*. Brit. J. Tuberc. 26: 178 (Oct.) 1932.

The hemoglobin value in these cases showed in twenty cases an average increase of 82 per cent and in ten cases an average decrease of 36 per cent. The control series showed sixteen cases with an average increase of 75 per cent and fourteen cases with an average decrease of 9 per cent.

In the thirty cases treated following thoracoplasty, fourteen showed an average increase of red blood cells of 598,000 and sixteen an average decrease of 39,000. Twenty of these cases showed an average increase of 12 per cent in the hemoglobin value and ten an average decrease of 45 per cent.

White Cells. It was decided that a simple estimation of the number of the various types of white cells would not give sufficient information on the action of ultraviolet radiation in pulmonary tuberculosis. It was also difficult to select one method of estimation of the ratio of the white cells as a measurement of the effect of ultraviolet radiation on the activity in pulmonary tuberculosis. Therefore, in the comparison of the white cell

TABLE 2—*Clinical Results of Ultraviolet Irradiation in Pulmonary Tuberculosis*

Condition	Ultraviolet Irradiation		Controls	
	Number of Patients	Percentage	Number of Patients	Percentage
Improved	17	56.6	40	66.6
Stationary	4	13.4	7	11.7
Not improved	9	30.0	13	21.7
Total	30		60	
Following Thoracoplasty				
Improved	16	53.3	42	61.8
Arrested	9	30.0	25	34.6
Not improved	5	16.7	11	13.6
Total	30		81	

counts, three methods of estimation were considered in evaluating the effect of the ultraviolet radiation on the activity of the pulmonary lesion as measured by the blood examination.

1 In Medlar's concept of the leukocytic picture the monocyte is considered as the white cell forming the primary tubercle and taking a large part in the repair of tuberculous lesions. The neutrophil is the chief cell in the formation of tuberculous abscesses or in enlarging ulcers or cavities. The lymphocyte is the predominating cell only when the lesion is healing. When the neutrophils number over 5,000 per cubic millimeter of blood, it is believed that the tuberculous lesions are undergoing abscess formation or that the ulcerous lesions are extending. When the monocytes number over 700 per cubic millimeter, that is evidence of the formation of new tubercles. If the lymphocytes number over 2,000 per cubic millimeter, healing is in progress.⁸

2 According to Cunningham, if the monocyte-lymphocyte ratio is computed, an increase of monocytes is an index of dissemination of the disease, and an increase of lymphocytes is an index of resistance to the disease. The normal average ratio of monocytes to lymphocytes is 1:4. It is believed that, when this ratio approaches normal or reaches values below normal, this is a valuable indication that the infection is being successfully withstood. An increasing ratio indicates that the patient is losing the fight.⁹

3 The Schilling differential count was interpreted according to Schilling's principle that the stab cells increase first in cases of infection and that if they constitute more than 3 to 5 per cent of the peripheral blood, a toxic element is retarding the normal development of myelocytes and juvenile cells into mature segmented neutrophils. This is known as a "shift to the left," an expression originally used by Arneeth to mean an increase in neutrophils with unsegmented nuclei at the expense of the segmented or mature forms. Schilling also believes that in a severe infection the bone marrow is overstimulated, thus causing the myelocytes to develop more rapidly, and the juvenile forms are poured into the circulation.¹⁰

These three theories were considered in evaluating the effect of ultraviolet radiation on the white blood cell picture in cases of pulmonary tuberculosis. Our compiled statistics show that this form of treatment produced no uniform effect on the white cell count.

Most authors state that ultraviolet radiation stimulates lymphocytosis in men and animals. In our sixty cases of advanced pulmonary tuberculosis this occurred only when the condition was improving, and an increase in lymphocytes occurred when the lesions were healing either with or without ultraviolet radiation.

CLINICAL RESULTS

The clinical results, as listed in table 2, in our opinion showed no definite benefits derived from the use of ultraviolet radiation in the treatment of active pulmonary tuberculosis or in these cases following thoracoplasty.

In cases of thoracoplasty with delayed wound healing, local ultraviolet irradiation with a carbon arc lamp increased the growth of healthy granulation tissue and the tendency to epithelization.

CONCLUSIONS

1 Ultraviolet radiation of the described intensity in doses sufficient to produce a mild erythema and subsequent pigmentation produced no beneficial effects in cases of active pulmonary tuberculosis or in cases following thoracoplasty.

2 Near a large city the changing atmospheric conditions introduce obstacles that make the selection of the dosage factors impossible in heliotherapy.

3 The generally listed dangers following ultraviolet irradiation in cases of pulmonary tuberculosis have been exaggerated, provided the dosage of ultraviolet radiation is carefully regulated.

4 In this series of cases there was no suggestion that ultraviolet irradiation had any uniform effect on the red blood cell count, the hemoglobin value or the white blood cell picture.

¹⁰ Cass J. W. Jr. The Schilling Differential Count and Red Cell Sedimentation Rate as a Measurement of Activity in Pulmonary Tuberculosis. *New England J. Med.* 211: 252 (Aug. 9) 1934.

The Cerebral Ventricular System.—The cerebral ventricles consist of a series of communicating cavities lined with ependymal epithelium. The ventricular system is divided into the two lateral, the third, and the fourth ventricles. The interventricular foramina connect the two lateral ventricles, the foramen of Monro connects the lateral with the third ventricle by way of the interventricular foramina, and the aqueduct of Sylvius connects the third with the fourth ventricle.—Davidoff, L. M. and Dyke, C. G. The Demonstration of Normal Cerebral Structures by Means of Encephalography. V. The Ventricles, Interventricular Foramina, and Aqueduct of Sylvius, *Bull. Neurol. Inst. New York* 4: 91 (March) 1935.

⁸ Kaminski J. The Leukocytic Picture as an Aid in the Measurement of Activity in Pulmonary Tuberculosis. *New England J. Med.* 211: 248 (Aug. 9) 1934.

⁹ Müller G. L. The Monocyte-Lymphocyte Ratio as a Measurement of Activity in Pulmonary Tuberculosis. *New England J. Med.* 211: 248 (Aug. 9) 1934.

PSYCHIATRY IN GENERAL PRACTICE

WITH SPECIAL REFERENCE TO THERAPY

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Our conceptions of psychiatry have undergone considerable evolution during the past quarter of a century. The term psychiatry is now used in a very broad sense, embracing all kinds of mental disease, mild or grave, transitory or protracted, benign or malignant, in fine, every variety of mental disorder or abnormality, including personality problems, behavior disorders, child guidance and problems of mental hygiene, social maladjustment, crime and delinquency.

In the present discussion, while using the term in its broader sense, I shall confine myself to a few psychiatric problems of importance and especially to those which serve as a background for the discussion of psychotherapy, which is of the utmost importance in general practice.

To avoid the use of psychiatric technicalities and for the sake of brevity, I shall refer to several well recognized general groups, namely, the affective or emotional group, the schizophrenic group, the organic group, the toxic infective and exhaustive group and the psychopathic personality and neurotic group.

THE AFFECTIVE OR EMOTIONAL GROUP

The disorders of the first group, the affective, may be described as emotional disturbances closely patterned after the emotional swings or upsets in normal life. They are of a benign character and, when uncomplicated, always end in complete recovery. Many such patients never require hospitalization.

The manic depressive psychosis is the most important disorder of this group. This is a very common malady, ordinarily and formerly known as mania and melancholia, and now known as manic depressive psychosis. It is a constitutional disorder which manifests itself in longer or shorter attacks of excitement or depression and which has a marked tendency to periodicity. It is equally frequent among the two sexes and may occur at any age. The chief symptoms of the depressed phase are emotional depression, psychomotor retardation, difficulty of thinking and various subjective feelings of inadequacy and self abnegation, self debasement and reproach, with many other accessory symptoms.

The fully developed attack of manic depressive psychosis, whether of depression or excitement, is quite obvious, usually requiring hospital treatment, and is therefore not pertinent to the present discussion. Manic depressive psychosis, however, may and frequently does occur in very mild forms. These mild depressions and excitements are as common, one might say, as gastric disorders or the common cold. Speaking now of the depressions, these may in some cases, because of their extreme mildness, closely resemble the moodiness and emotional swings of normal life. The analysis of the symptoms, however, will clearly demonstrate that such is not the case.

Every physician has frequently seen patients who complain of a general tired feeling, of inability to interest themselves in their daily routine, of difficulty of concentration, of a subjective feeling of inadequacy and insufficiency, of lack of pleasurable thoughts and

of a feeling of hopelessness and helplessness, bordering on despondency. In these cases the symptoms are generally associated with some sluggishness of various bodily functions, which may in many instances be the main occasion for seeking medical aid. The mental symptoms are usually quite marked early in the day, particularly on awakening, and in the afternoon and evening they become somewhat ameliorated. Some of these patients attribute their symptoms to some vague bodily conditions and others to definite environmental factors, such as financial reverses or the death of a near relative or similar emotional stresses.

It must be admitted that a condition of this kind can easily be misunderstood or even overlooked, first because, despite their complaint, these patients still are capable of carrying on their routine work to some extent, they generally do not give evidence of any tangible somatic disorder and, above all, because of the strong desire on the part of the physician (who is not psychiatric minded) to interpret these symptoms on the basis of physical or environmental factors. It is not uncommon to meet a patient of this kind who has received a careful physical examination and has been told that there is nothing the matter with him.

These conditions, as I have already stated, are very common, and failure to recognize their true character frequently leads to serious difficulties, such as business and family complications or aggravation of the malady. But suicide, of course, is the most dreaded complication in these cases. Despondency and loss of the joy of life are an integral part of the group of manic depressive disorders.

I wish to emphasize the accident of suicide for the obvious reason that it is fraught with unpleasant consequences for the physician as well as for the family. Most physicians are surprised to learn that suicides or attempts at self destruction are more common among patients with a mild depression than among those with severer attacks of melancholia. While it is true that the suicidal impulses are stronger and more constant in the severer types, the psychomotor retardation (which means physical and mental sluggishness, marked indecision and inertia), the most characteristic symptom of the disease, often prevents the patient from carrying these impulses into action. In milder cases, whenever the suicidal wave overwhelms the patient, though it may come at rare intervals, nevertheless, because of a lack of marked retardation, inertia and indecision, the patient is capable of carrying it into effect.

A great majority of the suicides reported in the daily press as of patients suffering from so-called mild nervousness are of this kind. A number of years ago, suicide was a misdemeanor, and all persons who attempted it in New York were placed under arrest and brought to the prison ward of Bellevue Hospital. Most of them suffered from mild depressions of the manic depressive type.

It is my custom to impress on students this general rule, i. e., to anticipate a tendency to self destruction in all types of mental depression, and to be particularly careful in mild cases as well as in the beginning of an attack of melancholia or during convalescence and just before recovery from such an attack. It is a matter of clinical observation that even in hospitals a large proportion of suicides occur at these times, for the reasons already stated, and, further, that since the patient appears almost normal or recovered at such times there is apt to be less watchfulness on the part of even the physicians and the nurses.

Another fact that makes recognition of these mild depressions as mental diseases extremely difficult is that sometimes a patient refers his symptoms to a bodily organ which may have some special significance for him. This may be due to an inferior function or to a fixation of interest often going back to childhood experiences. Some patients refer all these symptoms to the cardio-circulatory function and complain of serious heart trouble, others refer them to the gastro-intestinal tract, and occasionally some complain of rheumatic, neuralgic, neuritic and other familiar disorders.

An elderly woman of high social station has been suffering for some years from periodic attacks of what she terms "heart trouble" and for which she has been treated by various physicians. These attacks last for from a few days to several weeks during which she retires to her room, keeps aloof from the members of her family and becomes morose, irritable and despondent. She however, ascribes all her symptoms to the cardiac difficulties, complaining of vague precordial distress. Her physician, now dead, to whom she had been referred as one of the outstanding consultants of his time, recognized the psychogenic nature of the illness, stating that "although she has a slight cardiac murmur, it is not of such a character as to cause the discomfort or the distress complained of." There is also a history in this case of sudden overactivity and exuberance, psychic as well as physical, from time to time. She has a daughter who suffers from the circular type of manic depressive psychosis.

In other words, this patient, who suffers from mild attacks of depression has been treated for some years for cardiac disease, because she projects the symptoms of an essentially psychic disorder of mild character into a special organ, namely, in her case, the heart.

Alcohol plays a curious and interesting part in connection with these mild attacks of depression. At times alcohol masks the disorder in some patients who associate their attacks with drinking. Many of these persons are regarded as "dipsomaniacs" and treated as such. Some years ago, in a paper entitled "Transient Attacks of Manic Depressive Psychosis," I reported many cases of this kind from the alcoholic service of Bellevue Hospital. In these cases alcohol is an incident to the underlying manic depressive depression.

A very interesting fact is that alcohol in some of these cases serves to shorten these attacks. As a striking example, I may cite the case of a physician, who is now dead. He was subject to attacks of periodic drinking which were called dipsomania and would last for from two to five weeks, after which he abstained from alcohol. His illness was finally recognized as a mild manic depressive disorder, with alcohol as an incident and treated accordingly. These short attacks, however, associated with alcohol, continued to recur, although not as frequently as formerly. But during several of the periods of depression he failed to use alcohol at the inception of the depression. The latter attacks, unassociated with alcohol, lasted for prolonged periods (from six to nine months).

In this case and in many similar ones that I have observed, the use of alcohol evidently helped to shorten the attacks. Possibly the well known psychologic effect of alcohol, by bringing about mental relaxation, ease and flight from reality, prevents the formation of a superstructure of psychogenic fears and fancies which retard recovery from the depression. It should not be inferred, however, that the administration of alcohol in these depressions is to be recommended to shorten

the attacks. It is most probable that the effect of alcohol in the cases described is in the nature of an instinctive compensatory psychotherapeutic measure operating on a certain type of personality.

A few words on the opposite phase of the same disorder, namely, exhilaration instead of depression. The attack of exhilaration with overactivity, fluency in thinking and talking, undue optimism, a subjective feeling of physical and mental well being and exuberance—symptoms diametrically opposite to the depressive phase—may very closely resemble the mood seen in normal persons who are energetic, jolly, talkative, meddlesome and superficially efficient, the "Citizen Fixit" type.

This disorder can readily be recognized if the personality traits just enumerated suddenly appear in a man who is usually quiet and retiring, and particularly when such a person carries his activity, as he will eventually, into more or less irresponsible conduct, coming into conflict with conventions, surrendering himself to various excesses, such as excessive drinking, sexual blunders and reckless extravagance. This type of patient is more of a source of danger to his family and others than is the depressed type, who is mostly bent on self destruction. To permit these patients to follow their own devices may result in disastrous consequences to reputation, virtue, fortune and health.

It should be observed that in both of these types a superficial examination may not disclose the true state of affairs as to the mental condition, as patients suffering from this type of disorder are capable of momentarily controlling themselves to the degree that even an experienced psychiatrist is at times deceived. A safe and wise rule to adopt in order to avoid errors in examination and diagnosis in these cases is to give serious attention and weight to the information furnished by the family and friends and not to depend entirely on a short personal examination at one time.

While dwelling on the affective or emotional group I must also mention briefly the so-called reactive or situational disorders, which are so common in general practice. These are also benign emotional disturbances with a symptomatology which represents flight from realities and conflicts of life. These patients have a neurotic or psychopathic make up and naturally the clinical manifestation of the mental upset is highly colored by the personality traits. Some manifest confusion with depression, others manifest fears of injury by others, technically called paranoid projection, while others show excitement and restlessness. The mental mechanisms are mostly in the nature of conversion hysteria. The duration of the illness is dependent on the cause that gave rise to the psychotic upset.

The most striking and familiar examples of this type of reaction were the war neuroses or so-called shock cases. Most of the neurotic reactions observed during the war such as traumatic neuroses, neurasthenoid and various hysterical syndromes and convulsive attacks, were in the nature of conversion phenomena. I should like to say a few words regarding the conversion mechanism, for the reason that it is most interesting as well as to the point in this discussion.

By conversion, of course, is meant that somewhat obscure but very interesting psychologic mechanism by which the psychic conflicts of the individual are translated into physical symptoms. During the war, many cases of paralysis, blindness, aphonia and convulsive seizures developed that were of a purely functional character. That the underlying motive for such con-

version was the strong, unconscious wish to escape intolerable situations, such as fear, privations and hardships, is quite evident from the fact that as soon as these elements of hazard were removed, when the patient was invalided home or the armistice was declared, the great majority of these physical syndromes promptly disappeared.

It is important to call special attention in this connection to the fact that this very phenomenon of the conversion mechanism is continuously at work among the civilian population. During a war, obviously, the etiologic factors or unconscious motivations are quite sudden and overwhelming, whereas, during peace they naturally are of an insidious and gradual character, with resultant symptoms that are less potent and spectacular.

It is interesting to note that, since the criminal law has been reenforced making fourth offenders amenable to life imprisonment, there have been more frequent instances of the reactive type of disorder with conversion symptoms among prisoners. This reaction of conversion phenomenon developed in quite the same manner and with an almost similar kind of symptomatology as in the soldiers during a war, since the unconscious motivation for escape is just as overwhelming and compelling.

It is scarcely necessary to point out that many victims of conversion hysteria make the rounds from specialist to specialist, and most of the so-called cases of neurosis of the heart, gastro-intestinal disorders, headaches, insomnia, fainting attacks, dizziness, general weakness of various parts of the body, as well as vague complaints of genito-urinary disorders and various skin diseases belong in this category.

It may be observed further that a similar conversion mechanism, namely, unconscious lying or cheating oneself, is constantly made use of in the ordinary routine of life to avoid difficult and unpleasant situations without of course assuming the dignity of any definite illness.

Just to mention another equally interesting phase of this conversion phenomenon which is the converse of this—there is the patient who, instead of converting the mental conflicts into physical or somatic disorders, resorts to a diametrically opposite process for relief. Every physician has seen many patients suffering from serious chronic disorders, such as tuberculosis or some other progressive and exhausting organic disease, who develop certain mental attitudes in the form of undue optimism, often unreasonable and childish, and make elaborate plans for the future that are obviously impossible of being carried out. In other words, this type of patient also makes use of a similar conversion mechanism, making an unconscious effort to deceive himself of the seriousness of his disease and infirmity by developing mental symptoms, whereas others convert their mental conflicts into physical symptoms.

Space will not permit the discussion of the traumatic and other neuroses, all of which have practically similar mechanisms and motivations. However, I wish to emphasize again the central thought which the discussion of these conditions implies, namely, that there is not so much difference between the so-called physical and mental as has been unduly stressed that physical diseases are bound up with mental reactions, and that mental conflicts and disorders may be translatable into physical symptoms.

SCHIZOPHRENIC GROUP

The second is the schizophrenic or dementia praecox group, which has a protean symptomatology. For the purpose of this discussion, it is sufficient to say that schizophrenia is a serious mental disorder with an obscure etiology and pathology, despite the many theories prevalent at the present time.

The present attitude in psychiatry is to regard this as a trend reaction in which the basic symptoms are delusional ideas of a fantastic and bizarre character that are quite at variance with ordinary life. The inner unconscious conflicts and shortcomings of the patient are projected to the outer world and it is blamed for fancied persecution and oppression. Associated with this, there is also a shallow inadequate emotional reaction that is quite characteristic of this malady.

A sudden and fully developed attack of schizophrenia is not difficult to recognize—at least, its psychopathologic character, therefore this entity does not come within the scope of the present discussion. I shall briefly refer, however, to a type of schizophrenia, commonly called the simple type, that develops in a most insidious, gradual and protracted way, and that in its early stages may challenge at times the diagnostic acumen of even the most experienced.

A typical example is that of an adolescent boy who has always adjusted himself fairly well, has caused no trouble to his parents and has been looked on as a model child, frequently inviting the envy of his relatives and neighbors. He gradually becomes shy and lonely, dreamy and imaginative, he shuns the opposite sex and avoids social contacts. A boy of this type may undergo changes of personality that are so gradual that even those who come into intimate contact with him fail to recognize them. There is a gradual indifference to things in general and slight carelessness in personal habits. He becomes indolent, sluggish and lackadaisical and is inclined to stay indoors, sitting about idly, or gazing about more or less aimlessly.

These symptoms are so slight that at first the parents look on them with an indulgent eye—since he never has been a source of trouble and anxiety like the other children—but, as these traits persist sooner or later the parents become alarmed. Finally the physician is consulted and after making a careful physical examination he finds the boy "quite sound." He so informs the family, usually adding that the boy needs discipline, as he is in good health but lazy.

This kind of history one hears almost daily. In justice to the physician it must be said, however, that the average patient of this kind appears quite normal on casual examination. The somewhat shifty eyes, the indifferent and immobile facial expression, cold, clammy, often cyanotic hands, the disinclination to talk, with hesitating responses to questions, all these, in the absence of any obvious trends and delusions, cannot readily be recognized as evidences of any abnormal mentality, unless one has mental pictures of many similar cases. The most essential reason, however, for the physician's failure to recognize such cases is, let me again repeat, because he is not psychiatric minded, he is accustomed to think in terms of the physical or, putting it in another way, his training (or rather his lack of training) was such that he does not think of looking for mental situations and explanations unless they obtrude themselves on him.

What was said with regard to the preceding group, as a guide to the recognition of these mild obscure con-

ditions, is quite applicable here as well, namely, that the account and history given by the family should be accorded great weight and importance. In mild cases these patients are capable, even more so than in cases of mild depression or excitement, of dissimulating in the presence of the physician and appearing quite normal, especially if one is looking only for somatic anomalies.

Alcohol also plays a part in this group similar to that in manic depressive psychosis. It is a matter of clinical experience that in many potential schizophrenic patients, alcohol has been resorted to by the individual as a method of sublimation in an attempt to prevent the latent disease from becoming manifest. In other cases it might appear to act as a precipitant in that the individual may suffer from the toxic effect of alcohol in the form of delirium or hallucinosis which will mark the starting point of the schizophrenic attack.

ORGANIC PSYCHOSES

Organic psychoses are mental disorders that are an expression of coarse organic disease of the central nervous system. There are various types of organic lesions and injuries to the central nervous system, such as senile atrophy, arteriosclerosis, trauma causing injuries and damages to the brain substance itself, neoplasm, abscess, hemorrhage, encephalitis and encephalopathia. The psychopathologic symptoms of these conditions vary somewhat, according to the nature, extent and location of the organic pathologic processes, but the fundamental symptoms common to all, which are known to psychiatry as the organic reaction syndrome, are practically the same. The basic mental symptoms in all organic diseases of the central nervous system are clear enough when the disease is well developed, but often the earliest symptoms are subtle emotional changes or alterations in personality.

Because of limited space I shall merely refer to one organic psychotic disorder, the early recognition of which is most important to the general practitioner, namely, dementia paralytica, commonly known as paresis.

I need scarcely say that this is a condition of meningo-encephalitis of syphilitic origin. When a case of dementia paralytica is fully developed, there is rarely any difficulty in recognizing the character of the disease, but in the incipient stage it is sometimes most baffling. This is particularly so because, with the exception of comparatively few cases in which so-called neurasthenic symptoms are exhibited, these patients are not conscious of any ill health and therefore do not appeal to a physician for assistance. On the contrary there is a false sense of well being, exhilaration and superficial efficiency that obscures the picture and misleads even the family and friends. Occasionally these patients in addition will resort to alcohol, which masks and further complicates the clinical picture. The history and accounts of the immediate family and friends likewise are very often conflicting and contradictory.

The most important guide for the diagnosis under these circumstances is the occurrence of a gradual but radical change in the personality of the individual. If a man between the ages of 35 and 45, who heretofore has been well behaved, well mannered and temperate, a good father and a prudent business man, suddenly exhibits a marked change in his business, social and ethical principles, such a change should strongly suggest a possible case of dementia paralytica.

Of course, after the patient is in the hands of a physician, the earliest reliable symptoms are the changes in the pupillary action, lapses of retentive memory, irascibility and, above all, the characteristic disorder of speech that is almost pathognomonic of this malady. The unfortunate errors, however, in the early diagnosis of dementia paralytica happily have, during recent years, been reduced materially, owing principally to the fact that the serology is a great help in the diagnosis of these cases and that the average physician now most properly, as a matter of routine, makes serologic examinations.

I have briefly mentioned dementia paralytica for the sole reason that unless the condition is recognized promptly these patients are capable of doing much harm to themselves and particularly to their families, from a physical, social and financial standpoint. I have repeatedly seen the good name of a family as well as a respectable fortune blasted within a short period of time, solely because a patient was not brought under timely control.

THE TOXIC INFECTIVE AND EXHAUSTIVE GROUP

The fourth group, the psychoses symptomatic of somatic diseases, is still more familiar than the preceding organic type. These mental disturbances are obviously the expression of various toxic and infectious disorders, as well as of the profound exhaustion due to chronic and debilitating physical diseases. The mental symptoms are essentially similar to those of the coarse organic brain diseases, with the exception that the symptoms of the former are more acute and pronounced than those in the organic psychoses.

The action of all toxemias caused by exogenous and endogenous poisons, as well as profound debility and exhaustion, on cortical cells is in the nature of a trauma, hence the similarity of the psychotic symptoms. The perceptive faculties are seriously affected, giving rise to false sense perceptions—clouding of consciousness, disorientation and a dreamy and confused mental state, otherwise known as delirium, with which the general physician is so familiar, since these conditions are encountered mostly in private medical practice and in general hospitals. The type and intensity of the delirium are determined by the variety and degree of the poison, as well as the personality make up and susceptibility of the individual patient. Among such conditions may be mentioned alcohol and various other exogenous poisons, also endogenous poisons due to uremia, diabetes, anemia, cardiac disorders, tuberculosis, hyperthyroidism and many other conditions that are too well known to need mention.

The diagnostic difficulties in this group are much less than in other types of psychotic disorders. Unlike other mental disorders, there are physical illnesses that stand in a causal relationship to the mental disorder and make the recognition of this type of psychosis much simpler.

The detailed discussion of the treatment and handling of these conditions in general practice, from a psychiatric point of view, although interesting and profitable, will not be entered into here.

The treatment in these cases depends obviously on the underlying physical condition. One should be very conservative in the liberal and especially the persistent administration of hypnotics and sedatives of various sorts, as obviously these are apt to intensify the mental condition or produce it in susceptible patients. However, when given only at times of absolute necessity,

they should be given in sufficiently large doses to bring about the desired rest and sleep, but should not be continued for long periods. Psychotic patients of all kinds have an astounding tolerance for hypnotics and sedatives, and if they are given in repeated small doses restlessness is apt to be aggravated. If this is interpreted as an indication for larger and larger dosage, a drug delirium may be superimposed on the primary disorder.

Another important factor is the environment. Keeping in mind the nature of the mental symptoms, particularly the disorders of perception, various hallucinations and mental confusion, one should provide a very simple environment, with abundant light and air, with as few persons in attendance as possible, otherwise fatigue and disquieting distractions will accentuate the mental symptoms. It should also be added, however, that the attending physician at times seems to become unduly alarmed as soon as mental symptoms appear and shows a tendency to transfer the patient immediately to a hospital.

While it is true that some of these patients eventually need to be taken to a psychiatric hospital, many of them may, if properly treated, have an illness of short duration and can with marked success be treated at home or in a private room in a general hospital, provided of course, that the facilities will permit. Transferring a patient suffering from this type of symptoms to strange surroundings, particularly to crowded and more or less turbulent hospital wards, with their panoramic and complicated activities, frequently intensifies the delirium and mental confusion.

I am conscious of the fact that I have given a rather sketchy discussion of the psychiatric problems which may arise in general practice, and of necessity have not touched on many important problems. Furthermore, the foregoing facts, rapidly reviewed, have been presented mainly from the standpoint of a background for the brief discussion of psychotherapy which, I believe, is the psychiatric problem of far-reaching importance in general medicine.

PSYCHOTHERAPY

What is psychotherapy? It is the art of making use of the mental attitude of the patient as a curative factor in the treatment of his illness. Psychotherapy is directly dependent on the faith or the confidence of the patient that his illness will be cured. It matters little, as far as the patient is concerned, whether this faith or confidence is inculcated in him through a person or group of persons, or whether it is an agency which is tangible or a mere fancy. Every one readily admits the great potency of faith and confidence in all walks of life, the will to do, optimism, self reliance and self confidence are admittedly the essential qualities and factors for success in life. I have always thought that man makes use of only a very small fraction of the talents with which Nature has endowed him.

I have occasionally seen a patient who, despite his diseased and disordered mentality, has accomplished things that he was absolutely incapable of doing prior to his illness, this was possible because the critique, as a result of the mental disorder, was in abeyance and the patient could therefore give full sway to his native endowments.

But when it comes to the medical profession—the healing art—one is not inclined to accord a great deal of value or virtue to “purely” psychologic factors. Almost daily one hears of religious or semireligious

organizations that have established new clinics for the treatment of the sick. The number of healing cults of various kinds is legion—even the fortune tellers, clairvoyants and astrologers derive the greatest part of their income from invalids. One is accustomed to look on these reports with ridicule and ironic skepticism, assuming them to be false and chicanery, and often justly so. But is it reasonable to think that these cults of various kinds could multiply and prosper if they did not, at least to some extent, deliver some sort of wish-fulfilling relief? While they undoubtedly do a tremendous amount of harm and irreparable injury to many, the real fact is, and investigation will confirm it, that even the very garbled, distorted use or misuse of the principles of psychotherapy, no matter under what cloak, accomplishes much, healing some, ameliorating others and comforting all.

In a recent life of Pere Marquette, known as the apostle to American Indians, the following significant observations appear:

Among certain tribes the medicine men believed, or professed to believe, in suppressed desires as the cause of disease. They believed that there are two main sources of disease, one of these is the mind of the patient himself, which unwittingly craves something and will torment the body of the sick man until he possesses it, for they hold that there are in every man certain inborn desires, often unknown to himself, upon which his happiness depends. For the purpose of ascertaining such innate and ungratified appetites, they summon soothsayers who they think have a supernaturally imparted power to look into the inmost recesses of the mind.

Is this not an astonishingly accurate outline of the principles of dynamic psychology? One might almost suspect that this hypothesis and belief on the part of this primitive people was formulated by the followers of Freud.

The priests and doctors in ancient times, or the medicine men among primitive peoples, were the prototypes of various healing cults. Obviously in the absence of any scientific knowledge of the human body and its functions, they discovered certain principles of psychotherapy empirically, as a curative force, and tinctured them with magic, superstition and mysticism, in the manner followed by the modern cults.

Furthermore, psychotherapy as a healing force is evidently much more ancient than the practice of medicine based on physiologic principles alone. Is it not possible that scientific medicine, in its endeavor to shake off superstition and black magic has swung to an opposite extreme and has discarded psychic factors entirely, thus becoming perhaps too materialistic?

As has been pointed out psychotherapy presupposes a sentient and selective relationship toward the source of the healing force, namely, the physician. I should like briefly to refer here, even at the risk of digression, to the fact that this very psychologic principle, namely, that the patient must have freedom of choice in the selection of his physician, is the most serious objection to the socialization of medicine. The experience of large organizations, civic, industrial, military and otherwise, that provide medical care for their members, has amply demonstrated this fact. Such organizations although, as a rule, very well equipped, have failed to render satisfactory medical care commensurate with their effort and investment. The directors of the medical services of municipal police, fire and sanitation departments and many similar organizations readily admit that the sick members of such groups always prefer to be treated by physicians outside of the organi-

zations. In other words, they would rather be treated by physicians of their own selection. During the late war, although the army had well organized medical units in the various military camps, there was a definite tendency on the part of the soldiers to seek medical aid from physicians in the neighboring villages and towns.

I think one is justified in asserting that socialized medicine would endanger public health by depriving the individual of one of the basic and most effective factors of therapy.

The use of psychotherapy in psychiatry has made tremendous progress in the past two decades and has acquired a fairly well defined and scientific technic. Just to mention some of these methods:

First. Simple advice and counsel, well directed, with full knowledge of the situation regarding the patient's problems and difficulties.

Second. The method of persuasion which consists of the elaboration of the former, with a more logical, forceful and convincing discourse, going into considerable detail in a constructive manner as to the significance of the conflicts and how to meet the situations.

These two are simple, common sense methods that are made use of by every one and that are applicable to everyday affairs of life.

But the more effective methods of psychotherapy are those by which one can obtain important information concerning the patient's personality make-up and his intimate problems and conflicts, not only of the present but of the remote past as well. A substantial and enduring readjustment by means of psychotherapy can be brought about only through a clear recognition of such conflicts. Frequently the patient himself is not conscious of them. Among the more effective methods of psychotherapy may be mentioned:

1. Hypnotic catharsis. This technic consists in making a searching inquiry into the life history of the patient while he is in a state of hypnosis, with a view of uncovering his conflicts, longings and disappointments. The patient is encouraged to talk spontaneously and without interruption, except for occasional questions to direct the trend of associations. Many physicians are familiar with Dr. Breuer's famous case of a young neurotic woman who was successfully treated by this method. Breuer later directed the attention of Freud to the case, and it was their joint investigation which may be said to have marked the cornerstone of psychoanalytic psychology.

It should be said in passing that hypnosis as a therapeutic measure has again been revived in recent years, particularly abroad, after having fallen into disuse for several decades.

2. The most important and valuable method of psychotherapy is the psychoanalytic method, for which a definite technic has been developed, based on the principles of free association.

The fundamental principle in the psychoanalytic method is to uncover the individual's childhood and infantile experiences, which Freudian psychology assumes to be the cause of later neurotic conflicts. It is believed that in this manner the neurotic patient will again, as it were, live and re-experience these infantile psychic traumas, with the result that their painful emotional value will disappear by being brought into consciousness.

The psychoanalytic psychology has been more or less modified from time to time by various former pupils of Freud, notably Jung and Adler, who have established

separate schools of psychoanalytic psychology with some following. Such modifications, however, refer only to the Freudian psychology, but not to his psychoanalytic method or procedure, which still remains a monument to his genius.

3. The reeducation method. This is made use of, as the term implies, as an aid in all psychotherapeutic methods, supplementing them and utilizing the important information obtained in the upbuilding of the patient's personality. The reeducation method is especially effective if combined with hypnotic suggestions.

It is, of course, quite clear that in the various methods of psychotherapy, the fundamental effort is to secure the confidence of the patient or, speaking psychoanalytically, to establish transference on the physician. Secondly, and equally important, is a clear understanding on the part of the physician of the conflicts of the patient in order that psychotherapy may be applied in a systematic and well directed manner. The method and technic of psychotherapy are modified according to various circumstances, such as time, character of the illness and reactions of the patient.

The question may properly be asked whether psychotherapy has any place at all in general medicine (since the latter deals mostly with somatic disorders) and if so to what extent? Some years ago such a question would have evoked incredulous skepticism, but now, happily such is not the case. The value of psychic factors in the treatment of somatic diseases is fully appreciated by almost every physician. The problem now is rather its technic and its practicability in the course of a crowded general practice.

As has already been stressed, the physician's ideas of physical and mental conditions have undergone radical changes; he now knows that the difference is not so great, that all mental diseases, whether functional or organic, have a somatic component and that all somatic disorders, however slight or insignificant, have mental reactions. It is no longer speculative to state that the mental attitude of a person, including his emotional reaction, is capable of acting directly on the bodily functions or even on the tissues in such a manner as to cause pathologic changes, or at least to contribute to the development of disease processes. The physician no longer thinks in terms of the "purely" mental and physical, but rather how much of the mental and how much of the physical; he recognizes that psyche and soma are one and inseparable. It is also quite clear and certain that every person suffering from physical disease develops a definite mental reaction toward such a disease, and that the emotional and mental attitude in turn is capable of either enhancing or retarding the curative processes. It is at least to this limited extent that the general practitioner is able to and should practice psychotherapy.

Incidentally this revolutionary change in the general conception of the physical and mental has given great impetus to restoring psychiatry to medicine and medicine to psychiatry. There is at present a definite movement on foot throughout the country, especially in hospitals, to integrate the medical, surgical and psychiatric points of view under the same roof. The new psychiatric unit of Bellevue Hospital was conceived, planned and organized with this very purpose in mind, namely, to afford every facility for the combined effort of the surgeon, physician and psychiatrist in the treatment of the sick, and I think it is one of the earliest as well as the most comprehensive endeavors of its kind.

I fear that in speaking of psychotherapy and its technic as applied to psychiatry I may have conveyed the impression that the practice of psychotherapy in general is a formidable and complicated procedure. But such is not necessarily the case. Psychotherapeutic principles are quite simple and constitute the chief factors in all human relationships and activities—social, religious, political and commercial. The skilful salesman and the astute politician owe their success to psychologic principles similar to those which enable the physician to gain the confidence of his patient. The nature of the physician's professional work—the practice of medicine—is peculiarly adapted to the promotion of psychotherapeutic principles. He comes into contact with various types of personalities, young and old, rich and poor, good and bad, saint and sinner, divested of false pretense and veneer, and in the true nakedness of their character, thus he has the opportunity to gather accurate knowledge and experience as to types, traits and reactions which are so essential and indispensable in the practice of psychotherapeutics. In fact, whether he wills it or not, the physician is a psychotherapist and practices it daily in his professional work. He is forced to do so by his patients, since they look for it and demand it. Most physicians practice it unconsciously and some, although appreciating its value in a general way, carry it on in a haphazard, desultory manner.

My plea is to be conscious of this psychotherapeutic power and to practice it in a systematic and well directed manner. If I were asked to suggest a simple formula for the utilization of psychotherapeutic principles in general medicine, I should say: Be psychiatric minded, first, last and all the time. While making repeated routine examinations of the pulse, temperature and various organs and functions of the body, do not ignore the mental, surely not an inconsiderable function. Why not add to one's general routine the habit of evaluating each patient's personality and mental makeup, his general emotional reaction, his appearance and demeanor while under examination, noting particularly his emotional reaction toward his complaint and illness.

Let the patient talk not only about his illness but also about himself and his personal affairs and relationships freely and spontaneously, and with as little interruption as possible. Let him tell his story in his own way. With a procedure even as simple as this, it is amazing the amount of information that the patient will disclose, revealing valuable psychic and emotional factors intimately related to his physical illness or complaints.

It should be remembered that in the application of psychotherapy, consistency is of the utmost importance. The value of reassurance, confidence, hopefulness and well directed advice in the treatment of the sick is readily admitted, but it is frequently overlooked that in order to be effective, psychotherapeutic principles must be utilized, not only in words, but in deeds as well, not in a haphazard and aimless manner, but by following a deliberate and well laid plan with a definite goal. To reiterate, there should be in psychotherapy continuity and intelligent consistency, just as obtains in physical therapy.

With a fully developed consciousness and a modicum of technic, psychotherapy yields results far beyond one's expectations.

If the interest and enthusiasm of the younger generation of physicians in psychiatry, and particularly that of the undergraduate students, may at all be regarded as a criterion, it may safely be predicted that the time is not far distant when the physician will not be content to be

merely a skilful physical diagnostician and therapist but will be a doctor of the mind as well, and when to his skill and intelligence he adds these human qualities of clear and comprehensive insight into the psychic conflicts of his patient, he then becomes in a glorified way the doctor and priest of old, but with science and humanity as his aids, instead of superstition and reliance on the magical and the miraculous.

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CONCURRENT OSTEOGENIC SARCOMA IN BROTHER AND SISTERS

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Instances of the development of sarcoma in successive generations have been reported.¹ The appearance of simultaneous, symmetrical sarcoma in uniovular twins has been described by McFarland and Meade,² but we



Fig. 1.—Left to right: Matilda T., aged 17 years; Lennie T., aged 13 years; and George T., aged 23. Note enlargement in lower right thigh of Matilda T.

have been unable to find a previous report in medical records of the spontaneous and concurrent development of bone sarcoma in several members of one family, a brother and two sisters, aged severally 23, 17 and 13 (fig. 1).

These cases are presented therefore, with the hope that they may complement the evidence in favor of

¹ Silcock, A. Q. Hereditary Sarcoma of Eyeball of Three Generations. *Brit. M. J.* 1: 1079, 1892. Pinard, M. and Versini. Case of Probable Hereditary Transmission of Sarcoma. *Bull. et mem. Soc. med. d. hop. de Paris* 62: 653-657 (May 3) 1928.
² McFarland, J. and Meade, T. S. Genetic Origin of Tumors Supported by Simultaneous and Symmetrical Occurrence in Homologous Twins. *Am. J. M. Sc.* 184: 66-80 (July) 1932.

some of the disputed assumptions concerning the etiology of sarcoma and may possibly suggest leads in the study of the disease

CASE 1—History—George T., aged 23, a farm boy, complained of pain and swelling about the right knee. In August 1933 he began to suffer slight "rheumatic" pain and stiffness



Fig 2 (case 1)—Right knee showing sclerosing type of osteogenic sarcoma

of the right knee. He believed that this was due to walking on concrete pavement, so he quit the job which involved this and stayed on the farm. Some improvement followed, and he was able to work until December 30 when he received a severe blow on the right knee, a large limb on a felled tree, bent and under great tension,

flew against his knee when it was suddenly released as he chopped it. He suffered considerable pain at the time and became faint. He was unable to walk for several days owing to the swelling about the joint. The condition improved for a time but he began to notice a localized mass about the antero-medial aspect of the upper extremity of the tibia the latter part of January 1934 the knee becoming swollen, painful and limited in its motion. About three weeks later the tumor was lanced but



Fig 3 (case 1)—Thorax showing metastasis to the lungs

neither fluid nor pus was obtained. The mass about the knee steadily and gradually increased in size the distal leg and foot becoming edematous. The patient continued to have much pain about the knee. He had lost 40 pounds (18 Kg) in three months and was brought to the Georgia Baptist Hospital, March 19.

The patient had had pneumonia in 1929 otherwise his past history was without significance.

The family history is common to the three cases reported in this paper. There have been no other neoplasms in the family so far as is known. The people are of Irish English extraction. The paternal grandparents were second cousins and died of cardiovascular disease at 60 and 65 years. There were several cases of tuberculosis in the mother's family. She and the father were in good health. The Wassermann and Kahn tests were negative for both. The paternal aunts have large families in good health with no history of tumors. Besides Matilda, aged 17, and Lenmie, aged 13 (see individual histories), there are three other sisters, aged 21, 19 and 10 years, and a little brother, aged 6 years, all in good health.

Several years before the father had a slow growing tumor on the calf of the leg. It opened spontaneously and drained a mealy substance. Healing ensued and now on examination the site of the tumor presents a normal scar.

Examination—Physical examination March 21 showed notable emaciation. The temperature was 98.3 F, the pulse 80 and the respiration rate 22. Only the right knee and leg were of interest. The leg was maintained in an attitude of flexion. Anteromedial and just distal to the right patella there was a firm, fixed mass the size of a large orange. Centrally the mass was fungating and soft, the site of the lancing unhealed.

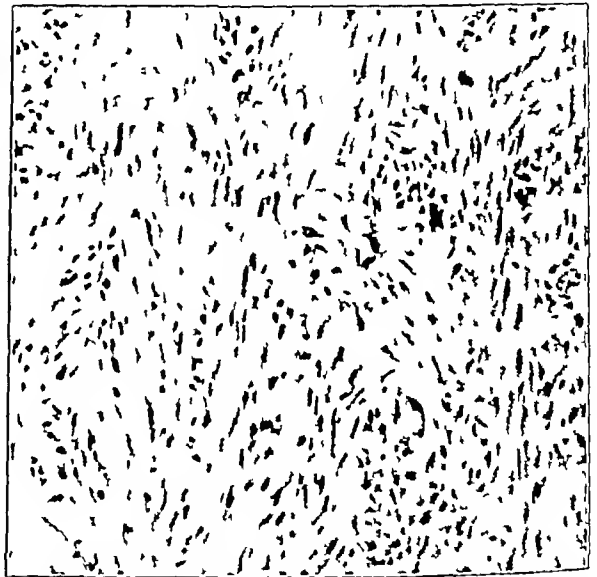


Fig 4 (case 1)—Section from tumor showing spindle cells and syncytial giant cells. The stroma is more conspicuous than in sections from the other two cases. Osteogenic sarcoma

Movements of the knee were painful and limited. The leg and foot showed pitting edema.

The blood Wassermann and Kahn tests were negative. The red blood cells numbered 4,220,000 (dehydration), with hemoglobin 85 per cent, white blood cells, 11,900, neutrophils 92 per cent, large lymphocytes 2 per cent, small lymphocytes 6 per cent.

The urine was scanty with much phosphate sediment and a total acidity of 75 degrees.

Roentgen examination of the right knee (fig 2) showed a large dense mass about the head of the tibia. There was a trabeculated bone deposit extending out into the mass. The upper third of the tibia presented a marked increase in density, especially in the posterior cortex. There were some areas of bone destruction in the shaft.

There was a large nodule in the outer zone of the upper margin of the lower left lobe (fig 3). The nodule measured about 5 cm in diameter and lay in the fourth interspace in the axillary line. A small nodule was to be seen just below the large one. There was a small nodule in the lower right lobe directly behind the anterior end of the sixth rib.

The diagnosis was sarcoma of the right tibia of the sclerosing type with metastasis to the lungs.

Progress Notes—The patient continued on to a cachectic state. The tumor became quite large (the size of a small

watermelon) and the leg and foot enormously swollen. When seen a few days before the patient's death, May 19, the tumor was dusky and extremely vascular.

Microscopic Study—The tumor was highly cellular and malignant. Many medium-sized giant cells were present (fig 4). The final diagnosis was round-cell osteogenic sarcoma.

CASE 2—History—Lennie T., a schoolgirl, aged 13 years, complained of a painful mass about the right shoulder. When coming home from school about the middle of January 1934, the patient tripped and fell on the sand road striking the right shoulder. She suffered immediate pain in the shoulder and noticed interference with motion. The physician manipulated the arm in an attempt to reduce what was thought to be a dislocation but desisted after complaint of extreme pain. She was in bed three weeks, crying often, owing to the very painful shoulder, which was somewhat swollen. After she got up the shoulder looked much better for a few days, then it began to swell again. Gradually a mass appeared about the antero-medial aspect of the right shoulder. She continued to have much pain and lameness of the right shoulder.

Her past history revealed nothing of importance other than a fracture of the right clavicle three or four years previously.

Examination—March 19, 1934 the temperature was 99.2 F, the pulse 100 and the respiration rate 22. The patient was fairly well nourished. The shoulder alone was noteworthy. There was a hard, immovable tumor attached to the antero-medial aspect of the upper third of the right humerus. There was slight warmth and redness but no bruit. The mass was of infiltrative hardness. There was some limitation of the movements of the shoulder joint.

The blood Wassermann and Kahn tests were negative. Examination of the blood showed red blood cells, 3,330,000, hemoglobin, 75 per cent, a slight increase in thrombocytes, white blood cells, 6,800, neutrophils 86 per cent, large lymphocytes 1 per cent, and small lymphocytes, 13 per cent.

Examination of the urine showed sugar negative, albumin, 2 plus, total acidity, 10 degrees, no casts, from 6 to 8 erythrocytes and from 10 to 12 pus cells to a high power field.

Roentgen examination, March 30, of the right shoulder (fig 5) showed complete destruction of the upper third of the right humerus. A pathologic fracture was seen in the upper third of the bone. A large mass about the osteolytic area infiltrated the soft structures. There was considerable bone deposit in the mass. Extension of infiltration was only to the epiphysis above, not involving the humeral head.



Fig 5 (case 2)—Right shoulder. Osteogenic sarcoma bone destruction medial to tumor. Note elevated periosteum. Clavicle shows healed fracture at junction of middle and outer third.

The diagnosis was destructive osteogenic sarcoma.

The chest showed no metastasis on roentgenograms made in the middle of March and later in the middle of May.

Radiotherapy was administered March 24 and again three days later. There was no response.

Progress Notes—As the tumor enlarged the patient became more and more anemic and finally cachectic repeating her brother's course. She died July 7.

Microscopic Study—Section (fig 6) shows highly cellular tissue. The cells were round and embryonal in type. The final diagnosis was round-cell osteogenic sarcoma.

CASE 3—History—Matilda T., aged 17 years, complained of intermittent, subacute pain in the lower third of the right thigh. About the middle of February 1934 she began to notice an occasional pain. The pain was not brought on by activity. There was no radiation of the pain and no regularity of occur-

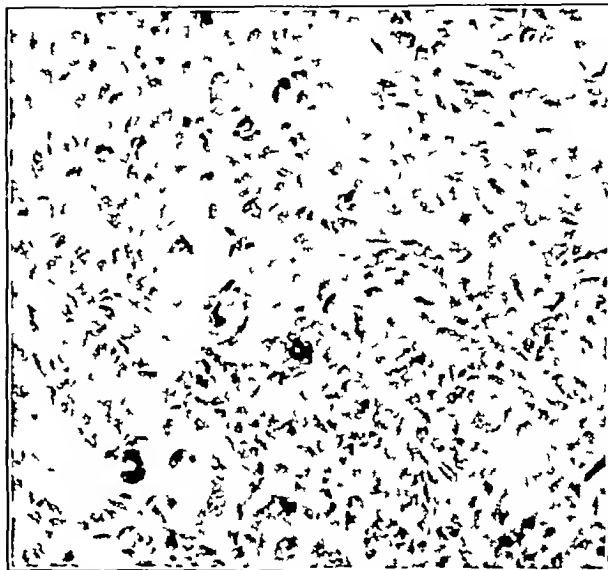


Fig 6 (case 2)—Section from tumor showing irregularity in size and shape of cells together with syncytial giant cells. Stroma is scanty. Numerous mitotic figures. Osteogenic sarcoma.

rence. Toward the last of March a bulging became apparent. This gradually increased in size, and she continued to have pain. There was no disability of the right lower extremity. There was no history of trauma.

Examination—May 20 the temperature was 96.3 F, the pulse 100 and the respiration rate 20. The patient was well developed and fairly well nourished in appearance. Only the right thigh was of interest. There was an early spindle-like enlargement of the anteromedial aspect of the thigh at the junction of the middle and lower thirds, visible on inspection. The mass was not sensitive on manipulation. Movements at the knee joint were not reduced in range. The mass was felt to be of indurative hardness and could be palpated on the anteromedial surface of the lower third of the right femur, encircling the bone throughout half of its circumference. It was not movable but firmly attached to the bone. The crural nodes were not palpable.

The blood Wassermann and Kahn tests were negative. Chemical analysis of the blood showed red blood cells 3,920,000, hemoglobin 65 per cent, white blood cells, 9,400, neutrophils, 74 per cent, lymphocytes, 26 per cent, a slight increase in thrombocytes, blood typing Moss II. Analysis of the urine showed 2 or 3 erythrocytes and 2 or 3 pus cells to a high power field.

Roentgen examination of the right thigh, April 14, revealed an area of osteonecrosis involving about 7.5 cm of the lower third of the right femur (fig 7). Greater destruction was noted along the anterior cortex than posteriorly, with some elevation of the overlying periosteum. There was a mass in the soft structures about the area of bone destruction, lying beneath the muscles.

Examination of the chest revealed no metastatic nodules.

The diagnosis was probable osteogenic sarcoma, but the condition had the appearance of syphilitic osteomyelitis.

Microscopic examination of a piece of tissue, April 25, revealed that it was largely fibrous and contained many fibroblasts. There were only a few blood vessels. There was considerable leukocytic infiltration.

The impression was that there was inflammatory change and that the growth was nonmalignant.

Because of these reports, amputation was delayed for about one month. Operation was not scheduled until serial roentgenograms had offered further support of the probability of a malignant condition.

May 5 there was an extension of bone destruction longitudinally in the shaft and no new bone production.

May 15 there was no involvement of the long bones or chest.



Fig 7 (case 3)—Anteroposterior and lateral views of the lower right femur showing bone necrosis and encircling soft tissue tumor beneath the muscles.

May 18 progressive destruction was present along the shaft of the femur and no bone regeneration. The dense tumor still was confined beneath the muscles surrounding the area of osteonecrosis. It appeared to arise from the outer layer of the periosteum (fig 8).

Amputation was carried out, May 23. It was decided not to attempt enucleation at the hip joint because of the girl's general physical state. A high upper third amputation of the thigh was done. The patient's condition toward the end of the operation was unsatisfactory, subcutaneous epinephrine and intravenous saline solution being administered to combat circulatory collapse. A blood transfusion was given after the amputation.

Pathologic examination of the lower two thirds of the right femur revealed that 9 cm above the condyles there was a firm spindle-shaped tumor mass lying in direct proximity to the bone shaft and completely surrounding it. The mass measured 9 by 2.5 cm. There was a necrotic cavity in the shaft of the bone, 4 cm in length and directly beneath the tumor. The bone marrow was soft and necrotic for a distance of 4 cm below and above the cavity. The latter was filled with dark bloody fluid and soft necrotic material.

On microscopic examination the extracortical tumor was reported fibrosarcoma with a rather low grade of malignancy. Figure 9 is a section from the medullary portion of the tumor.

Progress Notes—The postoperative course was uneventful after a rather persistent tachycardia for a time. On gradually regaining strength she was able to leave the hospital and return home. When seen two months later she was in very good health, had maintained her average weight and was without discoverable metastasis.

Two months later, however, the patient reported for examination, complaining of persistent chest pain, a harassing brassy cough and weight loss, and on roentgen examination multiple metastatic nodules were found widely distributed in the lung fields. The patient died Jan 29 1935.

COMMENT

1 These cases strongly support the hypothesis of a genetic origin or diathesis in the development of malignant tumors.² It would appear that a spontaneous susceptibility to autonomous cell growth was resident in the osseous systems of these individuals and perhaps localized to it. Further, it is to be noted that three different major long bones were the sites of origin of the tumors. The appearance of all three sarcomas in a right extremity is perhaps fortuitous, rather than dependent on dextralateral segregation of the "malignant factor" during ovid division.

2 The contemporary occurrence of the tumors, moreover, suggests the presence of some adjuvant extraneous factor or factors.

Trauma—Taken as a group, these cases indicate that injury was never the primary exciting cause but that its role was definitely one of aggravation and acceleration of already existent sarcoma. In case 3 there is no history of trauma. In each of the other cases it is to be noted that there was a rapidly appearing tumor at the site of injury. But it must be borne in mind that patient 1 had complained of pain for four months prior to the blow he suffered—pain of such consequence as to make him quit his job—and that patient 2, although asserting that there were no symptoms of any character before her accident, seems definitely to have sustained a pathologic fracture, indicating the silent growth of



Fig 8 (case 3)—Lower right femur four weeks later than in figure 7 showing marked extension of bone necrosis both in cortex and in medulla of the femur and increase in size of surrounding tumor.

intramedullary sarcoma (fig 5). Our belief that the fracture did not primarily excite malignant change is strengthened by the fact that patient 2 had broken her right clavicle three or four years earlier, when she had fallen down a cliff, and normal healing had resulted (fig 5). In this connection it is of interest to note that in April 1934, while his brother and sisters were suffering from sarcoma, William T. Jr., aged 6 years, sustained a fracture of the left clavicle. Follow up

roentgen examination showed normal callus formation, with no other abnormalities involving the bones of the shoulder. Healing was rapid and to date has been uncomplicated.

(These cases are not to be confused with those in the multiple fracture family reported by Werner.³ There is nothing here to indicate chronic bone disease as a ground for the superimposition of sarcoma.)

In case 3, of course the degree of influence of surgical insult at biopsy cannot be estimated, but radiologic study (figs 7 and 8) showed rapid extension of bone destruction subsequent to the diagnostic operation.

Infection—Unless the concomitance of the three cases can be assigned to chance, the instance offers the possibility of a specific infectious agent in the outset. The constitutional symptoms were not, however, suggestive of an infectious process. Culture and smears of bone marrow at the time of amputation in case 3 revealed no organisms.



Fig 9 (case 3)—Section from tumor showing round cells fairly uniform in size with rather pyknotic nuclei. The stroma is scanty. Osteogenic sarcoma.

Bone Growth—Kolodny's⁴ conclusion from statistics of the Registry of Bone Sarcoma that energetic bone growth, with its underlying endocrine influence, is a signal factor in the etiology of osteogenic sarcoma can well be applied here and must be considered in analysis.

Dietary—That there may be some dietary deficiency factor bearing a primary or aggravating role in the development of sarcoma is suggested by the environment in which this family lived. The nine persons living in a bare, three-room shack, were receiving meager support through federal relief. Although grossly they appeared to be well nourished it is plausible to assume that their economic status failed to provide a balanced fare.

26 Linden Avenue NE

3 Werner R. Multiple Occurrence of Tendency to Bone Fractures and Sarcoma Development in Family. *Instance Ztschr f Krebsforsch* 32:40-42 1930.

4 Kolodny Anatole. Bone Sarcoma. The Primary Malignant Tumors of Bone and the Giant Cell Tumor. *Surg Gynec & Obst* 44:1 (April 2) 1927.

OCCLUSION OF THE POSTERIOR INFERIOR CEREBELLAR ARTERY IN CARDIOVASCULAR DISEASE

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AND

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Cerebral vascular accidents may occur in any part of the brain, but it is common knowledge that the great majority of such accidents involve either the motor cortex or the internal capsule and produce here the classic picture in which the obvious hemiplegia plays the most prominent part. The two conceptions "stroke" and hemiplegia are therefore closely associated in the minds of most medical men. There are, of course, apoplexies in other localities of the brain, apoplexies without hemiplegia but with otherwise characteristic symptom complexes. It is our purpose in this communication to point out such a locality in the brain where vascular accidents occur much more frequently than is generally believed. We shall further point out that they can be readily recognized if one becomes familiar with their symptomatology and that their recognition is of far more than academic interest because of important clinical and prognostic peculiarities that they entail. The locality to which we refer is the lateral portion of the medulla, and the pathologic lesion in these cases is occlusion of the posterior inferior cerebellar artery.

A brief review of the anatomy and the circulation of the medulla with a consideration of the structures involved, will aid greatly in understanding the clinical picture.

The medulla is supplied by branches from the vertebral anterior spinal, basilar and posterior inferior cerebellar arteries. These vessels send paramedian branches which irrigate the pyramids and midline structures. They send also long and short circumferential branches into the substance of the medulla. A branch of the posterior inferior cerebellar artery supplies that sector which extends roughly from the outer border of the olive to the restiform body. It is an interference with the functions of the structures lying in this sector that gives the signs and symptoms of the lateral medullary syndrome. Thus one has

- 1 Involvement of the fibers from the vestibular nucleus resulting in dizziness, nystagmus, falling reactions and the like. The cochlear portion is for anatomic reasons rarely involved, but if it is affected one gets only partial deafness and tinnitus.

- 2 The restiform body which may be affected causing some hemiparesis.

- 3 Involvement of the ninth nerve, giving disturbance of sensation in the pharynx and soft palate and disturbance of taste in the posterior third of the tongue.

- 4 Involvement of the tenth nerve, causing (a) disturbance of movement of the soft palate and interference with the function of the pharyngeal constrictors and (b) paralysis of the vocal cord on the side of the lesion.

- 5 Involvement of the nucleus and descending root of the fifth nerve. This results in a hypesthesia of the face, cornea and mucous membrane of the nose on the homolateral side.

- 6 The spinothalamic tract, which is practically always caught and produces a contralateral hypalgesia, perhaps the most constant feature of the syndrome.

- 7 In a certain percentage of cases the catching of the oculo pupillary fibers as they pass through this region of the medulla producing a Horner's syndrome on the side of the lesion.

It is only fair to mention that the French writers, especially Forl and his associates differ somewhat from this view, as they divide the medullary syndrome into an upper and a lower one. They state that the upper syndrome is due to an occlusion of the arteria fossae lateralis bulbi, a branch of the basilar artery, and that the lower syndrome alone is due to an occlusion of the posterior inferior cerebellar artery, another branch of the basilar artery. Most references in the literature, however, disagree with the French view and still hold to the older conception which was first propounded by Wallenberg¹ and which represents the view most widely accepted today.

CLINICAL PICTURE

In unfolding a clinical picture produced by occlusion of the posterior inferior cerebellar artery, it must be emphasized right at the outset that, in contradistinction to the classic apoplexy, the attack is practically never ushered in with unconsciousness. In none of our cases did unconsciousness occur during the attack. The patient avers that something has happened to him and he may feel quite distressed. Yet the examiner is often not much impressed by the vague complaints and may attribute these to the underlying ailment or to a neurotic disturbance so frequently superimposed on organic disease. Such a fateful mistake is easily explained by the fact that one-sided lesions of the medullary structures involved cause so few and such equivocal disturbances in function that only a most minute examination will detect them. It is common knowledge that a one-sided paresis of the soft palate, the pharynx or the larynx produces very little disturbance to the patient. The larynx, unfortunately, is rarely examined by the internist or neurologist unless a definite complaint is registered by the patient and nystagmus is for some reason or other, not given the consideration that it deserves.

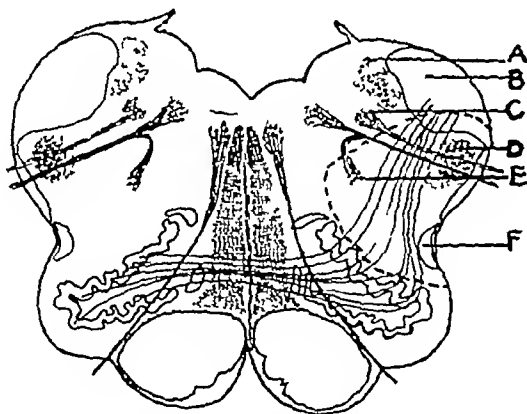


Fig 1—Diagrammatic sketch of the medulla modified from Wilson demonstrating the area in the lateral corner of the medulla that is involved by occlusion of the posterior inferior cerebellar artery. A vestibular nucleus B restiform body C nucleus of the ninth nerve D descending root of the fifth nerve E motor nucleus of the tenth nerve F spinothalamic tract

In other cases, again, the onset of the attack is more stormy or the emotional make-up of the patient less susceptible to neurotic disorders, and then the physician is strongly impressed by the organic nature of what has happened to the patient. The actual sequence of events in the vascular accidents under discussion is as follows. A patient having been treated for a cardiovascular condition or in whom such a condition has been anamnestically established suddenly develops

Meniere's syndrome. His trouble is usually ushered in by a more or less severe dizziness accompanied by vomiting. These phenomena dominate the scene for a day or two. Then other symptoms gradually begin to make their appearance, such as difficulty in swallowing, some disturbance in articulation or perhaps some sensory disturbances. Again it is not these subjective symptoms but the objective signs always accompanying the former that will disclose the real situation.

The clinician who suspects the real significance of the Meniere episode will not have to wait for the appearance of these symptoms but will be able to observe from the beginning certain objective signs that will at once point the way to a correct diagnosis. Of these objective signs the most important one from a diagnostic point of view is the nystagmus. The nystagmus is so valuable a sign because it can be readily visualized, because it is beyond any doubt an objective sign and because it will lead one on to the right track of clinical interpretation and localization.



Fig 2 (case 2)—Gross appearance of the medulla with a magnification of 1/2 diameter showing the destruction in the lateral corner of the medulla.

Next in diagnostic importance is the paralysis of one vocal cord. This is almost always present, although, as mentioned before, it will rarely betray itself by any appreciable impairment of function. It must and should be looked for. It will at least in some cases, clinch the diagnosis and point to the exact site of the accident. The other signs, as enumerated in the anatomic introduction, may vary as to their number and intensity and help merely to confirm the diagnosis. Among the latter there is one very significant sign, particularly when the nystagmus and vocal cord paralysis are not so manifest. This is a crossed sensory disturbance involving the face on the side of the lesion and the rest of the body on the opposite side. The anatomic explanation for this phenomenon is found in the involvement of the nucleus and descending root of the fifth nerve, fibers of which have not yet crossed, and the spinothalamic tract, the component fibers of which have all crossed in the cord. This also explains the fact that the sensory involvement is limited to pain and temperature. As a rule, these sensory disturbances are not complete. They may be limited to a homolateral corneal anesthesia and to islands of partial anesthesia on the other side of the body. These disturbances, however, are not as obvious as the nystagmus or as striking as the vocal cord paralysis. They must be painstakingly searched for to be elicited.

All these signs and particularly the symptoms diminish gradually in their intensity, but some traces of them will persist indefinitely. It is one of the distinguishing features of this vascular accident as contrasted with the classic apoplexy that the prognosis is definitely more favorable. There are occasional exceptions with a fatal termination. These occur when the lesion is caused by hemorrhage that spreads beyond the bounds of this sector, causing more extensive medullary damage—always a most serious disorder.

DIFFERENTIAL DIAGNOSIS

A differential diagnosis will only rarely come in question, but there are other lesions which can affect this region and may occasionally simulate its vascular etiol

ogy Thus multiple sclerosis may begin in this region and cause confusion in diagnosis With multiple sclerosis, however, other signs referable chiefly to the pyramidal tract or other characteristic regions will soon manifest themselves Of course the acuteness of the onset is not so striking in multiple sclerosis

Secondly, syringobulbia shows a predilection for this region, and it is important to point out a fact not generally known that syringobulbia may occur in apoplectic attacks These attacks are a form of progression of the disease, each one adding to the extent of the involvement Furthermore, syringobulbia is as a rule associated with some syringomyelic cavities in the cord, a pathologic process that will find expression in a more varied symptomatology

Thirdly we would particularly call attention to the bulbar type of poliomyelitis, which may come on with apoplectic suddenness, involving also one side of the medulla Here the usual elevation of temperature, characteristic changes of the spinal fluid and perhaps also some spinal cord involvement will readily help one out of the dilemma

Of other disorders that may occur in this locality we believe no mention need be made

The following case reports, two of them with autopsy material will serve to illustrate this syndrome

CASE 1—B K, a man, aged 67, admitted to the hospital, Dec 15, 1932, had been subject to attacks of angina pectoris for several months One morning a few days prior to admission he awoke with an attack that was diagnosed as a mild



Fig 3 (case 2)—Recent encephalomalacia and hemorrhage in the lateral corner slightly reduced from a photomicrograph with a magnification of 5 diameters

coronary occlusion After prompt medical aid he felt much better but was advised by his physician to remain in bed He felt so well however, that he got up and went to work the same afternoon

At noon that day while he was at lunch he suddenly felt dizzy and faint and had to be taken home to bed He vomited repeatedly had difficulty in speaking and complained of trouble in his throat The next day he was unable to swallow and his physician thought that a fish bone might have become lodged in his throat at lunch the previous day He was taken to the hospital for roentgen examination of the throat and

esophagus During the examination it was found that the barium sulphate stuck in the pharynx and did not move beyond it

A neurologic examination then revealed the following

1 Rotary nystagmus of the first degree was found, which affected each side but was more marked to the left

2 Marked hypesthesia of the left side of the face was present with an absence of the left corneal reflex

3 The soft palate on innervation was pulled to the right the so-called curtain movement

4 The sensation of the soft palate and pharynx on the left side was gone, so that the examiner's finger when introduced into the patient's throat on this side, fell into the depth as if into a hole, without meeting any resistance

5 Several areas of diminished sensitivity to pain and temperature were found on the right side of the body

The diagnosis was occlusion of the left posterior inferior cerebellar artery probably as the result of an embolus, which originated from a mural thrombus in the left ventricle of the heart

CASE 2—J P N, a man, aged 52, was a private patient of an outside physician and the record is incomplete However, the patient died while in the hospital and an autopsy was held here It is because of the instructive autopsy material that we decided to include the case with our presentation

The patient was admitted first Feb 26 1929 because of high grade cardiovascular disease with a recent onset of cardiac failure He showed no neurologic signs or symptoms at the time of his first admission Abnormalities then were confined to the evidences of cardiac failure He showed a moderate hypertension (156 systolic, 106 diastolic) and an enlarged heart with a systolic murmur at the apex At the time of the first admission he was kept in the hospital for two weeks treated for his failure and discharged March 12 as improved A week later he was readmitted because of the sudden appearance of evidences of a cerebral vascular accident Severe headache developed, and then he suddenly found that he was unable to swallow and noticed some difficulty in speech The record discloses no further details The examination as recorded revealed (1) right facial weakness, (2) moderate deafness (3) slow pulse (about 60) (5) hoarseness and (5) difficulty in swallowing

His condition became progressively worse and he died, March 28 one week after the vascular accident

The laboratory work and serologic reaction in this case were negative.

Although the clinical summary is meager, we think the pathologic demonstration will prove of considerable interest The gross specimens and the slides showed the sharp localization of the lesion to the lateral portion of the medulla We are sure that a careful neurologic examination would have revealed the syndrome as we have previously outlined it

CASE 3—B T a woman aged 31, married, admitted April 9, 1933 complained that on the previous night she awoke suddenly with a feeling of choking breathlessness, inability to swallow, numbness on the left side of the body and a tendency to fall toward the right side. The patient had a developed mitral stenosis She had been in the hospital only a month prior to this admission for a therapeutic abortion and sterilization Following this operative procedure a sudden cardiac failure developed with pulmonary edema She was treated for this condition remained in the hospital for about three weeks improved quite rapidly and at the time of her first discharge felt entirely well She remained well then until the episode mentioned

She was examined by us the day after her second admission The patient was lying in bed with her eyes closed, because she



Fig 4 (case 3)—Gross appearance of the defect in the lateral corner of the medulla (magnification 1 1/2)

stated, she got very dizzy when she opened her eyes. The following observations were made:

Examination of the cranial nerves revealed (a) Horner's syndrome on the right, (b) hypesthesia of the right cornea, (c) horizontal nystagmus of the first degree to the left and first and second degrees to the right, (d) suggestion of a facial weakness on the right, side of the central type, and (e) palatal weakness on the right side and a marked hypesthesia of the right soft palate and pharynx.

The upper extremities were essentially normal.

The abdominal reflexes were weak on the right and active on the left.

The lower extremities were essentially normal.



Fig. 5 (case 3)—Old encephalomalacia and defect in the tissue of the lateral corner of the medulla. $\times 5$

Sensory examination showed a hypesthesia for pain and thermal sense on the entire left side of body including the trunk and the extremities and a hypesthesia of the face on the right side.

We felt that we were dealing here with a cerebral accident and since the patient had a mitral stenosis with fibrillation the most likely cause was an embolus. The neurologic examination revealed involvement of the fifth seventh eighth ninth and tenth nerves on the right side and a hemihypesthesia of the left side of the body. This would localize the lesion in the right lateral portion of the medulla. Thus the diagnosis was occlusion of the right posterior inferior cerebellar artery, most likely as a result of embolism.

Except for the cardiac lesion, the rest of the examination was negative. The laboratory work and serologic reactions were all essentially negative. She improved remarkably from day to day and was discharged at the end of two weeks feeling very much better.

The patient was readmitted July 18, 1934, fourteen months after her attack of occlusion of the posterior inferior cerebellar artery, with a severe degree of cardiac failure and a recurrent rheumatic fever.

She was in the hospital for more than four weeks and her condition grew worse despite all treatment.

Neurologic examination showed that the nystagmus and the sensory changes were just as marked as they were at the time of the cerebral accident but that the other signs had cleared up.

The patient died August 23, with acute pulmonary edema and infarction of the right lung. In addition to the usual changes resulting from repeated rheumatic attacks there was found in the medulla the precise lesion which was clinically postulated some fourteen months before.

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AIR IN THE BILE PASSAGES

A REVIEW AND REPORT OF A CASE

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Biliary fistula into the intestinal canal usually results from the combination of infection and calculi in the biliary passages. Less frequently it follows a malignant condition of the gallbladder. Seldom does it develop from a perforating duodenal ulcer.

With all intra-abdominal inflammatory processes an attempt is made by the adjacent viscera to wall off the offending structure. When suppuration of the biliary tracts occurs adhesions form, and the gallbladder or its ducts may become agglutinated to proximate organs, i. e. duodenum, colon, stomach. As a consequence of constant pressure of calculi and advancing necrosis of the wall of the gallbladder, perforation into an adherent viscus may ensue. Internal biliary fistulas have frequently been associated with the presence of stones. Judd and Burden¹ found them to be present in the gallbladder or its ducts in 121 of their 153 cases. In 1885 Murchison² reported carcinoma of the gall

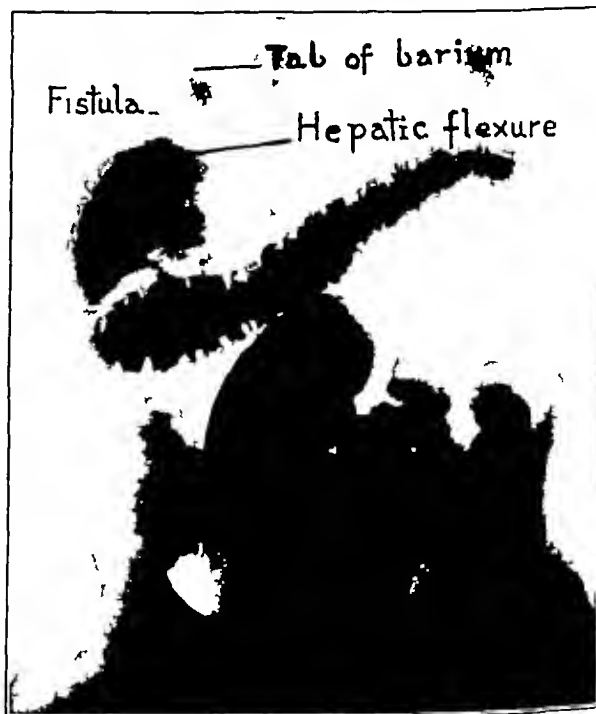


Fig. 1—Barium enema. Tab of barium is visible in the lumen of an air-containing viscus. The barium is also seen in the fistulous tract.

bladder to have been present in six out of nine cases of fistula between the gallbladder and the colon. Carman and Miller³ cited an instance of a carcinoma of the pylorus of the stomach that perforated into the gallbladder with the formation of a fistula. Kantor and

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¹ Judd, E. S. and Burden, V. G. *Ann. Surg.* 81:305-312 (Jan.) 1925.

² Murchison, C. *Clinical Lecture on Diseases of Liver*, 1885, p. 569 (edited by Brunton, T. Lauder).

³ Carman, R. D. and Miller, Albert. *Röntgen Diagnosis of Diseases of the Alimentary Canal*, Philadelphia: W. B. Saunders Company, 1917, p. 369.

Jaffin⁴ and Lönnerblad⁵ recorded cases of perforation of duodenal ulcer into the gallbladder or its ducts. The formation of a self made anastomosis between the gallbladder or its ducts to the intestinal tract is not uncommon.

In 1909, Robson⁶ demonstrated at operation a calculus impacted in a freshly forming fistula between the gallbladder and the colon. Judd and Burden referred in their series to eleven cases in which a stone was found in transit in the lumen of the fistula. Lönnerblad described a case of cholecyst-intestinal



Fig. 2—Y shaped gas shadow outlining two hepatic ducts and the common bile duct

fistula without any history of abdominal colic. He indicated two similar instances, one reported by von Korte and the other by Graeberger⁷. Here it must be assumed that, owing to an eroding stone, perforation took place slowly and that the inflammatory reaction was minimal. This is extremely rare.

Of 10,866 autopsies reported by Roth, Schroeder and Schloth,⁸ only forty-three fistulas between the gallbladder and the intestinal canal were found. Naunyn⁹ and Courvoisier collected 384 cases of biliary fistulas, of which 184 were of the cholecystogastro-enterocolonic type. Judd and Burden at the Mayo Clinic reported a large group of cases of internal biliary fistulas disclosed at operation. In these series, the most common by far were the cholecystoduodenal fistulas. Then next in order of frequency were the cholecystocolonic, cholecystogastric and, least frequent, the cholecystoduodenocolonic fistulas.

At operation or postmortem examination, the gallbladder is usually small and fibrotic. Stones are generally present. Often the common duct is greatly dilated. The liver may show cirrhotic changes or a thickened capsule.

4 Kantor J L and Jaffin A E. *Radiology* 10 10 (Jan) 1928
5 Lönnerblad Lars. *Acta radiol* 13: 551 1932
6 Robson A W M. *Brit M J* 1 1050-1054 (May 1) 1909. Dis
cases of the Gallbladder and Bile Ducts Including Gallstones ed 3
New York William Wood & Co 1904 p 133
7 Graeberger Gosta. *Acta radiol* 12: 164 1931
8 Roth Schroeder and Schloth cited by Robson⁶
9 Naunyn B A. *Treatise on Cholelithiasis* 1896 p 143 trans
by A E. Garrod

The impaction of a stone in the duodenum or small intestine complicating the perforation of the gallbladder into the digestive tract, may result in intestinal obstruction. Stones that have perforated into the large bowel rarely produce obstruction unless the stone is enormous or unless conglomerated calculi have formed a large mass. Retrograde infection from colon fistulas has resulted in abscess formation of the liver.¹⁰

Although the literature is replete with references to internal biliary fistulas, only forty-three cases have been diagnosed preoperatively. Masciottra and Etcheverry¹¹ reported one case. Lönnerblad described two personally observed cases and cited forty collected from the records. Judd and Burden reported that in their series of biliary fistulas, the diagnosis was made but twice. Of the forty-three cases diagnosed, six were cholecystocolonic fistulas (Reich,¹² Lönnerblad, Fuller,¹³ Judd and Burden (two cases), and Schinz¹⁴). The cases of Judd and Burden and of Schinz were proved. We wish to add our case to those previously reported as diagnosed before operation and confirmed at operation.

Of great interest in the case which we present is the display of gas shadows in the bile passages. This has been observed only six times in spontaneous internal fistulas (von Friederich,¹⁵ Öhnell and Lindblom,¹⁶ Graeberger Busi,¹⁷ Alberti¹⁸ and Beutel¹⁹) and three

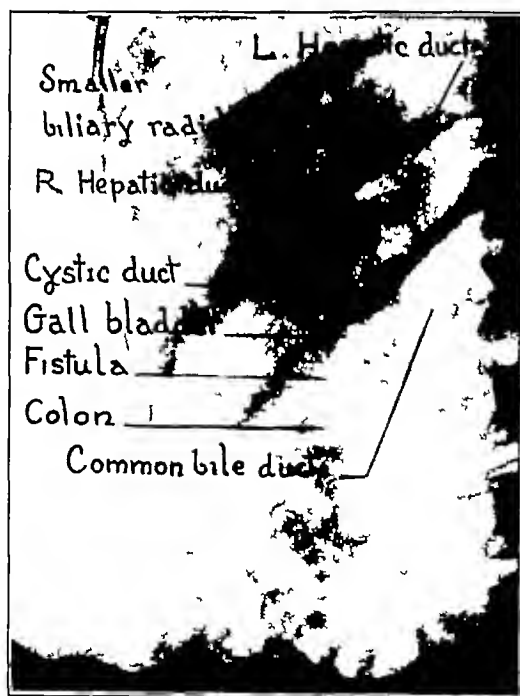


Fig. 3—Display of gas shadows in the fistula gallbladder cystic duct common duct and the like

times after the anastomosis of the gallbladder to the stomach or the duodenum (Walters and Thiesen,²⁰

10 Rolleston H D and McNece J W. *Diseases of the Liver Gall bladder and Bile Ducts* ed 3 New York Macmillan Company 1929 pp 676 and 822
11 Masciottra R L and Etcheverry M A. *Rev Med Quirug de pat femina* 1 234, 1933 abstr Int Abstr Surg 1934 p 126
12 Reich Leo. *Fortachr a d geb d Rontgenstrahlen* 40 698 1929
13 Fuller C J. *Brit M J* 1: 279 (Feb 15) 1930
14 Schinz H R. *Baensch W and Friedl E. Lehrbuch der Rontgendiagnostik* ed 3 Leipzig Georg Thieme 2 1440 1932
15 von Friederich L. *Fortachr a d geb d Rontgenstrahlen* 39 616 1929
16 Öhnell Harold and Lindblom K. *Acta radiol* 10 121 1929
17 Busi Anstide. *Radiol med* 8: 122 1921
18 Alberti. *Radiol med* 14 729 (Sept) 1927
19 Beutel A. *Röntgenpraxis* 1 326 (April) 1932
20 Walters Waltman and Thiesen W. *Proc Staff Meet Mayo Clin* 8: 772 (Dec. 14) 1934

Mallet-Guy and Beaupère,²¹ and Odischaria²²) In von Friederich's case the actual spirals of the valves of Heister were perfectly outlined by gas. In our case, the colon, the fistula, the small gallbladder, the cystic duct, the dilated common duct and the hepatic ducts were air filled and clearly visualized.

REPORT OF CASE

History—P. D., a housewife aged 41, the mother of four children, entered the hospital Dec 10, 1934. After her 1st pregnancy eight years previously she suffered an attack of upper abdominal pain below the costal margin and slightly to the right of the midline. The pain was very sharp in character, radiated around the right costal margin to the back and to the right shoulder region. During the attack she was nauseated and vomited thick green material. Fever of unknown height occurred during the first three days. After three weeks of illness all symptoms suddenly subsided. No jaundice or chills were present.

For five years after the initial episode, attacks of distressing abdominal pain recurred. They were referred to the upper right quadrant and were prone to follow the ingestion of

four minutes and bleeding time was two minutes. The blood chemistry was normal. The Wassermann and Kahn tests were negative.

Stool examination revealed no ova or parasites, and no blood. A small amount of undigested material and an occasional white blood cell was present. Some yeast cells were seen.

A barium enema revealed an abnormal oblique smudge like shadow in the upper right quadrant above the hepatic flexure and toward the transverse colon (fig 1). A trickle of barium had apparently passed out of the colon into a hollow structure filled with air lying externally to and diagonally above the hepatic flexure. The structure was interpreted as being the common bile duct.

The stomach and duodenum were roentgenographically normal. However, there was observed a Y-shaped air shadow with the lower vertical line lying slightly diagonally to the long axis of the abdomen and medially to the superior portion of the duodenum (fig 2). Gas had evidently outlined the common bile duct and the two hepatic ducts which emptied into it.

A flat plate of the abdomen visualized air shadows which outlined the fistula leading from the colon into the gallbladder, the cystic duct, the dilated common duct, the hepatic ducts and smaller biliary radicles (fig 3). A cholecystogram failed to outline the gallbladder (a usual occurrence in gallbladder fistula).

The preoperative diagnosis was cholecystocolonic fistula.

Operation—There was observed a small gall bladder about 3 inches long and three fourths inch wide, grayish, fibrotic, thick walled and noncaliculous. The organ was adherent both to the liver which was scarred and cirrhotic around the gall bladder area and to the transverse colon, to which the fundus was joined. The left lobe of the liver was normal. The head of the pancreas was slightly thickened. The common duct was dilated 1½ inches in diameter. The appendix was moderately fibrosed.

After many dense adhesions had been cleared from the area of the hepatic flexure it was possible to view a union of the fundus of the gallbladder to the transverse colon (fig 4a). This bridge was severed between clamps and an enterorrhaphy was done to close the defect (stoma opening) of the colon (fig 4b). The fistulous opening was 0.5 cm in diameter. A cholecystectomy was easily performed. The dilated common duct was investigated and found to be free from detritus. It was then drained with a large catheter. The appendix was removed.

The pathologic report was chronic ulcerative cholecystitis and chronic appendicitis.

Since her operation of three months ago, the patient has been absolutely symptom free for the first time in two years.

CONCLUSIONS

1 In a case of spontaneous cholecystocolonic fistula roentgenographic studies demonstrated gas and barium shadows in the biliary passages.

2 Persistent cramps and diarrhea were outstanding and significant symptoms.

3 The diagnosis was made preoperatively and confirmed by operation.

3021 Avenue I

Abuse of Language Mechanism—The language mechanism is, however, so easy for all to employ, words are so cheap sentences are complete grammatical units, and hence a speaker or writer may meander along without end or aim in his recording of nonrelated word-complexes. The worst that can be said of them apart from their futility, is that they are harmless so long as they do not lead to the acceptance of correlation between statements which are merely juxtaposed.—Bolton, J. S. The Evolution of Mind *Lancet* 1 728 (March 30) 1935.

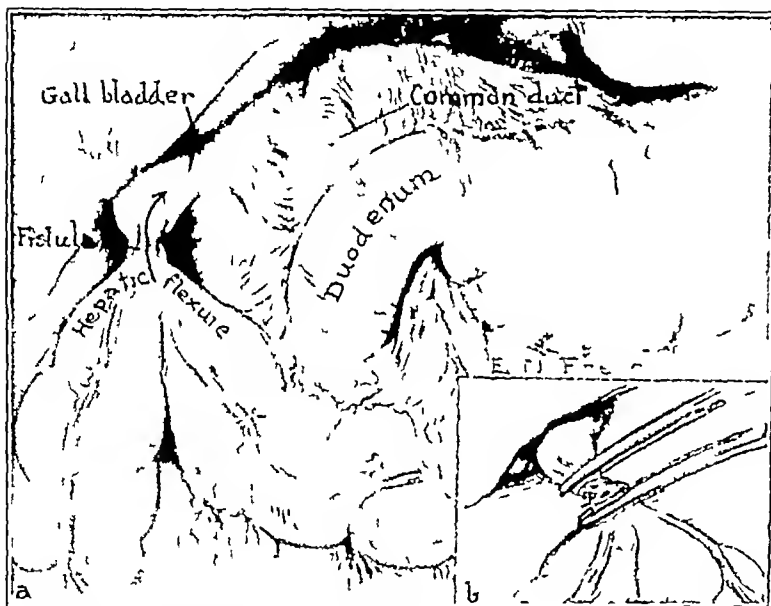


Fig 4—*a*, anastomosis of the fundus of the gallbladder to the colon; *b*, division of the union between clamps.

fatty or fried foods. During this time she was frequently constipated.

For the past two years she complained bitterly and persistently of the almost daily occurrence of cramps associated with diarrhea. The cramps began in the right hypogastrium radiated downward and then became generalized in the abdomen. The stools contained mucus but no gross blood. Weakness had been progressive.

The past history other than that mentioned was immaterial.

Physical Examination—The abdominal wall was moderately thick but was not distended. There was no enlargement of the liver or spleen. In the upper right quadrant there was noted deep elastic resistance and some tenderness. No other significant changes were present.

The temperature, pulse and respiration were normal. The blood pressure was 116 systolic 88 diastolic.

Laboratory data revealed the following. The urine was normal. The red blood cell count was 3,600,000, hemoglobin estimation 70 per cent. The white blood cell count was 6,750 with 80 per cent polymorphonuclear leukocytes, 19 per cent lymphocytes and 1 per cent mononuclear cells. Coagulation time was

21 Mallet-Guy and Beaupère. *Arch. d. mal. de l'app. digestif* 16 686 (June) 1926.
22 Odischaria. *S. Roentgenpraxis* 1 809 (Nov. 1) 1929.

THE HAZARDS OF THE INDUCTION
OF PNEUMOTHORAX

IN THE TREATMENT OF LOBAR PNEUMONIA

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AND

EDGAR MAYER, MD

NEW YORK

Pneumothorax is being used in many hospitals as a therapeutic measure in lobar pneumonia. Conflicting reports concerning the efficacy of this procedure have appeared in the literature. Its proponents present dramatic though uncritical results that are apt to stimulate undue enthusiasm. It seems well at this time to put forward a word of caution. Pneumothorax may be a hazardous procedure, and at present insufficient data to recommend its use are available.

The lobar pneumonias are a group of diseases due to different organisms which display more or less distinctive characteristics in respect to age incidence, course and prognosis, depending on the etiologic agent. The most important element determining the outcome in these diseases is the occurrence and degree of blood invasion. Pneumococcal pneumonias that do not become blood invaded have a mortality of 12 per cent or less, those blood invaded have a mortality of 25 per cent or more. In 139 nonbacteremic type I cases treated with serum on the first three days there were five deaths, a mortality of 3.6 per cent, in thirty-three blood-invaded cases the mortality was 33.3 per cent. Without serum the lowest mortality reported in the literature for type I cases is 20 per cent. The various pneumococcus types have blood invasion rates and mortalities that closely approach one another but are different for each type. The experiments of Stillman¹ and of Tuttle and Cannon² showed that damage to the lung capillaries

Results in Five Hundred and Thirty-Two Cases of Pneumonia Due to *Pneumococcus* Type I Treated with Serum (Adults)

Day of Disease Serum First Given	Total Cases			Bacteremic Cases		
	Cases	Deaths	Mortality per Cent	Cases	Deaths	Mortality per Cent
1	13	0		1	0	
2	53	3	5.7	14	3	21
3	73	8	10.9	12	4	33
4	86	12	11.7	23	9	39
5	91	17	18.6	30	13	43
6	80	15	18.7	23	11	48
7	51	14	27.4	16	9	56
8 and later	83	20	23.5	17	11	65
Total	532	80	16.7	136	60	44

due to the character of the invading organisms was the determining factor in blood invasion. Spontaneous recovery from pneumonia is apparently due to the development of humoral immunity. Recovery may be therapeutically induced by the passive transfer of this humoral immunity when administered sufficiently early in cases for which an antiserum is available. Delay in administration of type I serum increases mortality, as shown in the accompanying table.

From Littauer Pneumonia Research Fund of New York University and the Medical Service of Harlem Hospital and from the New York Hospital.

¹ Stillman E G J Exper Med 52:215 (Aug) 1930 38 117 (Aug) 1923

² Tuttle W M and Cannon P R J Infect. Dis 56 31 37 (Jan) 1935

MODE OF ACTION

Artificial pneumothorax has been proposed by its advocates as a natural surgical method of placing the lung at rest, some using for analogy the benefits accruing from splinting an infected hand to avoid spread and blood invasion. Although it is recognized that with increasing degrees of collapse there is a corresponding reduction in the blood volume flow through the collapsed lung and that it is probable that there is a reduction in the lymph drainage from the collapsed lung, yet despite the remarkable healing of tuberculous lungs incident to pneumothorax therapy and despite the long years of use we do not know what part these physiologic alterations play in the healing process.

LIMITATIONS AND HAZARDS

There are certain limitations and hazards involved in the use of pneumothorax in lobar pneumonia. It is

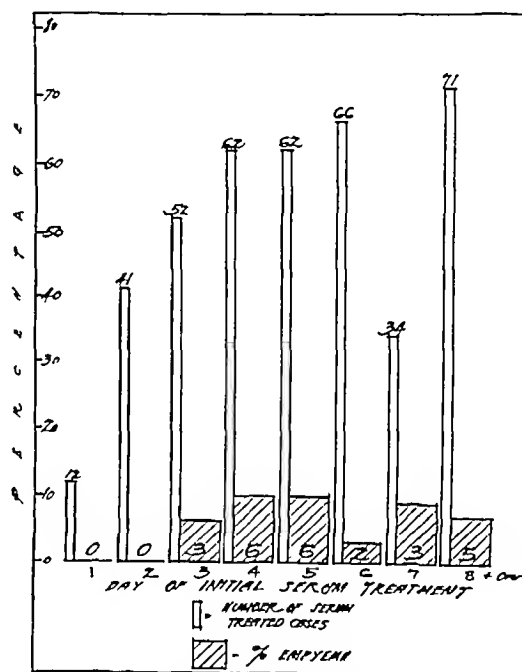


Fig 1—Frequency of empyema in serum treated pneumococcal pneumonia type I. Influence of day of initial serum treatment. Figures above plain columns indicate the number of serum treated cases. Figures in shaded columns cases of empyema. Percentage frequency is indicated on ordinate.

apparently recommended only in the early cases. Later in the disease, when well established consolidation has occurred, pneumothorax cannot collapse the consolidated lung. Patients with bacteremia, either early or late in the disease, do not respond favorably. Collapse of uninvolved lung may aggravate the dyspnea in a patient whose demand for oxygen is already increased by reason of fever and the mixture of unoxidized with oxidized blood. No one can selectively collapse the involved lobe. It may remain uncollapsed though the normal lobe shrinks. The introduction of air into an inflamed pleural sac presents conditions favorable to the development of fluid that may become purulent. Separation of the pleural surfaces precludes the localization of empyema should it occur as a spontaneous complication. When administered sufficiently early, serum therapy for type I reduces the incidence of empyema, as is shown in figure 1. Experience thus far indicates that a surprisingly large number of cases

present an adhesive pleurisy over the diseased lobe which precludes satisfactory collapse, when discovered pneumothorax therapy should usually be abandoned. Traumatic rupture of the lung and air embolism are complications that have occurred. Infected nucus may be forced into the opposite lung, and in some cases rapid development of a contralateral pneumonia has occurred notwithstanding the induction of pneumothorax. Elderly people with reduced vital capacity or those with cardiovascular diseases have likewise not done well.

The other has elected for treatment thirty cases from his service at Harlem Hospital.

The following complications and disadvantages have been noted with pneumothorax therapy of pneumonia

- 1 Late invasion of the blood stream in spite of collapse.
- 2 Invasion of another lobe on the collapsed side.
- 3 Invasion of the contralateral side.
- 4 Empyema
- 5 Induced rupture of the lung
- 6 Extreme mediastinal shift, with death
- 7 Harmful delay in application of serum therapy to suitable cases, as evidenced by unusual complications—nephritis



Fig 2—Condition on admission Feb 26, 1935 at 3 p m showing the involvement of the right lower lobe. The left lung field is clear.



Fig 3—Condition after attempted induction of pneumothorax showing clear lung field, 150 cc of air introduced; no pressure reading obtained; no relief of pain.



Fig 4—Appearance after the third refill and introduction of 950 cc. of air with collapse of right lower lobe which however, is much more dense than in the previous film. Readings with left lateral recumbent posture: -4 +1 1/2. There is commencing involvement of the upper portion of the left lower lobe without hilar involvement. The pain was relieved after the introduction of 375 cc of air with a resultant pressure reading of -3 +1.

TECHNIC

Absence of standard technic shows that the therapy is still in the experimental stage. Certain workers have instituted only one, two or three treatments at intervals of twelve, twenty-four or forty-eight hours. Some employ frequent refills at intervals of from three to four hours to attain speedy collapse. Some use negative intrapleural pressures. Others desire that pressures be slightly positive.

To evaluate this therapeutic procedure one must have frequent roentgen and accurate bacteriologic and

8. Fatigue of patients by frequent manipulation and roentgen examinations.

CONCLUSIONS

There is insufficient evidence to warrant the use of artificial pneumothorax in the treatment of lobar pneumonia except in large hospitals amply equipped for bacteriologic, serologic and roentgenographic studies.

Pneumothorax therapy should not be employed by those inexperienced in the treatment of pneumonia or in the use of artificial pneumothorax.

The favorable results thus far recorded deal almost solely with patients in the early stages of the disease and without bacteremia, and in pneumococcus types that otherwise have a low death rate. Prevention of bacteremia in patients has not been demonstrated. The response of dogs to pneumococcus type III is quite different from the response of patients.

The use of artificial pneumothorax in pneumonia is still in the experimental stage. Until a sufficiently large number of cases have been studied, general practitioners are not justified in employing it.

At least all cases of type I, as well as those of type VII and early cases of type II, should receive serum. In them the hazard of pneumothorax appears unnecessary.

Even those advocating this therapy do not recommend it for patients with well established consolidation, patients with bilateral lesions and those appearing for treatment after the third day of the disease.

REPORT OF CASE

W W a Negro aged 26, admitted at 12 45 p m, Feb 26 1935, to Harlem Hospital complained of midsternal pain, a cough and fever since February 24. At 8 p m on that day he had severe chest pain aggravated by difficulty in inspiration.



Fig 5—More extensive involvement of the upper portion of the left lower lobe at this time with a selective collapse of the right lower lobe and failure of the right upper lobe to collapse completely. A small amount of fluid is seen in the right pleural cavity. Pressure readings at this time: -4 +1.



Fig 6—Reexpansion of the lung. Entire clearing of the left lower lobe with increased markings persisting in the right lower lobe which had been collapsed.

serologic studies, and in view of the multiplicity of types a sufficient number of early cases to study. Early termination of a pneumonia and relief of clinical symptoms in any single case is not evidence of benefit achieved by the therapy. Some cases terminate early with no treatment and to indicate a change in the usual duration it must be shown that this occurs regularly in a large series.

One of us has observed sixteen cases with five deaths (30 per cent) and three empyemas (18.7 per cent).

with the cough becoming worse. The following morning he had a chill and blood tinged sputum.

On admission he had moist rales throughout both lungs and diminished breath sounds at the right base, with dullness. The pulse was 136, the respirations were 44 and the temperature was 104 F. The white blood cell count was 26,400, polymorphonuclear leukocytes 85 per cent. Figure 2 shows a consolidation in the lower portion of the right lower lobe, the remainder of the lung fields were clear. The sputum revealed pneumococcus type I.

At 3 p. m. a pneumothorax was performed with the administration of 150 cc of air. A roentgenogram (fig. 3) taken after this pneumothorax showed a slight amount of air below the consolidated lung. At 8 p. m. the temperature and pulse fell, the pulse being 114, the temperature 100 F and the respirations 36. At this time 375 cc of air was administered. The pressure reading changed from minus 5 minus 1 to minus 3 plus 1 and there was considerable relief of pain. At 11:45 an additional 425 cc of air was administered and the

patient was discharged cured on the fifteenth day with the lung fully expanded though there was still some radiopacity at the site of the original pneumonia, which had been collapsed. The second invasion had entirely cleared.

Though it is possible that the invasion of the contralateral lung was the result of the collapse of the primary site, this is by no means established or urged. It is more probable that the second invasion developed as the result of the pneumococcal infection which was unchecked by the induction of pneumothorax. Obviously the treatment of the opposite side by pneumothorax was impossible.

Without roentgen study of the progress of the infection and prompt recognition of an invasion of the contralateral side and typing, this patient would not have received the benefits of serum therapy. At least from eight to twenty-four hours would have been necessary to determine whether the blood culture was positive. The induction of pneumothorax in this instance was an unnecessary, costly and dangerous therapeutic interference which was responsible for delay in administering specific therapy.

62 West Eighty-Seventh Street—470 Park Avenue

Clinical Notes, Suggestions and New Instruments

MIGRATION OF NEEDLE INTO HEART THROUGH CHEST WALL SURGICAL REMOVAL

ELECTROCARDIOGRAPHIC AND ROENTGENOGRAPHIC STUDIES

HAROLD A. GOLDBERGER, M.D. AND HAROLD E. CLARK, M.D.
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This case is reported because of its unique character and its interesting electrocardiographic and roentgenographic records.

N. S., a man aged 34, Puerto Rican sign painter, was brought to the Metropolitan Hospital by ambulance, complaining of pain in the left side of the chest. He stated that he was sleeping in a bed placed directly below a pincushion suspended on the wall. He was aroused from sleep by a sharp pain in the anterior part of the left side of the chest. He said it felt as if a needle had stuck him. The pain increased in intensity and he called an ambulance.

On admission of the patient to the ward the pain had increased in severity and was exaggerated on deep breathing. He now complained of pain radiating to the tip of the left shoulder and designated the tip of the acromion process and the area covered by the supraclavicular fossa in addition to the precordium as the points of maximum pain.

The past and the family history were of no significance except for the fact that he had been admitted to the hospital on two previous occasions for acute alcoholism. At the time of the previous admissions no pathologic condition was found other than the acute alcoholism, no cardiac murmurs and no arrhythmia or abnormal changes in blood pressure.

On physical examination the patient was sitting up in bed apparently in acute pain and slightly dyspneic. The pupils reacted to light and distance. No abnormal pulsations were present in the neck. Expansion of the two sides of the chest were equal. On the left anterior chest in the fourth interspace $1\frac{1}{2}$ inches medial to the nipple line was a small red point about 1 mm in diameter. This area was tender only on deep pressure. The lungs were resonant throughout and no rales were heard.

The border of the left ventricle was percussed for a distance of 8.5 cm from the midline. The apical impulse was seen and felt in the fourth interspace 8 cm from the midline. A coarse thrill was palpated all over the precordium maximal

From the Department of Surgery, Metropolitan Hospital, Service of Dr. Lucius Salisbury.

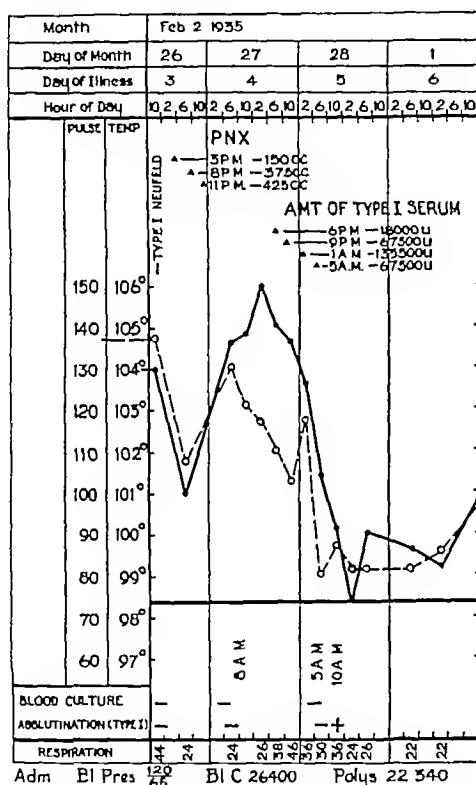


Fig. 7.—The temperature chart of patient W. V. suffering from pneumonia due to pneumococcus type I involving the right lower lobe. After good collapse of this lobe there was an involvement of the left lower lobe commencing at its apex and with rise of temperature to 106 F. At this time large doses of pneumococcus type I serum were given with fall of temperature and pulse to normal.

pressure readings were minus 4 plus $1\frac{1}{2}$. During the night the temperature rose to 106 F and the pulse, which had reached 130 was 118. Another roentgenogram taken during the night showed a well collapsed right lower lobe, a partially expanded right upper lobe and a definite involvement in the central portion of the left lung field. There were signs of consolidation in the upper portion of the left lower lobe.

On admission studies of the agglutinins for type I prior to the administration of specific serum for type I had been negative. On the evening of the second day in the hospital and during the night, four doses of serum were given at the following times: 6:30 p. m. 10,000 units; 9:45 p. m., 67,500 units; 1 a. m. 135,000 units and 5 a. m. 67,800 units.

The temperature and the pulse reached normal. Agglutinins were strongly evident in the blood stream. There was no significant rise of temperature until the eleventh day when the patient had a mild serum sickness lasting three days. The

at a point 1 cm medial to the site of the pin prick. On auscultation both heart sounds were obscured by a very loud, coarse, grating murmur, which reached maximal intensity during systole. The same ill defined noise was still further intensified with each respiration. All other physical manifestations were normal.

The temperature was 99.8 F, the pulse was regular, was of good quality, was equal at the two wrists and maintained a rate of 92, respirations were slightly labored at a rate of 24, blood pressure was 108 systolic, 85 diastolic. Urinalysis showed a specific gravity of 1.034, a faint trace of albumin, absence of sugar, a moderate number of white cells and an occasional hyaline cast.

twelve hours after the operation the patient's respiration became labored and the pulse rapid and weak. Respirations were 36 per minute, the pulse was 160 and the blood pressure 80 systolic, 64 diastolic. Examination of the chest showed dullness and absent breath sounds at the left base. Examination with a portable x-ray apparatus showed fluid in the left side of the chest with shifting of the heart slightly to the right. There was no collapse of the upper left lung. Pleural puncture was done on the left side and 300 cc. of dark fluid blood was removed. In spite of supportive measures the patient's condition became rapidly worse, blood pressure was 60 systolic, 40 diastolic, the respiration rate 42 and the temperature 103. The patient died a short time later.



Fig 1—Routine chest plate showing the needle in the third interspace in the shadow made by the left ventricle



Fig 2—Exposure with the Bucky diaphragm showing the needle casting several shadows owing to contraction of the left ventricle



Fig 3—Chest plate taken after operation showing enlargement of the heart shadow (hemopericardium) and early pneumonia (atelectasis) at the right base.

A diagnosis of needle in the heart was made and the patient was taken to the x-ray room, where two exposures were made, one a routine chest plate and the other an exposure with the Bucky diaphragm (figs 1 and 2).

With fluoroscopic examination the needle was visualized as a straight body about 2 inches long moving with each systole in an oblique direction in a plane parallel to the third interspace about an inch from the midline. The position thus found was mapped out on the chest with a skin pencil.

An electrocardiogram was taken (fig 4) and the patient was prepared for the operating room. Nitrous oxide-oxygen-ether anesthesia was given. The operative procedure consisted of a vertical incision made from the third rib to the sixth rib in the left parasternal line with a horizontal incision along the fourth intercostal space for a distance of 7.5 cm. The fourth and fifth costal cartilages were incised and the intercostal muscles of the fourth interspace cut. The parietal pleura was opened and no free fluid was found but a few very fine threads of fibrin were seen to stretch with each heart movement between the parietal pleura and the pericardium. The pericardium was examined but not opened, and no evidence of hemorrhage was seen. The eye of the needle was located by palpation and then visualized in a plane parallel to the third interspace. The only portion seen was the eye proper the remainder being buried in the left ventricle.

On close examination the needle was seen to have passed through the lower medial tip of the upper lobe of the left lung at the cardiac incisura and at this point a small laceration one-half inch in length was seen in the lung tissue. The needle was withdrawn with a curved hemostat and found to be 1 3/4 inches long. At this time no bleeding in the heart tissue was observed and it was quite interesting to note that the site of perforation was very close to the left coronary artery. The pleura was then closed and the intercostal muscle sutured approximating the costal cartilages. The skin was sutured with black silk.

The patient returned from the operating room to the ward with a pulse of 110 and in relatively good condition. The first ten hours after operation was uneventful the patient resting comfortably under the usual postoperative sedation. About

Postmortem examination of the wound revealed the pericardial cavity full of dark red fluid blood. There was a deposit of fibrin over the heart and the puncture wound was clearly seen in the left ventricle.

SUMMARY

- 1 In the case here reported roentgen examination confirmed the clinical diagnosis of a needle in the heart. An exposure made with the Bucky diaphragm showed the interesting phenomenon of a needle in the left ventricle causing several shadows as a result of the contractions of the left ventricle.
- 2 An electrocardiogram showed the unusual phenomenon of an artificially produced coronary syndrome with high take-off

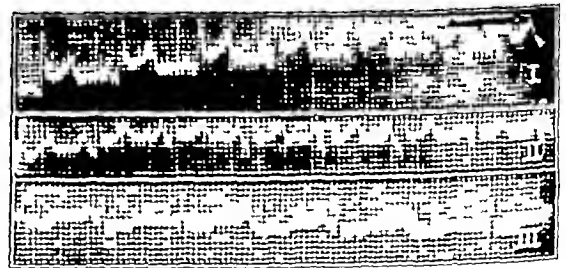


Fig 4—Electrocardiogram taken before operation showing a high take-off of the T wave in leads 1 and 2 and inversion of the T wave in lead 3. With a rate of 100 the PR interval was 0.12 second and the QRS interval was 0.4 second. The auricular and the ventricular rhythm were regular.

of the T waves and inversion of the T wave in lead 3. The pain distribution was that of coronary artery disease and the site of the needle puncture in the left ventricle was close to the proximal portion of the left coronary artery.

3 Postoperative roentgenograms showed enlargement of the cardiac shadow with apparent fluid in the pericardial sac clouding of the left base of the pulmonary field and rapid reexpansion of a lung artificially collapsed during operation. The patient apparently died of secondary hemorrhage into the pericardial sac and subsequent cardiac tamponade.

RETROPERITONEAL LIPOMYXOSARCOMA

CARRINGTON WILLIAMS M.D. RICHMOND VA

There is no more innocent new growth than the ordinary pure lipoma. When, however, there are areas of fibrous or myxomatous tissue scattered throughout the tumor it has a tendency to recur and not infrequently to change from a benign to a malignant tumor. This malignant tumor is a sarcoma arising from the fibrous tissue, which recurs locally without metastasis to distant parts of the body.

The case reported is interesting first on account of the enormous size of the tumor, secondly because the original tumor appeared benign and thirdly because of the changes in the character of the tumor and in its microscopic appearance at three different times during a period of six years.

REPORT OF CASE

Mrs F N J, a widow, aged 65, who had enjoyed excellent health until the onset of her present trouble entered St Luke's Hospital June 22, 1925. Four years before she first noted a mass in the right side of the abdomen. There was no pain or other discomfort associated with this mass until after two years, when it had grown quite large, there was discomfort from the weight of the tumor and attacks of weakness. At

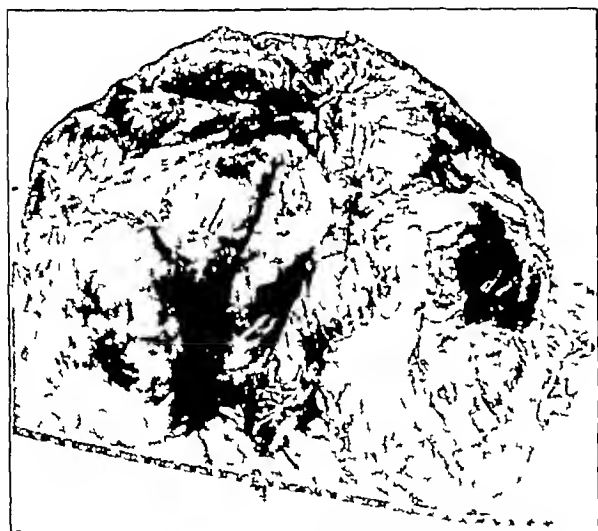


Fig 1—Tumor removed at first operation. The kidney is seen in about the middle of the lower portion.

this time the tumor was explored (at another hospital) without the peritoneal cavity being opened. It was considered irremovable and tissue was taken for microscopic examination. This tissue was reported lipoma. Several roentgen treatments were given without effect on the tumor. She continued to lose body weight and strength, but the tumor continued to grow so that on admission to the McGuire Clinic her combined weight equaled her maximum weight. The atrophy of her body was due to the growth of the tumor because her appetite was enormous.

Physical examination, aside from the huge tumor which filled the abdomen from ribs to pelvis, showed large tortuous veins over the anterior chest, a systolic mitral murmur with slight hypertrophy of the heart and edema of both legs.

The blood Wassermann reaction was negative. Urinalyses were not significant. The blood showed red cells 2,760,000; hemoglobin 40 per cent (Dare); white blood cells 6,000; polymorphonuclear leukocytes 78 per cent; lymphocytes 20 per cent; large mononuclear leukocytes 1 per cent; and eosinophils 1 per cent. Four transfusions of whole blood were given, resulting in a rise of hemoglobin to 60 per cent. Her general condition was likewise improved.

Operation was performed July 2 by Dr Stuart McGuire and myself. A long incision was made over the tumor which

was exposed without the peritoneal cavity being entered. It separated from surrounding structures with remarkable ease until the whole mass was lifted upward, exposing the right renal vessels. The kidney was so deeply embedded in the tumor that it was removed in situ. During the dissection the peritoneal cavity was opened. The entire intestinal tract and peritoneal cavity were pushed well over to the left side. There was no tumor in the cavity. The peritoneum was closed. The tumor apparently had been completely removed. A large drain



Fig 2—Section of the tumor removed at the first operation showing fat and fibrous tissue.

of gauze and rubber was inserted into the cavity and the wound closed around it. The tumor was made up of fat and fibrous tissue and weighed 51 pounds (23 Kg) (fig 1). Microscopically it was largely pure fat but some areas showed a preponderance of fibrous tissue (fig 2). The diagnosis was fibrolipoma (Dr S W Budd). Convalescence was smooth, disturbed only by a moderate amount of bloody discharge. The lowest hemoglobin after operation was 46 per cent. The body weight three weeks after operation was 82 pounds (37 Kg).



Fig 3—Section of the tumor removed at the second operation.

At this time the edema of the ankles had cleared up and the dilated veins on the anterior chest wall had disappeared. The patient gained rapidly in weight and strength and returned to her former strenuous activities. Six months after operation she weighed 122 pounds (55 Kg) and after a year 132 pounds (60 Kg).

She remained well and active for five years when she noted a mass in the right flank. This increased in size so she returned for treatment June 2, 1930. At this time she was well nourished, the tumor mass was movable and lobulated.

and aggregated about the size of an adult's head. The phenolsulphonphthalein excretion was 36 per cent in a two hour period, the nonprotein nitrogen of the blood was 36 mg per hundred cubic centimeters and sugar 110 mg. The hemoglobin was 70 per cent.

She was operated on June 8. The peritoneal cavity was opened and innumerable pedunculated firm growths were found scattered throughout the right side of the cavity, varying in size from 1 to 10 cm in diameter. The great omentum was heavily infiltrated and behind the peritoneum were two masses about 12 cm in diameter. The omentum was resected as many of the pedunculated growths were removed as was possible and the large retroperitoneal masses were removed.

Some of these tumors were pure fat others were myxomatous and still others were more fibrous in character with areas showing definitely malignant change (fig 3). The diagnosis was lipomyosarcoma (Dr Budd).

Following the operation the patient improved but was never well again. In January 1931 a recurrence of the growth was noted but at this time she had had fever over a period of several weeks and was not able to return to the hospital until May. She now had lost weight and strength and appeared quite ill. There was a hard immovable mass in the right side of the abdomen extending from the ribs to the pelvis. The

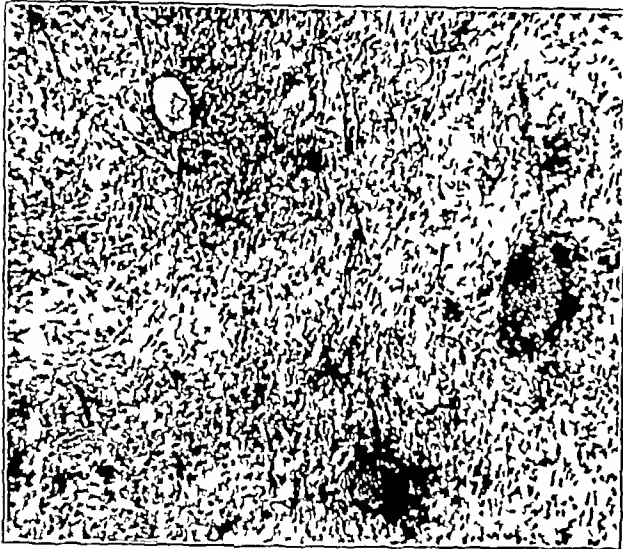


Fig. 4—Section of the tumor removed at the third operation

hemoglobin was 46 per cent nonprotein nitrogen of the blood 36 mg, creatinine 1.8 mg, and sugar 125 mg. Phenolsulphonphthalein excretion was 22 per cent in a two hour period. At operation this mass consisting of two large nodules measuring 12 and 20 cm in diameter was removed.

The microscopic examination by Dr Budd revealed much the same picture as before, except that the areas of sarcoma now predominated and the cells were more highly malignant (fig 4).

The patient made a good recovery from the operation but did not regain her former strength. Recurrence of the tumor was noted five months later and after another month she died six years and four months after the removal of the tumor and ten years after it was first discovered.

COMMENT

The original biopsy specimen taken two years after discovery of the tumor showed a pure benign lipoma but it was probable that the tumor at that time would have shown its fibrolipomatous character had it been completely removed. It was certainly originally benign. The tumor was exposed to x-radiation (amount not known) without any favorable influence. It is interesting to speculate on the question of actual harm that the rays may have done. These large retroperitoneal lipomas usually recur as sarcomas, it is therefore important to remove them early and completely. Since the recurrence is only local

repeated operations should be done as radically as circumstances permit. A review of the literature of recent years fails to reveal a report of such a tumor as large as this one. The first tumor weighed 51 pounds the second and third tumors approximately 10 pounds each (4.5 kg), making a total tumor weight of about 70 pounds (31.8 kg).

THE TREATMENT OF CIRRHOSIS OF THE LIVER WITH INSULIN

JOHN E. WALKER, M.D., COLUMBUS, GA. AND WILEY D. WOOD, M.D., CAMP HILL, ALA.

Lepelne¹ states that the combination of a high carbohydrate diet and insulin is of value in the treatment of cirrhosis of the liver. McCabe and Hart² report five cases treated in this manner with a definitely favorable influence on the disease.

We have used this method of treatment in one case. The result was gratifying. A report seems desirable in an effort to stimulate further trial of the method in this generally hopeless disease particularly in ambulant patients not yet showing signs of hepatic toxemia.

A white man aged 48 unmarried a carpenter complained of a swollen abdomen March 1 1933. His past health had always been good except for malaria at the age of 18 years and gonorrhea at the age of 34. He had never had a venereal sore and stated that he did not use alcohol.

His present illness began fourteen months previously when the abdomen began to swell. This swelling gradually increased and had prevented him from working for four months. Shortness of breath had not been present at the onset of illness but had gradually developed with the progressive abdominal enlargement.

The patient was emaciated. There was no evidence of cardiac enlargement or valvular disease. The abdomen was enormously distended and there were enlarged tortuous veins over the lateral walls of the chest. There was moderate edema of the lower legs. The Wassermann reaction was negative.

Abdominal paracentesis was done April 1. Three gallons of fluid with a specific gravity of 1.010 was removed. Altogether he was tapped thirty-two times between April 1933 and May 1934. The intervals between tapings averaged twelve days. From 3 to 4 gallons of fluid was obtained at each tapping.

Soon after the patient was seen he was given five intramuscular injections of sahrgan. He took 15 grams (1 Gm.) of theobromine sodiosalicylate three times a day for twenty-two days beginning Sept. 26 1933. Following this he took daily 48 grams (31 Gm.) of ammonium nitrate for twelve days. Finally he took 240 grams (155 Gm.) of urea three times a day for sixty-one days (until Jan. 1 1934). None of these diuretics had any noticeable effect on the disease or on the frequency of tapping. Diuresis was evident, but the patient was apparently unable to control the ensuing thirst.

Dec. 15 1933 as a result of the appearance of the article by McCabe and Hart² insulin was begun at first 5 units before the noon meal. By December 28 this had been increased to 10 units three times a day before meals and on Jan. 12 1934 a further increase to 15 units three times a day was made. The last dose was continued until March 28 thus making a period of slightly over three months during which he received insulin.

During the period of insulin administration the patient followed a diet containing approximately 400 Gm. of carbohydrate. Except for a preliminary period of instruction he administered the insulin to himself. The danger of insulin reaction was strongly impressed on him, and he carried sugar with him at all times. No insulin reactions occurred.

Throughout the period of observation the patient was ambulant. He was his own judge in regard to when tapping was necessary requesting it when the abdomen became so distended as to impede his movements. Edema of the feet also subsided after each tapping.

¹ Lepelne, Georg. Die Erkrankungen der Leber und Gallenwege. J. F. Lehmanns, Munich, 1930.
² McCabe, John, and Hart, J. F. Treatment of Hepatic Cirrhosis with Insulin. New York State J. Med. 33: 924 (Aug.) 1933.

In February there was a period of seventeen days during which tapping was unnecessary. This was the longest interval without tapping since the first paracentesis eleven months before. Following this, two more tapings were necessary, the last one on May 20.

The patient was last seen in December. There was no evidence of fluid in the abdomen. He had resumed his occupation as carpenter. A recent letter (Feb 18, 1935) states that he is employed as the manager of a large farm and that he feels nearly as well as ever.

SUMMARY

A case of cirrhosis of the liver showed marked improvement on being treated with insulin and a high carbohydrate diet. Abdominal paracentesis, after having been necessary thirty-two times was discontinued altogether.

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Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

PARATHYROID HORMONE THERAPY

JOSEPH C. AUB, M.D.

BOSTON

NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed, the series will be published in book form.—ED

The clinical use of the active principle of the parathyroid gland is dependent on its marked influence on calcium and phosphorus metabolism. Its physiologic effects are, in brief:

- 1 To raise the blood calcium and lower blood phosphorus
- 2 Possibly to increase the ionized calcium in the blood
- 3 To increase the calcium and phosphorus excretion in the urine
- 4 To obtain the calcium for this increased demand either from a large amount of ingested calcium or from the stores in the bone

When given in excess, parathyroid extract elevates the blood calcium excessively and a train of toxic manifestations may occur:

- 1 The kidney is damaged and, possibly as a result,
- 2 Blood phosphorus rises and
- 3 Nitrogenous waste products accumulate in the body fluids
- 4 Abnormal deposits of calcium salts occur in soft tissues
- 5 Because of the large excretion of calcium and phosphorus in the urine, kidney stones are formed
- 6 Osteitis fibrosa cystica develops in bones, with an increase in activity of osteoclasts, and usually of osteoblasts. As a result, there appear generalized osteoporosis, cysts, and giant cell tumors

CLINICAL USE

It is apparent, therefore, that when used in the clinic the effect of parathyroid extract must be carefully watched in order to obtain an effect within physiologic limits. This can be accomplished by frequent determinations of the level of calcium and phosphorus in

the blood. A blood serum calcium level above 12 to 13 mg per hundred cubic centimeters is never desirable.

Parathyroid Dosage—It must be remembered that the strength of the unit of parathyroid hormone has been reduced recently to one fifth of its previous potency. The doses referred to in this paper, therefore, are expressed as the new 1934 revision of unitage, while the concentration of the extract and therefore the volume of injections remains unaltered. Like other active principles of glandular secretion, parathyroid extract has a greater effect when it is needed. Thus seventy-five units a day (1934 revision) may be enough to elevate the blood calcium level from 4.5 to 7 mg per hundred cubic centimeters of serum in a case of low calcium tetany. In normal individuals it may require 500 units a day to raise the level from 10 to 12 mg per hundred cubic centimeters of serum. However, the variation in susceptibility is great, and amounts that will markedly elevate the blood calcium in one individual may have little effect in another. The dosage must be regulated by determination of the level of blood calcium, repeated every few days until the new blood level is stabilized. When the doses are too small, this can of course be detected by continuance of the tetany, but hypercalcemia gives few clinical indications until a level of about 14 mg per hundred cubic centimeters of serum is reached. There then appear loss of appetite, nausea and a great sense of fatigue.

Collip showed that repeated doses of the extract are more effective than a single large injection. It is therefore wiser to give the parathyroid extract twice daily even though the injections cause some induration and pain.

Time Relations—Parathyroid hormone, injected intravenously, has a latent period of approximately four hours, after which the blood calcium rises and therapeutic effects begin. These effects then last about twenty hours following a single injection. In contrast to this it must be remembered that calcium salts when injected intravenously exert an immediately beneficial effect, which is often prolonged beyond two hours. Vitamin D, on the other hand, when given in very large doses, gradually elevates the blood calcium level over a period of days. This effect, when once established, is maintained for at least two weeks after therapy is discontinued. An overdose of vitamin D, therefore, is associated with loss of appetite and discomfort for a prolonged period.

Duration of Effect—The chief disadvantage of the parathyroid extract now available is the gradual loss of its effect. After several months of use an apparent immunity to it is established and then 750 units may produce no effect in a patient who originally responded well to 50 units. This characteristic limits its use to rather acute conditions, in which the treatment needs to be continued for weeks rather than months.

VITAMIN D IN RELATION TO PARATHYROID EXTRACT

Vitosterol, when given in large enough amounts, exerts much the same effects on the body as parathyroid extract. It raises the calcium level in blood and excreta and it also increases the absorption of calcium from the intestinal tract, the latter is not influenced by parathyroid extract. Vitamin D also has the advantage of maintaining these effects indefinitely, and it can be

given by mouth. Therefore it is often preferable to substitute vitamin D for parathyroid extract, particularly when prolonged administration is needed.

Vitamin D has a disadvantage as well. Whereas parathyroid extract takes a few hours to establish its effect, vitamin D takes days, and this is a serious consideration in an emergency. The effects of an overdosage of vitamin D last a long time and a hypercalcemia so induced lasts for two weeks or longer, so that the accompanying nausea, lack of appetite and other more serious signs are protracted. An overdosage of vitamin D, therefore, is highly undesirable.

USES OF PARATHYROID EXTRACT

Because its most outspoken effect is to raise the blood calcium level, the clinical use of parathyroid extract is most dramatically seen in patients with a low blood calcium tetany.

Tetany—It must be remembered that tetany is merely a symptom complex of increased neuromuscular irritability. Gastric tetany from loss of gastric secretion, or tetany due to overventilation, has little to do with calcium deficiencies but is due to an alkalosis. Measures designed to increase calcium metabolism are not indicated here. Parathyroid extract exerts its outstanding value in the treatment of acute or postoperative low calcium tetany. The removal of parathyroid glands may occur of course during a total or subtotal thyroidectomy as well as during a parathyroidectomy. Under such conditions, tetany may appear between sixteen hours and six days after the operation. Usually preceded by tingling and numbness, often with a feeling of nervousness and fright, the signs may rapidly become intense and fulminating. Carpopedal spasm, severe laryngeal spasm, and generalized convulsions associated with great cyanosis may develop and require most careful therapy if death is to be avoided. The drugs that are available must be chosen with attention to their speed and duration of effectiveness. The slow intravenous injection of calcium salts has an almost instantaneous beneficial effect, which often lasts longer than two hours. Calcium gluconate is an excellent salt for this purpose because it does not cause sloughing, as would calcium chloride, if it escapes about the vein. In the normal adult 10 cc of a 20 per cent solution of calcium gluconate may be given intravenously if at least four minutes is taken for the injection, a few minutes later a similar amount may be injected intramuscularly. The relief from low calcium tetany by this procedure is dramatic, and if necessary the procedure may be repeated on the return of the tetany. For a more prolonged effect one must turn to parathyroid extract, which, after its four hour latent period, will elevate the blood calcium for nearly twenty hours. These two drugs—calcium by mouth, and parathyroid extract intramuscularly—can maintain the patient free from tetany for many weeks, and if necessary the rôle of parathyroid extract may be taken over gradually by large doses of vitamin D. It must not be forgotten that thyroid extract also mobilizes calcium stores and is therefore an aid in the therapy of this disease.

Other suggested uses of parathyroid extract are dependent on the desirability of (a) decalcifying the body and (b) raising blood levels and excretion of calcium.

The desire to have the body lose calcium occurs (1) when there are abnormal deposits of calcium salts in

the tissues and (2) when there are abnormal metals stored in the bone, as in lead or radium poisoning.

1 Many attempts have been made to decalcify the abnormal deposits of calcified glands, arteriosclerosis, otosclerosis and myositis ossificans. While an occasional positive result is reported, most of these attempts have resulted equivocally. The reason for this is now clear, for it is the supply of calcium and phosphorus stored in bones that is drawn on first in times of demand. The trabeculae of bone, scattered throughout the marrow, act as a readily available supply that can store or liberate calcium, much as fat stores are available for calories. As a result of this excellent physiologic mechanism, the calcium in the abnormal deposits is not disturbed. Therefore it does not appear to be a practical procedure to attempt decalcifying therapy for any of these conditions.¹

2 Because of the ready liberation of bone salts it is clear that one can use a decalcifying regimen to liberate abnormal metals which may be stored in bone. Lead is the prototype of such metals, and probably the most effective method of removing lead from bones is by means of a low calcium diet plus parathyroid extract.² Flinn and Seidlin³ have reported similar results for radium. Two factors in the procedure must be remembered. 1. An acid-producing salt, such as ammonium chloride, is easier to use clinically, even though slower in effect, and eventually probably has the same result. 2. Because the bone trabeculae are first drawn on, the abnormal deposits of metal that may be in the bone cortex will be affected only slightly.⁴ With an inert metal like lead, it is more important to eliminate the portion stored in the trabeculae.⁵ With a metal such as radium and its derivatives, however, which injures the surrounding tissues by its continuous bombardments with rays and particles, the part that remains in the bone cortex is of considerable importance, and this is not readily influenced by any known therapy.

RAISING THE BLOOD CALCIUM LEVEL

Raising the blood calcium level should theoretically be of clinical value in the healing of fractures. There has been some difference of opinion about this,⁶ though it now appears evident that little benefit can be expected from this type of therapy. Nor do I think much delay in ossification could occur from the use of parathyroid extract, because callus as well as ossifying cartilage has such an affinity for holding calcium. A recent severe hyperparathyroidism in a growing boy has demonstrated that decalcification occurs in all the bones except about the areas of ossification.⁷ It appears, therefore,

1 Aub J C. Calcium and Phosphorus Metabolism. Harvey Lectures 1928-1929.

2 Hunter Donald, and Aub J C. Lead Studies. XV. Effect of Parathyroid Hormone on Excretion of Lead and of Calcium in Patients Suffering from Lead Poisoning. *Quart J Med* 20: 123 (Jan) 1927.

3 Flinn F B and Seidlin S M. Parathormone in the Treatment of Radium Poisoning. *Bull Johns Hopkins Hosp* 45: 269-275 (Nov) 1929. Flinn F B. Elimination of Radium Salts from the Human Body. *J A M A* 98: 1763 (May 23) 1931.

4 Bauer Walter, Aub J C and Albright Fuller. Studies of Calcium and Phosphorus Metabolism. V. A Study of the Bone Trabeculae as a Readily Available Reserve Supply of Calcium. *J Exper Med* 49: 145 (Jan) 1929.

5 Aub J C, Robb G P and Rossmersli Elsie. Lead Studies. XVII. The Significance of Bone Trabeculae in the Treatment of Lead Poisoning. *Am J Pub Health* 22: 825 (Aug.) 1932.

6 Lehman E P and Cole W H. Parathyroid Hormone and the Calcification of Fractured Callus. *J A M A* 89: 587 (Aug 20) 1927. Fine J and Brown S. The Influence of Parathormone on Bone Regeneration. *New England J Med* 198: 932 (June 21) 1928. Hueper W C. Effect of Repeated Injections of Parathyroid Extract on Calcification of Osteoid Tissues. *Arch Path. & Lab Med* 3: 1002 (June) 1927.

7 Tibbets D, McLean R and Aub J C. Unpublished data.

that according to present evidence parathyroid extract would exert little influence on the healing of fractures

While an adequate calcium and phosphorus intake, together with viosterol, is probably of value in the control of dental caries, it would appear obvious that the more difficult use of parathyroid extract would not be indicated in this regard

There are many other conditions in which high calcium therapy has been declared of value. Only two of these need to be discussed here—pregnancy with lactation, and edema

Pregnancy with lactation has great effects on the calcium stream in the body. This was dramatically demonstrated by the observations of Kozelka, Hart, and Bohstedt,⁸ in which they showed that adult thyroparathyroidectomized dogs lived satisfactorily when given 13 rat units of vitamin D daily until they became pregnant. Their requirements for vitamin D to prevent tetany then gradually rose to 26,000 units, and during lactation to more than 40,000 units daily. It is not difficult, therefore, to understand the appearance of tetany and the bodily need for high calcium therapy and its adjuncts during this period. In a prolonged demand such as this, the control of tetany can usually be accomplished by the wise use of adequate amounts of milk and vitamin D. Only rarely will the more urgent treatment of tetany, already described, be needed

Edema—Parathyroid extract has been advised to reduce the edema of acute and chronic nephritis,⁹ of nephrosis,¹⁰ and also of cardiac failure.¹¹ Some investigators have found that persistent edema responded well to the daily injection of 250 units of parathyroid extract for a few days. This therapy corresponds to the good reports of other investigators following the use of calcium salts. While the difficulties associated with injections of parathyroid extract remain a deterrent factor in their use in edema, this method of therapy should not be neglected. In cases resistant to other forms of therapy, parathyroid extract may well be tried

Parathyroid extract has also been recommended in asthma and vasomotor rhinitis, in hemorrhage, in jaundice, and in gonorrheal epididymitis and salpingitis, but its use in these conditions has not been adequately established

SUMMARY

The chief therapeutic value of parathyroid extract is dependent on its influence on the blood levels of calcium and phosphorus. Its major use, therefore, lies in the treatment of acute low calcium tetany. In this condition it may be a life saving measure. Parathyroid extract may also be chosen for other therapeutic purposes. In these less urgent conditions, its beneficial effect arises from the liberation and the increased excretion of salts derived from bone

695 Huntington Avenue

8 Kozelka F L, Hart E B and Bohstedt, G. Growth Reproduction and Lactation in the Absence of the Parathyroid Glands. *J Biol Chem* 100: 715 (May) 1933

9 Davidson J R. A Case of Adolescent Myxedema Accompanied by Nephrosis and by Tetany of Parathyroid Origin Treated with Thyroid and Collip's Parathyroid Extract. *Canad M A J* 15: 803 (Aug) 1925. Mason E H. A Case of Chronic Nephritis Treated with Collip's Parathyroid Extract. *ibid* 16: 538 (May) 1926. McCann W S. Diuretic Action of Parathyroid Extract Collip in Certain Edematous Patients. *J A M A* 90: 249 (Jan 28) 1928. Hueper W C. The Diuretic Action of the Parathyroid Extract. *Arch Int Med* 44: 374 (Sept.) 1929.

10 Meakins J C. Reaction of Chronic Nephrosis to Thyroid and Parathyroid Medication. *J A M A* 59: 149 (July 9) 1927.

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Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

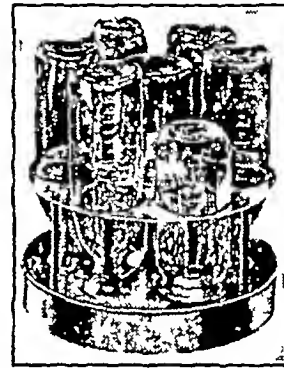
HOWARD A. CARTER, Secretary

CAPSON BABY'S NURSING BOTTLE STERILIZER ACCEPTABLE

Manufacturer: Capson Manufacturing Company, 4115-4121 Ravenswood Avenue, Chicago

Sterilizing baby's nursing bottles is accomplished by live steam at approximately atmospheric pressure with this device.

The Capson Sterilizer consists of an inverted pan (12 inches in diameter) approximately 1 inch in depth with seven aluminum tubes projecting upward approximately 2 inches, and a kettle about 14 inches deep. The rack and tubes are placed in the deep kettle containing clear water. One half inch of water is sufficient to allow space under the tubes for the steam to collect. The kettle is deep enough to permit the bottles to stand upright. Bottles are inverted over the steam tubes and are held in place by a guide. After the cover has been placed on the deep kettle, it is placed over a source of heat. Live steam circulates in the inverted bottles, and the surface of the bottle, including the neck and outside, are sterilized.



Capson Sterilizer

The Capson Sterilizer is made in two models, Model A being entirely of aluminum and Model B having aluminum tubes. The rack with the inverted pan and bottle rest are made of heavily coated tin plate.

According to the firm, the reason for devising this unit is to do away with sterilizing baby bottles in large volumes of water, which requires that the bottles be completely submerged, and a long time over a source of heat is required to bring the water to a boiling point. Furthermore, in some localities, when the bottles are removed from the boiling water, a deposit is invariably found in the bottles, usually white but sometimes red, depending on the mineral contents of the water. This deposit, although sterile, is objectionable to the eye, and the manufacturer claims that it probably forms a splendid base for bacteria. In using the Capson Sterilizing method, the bottles are rinsed after use and inverted over the tubes, and the sterilizer is set into the deep kettle. When the water comes to a boil, live steam circulates in and around the bottles, sterilizing them and leaving no deposit. Ten minutes' boiling time is required to sterilize the bottles effectively. The nipples may also be sterilized by confining them in a small bottle made for the purpose. This bottle is inverted over one tube in the same manner as the nursing bottles.

In a laboratory acceptable to the Council, the Capson Baby's Nursing Bottle Sterilizer was investigated. The purpose of the test was to determine the efficacy of the Capson Nursing Bottle Sterilizer when confined within a large kettle. The objects were (1) to determine whether the apparatus sterilizes the inner surface of the nursing bottles, (2) to determine whether the lip and outside of the necks of the nursing bottles are sterilized, and (3) to determine whether the inner surface of the nipple jar, metal funnel-cap and nipples are sterilized.

Cultures used for test were stock strains of *Staphylococcus aureus*, *B typhosus* (*Eberthella typhi*) and *B coli* grown in broth twenty-four hours diluted 1:10 for use. Contamination was performed by smearing 2 cc of the diluted cultures over the inside of 8 ounce narrow-mouth nursing bottles and 2 cc over the lip and outside of the neck and by running 2 cc of each suspension into the nipple jar containing the nipples, in such a manner that the funnel, the inside of the jar and the nipples were soiled.

The Capson Sterilizer with bottles, nipples and jar were placed in a covered kettle, containing about one-half inch of water and were steamed ten minutes.

Controls consisted of boiling for twenty minutes in water in a covered boiler a parallel set of contaminated bottles and nipples.

After "sterilization" tests for sterility were made by (a) flushing the outside of the neck and lip of the bottle with a tube of broth, (b) flaming the mouth of the bottle, pouring in a tube of broth then plugging the bottle with sterile cotton and flushing the inside of the bottle with the added broth, (c) placing the nipples in flasks of broth, and (d) flushing the inside of the nipple jar with broth and then pouring broth into a sterile test tube. The broths were then incubated for forty-eight hours. Tests were also run, in which diluted cultures with sterile milk were used instead of salt solution.

B. subtilis, which is a spore-bearing organism resistant to sterilization, was introduced as a trial organism to test the effectiveness of the sterilizer without the expectation of success, for autoclaving is the only certain heat method for killing spores. The results while not successful, compare favorably with the control boiling method according to the limited number of experiments performed. The tests in which the contaminated utensils were permitted to dry and in which milk dilutions of the organisms were used were designed to approximate actual conditions that might eventuate.

Within the scope of these experiments the Capson Nursing Bottle Sterilizer as modified, by operating within a covered pail and by the nipple jar seating on the spout, is an effective and practical method for sterilizing nursing bottles and nipples.

This Sterilizer will effectively sterilize only when it is confined within a deep kettle and the cover placed on it. In view of the favorable report as to the efficacy of this sterilizer, the Council on Physical Therapy voted to include the unit in its list of accepted devices.

TOMAC OXYGEN INSUFFLATOR ACCEPTABLE

Manufacturer American Hospital Supply Corporation, Chicago

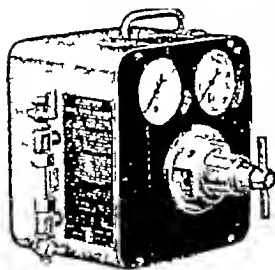
The Tomac Oxygen Insufflator is a portable tracheal apparatus for the administration of oxygen. The outfit is small and compact, weighing less than 15 pounds, which provides for easy removal to the bedside of a patient or wherever needed.

Over-all dimensions are 8¼ inches high by 9 inches wide by 7 inches deep. All gages and the regulator are set in a black bakelite panel and mounted at the eye level when in use. The entire unit is made of stainless steel, equipped with a carrying handle mounted on top. All inside parts are silver soldered. The unit has a visible water gage at the left of the regulator, a hose connection at the rear, and is equipped with a Tomac flow gage and Tomac pressure gage.

A regulator, which reduces 2,000 pounds per square inch pressure with safety and makes possible constant and controlled volume and pressure, is part of the equipment. The unit is also equipped with a pop-off valve as a means of safeguarding the patient and the operator against building up dangerous back pressures of oxygen. It has a maximum flow of oxygen of 15 liters per minute.

The Tomac Oxygen Insufflator was used in a clinic for a period of eighteen months and compared with other types of insufflators. The humidifier was found to deliver 20 mg or more of water per liter over the therapeutic range of 5 to 15 liters per minute. The water gage is designed so as to indicate clearly the upper and lower levels of water that are necessary to saturate the oxygen. The water trap has a capacity much over that of the humidifying chamber.

In view of the efficiency, durability and good performance of the Tomac Oxygen Insufflator, the Council on Physical Therapy voted to include the unit in its list of accepted devices.



Tomac Oxygen Insufflator

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

AZOCHLORAMID—A product containing approximately 96 per cent of N,N-Dichloroazodicarbonamidine.— $(\text{H}_2\text{N}(\text{ClN})\text{C}=\text{N}-\text{N}-\text{C}(\text{NCl})\text{NH}_2)$ —An N-chloro derivative of azodicarbonamidine.

Actions and Uses—Similar to those of chloramine, dichloramine, and solution of chlorinated soda, over which it is claimed to have an advantage in that it possesses lower reactivity with extraneous organic matter and higher bactericidal activity in the presence of organic material. Solutions of azochloramid are proposed for dressing, packing or irrigating infected wounds and cavities. Internal use of azochloramid solutions is not recommended. The available evidence indicates that the substance possesses a relatively low toxicity.

Dosage—Azochloramid is usually employed in concentrations of 1,600 and 1,300 in approximately isotonic buffered saline solutions. A solution containing one part of azochloramid in 500 parts of glyceryl triacetate (triacetin) and possessing greater stability than the aqueous solutions may also be used.

Manufactured by Wallace & Tiernan Products, Inc. Belleville, N. J. U. S. patents 1,958,370 (May 8, 1934, expires 1951) and 1,958,371 (May 8, 1934, expires 1951). U. S. Trademark.

Azochloramid Buffered Saline Mixture (for preparing 1 liter of a 1:3,300 aqueous solution). Vials containing azochloramid 0.3 Gm., sodium phosphate 0.6 Gm., potassium phosphate (monobasic) 0.09 Gm. and sodium chloride 8.5 Gm.

Azochloramid Buffered Saline Mixture (for preparing 1 gallon of a 1:3,300 aqueous solution). Vials containing azochloramid 1.14 Gm., sodium phosphate 2.27 Gm., potassium phosphate (monobasic) 0.34 Gm. and sodium chloride 32.18 Gm.

Azochloramid Buffered Saline Mixture (for preparing 1 liter of a 1:1,600 aqueous solution). Vials containing azochloramid 0.6 Gm., sodium phosphate 0.6 Gm., potassium phosphate (monobasic) 0.09 Gm. and sodium chloride 8.5 Gm.

Azochloramid Buffered Saline Mixture (for preparing 1 gallon of a 1:1,600 aqueous solution). Vials containing azochloramid 2.27 Gm., sodium phosphate 2.27 Gm., potassium phosphate (monobasic) 0.34 Gm., and sodium chloride 32.18 Gm.

Azochloramid occurs in bright yellow needles or plates. It possesses an odor suggestive of chlorine and has a burning taste. When pure it is odorless and practically tasteless. It is very slightly soluble in water, slightly soluble in glycerol and ether, soluble in alcohol, soluble (incompletely) in glacial acetic acid, acetone and ethyl acetate, very slightly soluble in chloroform and nearly insoluble in carbon tetrachloride and liquid petroleum. Azochloramid decomposes (explosively) without melting at 155.0–155.5 (U. S. P. X Melting Point Method). Solutions of azochloramid decompose on exposure to light.

Agitate 0.01 Gm. of azochloramid with 35 cc. of water a practically complete solution (yellow-orange) occurs with only a very slight turbidity at most. Treat 5 cc. portions of this solution as follows: Add 0.25 cc. of silver ammonium nitrate solution a brick red precipitate forms soluble in an excess of ammonia water, add 2 cc. of potassium iodide solution and agitate with 0.5 cc. of chloroform the chloroform layer is colorless or at most very faintly colored, add 0.1 cc. of diluted hydrochloric acid to the mixture and further agitate the chloroform layer acquires a deep violet color, add 2 cc. of diluted nitric acid solution and 1 cc. of silver nitrate solution a slight white turbidity but no precipitate forms, add sulphurous acid solution until the yellow color disappears, add 2 cc. of diluted nitric acid solution and 1 cc. of silver nitrate solution and agitate a curdy white precipitate remains soluble on addition of excess ammonia water, add from 30 to 40 cc. of water and treat according to the U. S. P. X turbidimetric test for chlorides, the turbidity is less than that produced in a control test made with 0.1 cc. of fiftieth normal hydrochloric acid.

Dissolve about 0.1 to 0.15 Gm. of azochloramid accurately weighed in 20 cc. of glacial acetic acid in a glass stoppered 250 cc. erlenmeyer flask. Add 10 cc. of potassium iodide solution and 50 cc. of distilled water, allow the mixture to stand for ten minutes and titrate the liberated iodine with tenth normal sodium thiosulphate. The number of cubic centimeters of tenth normal sodium thiosulphate consumed per gram (due to active chlorine and the azo group $-\text{N}=\text{N}-$) is not less than 317 cc. nor more than 328 cc.

Dissolve from 0.12 to 0.15 Gm. of azochloramid accurately weighed, in 15 cc. of glacial acetic acid contained in a 400 cc. beaker, add 90 cc. of water with stirring and follow with sufficient sulphurous acid solution to produce a clear colorless solution. Add 20 cc. of silver nitrate solution and 20 cc. of diluted nitric acid solution. Heat the solution until it boils and set aside for several hours. Filter through a prepared Gooch crucible and wash the precipitate well with portions of hot water slightly acidified with nitric acid, wash with one portion of cold water dry at 105°C. for one and one-half hours, cool and weigh the chloride (Cl^-) calculated from the silver chloride weighed is not less than 38.25 per cent nor more than 38.75 per cent.

Heat from 0.2 to 0.3 Gm. of azochloramid accurately weighed for five hours at 100°C. the loss in weight is not less than 0.4 per cent nor more than 0.7 per cent. Heat about 0.25 Gm. of azochloramid accurately weighed in a platinum dish until constant weight is attained, the ash is less than 0.1 per cent.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
RAYMOND HERTWIG, Secretary

AMENDMENT OF COMMITTEE DECISION "FORTIFICATION OF FOODS OTHER THAN DIETARY STAPLES WITH VITAMIN D"

The second paragraph of the respective Committee Decision (THE JOURNAL, Feb 16, 1935, p 563) has been amended to include cake, cake flour, cheese and beer as examples of foods not warranting fortification with vitamin D. The amended paragraph will read:

"Examples of foods not warranting fortification with vitamin D are beer, cake, cake flour, cheese, ice cream and sausage, and such accessories as chewing gum."

ACCEPTANCE WITHDRAWN

ORANGE CRUSH CARBONATED BEVERAGE

Manufacturer—Orange-Crush Company, Chicago

Description—Carbonated beverage prepared from carbonated water, sucrose, orange juice (one twentieth by volume of the beverage), citric acid (lemon juice), sodium benzoate (0.05 per cent), orange oil and United States Department of Agriculture certified color.

Manufacture Analysis and Vitamins—See announcement, THE JOURNAL, March 31, 1934, page 1004.

Reasons for Withdrawal of Acceptance—Orange Crush Beverage was accepted on condition that all advertising would appropriately present the product as a beverage containing little orange juice and prominently display a complete descriptive statement defining the article. The name Orange Crush, unless appropriately qualified in each individual piece of advertising, incorrectly implies that the product is either all orange juice or essentially orange juice. In fact, only one twentieth by volume of this beverage is orange juice.

The company subsequent to acceptance did not demonstrate compliance with these requirements in respect to advertising apart from the label. The advertising continued to present the product as "Orange Crush." After approximately one year the company found that competitive advertising practices in the field of beverages would not permit the successful merchandising of Orange Crush Beverage in accordance with Committee requirements for advertising and requested withdrawal of acceptance.

Names and advertising for beverages should correctly inform the public of the nature and food value of beverages it purchases. Any name or advertising that may lead the consumer to believe a beverage containing little fruit juice is essentially or in considerable part fruit juice is seriously misleading. Orange juice and Orange Crush Beverage are distinctive products with wholly unlike nutritional values. Orange juice is a rich source of vitamin C, whereas Orange Crush Beverage contains only an insignificant quantity.

The bottle label for Orange Crush Beverage comes within the jurisdiction of the federal Food and Drugs Act and is satisfactory for informing the consumer. This law however, unfortunately does not govern food advertising apart from package labels.

Under these conditions the public has no legal protection from false and deceptive advertising. Beverages and other foods may be advertised in a false and deceptive manner with respect to composition and food values without legal interference.

In that the company finds itself competitively unable to advertise Orange Crush Beverage in accordance with the Rules and policies of the Committee on Foods for truthful advertising, acceptance is being withdrawn and the product will no longer be listed among the accepted foods of the Committee on Foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary

MOUNT ROYAL DAIRIES PASTEURIZED HOMOGENIZED MILK

Distributor—Mount Royal Dairies, Ltd., Montreal, Canada.

Description—Bottled, pasteurized, homogenized milk.

Preparation—Milk obtained from producers licensed by the Montreal Board of Health and subject to the requirements of the Province of Quebec is regularly tested for milk fat, bacterial content and its reaction to methylene blue. A rigid inspection is also maintained in the dairy's own laboratory. Milk passing these tests is heated to 63 C, filtered at 49 C, homogenized under 2,500 pounds pressure, pasteurized by the holding method (63 C for thirty minutes), cooled to 3 C and automatically filled in bottles by the usual procedure (THE JOURNAL, Sept 1, 1934, p 681).

Analysis—Standardized to contain not less than 37 per cent of milk fat.

Calories—0.7 per gram 20 per ounce.

Claims of Distributor—The cream does not separate. The curd formed in the stomach is softer than that from unhomogenized milk.

KISMET CAKE FLOUR

Manufacturer—Noblesville Milling Company, Noblesville, Ind.

Description—Short patent flour prepared from soft winter wheat bleached and matured.

Manufacture—Soft winter wheat is cleaned, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, bleached with a mixture of benzoyl peroxide and calcium phosphate (one-half ounce per barrel), matured with beta chloral (2 ounces per barrel), and packed in paper sacks.

Claims of Manufacturer—Recommended for cake and pastry baking.

CELLU APPLE SAUCE PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago.

Packer—Geneva Preserving Company, Geneva, N. Y.

Description—Canned cooked apple sauce prepared from peeled and cored apples packed in water without added sugar or salt.

Manufacture—New York State Baldwin or Greening apples are automatically peeled, cored, trimmed, inspected, immersed in cold salt solution to arrest enzymatic action, again inspected for removal of bruised sections, particles of cores and any other defects, are cooked in an atmosphere of steam, screened and automatically filled into cans, which are sealed, processed for about ten minutes in boiling water and immediately cooled.

Analysis (submitted by distributor) —

	per cent
Moisture	89.4
Total solids	10.6
Ash	0.2
Fat (ether extract)	0.3
Protein (N X 6.25)	0.3
Reducing sugars as invert sugar	6.1
Sucrose	1.5
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	9.0

Calories—0.4 per gram 11 per ounce.

Claims of Distributor—For diets in which sweetened fruit is proscribed.

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SATURDAY, JULY 20, 1935

PROLONGATION OF HUMAN LIFE

The obituary notices regularly published in *THE JOURNAL* offer data that should make the physician pause in his professional treadmill and reflect on his own mode of living. A list of 100 deaths of physicians was made up from the notices in *THE JOURNAL*. Suicides and accidental deaths were excluded. In this group 65 per cent died of cardiovascular disease, the youngest died at 37 of carcinoma, the oldest physician, aged 89, died of cardiac failure. The average age of this small group was 64 years. In the registration area of the United States in 1928, cardiovascular disease caused the death of 45.5 per cent of those over 45 years. Allowing for the smallness of the group of physicians studied, the percentage of deaths from cardiovascular disease is still excessive. The anxieties and stresses of medical practice, irregularities in dietary habits, the disturbed rest and the multifarious activities of a busy practitioner tend to exhaust the cardiovascular apparatus. Comparative anatomists have established that the natural life expectancy of an animal is usually five times the period needed for full skeletal development. Since 21 years is required for full skeletal growth in man, the age of 105 might be set as the approximate normal human limit.

Montaigne said "Men do not usually die, they kill themselves." During the past century there has been a substantial increase in the general life expectation as the result of modern advances in hygiene and sanitation. Most of the progress has been achieved in infant and young life. Little has been accomplished in the improvement of health and mortality in older persons. Under present conditions, thirty-three out of every hundred thousand people in the United States may expect to live 100 years. Most people fall by the wayside between 60 and 80 years of age. At the later periods of life the mortality is chiefly due to degenerative diseases such as arteriosclerosis, chronic nephritis, heart disease and cerebral hemorrhage. Among numerous factors that may conceivably influence the health and life of the individual are heredity, diet, habits of work

and thought, pleasures, climate, economic status, social position, profession or occupation, race, and exposure to infectious diseases such as pneumonia, tuberculosis and syphilis.

Longevity may be considered from the broad point of view of the biostatistician, who deals with mass figures and considers the longevity of groups and strata of the population. Life expectancy during the Middle Ages is estimated at 21 years. During the eighteenth century in France, 29 years was the average expectation of life. In 1859 in the same country it was estimated at 40 years. The United States had a life expectancy of 48 years in 1915. In 1925 it was 55 years, and in 1926 it reached 57.74 years. Dublin¹ has studied the Massachusetts life tables from 1890 to 1930. He observed that the gains in expectation of life have been greater among females than among males. These gains decrease rapidly from decade to decade, until at the age of 40 they virtually disappear. There have been significant qualitative changes in mortality as studied during this forty year period. Certain diseases that ranked high in mortality forty years ago are not important now. Diseases that now assume a high position in the mortality list were not included at the beginning of the twentieth century. In the first five years of the century, tuberculosis led all other diseases by a large margin with a death rate of 184.7 per hundred thousand. By 1925-1929 this disease had fallen to sixth in rank, with a death rate of 77.2 per hundred thousand. Organic heart disease, which was third in order at the beginning of the century, is now the leading cause of death, with a mortality almost double that of thirty years ago. In only one respect has modern sanitation and medical science been able to effect any improvement in mortality from cardiac disease. There has been a considerable drop in death rate among children and in adults up to the age of 45, but in older ages the rate has greatly increased. The general aging of the population is in part responsible for the rise in the death rate from heart disease. Many who might have been victims of other diseases under previous conditions of sanitation now succumb at older ages to heart disease. Diphtheria has been almost completely eliminated, as the result of vigorous public health campaigns and the general use of toxoid. The most conspicuous example of a disease that has utterly disappeared as a leading cause of death is typhoid. This has been accomplished by the modern practice of sanitation and hygiene.

Although mass statistics indicate a definite upward trend in the duration of life, individual longevity is still problematic and the resultant of hereditary and environmental influences. Pearl,² who has studied longevity as a problem in biostatistics, states that the average

¹ Dublin, L. J. and Lotka, A. J. *The History of Longevity in the United States*. Human Biology 6: 43 (Feb.) 1934.

² Pearl, Raymond. *The Distribution and Correlation of Variation in the Total Immediate Ancestral Longevity*. Human Biology 6: 98 (Feb.) 1934.

value of this biologically important characteristic is constant for the particular species, variety or race. By a series of studies on the total immediate ancestral longevity (TIAL), which is the mean sum of the ages of death in the six immediate ancestors of an individual, Pearl concludes that the total immediate ancestral longevity is as definite a biologic attribute as the individual's height. He finds that the average longevity of ancestors in a group of nonagenarians and centenarians is greater than that of persons not selected for their longevity. It is of great interest that 13.4 per cent of this nonagenarian group was bred from matings in which neither parent was long lived. With respect to innate genetic longevity Pearl finds three large groups: those dying under 50 years of age, those dying between 50 and 70 years, and those dying after 70 years. In comparison with heredity, Pearl finds that environment is less potent a factor in determining longevity. Alexander Graham Bell³ studied the genealogy of the Hyde family (8,797 persons) to determine the conditions associated with longevity. He found that a tendency to longevity is an inheritable characteristic. In cases in which neither parent lived to be 80, only 5.3 per cent of the offspring lived to be 80 or older. When only one parent lived to be 80 or older, 9.8 per cent of the offspring survived to 80 or beyond. When both parents lived to be 80 or older, 20.6 per cent of the children lived to be 80 or older. The average duration of life of the progeny was greatest in cases in which the parents were long lived, least when they were short lived, and intermediate when the parents died at intermediate ages. There was a direct correlation between the duration of life in the parents and the longevity of their children. The younger the parents were at marriage, the greater was the average longevity of their progeny. Children born during the first ten years of married life were longer lived than those born later. Bell concluded that heredity is a most significant factor in determining longevity. Nakayama⁴ sent questionnaires to 10,000 octogenarians in Japan. He found that the majority of the aged had long lived grandparents, parents, brothers and sisters. They were found mostly in the middle classes. The lower classes ranked second as concerns longevity and the upper classes third. The majority proved to be the eldest son or daughter. Most of them were born when the fathers were between 26 and 30 years of age and the mothers between 21 and 25 years. Nakayama found that longevity was rare among the unmarried. The aged had an average constitution, but some were corpulent and a few were slender. Tall men lived long, but short individuals did not. As concerns personal habits, most of these old persons went to bed early and arose late. They usually had led a quiet life. Half of them were drinkers but the women were all nondrinkers. Nakayama concludes

that for long life it is necessary to come from long lived parents, preferably of the middle classes and located in rural rather than urban communities.

Longevity is an art as well as a science. The art consists in practicing a reasonable adaptation to environment and adherence to the laws of hygiene based on a knowledge of oneself and one's needs. The mental outlook is as important as the physical aspect of living. It is desirable to cultivate equanimity, contentment and optimism. All disturbing passions such as anger, envy and jealousy should be avoided. Diet is important in the maintenance of reasonable longevity. Authorities agree that the amount of food should be restricted in old age. Nevertheless a strict adherence to stringent rules of diet is not desirable, since it may become a neurotic fad. The progressive decline in the course of life is not an inexorable law. The tempo of the biochemical processes may be increased or diminished by modes of living. Modern high tension living and intense competition accelerate the rate of living and evoke premature senility, followed by premature death due to cardiovascular degeneration. Old age has been shelved as useless in a society based on material standards. This is erroneous. Consider the productivity and usefulness exemplified by the old age of Michelangelo, Titian, Luigi Cornaro, Gladstone, Edison and Jacobin. Emerson has said that men old in years and intellect have composed the greatest governments. As Thewlis⁵ suggests, old age is more beautiful and fruitful than is ordinarily supposed. Dr Abraham Jacobin was in active practice past the age of 87, after having practiced more than sixty-three years. He remained keen of intellect and memory and his advice was sought by many. The distinguished surgeon W. W. Keen wrote his system of surgery when he was past 70. Physicians should consider physiologic old age as a happy state worth achieving and should encourage the aged to carry on their work.

Geriatrics has been a neglected field of medicine. At present the mortality at advanced ages is considerably more than necessary, owing to neglect of special study in the anatomy and physiology of senescence. The tissues of the aged are vulnerable as in early life to childhood diseases such as thrush, bronchitis, chilblains, eczema and pneumonia. There is a tendency to develop growth irregularities such as warts, acne, nevi, moles and freckles. Gilford⁶ calls attention to the defective immunity that accompanies senile degeneration, with resulting susceptibility to bacterial invasion. The rate of senescence varies in different individuals and in various organs. The thymus gland dies in youth, the ovaries at about 48, and the testes around 65 years. In the rare condition of progeria, a person may be senile in early childhood and die of old age in adolescence. Similarly the flame of life may flicker much beyond the

³ Bell A. G. *The Duration of Life and Conditions Associated with Longevity*. Genealogical Record Office, Washington, D. C. 1917.

⁴ Nakayama. *Longevity and Moderation*. Japan Letter, J. A. M. A. 101: 1090 (Sept. 30) 1933.

⁵ Thewlis M. W. *Geriatrics*. St. Louis: C. V. Mosby Company, 1924.

⁶ Gilford. *Hastings The Disorders of Post Natal Growth and Development* 1911.

usual term. Many biochemical mysteries are involved in these phenomena, which challenge the curiosity and spirit of the scientific investigator. Elie Metchnikoff, an eminent student of longevity, has said: "Human life does not last as long as it ought to in ideal conditions. We may predict that when science occupies the preponderating place in human society that it ought to have, and when knowledge of hygiene is more advanced, human life will become much longer and the part of old people will become much more important than it is today."

CHEMICAL NATURE OF HEMATOPOIETIC SUBSTANCES PRESENT IN LIVER

The observation about nine years ago that liver contained a substance which when fed to patients with pernicious anemia produced a dramatic improvement aroused immediate interest regarding the chemical nature of the active substance. Chemical "dissections" of the complex hepatic material were undertaken in several laboratories and within a relatively short time information that gave considerable insight into the chemistry of the hematopoietic substance was reported.¹ The active agent did not appear to be a carbohydrate, lipid, protein, proteose, peptone, simple polypeptide, purine, pyrimidine or single amino acid. Apparently it was a nitrogenous base, perhaps a secondary or tertiary amine. Further evidence of the nitrogenous character of the substance was reported by another group of investigators,² their results, however, suggested that the active agent was probably a simple polypeptide.

In the five years since the completion of these pioneer investigations, progress in studies of the chemistry of the active hematopoietic substance has become increasingly difficult because the availability of effective anti-anemia preparations has lessened the number of satisfactory patients for the assay of the various chemical fractions. Also, experience has shown that many of the chemical methods of choice for the fractionation of the crude preparations cannot be employed because of the consistent inactivation of the product. However, within the past few months progress has been made, one group of investigators,³ has separated from potent liver extracts three substances that may prove of importance. Two of these were obtained in crystalline form, one was identified as *l*-tyrosine and the other was believed to be a complex purine. The identity of the third fraction had not been ascertained. Both the tyrosine and the purine derivative produced a marked reticulocytosis when administered to guinea-pigs, and the latter also exerted a favorable therapeutic

effect in canine black tongue. It should be borne in mind however, that the value of these two experimental animals as hematopoietic test subjects has not as yet been adequately determined. A recent comment⁴ on a report of the clinical trial of the three fractions states that none of them when used alone possessed clinical activity, whereas a mixture of the three was highly effective as a remedy for pernicious anemia. This work seems to indicate that several substances having a mutual supplementary action are responsible for the clinical value of liver in the treatment of pernicious anemia.

Meanwhile, a report of comprehensive chemical studies describing results considerably different from those just discussed has appeared.⁵ The chemical behavior of the active material isolated by Dakin and West resembled that of a derivative of a polypeptide. It was precipitated by Reinecke acid and could be salted out by ammonium sulphate, magnesium sulphate or sodium chloride. The clinical activity was readily destroyed by exposure to cold half-normal sodium hydroxide, by boiling for one hour with half-normal sulphuric acid, or by treatment with the salts of certain heavy metals. Some insight regarding the possible chemical composition of the substance was gained by studying the products obtained by the hydrolysis of relatively pure preparations. One of these products was an aminohexose, similar to glucosamine but not definitely identified as such. The amino acids lysine, arginine, glycine, leucine, hydroxyproline and aspartic acid were definitely identified in hydrolysates of the purest preparations. Pyrimidine and purine bases were absent and some active preparations contained practically no inorganic material. The possible molecular weight of the substance, as determined by a titration method, was found to be some multiple of 1,430, a value not unlike the values expected for polypeptides. As indicated by the rate of liberation of free amino groups, active preparations were digested by pepsin although the process was slow and incomplete, ereptic digestion was likewise slow but was fairly complete. On the whole, these data strongly suggest that the active antianemic substance may be an aminohexose polypeptide, however, as the authors point out, no claim to strict chemical individuality can be advanced as yet, since the separation of this type of compound must of necessity be extremely difficult. However, the probable high degree of purity of the preparations employed by these investigators is indicated clinically by the fact that the parenteral administration of only 30 mg gave perceptible reticulocyte responses in suitable patients with pernicious anemia, whereas 80 mg produced maximal responses. The possible relationship of the active hematopoietic substance isolated by these investigators

1 Cohn E J, McMeekin T L and Minot G R. The Nature of the Material in Liver Effective in Pernicious Anemia. IV. *J Biol Chem* 87: xlix (June) 1930.

2 West Randolph and Howe Marion A. Crystalline Derivative of an Acid Present in Liver Active in Pernicious Anemia. *J Biol Chem* 88: 427 (Aug) 1930.

3 Suhbarow Y, Jacobson B M and Fiske C H. The Separation of the Substances in Liver Which Are Reticulocytogenic in the Guinea Pig and Which Are Therapeutically Effective in Experimental Canine Black Tongue. *New England J Med* 212: 663 (April 11) 1935.

4 *Science News*, Combination of Substances Needed for the Cure of Anemia. *Science* 81: 8 (May supp) 1935.

5 Dakin H D and West Randolph. Observations on the Chemical Nature of a Hematopoietic Substance Occurring in Liver. *J Biol Chem* 109: 489 (May) 1935.

to products of the partial digestion of gastric mucin, itself a glycoprotein, may be of special interest in view of the well known value of gastric tissue in the treatment of pernicious anemia. Further work along these lines may well yield valuable information.

Current Comment

SAFE PROCESSES FOR HOME CANNERS

An economic emergency, such as that of the last few years, is usually accompanied by increased efforts to conserve food. An important part of the present federal relief program is the urging of the unemployed to raise vegetables and to preserve them by canning. In view of the well known dangers from inadequately processed foods, a careful consideration of safe procedures for the home canning of foods is imperative. The incidence of poisoning from home canned foods, particularly botulism, is most frequent in the case of the "nonacid" foods, such as green beans, carrots, beets, spinach and asparagus, apparently the "acid foods" are more easily sterilized. An examination of much of the literature for the home canner reveals a great confusion in the recommendation for safe procedures. Often the instructions are based on insufficient or incompetent experimental work and as frequently, perhaps, they are biased for commercial reasons. The methods suggested for home canners may be classed into three groups: the boiling water, the oven, and the pressure cooker procedures. A recent critical comparison of these three methods¹ has shown that the pressure cooker process is the only one that is safe beyond question. Standard quart glass jars of cream corn were subjected to the three commonly used methods of food processing, namely, heating in the pressure cooker at 15 pounds, in a hot air oven at 250 F, and in boiling water. The temperature of the contents at the center of the jar was followed by a thermocouple device. The temperature of the sample treated by the pressure method rose rapidly, reaching 212 F in fifty minutes and the maximum temperature of 250 in seventy minutes. The temperature of the boiling water-treated sample rose more slowly and finally reached the temperature of 210 after ninety minutes. The temperature of the oven-treated jar increased even more slowly and at the end of ninety minutes had reached only 188. The importance of careful experiments of this kind cannot be overemphasized. The fact is beautifully demonstrated that at least one and one-half hours of the time employed for processing foods by the boiling water and oven methods is required to bring the temperature of the sample to the temperature of boiling water. Thus, only one to one and one-half hours remains for the destruction of toxic bacteria and their spores. This time is not sufficient, as it has been demonstrated that the spores of some strains of *Clostridium botulinum* are not destroyed in three hours at a temperature of 212. Other experiments similar to that just described have been conducted on other nonacid food with the same

result. These data without question warrant the conclusion that the pressure cooker method of canning nonacid foods is the only safe procedure. This conclusion is in accord with a resolution recently passed by the American Public Health Association that "those who distribute literature on home canning advise the use of the pressure cooker for nonacid foods and that in the preparation of all such literature full consideration be given to bacteriological and chemical knowledge on the art of canning, so that the home maker may be given safe counsel on methods of home canning and may recognize the hazards of home-canned foods inadequately processed in the oven and in boiling water."

Association News

THE KANSAS CITY SESSION

Eighty-Seventh Annual Session to Be Held in May

The American Medical Association will hold its Eighty-Seventh Annual Session in Kansas City, Mo., May 11 to 15, 1936.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Changes in Health Officers—Dr. Francis P. Wisner, Marysville, has been appointed health officer of Sutter County to succeed Dr. Trusten P. Peery, and Dr. William H. Eaton for many years health officer of Santa Barbara, has been succeeded by Dr. Clarence T. Roome.

Society News—Speakers before the Alameda County Medical Association, June 17, were Drs. Vernon G. Alderson, on "Allergic Asthma," Fletcher B. Taylor, "Gallbladder Therapy," Hobart Rogers, "Significance of Melena," and James Frug, "Cushing's Basophilic Syndromes and Similar Endocrinopathies." All are from Oakland.

Mussel Quarantine Again Established—The state department of public health has established a quarantine on all mussels, covering the coast area from the southern boundary of Monterey County north to the California-Oregon boundary with the exception of San Francisco Bay. Under this ban, the sale or offering for sale of mussels gathered from the specified areas for the period May 15 to September 30 is prohibited.

Dr. Larkey Appointed Director of Welch Medical Library—Dr. Sanford Vincent Larkey, since 1930 librarian and assistant professor of medical history and bibliography, University of California School of Medicine, San Francisco, has been appointed librarian of the Welch Medical Library of Johns Hopkins University, succeeding Dr. Fielding H. Garrison, who died in April. Dr. Larkey is 37 years of age and is a graduate of the University of California School of Medicine. He will take over his new duties in the fall.

GEORGIA

State Society to Award Trophy—The Medical Association of Georgia will award each year a cup to the district of the Georgia Congress of Parents and Teachers adjudged to be the leader in preventive health work in its congressional district for the year. The first presentation of the trophy will take place at the annual meeting of the state medical association in April 1936. The winning district will have its name permanently engraved on the cup and will keep it for a year.

Dr. Kelly Appointed Dean—Dr. George Lombard Kelly, vice dean and professor of anatomy, University of Georgia School of Medicine, Augusta, has been elected dean by the regents of the University System of Georgia, effective September 1. Dr. Kelly has been vice dean since the early part of

¹ Tanner, F. W. Proper Processes for Home Canners. *J. Am. Dietet. A.* 11:18 (May) 1935.

1934 He is 45 years of age, and a graduate of the University of Georgia School of Medicine in 1924 At the annual meeting of the Medical Association of Georgia in 1933 he received the Crawford W Long Medal for original research.

IDAHO

Graduate Instruction at State Meeting—The program of the annual meeting of the Idaho State Medical Association in Boise, September 9-13 has been arranged as a graduate course. Members of the staff of Northwestern University Medical School, Chicago, will present the entire program.

Dr. Lathan A. Crandall Jr. Physiology of the Heart, Response of the Body to Wounds and Infection Recent Advances in Physiology of the Digestive Tract Physiology of the Liver Glands of Internal Secretion

Dr. William H. Holmes Common Forms of Cardiac Disease Pneumonia Medical Management of Peptic Ulcer Recognition and Treatment of the Anemias Practical Management of the Diabetic Patient

Dr. John A. Wolfer Preoperative Preparation of the Patient Wounds Including Burns Surgical Management of Peptic Ulcer Cholecystitis, Significance of Postoperative Symptoms

Dr. William R. Cubbins Fractures of the Femur Compound Fractures Including Osteomyelitis Knee Joint Fractures of the Leg Including the Ankle and Foot Skull Fractures

Dr. George H. Gardner The Gynecologic Patient Pelvic Infections The Unhealthy Cervix, Uterine Bleeding Newer Methods of Diagnosis and Treatment

In addition to this program, lectures will be presented at a meeting for the public.

Dr. Crandall, Behind the Scenes of Medical Science

Dr. Cubbins The Layman's Duty to the Injured

Dr. Holmes Diet and Disease

Dr. Wolfer The Nature of Cancer

Dr. Gardner will deliver a special lecture for women on the subject of menstruation.

ILLINOIS

Personal—Dr. Felix W. Sokolowski, Chicago, has been made managing officer of the Alton State Hospital, succeeding Dr. Dudley T. Dawson, who took a similar position at the Peoria State Hospital.

Units of Diphtheria Antitoxin—The Illinois State Department of Health will in the future issue diphtheria antitoxin for treatment purposes in vials of 20,000 units. When a larger dose is desired, a multiple number of 20,000 unit vials should be obtained. The department officials believe that deaths have occurred in the past because the dosage has been too small. For prophylactic purposes the department will continue to issue 1,000 unit vials of antitoxin.

Chicago

Dr. Hayden Appointed Head of Department—Dr. Daniel B. Hayden, associate clinical professor of laryngology and otology, Rush Medical College, University of Chicago, has been appointed head of the department of laryngology and otology, effective July 1. Dr. Hayden graduated from Georgetown University School of Medicine in 1904, and has been associated with the Rush Medical College for many years.

KANSAS

New Headquarters for County Society—The Sedgwick County Medical Society has purchased a building at 135 North Main Street, Wichita, which it will remodel for headquarters. In addition to the offices of Mr. M. F. Cahal, executive secretary of the society, and his assistants, the building will contain a library and an auditorium for meetings of the society. The second floor will be used for the offices and the first floor will be leased.

Society News—At a recent meeting of the Brown County Medical Society and the woman's auxiliary, Dr. Laurence S. Nelson, Salina, spoke on 'Management of Cases of Fractured Skull,' and Dr. Porter D. Brown, Salina, 'Anesthetics in Labor.'—Speakers before the Cowley County Medical Society in Winfield recently included Dr. Charles C. Hawke, Winfield, on 'Varicose Ulcers and Their Treatment', Dr. Howard L. Snyder, Winfield, president-elect of the Kansas Medical Society, was the guest of honor at the meeting.—The Crawford County Medical Society was addressed May 23, by Dr. Ralph Bowen, Oklahoma City, on 'Practical Management of the Asthmatic Child'.—At a meeting of the Harvey County Medical Society in Newton, June 6, Drs. Andrew W. McAlester, Kansas City, and Abraham C. Eitzen, Hillsboro, discussed infections of the eye and epidemic encephalitis, respectively.—The Labette County Medical Society was addressed in Parsons, May 22 by Drs. Howard E. Marchbanks and Chester Herbert Smith, Pittsburg, on heart diseases and thyroid complications, respectively.—Dr. Vern L. Pauley, Wichita,

addressed the Pratt County Medical Society, May 24, on tuberculosis of the kidney and diseases of the ureter.—At a meeting of the Washington County Medical Society in Washington, June 11, Dr. James Harold Lynch, Fairbury, presented a discussion of diseases amenable to treatment by splenectomy.

MASSACHUSETTS

Memorial Service—A memorial service for the late Dr. George H. Bigelow, director of the Massachusetts General Hospital, Boston, was held in Memorial Church of Harvard University, Cambridge, May 12.

Stimulation of State Hospital Research—Dr. Winfred Overholser, commissioner of mental diseases of Massachusetts has appointed a departmental research committee to stimulate and coordinate research activities in the state hospitals, according to *Science*. Dr. Abraham M. Verson is chairman and other members are Drs. Douglas A. Thom, Roy G. Hoskins, Neil A. Dryton and Harry C. Solomon. The Rockefeller Foundation is supporting research programs in the Worcester and Boston state hospitals as well as a statistical project of the department at Boston, it was announced.

Personal—Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard Medical School, Boston, was elected an honorary member of the National Academy of Medicine of Spain at the recent celebration of the two hundredth anniversary of its founding, *Science* reports.—A portrait of the late Dr. George F. Curley was recently presented to the Milford Hospital by his daughter, Mrs. John W. Gahan, Milford. Dr. Curley was surgeon-in-chief to the hospital until his death in April.—Dr. Douglas A. Thom, Milton, received the honorary degree of master of science in medicine from the University of Vermont at its commencement exercises in Burlington, June 24.—Dr. Paul Dudley White, Boston, delivered the St. Cyres lecture of the National Hospital for Diseases of the Heart, London, July 10 at the house of the Royal Society of Medicine, on 'Congestion Without Myocardial Failure'.—Dr. John H. Nichols has resigned as superintendent of the state infirmary at Tewksbury.—Dr. Richard M. Ash has been appointed health commissioner of Quincy.

MICHIGAN

New Health Unit—The establishment of a new health unit in Calhoun County with Dr. Matthew R. Kinde, Hastings, as director, has been announced. The unit, which is a project of the W. K. Kellogg Foundation is financed in part by appropriations of \$6,000 and \$3,000, respectively, by the county and state. It will open officially September 1. Dr. Kinde has resigned as health director of Barry County to take over the new office. He has been succeeded by Dr. Robert B. Harkness, acting health officer of Eaton County for the past three months.

Society News—Dr. Edgar E. Martmer was chosen president of the Detroit Pediatric Society at the annual meeting, June 19, and Dr. William J. Scott, secretary.—The Lenawee County Medical Society was addressed by Dr. Alpha Rees Klopfenstein, Toledo, June 19, on 'Vesical Neck Obstruction'.—Dr. Vernon L. Hart, Minneapolis, addressed the Houghton County Medical Society, Calumet, July 2, on 'Mechanical and Physiologic Rest in the Treatment of Diseases and Injuries of the Extremities'.—Members of the Jackson County Medical Society and their wives gathered at Clark Lake, June 27, for their annual spring outing.—Dr. Louis J. Hirschman, Detroit, addressed the Muskegon County Medical Society, June 29, on 'Office Management of Common Rectal Diseases'.

MINNESOTA

Personal—Dr. Edward J. Engberg, St. Paul, for many years secretary of the board of medical examiners, was appointed a member of the state board of health by the governor June 24, succeeding the late Dr. Helen H. Hielscher, Mankato. Dr. Max W. Alberts, St. Paul, has succeeded Dr. Engberg on the medical board.

Hospital Association Meeting—The twelfth annual convention of the Minnesota Hospital Association was held at Duluth June 20 and at Lutsen, June 21. Dr. Alloys F. Branton, Willmar, was chosen president-elect of the association and Mr. Victor Anderson, manager, Abbott Hospital, Minneapolis, was installed as president. A. M. Calvin is executive secretary. Speakers at this meeting included

Dr. Bert W. Caldwell, Chicago Hospital Legislation—Federal and State

Dr. Malcolm T. MacEachern, Chicago What Successful Hospitals Are Doing to Overcome Their Difficulties

Mr. Robert Jolly, Houston, Texas, president American Hospital Association What Is the Future of the Voluntary Hospital?

Dr. Lawrence R. Gowan, Duluth The Place of Mental Hygiene in the General Hospital Program

NEW YORK

Medal Awarded by University of Buffalo—The Lucien Howe Medal in Ophthalmology recently awarded to Drs Joseph H Globus and Sidney M Silverstone was conferred by the University of Buffalo and not by the Medical Society of the State of New York, as noted in THE JOURNAL, June 22, page 2274. The award was inadvertently confused with an award with the same name that has been made in previous years by the medical society. The late Dr Howe gave to the University of Buffalo some years ago a sum of money, interest from which was to be used for the manufacture of a specially designed medal to be given annually to the author of a work on an ophthalmologic subject. Dr Harold W Cooper, Buffalo, is chairman of the committee on award.

Society News—Speakers at the third quarterly meeting of the Ontario County Medical Society at Geneva, July 9, were the following members of the Geneva General Hospital staff: Drs Melvin Edgerton Deuel, on 'Indications for Version or Forceps in Occipitoposterior Presentations'; Thomas W Maloney, "Preparation of the Diabetic for Surgical Procedure"; Claude C Lytle, "Abdominal Emergencies"; Robert E Doran Jr, "Resumé of Osteoplastic Cases," and Homer J Knickerbocker, "Preoperative and Postoperative Care."—Dr Frank H Lahay, Boston, addressed the Medical Society of the County of Nassau, May 28, on "Newer Developments in Thyroid and Parathyroid States."—Dr Arthur W Wright, Albany, was elected president of the New York State Association of Public Health Laboratories at the recent annual meeting in Syracuse, Dr Orren D Chapman, Syracuse, vice president, and Miss Mary B Kirkbride, secretary.—Dr Elise S L'Esperance, New York, was elected president of the Women's Medical Society of New York State at the annual meeting in Albany in May. Vice presidents elected are Drs Madge C L McGinness, New York, Alice Stone Woolley, Poughkeepsie, and Edith Fowler Wheeler, Cortland, and the secretary, Dr Marguerite P McCarthy, Solvay.—The medical profession of Rochester gave a testimonial dinner to Dr Floyd Stone Winslow at the University Club, June 20, in honor of his selection as president-elect of the Medical Society of the State of New York. Dr Edward T Wentworth was toastmaster, and speakers included Frank Gannett, publisher of the Gannett newspapers, H Douglas Van Duser, president of the Rochester Bar Association, and Drs Benjamin J Slater, Rochester, and James F Rooney, Albany. About 200 persons were present.

New York City

Hospital Superintendent Appointed.—Dr William B Talbot, assistant director of Grasslands Hospital, Valhalla, since 1928, has been appointed superintendent of New York Post Graduate Medical School and Hospital, to succeed Dr Thomas Dwight Sloan. Dr Talbot was graduated from Tulane University of Louisiana School of Medicine in 1922.

Personal—The physicians and directors of Sydenham Hospital gave a dinner to Dr Max Rosenthal, president of the medical board of the hospital, in honor of his seventieth birthday, May 15, at the Hotel Pierre. Speakers were Mr Simon Bergman, president of the board of directors, Drs Julius Jarcho, Jacob Heiman, Moses H Edelman and Mr David Tishman.—Dr William Bradley Coley will lecture before the Royal College of Surgeons of England, London, October 10, on "Treatment of Inoperable Malignant Tumors with the Toxins of Erysipelas and Bacillus Prodigiosus, Based on a Study of End Results from 1893 to 1935." At that time Dr Coley will be made an honorary fellow of the college.—Dr James W Smith was one of twelve alumni of New York University who received the Alumni Meritorious Service Award at the annual commencement of the university June 12. Dr Smith was graduated from the school in 1917.—Dr Florence Rena Sabin received the honorary degree of doctor of science at the annual commencement of the University of Colorado.

Dr Gasser Appointed Director of Rockefeller Institute—Dr Herbert Spencer Gasser, professor of physiology, Cornell University Medical College, has been appointed director of the Rockefeller Institute for Medical Research to succeed Dr Simon Flexner, who will retire in the autumn. Dr Gasser, a native of Wisconsin, is 47 years old and a graduate of Johns Hopkins University School of Medicine. Previous to his medical training he had taken bachelor's and master's degrees at the University of Wisconsin and had taught physiology there for two years. After graduation from Johns Hopkins Dr Gasser was instructor in pharmacology at Wisconsin for a year and in 1916 went to Washington University School of Medicine, St Louis as instructor in physiology. He served successively as associate and associate professor of pharmacology and in 1921 was appointed professor of pharma-

cology, remaining in that position until 1931, when he went to Cornell as professor of physiology and director of the physiology laboratories. Dr Gasser's chief research interests have been concerned with the coagulation of blood, the problem of traumatic shock and the electrophysiology of nerve.

NORTH CAROLINA

Society News—Dr Lester A Crowell Jr, Lincolnton, addressed the Buncombe County Medical Society, Asheville, June 3, on 'Pneumothorax Treatment of Lobar Pneumonia'.—Drs Edwin P Alyea and Robert A Ross, Durham, were among speakers at a meeting of the Sixth District Medical Society at Burlington, June 20, on "Urologic Back Pain" and "Significance of Gynecologic Pain," respectively.

OHIO

Fund for Library—The late Mrs Jane Moore, Columbus, established by her will a fund for the purchase and maintenance of a medical library in Columbus, in memory of her son, the late Dr Edward Howard Moore. Drs Florus F Lawrence, Hervey W Whitaker and William C Davis, Columbus, are trustees under the will. Medical literature purchased by them will be placed in an alcove in the Columbus Public Library.

Personal—Dr Lyman W Childs announced his retirement as supervisor of health service in Cleveland schools at the end of the school year. He was appointed to the school staff in 1910.—Friends of Dr Milton L Johnston, Harrod, gave a testimonial dinner in honor of his fiftieth anniversary in the practice of medicine, June 12.—Dr Jones L Hurst, Dorset, has been appointed health commissioner of Ashtabula County to succeed the late Dr Walter S Weiss, Jefferson.—Dr Roy C Hunter, Wapakoneta, was recently appointed to the state medical board of Ohio to succeed Dr Fred Wuist, Dayton.—Dr Arthur C Bachmeyer, formerly dean of the University of Cincinnati College of Medicine and now director of clinics at the University of Chicago, received the honorary degree of doctor of science at the commencement of the University of Cincinnati recently.

Society News—Dr Harley O Bratton, Columbus, addressed the Fayette County Medical Society, Washington Courthouse, June 7, on treatment of hypertrophy of the prostate.—Dr Elmer R Arn, Dayton, gave an address on the surgery of malignant growths of the stomach and colon at a meeting of the Warren County Medical Society, Lebanon, June 4.—Dr Benedict Olch, Dayton, spoke on 'The Heart After Forty' before the Greene County Medical Society, Xenia, June 6.—Dr George W Crile, Cleveland, addressed the Marion Academy of Medicine, June 4, on tumors of the breast.—Dr Arnold F Sydow, Cleveland, discussed treatment of burns at a meeting of the Portage County Medical Society, Ravenna, June 6.—Drs Arthur C Ernestine and William J Gardner, Cleveland, discussed "Use of Drugs in Treatment of Heart Disease" and "Surgical Lesions of the Cerebral Blood Vessels," respectively, at a meeting of the Muskingum County Academy of Medicine in Zanesville, June 5.

PENNSYLVANIA

New Health Officers—Dr Eugene H Dickenshied, Allentown, has been appointed medical director of Lehigh County to succeed Dr Jacob Treichler Butz. Dr Victor J Baluta, Shamokin, has been appointed medical director of Northumberland County, succeeding Dr Oscar E Salter, Shamokin. Dr J Glenn Hemington, Uniontown, has been appointed health director of Fayette County.

District Meeting at Williamsport—The Seventh Council District of the Medical Society of the State of Pennsylvania held its annual meeting at Williamsport, July 12. Speakers were Drs Moses Behrend, Philadelphia, president of the state society on 'Differential Diagnosis of Upper Abdominal Lesions as a Factor in Reducing Morbidity and Mortality'; Ruth Hartley Weaver, Philadelphia, "Prenatal and Maternal Care"; Charles C Wolferth, Philadelphia, "Treatment of Heart Disease." Dr Walter F Donaldson, Pittsburgh, secretary of the state society, discussed state society affairs, and Dr William H Mayer, Pittsburgh, social trends and medical service.

Society News—Dr Herbert T Kelly, Philadelphia, addressed the Northampton County Medical Society, Easton, June 21, on 'New Principles and Methods in the Treatment of Diabetes Mellitus'.—Dr Robert H Jeffrey, addressed the Fayette County Medical Society, Uniontown, June 6, on infections of the skin, and Dr George H Robinson, on treatment of hemorrhoids, varicose veins and ulcers of the cervix. The society held its annual picnic jointly with the dentists of the

county at the Umontown Country Club, July 10—Dr Carl E Ervin, Danville, addressed the Cambria County Medical Society, July 11, on "Diagnosis and Management of Chronic Digestive Disturbances"—Dr Hyman A Slesinger, Windber, was host to the Pittsburgh Pediatric Society at a clinic at the Windber Hospital, May 24 Dr Ellwood W Stitzel, Altoona, delivered a paper on "Treatment of Pseudohypertrophic Muscular Dystrophy with Glycocoli"

Philadelphia

Dr Krusen to Head Physical Therapy Department—Dr Frank H Krusen, associate dean of Temple University School of Medicine, has resigned to go to Rochester, Minn., to take charge of a physical therapy department at the Mayo Clinic Dr Krusen has been director of a department of physical medicine at Temple University Hospital since 1931

Faculty Changes at the University—Dr Edward A Schumann, associate professor in obstetrics at the University of Pennsylvania School of Medicine, has been made professor of obstetrics to succeed the late Dr Edmund B Piper Dr James A Babbitt, who has been with the school for many years and was for several years acting head of the department of otolaryngology, has been made emeritus professor of clinical otolaryngology

Personal—Dr Clarence A Patten, associate professor of neurology, University of Pennsylvania Graduate School of Medicine, was recently appointed professor of neurology to succeed the late Dr Theodore H Weisenburg—The Philadelphia College of Pharmacy and Science at its annual commencement, June 5, conferred the honorary degree of doctor of pharmacy on Dr William A Pearson, dean of Hahnemann Medical College.—Dr Martha Tracy, dean of Woman's Medical College of Pennsylvania, has been granted a year's leave of absence from the college Dr Henry D Jump will be acting dean during her absence

Pittsburgh

Changes at the University of Pittsburgh—Dr Stanley S Smith, associate professor of ophthalmology, University of Pittsburgh School of Medicine, has been appointed professor to succeed Dr William W Blair Dr George J Wright has been made professor of neurology to succeed the late Dr Thomas M T McKennan There are sixty-five graduates from the school this year, the incoming freshman class has been reduced from sixty-seven to fifty-five

TENNESSEE

Health at Knoxville—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended July 6, indicate that the highest mortality rate (20) appears for Knoxville and that the rate for the group of cities as a whole was 10.2 The mortality rate for Knoxville for the corresponding week of 1934 was 17.3 and that for the group of cities, 10.8 The annual rate for the eighty-six cities for the twenty-seven weeks of 1935 was 12.1, as against 12 for the corresponding period of the previous year Caution should be used in the interpretation of weekly figures, as they fluctuate widely The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rates

Society News—Dr Joe T Smith Knoxville, was elected president of the Tennessee Pediatric Society and Dr William W Potter, Knoxville, president of the Tennessee Academy of Ophthalmology and Otolaryngology, at the recent annual meetings —Dr John A McCulloch, Maryville, addressed the Blount County Medical Society, June 27, on "Nonspecific Urethritis"—Memphis physicians presented the program of the Tri-County Medical Association (Carroll, Henry and Weakley counties) at McKenzie, May 14, as follows: Drs Robert Lyle Motley, "Treatment of Circulatory Emergencies," John L McGehee, "Appendicitis During Pregnancy," and Walter A Ruch, "Prenatal Care"—At a meeting of the Dyer, Lake and Crockett Counties Medical Society, Dyersburg, June 5, speakers were Drs Wilson L Williamson and William R. Blue, Memphis, on "Recent Advances in Gynecology and Obstetrics" and "Immunology," respectively—Physicians of Bradley, McMinn, Monroe and Roane counties held a joint meeting at Athens, May 21, with the following speakers, among others: Drs George W Burchfield, Maryville, "Diagnosis and Treatment of Sinus Infections," Robert B Wood, Knoxville, "Pneumothorax as Treatment in Pulmonary Tuberculosis," and William R. Arrants, Athens, "Obstetrics in General Practice."—Dr Jarrell Penn, Knoxville, addressed the Knox County Medical Society, June 4, on "Fractures of the Shaft

of the Femur"—Drs Wilder W Hubbard and Murray B Davis, Nashville, addressed the Lincoln County Medical Society, June 4, on pneumothorax in pulmonary diseases and abdominal pain, respectively

UTAH

Dr Beatty Resigns as Health Officer—Dr Theodore B Beatty, health commissioner of Utah since the state department of health was created in 1899, retired to private life, July 3, and was succeeded by Dr John L Jones, assistant commissioner and state epidemiologist since May 1934 Dr Beatty, who is 72 years old, is a native of Illinois and a graduate of Rush Medical College, Chicago In 1931 Dr Beatty was elected president of the State and Provincial Health Authorities of North America His successor is a native of Utah and graduated from Harvard University Medical School in 1925 Dr Jones received a degree in the Harvard School of Public Health in 1928 and from that year until his appointment in Utah in 1934 was director of the bureau of communicable diseases of the state board of health of Kentucky

VIRGINIA

Group Hospitalization Plan in Richmond—The Richmond Academy of Medicine at a meeting June 11 approved a group hospitalization plan for the city Six hospitals have already approved the plan, according to the *July Virginia Medical Monthly* Commercialism is entirely eliminated, it was said, and every effort will be made under the sponsorship of the academy to make the plan a true community service. For the time being hospitalization will be limited to groups of ten persons, who will constitute not less than 40 per cent of the employed force to which they belong There will be an enrolment fee of \$1 and a monthly fee of 85 cents payable monthly

GENERAL

Diagnostic Manual of Gallbladder Clinic—Physicians who registered at the exhibit of the Gallbladder Clinic of the New York Post-Graduate Medical School and Hospital in the Scientific Exhibit of the American Medical Association at Atlantic City are requested to write directly to the hospital, 303 East Twentieth Street, New York, in order to receive copies of the diagnostic manual The notebook kept at the exhibit containing addresses of interested physicians was lost on the last day of the meeting

Outbreaks of Typhoid—Two women carriers who helped prepare food for a picnic in Philadelphia, May 30, are believed to be responsible for an outbreak of typhoid among the 400 persons who attended Seventy-three cases with five deaths had occurred up to July 6, according to the *Philadelphia Inquirer* Systematic examination of the women who prepared or contributed food for the picnic revealed the carriers, who were not on the city's list of carriers and who had not suspected their condition, it was said—More than 2,500 persons were immunized against typhoid in Richmond County, North Carolina, during June after an outbreak in several towns, newspapers reported, June 22—Private wells in Minneapolis are being examined in an effort to trace the source of an outbreak of typhoid in the city Thirty-five cases with one death had been reported from May 25 to June 27, according to newspaper reports

British Physicians to Visit United States in August—A group of British physicians will arrive in New York on the *S S Georgic*, August 4, on their way to the annual meeting of the British Medical Association in Melbourne, Australia, in September The Medical Society of the State of New York will entertain the visitors on a trip to Grasslands Hospital, Valhalla, Sunday afternoon, August 4, and on the following morning to the Columbia and Cornell medical centers, the New York Academy of Medicine and the Rockefeller Institute for Medical Research There will be an alternative trip to Rockefeller Center and the National Broadcasting Company, the two groups assembling for luncheon at the Waldorf-Astoria The reception committee on behalf of the Medical Society of the State of New York includes Drs Frederic E. Sondern, New York, president of the society, and Arthur J. Bedell, Albany, immediate past president The reception committee for the American Medical Association consists of Dr Morris Fishbein, Chicago, Editor of *THE JOURNAL*, and Drs Austin A. Hayden, Chicago, and Arthur W. Booth, Elmira, N. Y., members of the Board of Trustees Some of the British guests will be accompanied by their wives, making about 100 persons in the group

Medical Bills in Congress—*Change in Status* S 883 has passed the House, directing the retirement of acting assistant surgeons of the United States Navy at the age of 70 years *Bills Introduced* S 3238, introduced by Senator Wheeler,

Montana, proposes to enact a 'Federal Building Workmen's Compensation Act'. The bill provides that every contract entered into with the United States or any executive department, independent establishment, agency or instrumentality thereof for the construction, alteration or repair of any public building or public works shall contain a provision requiring the contractor to provide adequate workmen's compensation insurance for employees on the work who may come within the purview of the workmen's compensation laws of the state in which the work is to be performed. In case of employees not coming within the purview of the workmen's compensation act of the state in which the work is performed, the contractor shall with respect to the injury or death of such employees provide liability insurance pursuant to the Longshoremen's and Harbor Workers' Compensation Act. H. R. 8805, introduced by Representative Sirovich, New York, proposes to enact an act "to prevent the manufacture, shipment, and sale of adulterated or misbranded food, drugs, nonalcoholic and nonintoxicating beverages, and cosmetics and to regulate traffic therein, to prevent the false or fraudulent advertisement of food, drugs, nonalcoholic and nonintoxicating beverages, and cosmetics." H. R. 8835, introduced by Representative McCormack, Massachusetts, proposes to provide for the deductibility, for the purposes of income tax, of charitable and other contributions by corporations.

Pan American Medical Congress—The general scientific assembly of the Pan American Medical Association was held on board the *Queen of Bermuda* en route to the West Indies and Brazil, July 6-11. Among speakers announced in the program were

- Dr. Lewellys F. Barker, Baltimore: Treatment by the General Practitioner of the More Common Diseases of the Nervous System.
- Dr. Morris Fishbein, Chicago: Our Changing Times. A Study of the Significant Advancement in the Nature of Medical Practice and of Current Tendencies in Social Medicine. Also Fads and Quackery in Healing. An Analysis of the Evolution of Charlatanism and an Exposé of Current Tendencies in Quackery.
- Dr. Russell M. Wilder, Rochester, Minn.: Clinical Significance of Recent Discoveries of the Metabolic Function of the Anterior Lobe of the Pituitary.
- Dr. Foster Kennedy, New York: Relationship of Neurology and Psychiatry to General Medicine.
- Dr. Varaxiad H. Kazanjian, Boston: Various Deformities of the Face with Methods of Treatment.
- Dr. Charles C. Dennis, Kansas City, Mo.: Heat in the Treatment of Syphilis.
- Dr. William D. Haggard, Nashville, Tenn.: What Can We Do to Lower the Mortality from Appendicitis?
- Dr. Fred H. Albee, New York: Bone Graft in Repair and Cure of Disease.
- Dr. Joseph Jordan, Ellers, New York: Diagnosis and Treatment of Cancerous Skin Lesions.

Eighteen sections were to hold meetings on shipboard. Other meetings were to be held in Rio Piedras, Puerto Rico, and in Rio de Janeiro and São Paulo, Brazil, with addresses by physicians of the cities visited. Dr. Chevalier Jackson, Philadelphia, is president of the association and Dr. Joseph Jordan, Ellers, New York, director general.

Fraudulent Solicitors—It is reported that a man calling himself "Dr. Al Thompson" and "Dr. A. G. Thomas" has been writing checks on physicians in North Carolina and Virginia. He arranges a visit ostensibly to sell instruments, and on his departure, check books, prescription forms, hospital reports and personal letters are missing. This man is about 40 years of age, 5 feet 8 or 9 inches tall, weighing about 160 pounds. He is red faced and wears heavy glasses and a brown gray suit and hat. A physician from Langhorne, Pa., reports a man calling himself D. A. Thompson and claiming to represent the "Associated Importing Factory 37 West Twenty-Sixth Street, New York," selling desk blotters and felt chair covers. The physician paid him \$6 but the articles were never received. Investigation revealed that there is no such address. From Jasper, Ala., comes the report of a man giving his name as Karter and claiming to be the head of Karter Surgical Service Company of Birmingham. Instruments valued at \$35 were given to the man to be repaired and the work paid for. When the instruments were not returned a visit was made to the address in Birmingham which was found to be a vacant lot. No one in the neighborhood had ever heard of "Karter." This man is described as a dark skinned, smooth shaven person about 5 feet 6 inches tall. He is said to weigh about 130 pounds and to have brown eyes. He claims to have worked for Pfau and Kny-Shearer in New York, is about 30 years of age, knows instruments and tells a plausible story. The St. Louis Medical Society reports that a man who used the name Garrison and introduced himself as a brother of the late Dr. Fielding H. Garrison of the Welch Medical Library, Baltimore, called on the society's librarian. He told of an automobile accident and a fine and asked for a small loan to enable him to get home.

Dr. Frederick Russell Resigns as Director of International Health Division—The resignation of Dr. Frederick F. Russell as director of the International Health Division of the Rockefeller Foundation and the appointment of Dr. Wilbur A. Sawyer, associate director, to succeed him has been announced. Dr. Russell will retire September 1, having reached the age limit. He graduated from Columbia College of Physicians and Surgeons in 1893, and began his career as a member of the Medical Corps, U. S. Army, in 1898, advancing through the various grades to that of colonel in 1917. He resigned in 1920. He was curator of the Army Medical Museum, Washington, D. C., from 1907 to 1913, and also instructor in bacteriology and clinical microscopy at the Army Medical School, where he performed distinguished service in developing and producing the typhoid vaccine which the army has used with great effectiveness since that time. Colonel Russell also devised a culture medium which greatly simplified the identification of the typhoid bacillus. He was professor of pathology and bacteriology at George Washington University School of Medicine from 1909 to 1913 and for the following year lecturer in tropical medicine at the New York Post-Graduate Medical School and Hospital. From 1915 to 1917 Dr. Russell was chief of the board of health laboratory in Ancon, C. Z., and during the World War was in charge of the division of infectious diseases and of the laboratory service of the surgeon general's office, U. S. Army. From 1920 to 1923 he was director of the public health laboratory service of the International Health Board, and since 1923 has been general director of the board. In 1919 he received the Distinguished Service Medal. Recently he was named lecturer on preventive medicine and hygiene and epidemiology at Harvard Medical School, Boston. Dr. Sawyer, a graduate of Harvard Medical School, 1906, has been associated with the International Health Division since 1919, having been associate director since 1927. From 1908 to 1911 he was medical examiner at the University of California, director of the Hygienic Laboratory, 1910-1915, and secretary and executive officer of the California State Department of Health 1915-1918, lecturer in hygiene and preventive medicine, 1914-1916, and clinical professor in the same subject at the University of California Medical School, 1916-1919. He served during the World War and afterward in the surgeon general's office, Washington, D. C., in the control of venereal and communicable diseases. From 1919 to 1922 Dr. Sawyer directed a campaign against hookworm in Australia and was adviser in public health to the Australian ministry of health from 1922 to 1924, assistant regional director for the East, 1923-1924, and director of the public health laboratory service of the international health board, 1924-1927. Dr. Sawyer was also a member of the West African Yellow Fever Commission of the Rockefeller Foundation in 1926 and since 1928 has been in charge of the foundation's Yellow Fever Laboratory in New York.

Government Services

Civil Service Commissions

The U. S. Civil Service Commission announces open competitive examinations for the positions of medical, associate and assistant medical officers, the applications to be on file with the commission not later than July 29. To be eligible, applicants must qualify in at least one of the following optional branches and must state in their applications the branch or branches desired: cardiology, cancer diagnosis and treatment, eye, ear, nose and throat, urology, internal medicine and diagnosis, neuropsychiatry, pathology and bacteriology, roentgenology, surgery (general or orthopedic), tuberculosis, venereal disease (clinical or public health), and general practice (associate grade only). For medical officer, the salary will be \$3,800 a year; for associate medical officer, \$3,200 a year, and assistant medical officer \$2,600 a year. These salaries are subject to a deduction of 3.5 per cent toward a retirement annuity. Further deductions are also provided for depending on the service. Competitors will not be required to report for examination at any place but will be rated on their education and experience on a scale of 100, such rating being based on the sworn statements in their applications and on corroborative evidence. In addition to having certain qualifications persons selected for appointment must pass a physical examination given by a federal medical officer. Application forms may be obtained from any first class postoffice, from the U. S. Civil Service Commission, Washington, D. C., or from the U. S. Civil Service district office in any of the following cities: Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, San Juan, P. R., and Balboa Heights, C. Z.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 22, 1935

Report of Committee on the Reform of the Curriculum

In the discussions that have gone on for some time in this country among teachers, students and physicians there has been general agreement that the curriculum is overloaded. Students have to spend too much time on subjects of no value to them in their subsequent careers as physicians. The General Medical Council, the body appointed by the government to control medical education and medical examinations, has now expressed its views. A year ago it appointed a committee to consider the information and proposals received by it for the revision of the curriculum. The report of the committee has now been made and the council has ordered that it should be circulated to the licensing bodies and deans of the medical schools. The systems of medical education vary widely in different countries, but there is no evidence that a higher standard of qualification is obtained anywhere else or indeed that other countries are satisfied with their own methods. The committee holds that medical education will be best advanced by developing and improving the existing system. There does not appear to be an appreciable body of criticism of the main principles of the present curriculum, as, for example, its length, the chief subjects required, or the order in which they should be studied. An increase of the present length (five years) would add to the financial burden of medical qualification. The standard of qualification can be improved without lengthening the period by raising the requirements at entry and expending the time available to fuller advantage.

Before admission to the medical curriculum proper an examination has to be passed in general education and in the preliminary scientific subjects. The curriculum proper begins with the study of anatomy and physiology. Registration as a medical student takes place at this point, but not before the age of 17. The committee agrees with the opinion that the medical curriculum proper should not be begun before the age of 18, partly to ensure sufficient general education and partly to await due maturity of mind. The standard of general education should be at least equal to that for the other learned professions and not below that of matriculation for the universities. It should not cease at too early an age and its present level should be raised.

THE PRELIMINARY SCIENTIFIC SUBJECTS

Much of inorganic chemistry has no special educational merit and is not of particular value to the medical student. The omission of such matter would enable organic chemistry also to be taken in the preliminary course and the student at about the age of 18 could pass an examination in chemistry and physics that would satisfy the council and enable him to enter on the medical curriculum proper without further examination in these subjects. Biology is a valuable introduction to the study of anatomy and physiology. It should be permissible for the course to begin, as at present, before registration, but the examination in it should be taken some time after registration and its study should be continued into the subsequent period.

THE MEDICAL CURRICULUM PROPER

The subjects fall into two main groups: the professional scientific, occupying the first two years and the clinical, occupying the final three years. The student should not pass to the second group until he has proved his knowledge of the first by passing an examination. Instruction in applied anatomy and physiology should be continued during the period of clinical studies. There has been considerable criticism of the teaching

of anatomy, that it is taught in too great detail and sometimes by teachers not in touch with its clinical applications, and that it is taught on the assumption that the student is to become a professional anatomist. The committee holds that while these criticisms have some foundation they are less true now than they were some years ago. The committee recommends that the vocational aspects of anatomy be made more prominent by beginning the introduction to the clinical subjects in the second year. Similar criticisms have been made as to the teaching of physiology, but they are less emphatic. It is said that in some schools too much attention is paid to physiology of little vocational value. The committee is not satisfied that this criticism is in general justified. It recommends that physiology and clinical medicine be brought into closer union, especially by continuing physiology into the clinical years and by associating clinical teachers with its teaching. Instruction in the principles of genetics should be given at this stage. Introductory clinical subjects should be taught throughout the second year. These include methods of clinical examination—use of the stethoscope and ophthalmoscope and examination of body fluids—introduction to general pathology and bacteriology, and introduction to pharmacology.

THE PERIOD OF CLINICAL STUDIES

The period of clinical studies occupies the third, fourth and fifth years. Except for reasonable holidays, clinical instruction should be continuous throughout this period and applied anatomy and physiology should be continued by teachers of anatomy and physiology and the clinical teachers jointly. There should be a minimum period of one month's residence in a hospital for medicine and the same for surgery, and two months for obstetrics. Practical instruction should be given in minor operative surgery on the living. A medical clinical clerkship in the hospital wards should be held for six months and a surgical dressership for the same period. Instruction should be given in dietetics, therapeutics and prescribing, physical therapy, principles of nursing, child welfare, psychology and radiology. Throughout the whole period of study attention should be directed to the importance of the measures by which health may be maintained and to the prevention of disease. During the later stages of the period, instruction should be given in the obligations under the national health insurance act and other acts of parliament and in medical ethics.

The Future of the Hospital System

The British Hospitals Association had decided to institute a committee of inquiry into the whole future of the hospital system. The association represents all the voluntary hospitals (hospitals supported by the voluntary subscriptions of the charitable for the benefit of the poor). The altered economic conditions and particularly the immense sum now spent by the state and the local authorities on social services have created new and serious problems for the voluntary hospitals. The rivalry of the rapidly increasing municipal hospitals, supported by public funds, and the need of middle class people for hospital treatment are the main problems. It may be said that the main object of the municipal hospitals is that no citizen shall suffer for lack of hospital treatment. Every one whose illness requires it is entitled to admission, but a graduated charge is made in the case of those who can pay. The London County Council, whose huge municipal hospital system has been previously described in *THE JOURNAL*, has appointed almoners for its hospitals, whose duty will be to interview entrants and assess the contributions they are to make toward the cost of their maintenance and treatment, as has been done in recent years in the voluntary hospitals. With regard to the competition of municipal with voluntary hospitals, an important point is that the former, with public funds behind them, can often acquire better equipment than the latter.

For persons of the middle class, neither of these hospital systems has been designed or are suitable, except that to a limited extent pay wards have been established for the middle class in some voluntary hospitals. The proposal is finding favor that an insurance system be established for them, so that by paying of a graduated amount yearly their families may have the right of treatment in hospitals under the supervision of their own physicians. Their position has been rendered more difficult by the industrial depression and high taxation, while at the same time medical treatment has become more elaborate and therefore more costly. It has been said that only the poor and the rich can get the best medical treatment—the former because it is provided for them in the voluntary hospitals, the latter because they can pay for it.

PARIS

(From Our Regular Correspondent)

June 7, 1935

Effect of the Modified Armbruster Law on Foreign Physicians

Reference has been made in recent letters to student riots and protests made by many medical organizations against the ever increasing number of foreign physicians since the World War. The first attempt to check the influx from other European countries was the passage of the Armbruster law in 1933, which made it obligatory following enactment of the law for every one to be naturalized who desired to secure a state license to practice medicine in France or its colonies. The students who had already matriculated, prior to the passage of the law, were exempted from this requirement. Prior to the Armbruster law, a large number of students from Rumania had been allowed to take the examinations for state license without being obliged to have a French bachelor of arts degree or to pass the examinations of the preliminary medical year (physics, biology and chemistry). The latter exceptions to the standard requirements were the result of a treaty between the two countries dating back to 1860.

Since the passage of the Armbruster law, a larger number of foreigners than ever before applied for state licenses, because those already matriculated in the medical schools were exempt from the obligation of becoming naturalized.

One of the reasons for the influx of foreign medical and dental students during recent years is that the number of such students has been greatly limited not only in other European countries but also in the United States. Other students have been obliged to leave their native countries because of religious or political reasons. Although France has always been very hospitable in its attitude toward foreign students, physicians and dentists, the economic crisis through which the country is passing has caused these professions to feel keenly the competition of such a large number of foreigners.

The original Armbruster law of 1933 thus left too many loopholes, and it became imperative to check the influx of foreign physicians and dentists as well as that of students in these professions.

During the 1934-1935 session of the Paris Medical School, out of a total of 4852 students there were 1530 foreigners—nearly one third. Of these 1,530 foreigners, 689 matriculated as candidates for a state license to practice in France. Of the 1,530, 841 desired only the university diploma which requires the same medical school examinations but does not demand the French bachelor of arts degree before admission to the medical school.

During 1933-1934, 585 state licenses were given by the Paris Medical School to French graduates as compared to 125 state and 112 university diplomas to foreigners. During 1934 and the first six months of 1935, 669 state licenses were given to French and 136 to foreign students. One hundred and twenty-

four university diplomas were granted. The latter constitute simply an honorary degree, often employed by foreign students in securing admission to schools in their own countries.

From 1925 to 1933, 2,376 diplomas were registered in the department of the Seine (in which Paris is situated), central police office. Of these 2,376 licenses to practice, 1,974 were issued to French citizens and 402 to foreigners.

The essential features of the new law as it affects foreigners and as just passed by the legislature are as follows:

In order to practice medicine or dentistry in France or its colonies, a state diploma and naturalization are now obligatory. The only exception to the latter is when those who desire to practice in France are citizens of countries that permit French physicians or dentists to practice without being naturalized. Even under these circumstances a parity must be established between the number of French physicians or dentists in a given country and the number of citizens of such a country who practice medicine or dentistry in France.

Any physician or dentist who has graduated from a foreign school and who wishes to obtain a French state license will be required to pass not only all the examinations of the French bachelor of arts degree but also those of the preliminary medical year (physics, biology, chemistry). Graduates of foreign schools who have complied with these requirements may enter the fourth year of the medical school but will be obliged to pass the examinations of the first three years. The medical school course has been recently lengthened from five to six years.

Foreign students will not be allowed to matriculate in any university unless they possess a French bachelor of arts degree and have passed the examinations of the preliminary medical year in France. No foreign or naturalized students, candidates for a state license, will receive any credit for work done in the medical or dental schools of his or her own country. No foreign student who has failed in examinations or has been refused admission in the medical or dental schools of his or her own country will be allowed to matriculate in a French university.

A special commission must verify every medical or dental diploma within six months after passage of the law. Every foreign physician or dentist who has been naturalized and has been granted a state license to practice shall be compelled to serve the same length of time (usually two years) in the army, navy or air corps as a French physician or dentist. If this requirement has been complied with, permission to begin practice immediately is granted.

If the physician or dentist, possessor of a state license, is exempted by the military authorities from active service, he or she can begin to practice only after an interval corresponding to the duration (two years) of the compulsory military service. This interval becomes double in length if on account of age the naturalized physician or dentist has been absolved on account of having passed the age limit of military service.

No naturalized physician or dentist, even though he has a state license, will be permitted to serve as an expert witness or as a public official until five years has elapsed from the date of graduation.

These requirements of military service do not apply to foreign students now engaged in medical or dental studies until after Dec. 31, 1940 or to foreign physicians or dentists who were practicing in France prior to passage of the law.

In the bill as passed by the chamber of deputies (corresponding to House of Representatives), all physicians and dentists who were not French citizens were compelled to apply for naturalization papers within three months after passage of the law. This paragraph caused much anxiety among American and English physicians and dentists in France, the majority of whom practice in Paris.

A delegation headed by Dr Edmund L. Gros, chief of the medical staff of the American Hospital of Paris, and Dr Edward Orton, Dr Francis J. Wilson and Dr William Davenport Jr, representing the dentists, called on the American ambassador, Jesse I. Straus, and explained to him the serious situation in which they would be placed if this law should be passed as it stands. Some of them have been in France for twenty or thirty years. Many have been volunteers in the French army and helped to organize during the war the American Ambulance Hospital, the American Field Service and other relief organizations.

The American Hospital of Paris, deprived of the American members of its staff would have lost much of its American atmosphere and methods.

As the result of protests by the American and British ambassadors, the senate modified the chamber of deputies bill so as to exclude from compulsory naturalization and subsequent military service all foreign physicians and dentists who had been granted state licenses prior to the passage of the new law. The chamber of deputies at the request of the minister of foreign affairs, Mr Laval, accepted the change made by the senate.

The new law goes into effect immediately and it is hoped that in the near future it will greatly decrease the number of foreign physicians and dentists practicing in France.

BERLIN

(From Our Regular Correspondent)

May 13, 1935

Therapeutic Management of the War Injured

The care of the war injured is a task of the federal government which is delegated to a special department of the federal ministry of labor. This department provides for the needs of the war injured now living and also for the necessities of the dependents of the two million who lost their lives in the World War. A pension is not granted unless the reduction of the earning capacity caused by the war injury amounts to more than 25 per cent. As the number of the war injured who are drawing a pension is about 800,000 (THE JOURNAL, Dec 1, 1934, p 1721) it may be estimated that the total number of war injured ranges around 1,500,000.

Under the federal law pertaining to the aid to be given the war injured, only such persons can claim therapeutic care as can furnish evidence of having developed a *versorgungsleiden* by which is meant all disturbances of health resulting from an injury suffered in the war service. The duty of deciding whether the disturbance of health is due to a service injury devolves on the pension board. In practice, certain distinctions with reference to the results of service injuries have come to be accepted. For example, a disturbance of health may have originated as a result of a service injury or it may merely have become exacerbated. Examples of the former are wounds and infectious diseases. In addition there are disturbances of health in which there is no causal but only a temporal connection with the war service. In such cases aid is likewise granted, although there is no legal claim for aid. Furthermore, a distinction is made between direct and indirect results of war injuries. A direct result, for example, would be a stiff knee-joint following a gunshot injury. An indirect result would be a flatfoot developing following the loss of the other leg.

Wherein the therapeutic care consists is exactly specified in the law. It comprises medical treatment supplying with medicines and other remedies that may be needed to insure the success of the therapeutic aid or to alleviate the effects of the service injury. In addition, a course of treatment, including maintenance in a sanatorium may be granted, or, if other forms of treatment do not yield adequate results, treatment in a spa may be approved. Blinded persons are given a dog specially

trained to guide the blind. In some instances the *krankenassen* with their comprehensive organization are called on to aid in the application of therapeutic care, but the reich has retained in its own hands a portion of the therapeutic care, since some of the forms of aid it is necessary to grant the war injured go beyond the customary performances of the *krankenassen*. Most of the war injured are insured in the *krankenassen* but even though that is not the case the reich may make use of the *krankenassen* in rendering aid to the war injured. The *krankenassen* do not, however, aid in giving courses of treatment in spas and sanatoriums. These forms of treatment are used chiefly in service injury disorders in which one anticipates especially favorable effects from the specific virtues of the waters of certain health resorts, more particularly, stubborn neuralgias associated with loss of limbs, chronic inflammations of joints, rheumatic disorders, diseases of metabolism, certain forms and grades of tuberculosis of all organs, and disturbances of circulation. For the application of such forms of treatment the reich provides a number of special institutions, which are directed by medical officers. As a rule, the length of spa treatment is limited to four weeks, and sanatorium treatment for lung patients to from three to six months, but in exceptional cases the time may be extended. In addition for the clinical observation and treatment of severely tuberculous, infirm and chronically ill war-injured there are four such federal institutions for patients whose condition is not amenable to domiciliary treatment. According to statements made in Munich by one of these medical officers, in 1932 6,161 patients were allowed treatment in spas or health resorts and 1,781 in sanatoriums.

Orthopedic aid is also administered without the mediation of the *krankenassen*, by means of special orthopedic welfare centers. In 1921 orthopedic aid was granted to 23,892 persons with one amputated arm, to 191 persons with both arms amputated, to 53,869 with one leg amputated, to 1,084 with both legs amputated, to 3,803 persons who wear supporting apparatus, to 91,614 persons required to wear orthopedic shoes, and to 1,635 persons in need of wheel chairs or other form of vehicular aid. The range of usefulness of the orthopedic centers has remained unchanged. There are today thirty-two such centers, which, as of Oct 1, 1933 had given aid to 236,642 war injured. No more recent statistics have been issued. The number of prostheses, their purchase, repair and length of wear, and their price range are governed by special provisions. In 1932 the following prostheses were furnished: 1,600 new artificial arms, 9,000 artificial legs, 60,000 pairs of orthopedic shoes, 600 wheel chairs and other vehicular aid, 2,650 rain coats, and 183,000 small orthopedic aids. In addition, 146,000 pieces of apparatus were repaired. The total sum expended was 9,000,000 marks (\$3,600,000).

Abortion and Race Hygiene

The attitude of the German medical profession toward abortion is now unequivocally established on the basis of principles that have been set up by the government (THE JOURNAL, January 26, p 331). While the discussions on the fundamental question may be regarded as closed, some important matters of detail have sprung up. It is surprising to learn from an article that appeared in the *Deutsches Aerzteblatt* the official organ of the medical federations, that a half million abortions still occur annually in Germany. From the effects of abortion, at least 80,000 women have died either at once or within five years from hemorrhages, septic disorders, or the like, which amounts to 16,000 a year. In addition 300,000 women are said to have become ill because of the intervention, half to two thirds of whom fail to recover their health. Most of these abortions are carried out by underhanded quacks. A recent court decision has brought the question of abortion into an interesting connection with the eugenic principles of the national socialist state. Strictly speaking, the eugenic indications for

abortion are absolutely rejected in Germany. However, not long ago the Hamburg eugenics court, on which devolves the task of enforcing the German sterilization law, declared that the interruption of pregnancy for eugenic reasons is exempt from punishment, assigning as the reason for such decision that a "racial emergency" exists. The court decided in one case in which the child would in all probability present hereditary defects for the interruption of pregnancy, in order that sterilization might be performed at once. Many jurists have condemned the decision of the Hamburg court on the ground that it exceeded the limitations imposed on judges. The court, nevertheless, has not yielded from its point of view, and, in the meantime, during the course of the year 1934, approved twenty-nine interruptions of pregnancy for eugenic reasons. It has even taken the unusual stand that a pregnancy can be interrupted without a court order in case either parent has been legally declared to present hereditary and transmissible defects. The Hamburg eugenics court, in justification of its decision has declared that, for the sake of the continued existence and health of the German people, an unborn child that is likely to present hereditary and transmissible defects may be destroyed, even though thereby the legal regulations concerning abortion are violated.

Other eugenics courts, however, do not endorse the standpoint of the Hamburg court. For instance, the eugenics court of Berlin decided, with reference to a minor child with hereditary epilepsy, to postpone sterilization until six months after completion of the existing pregnancy. These questions are now being eagerly discussed in the special medical journals bearing on these problems.

Reforms in Sex Education

Dr W. Gross, the director of the Rassenpolitisches Amt of the national-socialist party, has emphasized the need of considering sex education of the youth. He referred particularly to statements that Dr. Ockel had made in the official *Deutsches Ärzteblatt*. Dr. Ockel calls attention to the unfortunate conditions that have resulted from the fact that almost nothing has been done to solve this difficult problem. At present the number of illegitimate births shows a rapid increase. The present trend of developments is shown clearly by statistical data recently published by Dr. Harmsen, who supervises in Berlin a home for unmarried mothers among the educated classes. According to his annual report for 1933, of 206 mothers twenty-two belonged to the 14-20 age group. Most of these came to the home during the last third of the year 1933 in constantly increasing numbers, nor did the beginning of the year 1934 show any decrease, but rather the contrary. These mothers come frequently from very respectable families. In many cases it is uncertain which one of two or more comrades is the father of the child, so that "we have a state of affairs that we have seldom, if ever, observed during our period of activity." There appears to be no intention on the part of these young persons to establish a more permanent union or to enter into marriage relations.

It is not surprising that most urgent appeals for help have been heard. Physicians and teachers especially, have been asked to cooperate. Parents must be induced to give their children early instruction in sex matters. A series of lectures should be given that would furnish them the basis for such instruction. The first instruction in sex matters should be given children between the ages of 5 and 10 years and is primarily the duty of the parents. First instruction should consist of a simple presentation of the essential facts of procreation, propagation and birth. In the second stage of instruction from the eleventh year up to puberty, the emphasis may be placed on the fact of procreation together with gradual enlightenment on the internal processes, in which the school and the home may work together toward a solution of the task. In the third stage,

more detailed knowledge of sexual processes may be given, this being a problem of guidance of juveniles. These urgent appeals and the statistics cited reveal all too clearly what unpleasant conditions have developed in recent years, as the result, in part, of the lack of systematic instruction in sex matters.

VIENNA

(From Our Regular Correspondent)

June 3, 1935

Celebration of the Sesquicentennial of the Vienna General Hospital

The celebration of the sesquicentennial of the founding of the Vienna General Hospital during the last two weeks of May, was closely intertwined with the fifty-fifth International Postgraduate Course, and the Vienna and Austrian medical societies took the occasion to hold, during these two weeks, special sessions with unusually interesting programs, participated in by eminent scientists, including some from foreign countries.

The history of the General Hospital was presented in an address by Professor Neuberger. The festivities were held on a magnificent scale, under the auspices of the central government, the municipal authorities and the Vienna faculty of medicine. Twenty-six different nations were represented. The sesquicentennial celebration should have been held last year, since the General Hospital was opened Aug. 16, 1784, but the political disturbances of last summer made it seem advisable to postpone the celebration. Emperor Joseph II, who was known in history as the first liberal ruler, founded the General Hospital because he was deeply interested in public health work and in medical instruction. Where the General Hospital now stands, there stood at that time the so-called Gross-Armen-Haus, with seven large inner courts. This institution was altered and several additions were made, after the pattern of the institution in Leyden (Netherlands), to adapt it for the uses of a hospital. The new institution, which came to be known as the General Hospital, obtained as an annex a "medizinisch-praktische Lehrschule für Aerzte." At the request of the head of this "clinic," any patient in the hospital that was needed for instruction purposes was placed at his disposal. It was not until 1795, under the leadership of Professor Vetter, that a dissecting room was equipped. The "Leichenhaus" then established still bears in gold letters the motto "Indagandis sedibus et causis morborum" (for research of the sites and causes of diseases) and is still functioning with full force. Dr. Vetter laid the foundation for the magnificent collection of anatomopathologic specimens, which is now the pride of the institution. In 1801, the first vaccination against smallpox ever applied in Germany was performed in the Vienna General Hospital. The essential nature of typhoid was studied here for the first time. Among the important acquisitions that originated in the General Hospital were the development of obstetrics by Boer in 1810, in which he emphasized that birth is a physiologic and not a pathologic process, the first ophthalmologic clinic in central Europe, under Professor Beer (1812). The Vienna Medical School reached a high stage of development under Rokitansky as pathologic anatomist and Skoda as internist and diagnostician, around 1840. In the surgical clinic, Schuh performed in 1847 the first major operation under ether anesthesia. In 1848 Hebra became director of the dermatologic clinic. Semmelweis demonstrated that puerperal sepsis is an infection and showed how it could be prevented. In 1860 Türck made systematic examinations with a laryngoscope devised by Garcia and thus became the founder of laryngology, in 1868 experimental pathology was introduced by Stricker. Through Billroth, Vienna became the Mecca of surgeons (1867-1894). He resected the esophagus, extirpated the larynx and

performed suprapubic prostatectomy and pylorus resection—operations previously unknown in Europe. Urology and cystoscopy, and likewise catheterization of the ureters, were practiced by Dittel in Vienna for the first time, orthopedics was advanced by Albert and Lorenz. The field of hypnosis and psychology was opened up by Krafft-Ebing, and psychoanalysis was discovered and developed by Freud. Cocaine as an anesthetic was introduced in 1884 by the ophthalmologist Dr. Koller (now in America). Otology was advanced by Politzer, rhinolaryngology by Hajek, and roentgenology by Holzknecht. Three men connected with the General Hospital have won the Nobel prize: Wagner-Jauregg, Barany, and Landsteiner. In the past three decades, the General Hospital has become too small for the needs of modern times. Six clinics have been moved to the new hospital, and thus sufficient space was secured for the clinics remaining in the old building. These have been completely modernized without disturbing the external appearance of the institution.

In connection with the celebration, an extensive exhibit, which gave a complete survey of the modern methods of treating and caring for patients, was organized. In the Museum of Natural History an exhibit was opened by the minister of public health, containing all the plans and presentations that affect the century and a half of history of the General Hospital, also old instruments, trephined skulls from prehistoric epochs, antique prescriptions and drugs, and, among other things, the first microscope, the first stethoscope, the first laryngoscope and the first ophthalmoscope.

Various societies held meetings simultaneously with the festivities. In the Verein für Psychiatrie und Neurologie, Professor Marburg and Dr. Suva discussed cavity formation in the spine following trauma. Dr. Scheinker presented a paper on observations on the spirochete in multiple sclerosis. Dr. Stengel discussed acute encephalitis.

At the special session of the Society of Internal Medicine, Professor Eppinger spoke on the pathology of inflammation. Professor Wenckebach delivered a long address on "Respiration and Circulation." Anemia and its dependence on the activity of the liver and the stomach was presented by Professor Hitzengerber. Anemia as the cause of dermatologic manifestations was considered by Professor Arzt. Professor Falta spoke on diabetes, and Professor Bauer on icterus and its nonoperative treatment; the latter discussed also hormones.

At the meeting of the Oesterreichische Krebsgesellschaft, Professor Fraenkel delivered the memorial address on "The Problem of Cancer." He said that cancer must not be conceived of as a local disorder but as a manifestation conditioned by the constitution of the patient, and that chronic irritants, which are often regarded as the cause of the carcinoma, have only a modest role. It is now possible, in a large percentage of cases, to establish the diagnosis in an early stage by means of serologic tests. Many other scientific societies held sessions during the festivities commemorating the founding of the General Hospital. At the closing session of the Gesellschaft der Aerzte, Professor Clairmont of Zurich spoke on the "Development of the Surgical School of Vienna During the Past Hundred and Fifty Years." He emphasized the invigorating effects on medicine that are traceable to this center of research. Every day of the two weeks was filled with entertainment: receptions instituted by the government and by the mayor of the city, unveiling of a monument to the first director of the hospital, inspection of exhibits and of hospitals in Vienna and vicinity, special performances in the theaters, and social events in honor of foreign guests.

Statistics on Marriages and Offspring

The recent edition of the Statistical Compendium of the Republic of Austria and the City of Vienna contains statistics that are of interest to physicians. Striking an average for ten

years, it appears that only 0.1 per cent of the men entering matrimony are under 20 years of age, while only 0.1 per cent of the women are under 16. Six per cent of the brides are under 20. Only 8 per cent of the bridegrooms are under 25, although 25 per cent of the brides are under that age. The maximum of the men (more than 50 per cent) married between 25 and 30. Forty per cent of the women belong to this age group when they marry, which is also the maximum. Sixty-five per cent of the brides belonged to the 20-30 age group, while the same percentage of the bridegrooms belonged to the 25-35 age group. Of the men 1.5 per cent belonged to the 50-60 age group, while 0.4 per cent were past 60 when they went to the altar. On the other hand, only 0.5 per cent of the women belonged to the 50-60 age group, 0.2 per cent to the 60-70 age group, and less than 0.1 per cent to the group whose age was above 70. It is evident, therefore, that there is usually a difference of five years in the ages of the bridegroom and the bride. During the past fifteen years, to be sure, the average age of bridal couples has been somewhat higher, as the statistics for 1932 show, but the difference of five years in their respective ages has remained the same.

Further tables deal with the relative age of the parents and their children. It is shown that 5 per cent of all living legitimate children were the offspring of mothers who were more than 40 years old, and that 1.5 per cent of the fathers were more than 50 years old. Most children (about 35 per cent of all births) are born from three to ten years after the marriage of their parents, although 0.5 per cent of the children are born after their parents have been married twenty years or more. In the rural sections of the country, bridal couples are generally older than in the cities, and the age of the bride particularly is from one to two years greater than in the cities. In more recent years, however, the young people are marrying earlier. A drop in the birth rate is observable in most parts of the country. In Vienna, for example, the decline amounts to 50 per cent as against 1924, although in the provinces it is only from 15 to 22 per cent. The decline in the number of illegitimate births is only from 4 to 5 per cent, so that, in comparison with the legitimate births, they show an increase.

Prof. Dr. Benjamin Gomperz

Prof. Dr. Benjamin Gomperz, formerly a well known otologist and a favorite pupil of Professor Politzer, has died. Gomperz devoted himself especially to otology pertaining to young children. His textbook was translated into practically all cultural languages, and his otologic department in the Kinderkrankeninstitut in Vienna, in which he served for forty years, was the mecca of the physicians specializing in this branch. He published works also on anatomy and physiology of the organs of audition, on the testing of hearing in children, on the constitution in hardness of hearing, and on problems of heredity.

Prof. Dr. Emil Mattauschek

With the recent sudden death of Prof. Dr. Emil Mattauschek, a great man has passed on. He had attained the age of 66, forty years of which he had spent as a physician and director of the psychiatric-neurologic department of the General Hospital. He devoted himself even in his younger years to scientific research and to organization, and served, during the war, as head of the medical department of the army. Later he became the chief psychiatrist of the army. He was the collaborator of the Nobel prize winner Wagner-Jauregg in connection with the latter's researches on malaria therapy in dementia paralytica and was well known by reason of his own research on the anatomy of the central nervous system. He was also a well known court psychiatrist, his textbook being still widely used.

ITALY

(From Our Regular Correspondent)

May 15, 1935

Defense Against Gas Attacks

Major Ferri delivered recently, before the *Sindacato Medici di Roma e Provincia*, a lecture on the means of defense against gas attacks. He said that the first mask of modern type in which granules of a solid substance were relied on to give protection against gas attacks, was devised in 1915 by Professor Guareschi. This model did not come into use, and the Italian army employed masks of layers of gauze impregnated with neutralizing solutions until in January 1918 the Guareschi idea was used in the form of the English respirator. The mask, which is essentially a filtration apparatus, still occupies first place among the means of individual defense. Various types of masks have been designed for the army and for the civilian population. They do not differ so much from the standpoint of quality or the capacity to resist a concentrated attack as they do from the point of view of duration of protection and the cost of manufacture.

The speaker pointed out the important things to be considered in a mask: its efficacy with reference to the concentrations of gas likely to be encountered in the field, its tight fitting qualities, and the degree of comfort with which it can be worn.

The wearing of a mask reduces the physical and mental powers of the wearer, but suitable breathing will notably reduce the discomfort of its use. The use of this principal means of individual defense may be regarded with satisfaction.

In some types of chemical warfare, Major Ferri pointed out that it is necessary to use hermetically sealed apparatus that absolutely isolates the wearer from his environment, supplies him with the necessary oxygen, and absorbs the carbon dioxide of the expired air. Such apparatus may be one of two types, either with an oxygen reserve or a mechanism for the production of oxygen. The apparatus with a production system is based on sodium peroxide or on so-called solid oxygen which releases compressed oxygen, pure or mixed with carbon dioxide. At present, protectors supplying compressed oxygen are preferable. The short period of effectiveness, averaging about an hour, the cumbersomeness and weight, the difficulty of handling, the cost, and other disadvantages prevent, for the present the supplying of such protectors to the whole army. It may however, be feasible to supply this apparatus to certain branches of the artillery, the corps of engineers and the sanitary service.

The need of protecting the entire surface of the body against the action of vesicant gases (dichlorodiethylsulphide and dichlorobeta-chloro-vinylarsine) requires the use of special garments. These are made of an impermeable fabric treated in a special manner and consist of a hood, gloves and boots. The eyes and the respiratory passages are protected by the mask. These garments cause disturbances in the circulation and in the respiration. In summer the body temperature rises above normal, particularly in persons performing physical labor. A temperature of 38 C (100.4 F) is often reached and a hyperthermia up to 39.2 C (102.5 F) has been observed. Attempts have been made to improve the qualities of these garments but without much success. Their use should be confined to specialists, and they should be used only for short periods.

The author spoke then of the organization of a collective defense against gas attacks, the composition of the air, the temperature, and the degree of humidity. In order not to exceed from 15 to 2 per cent of carbon dioxide or 17 per cent of oxygen it is sufficient to provide 1 cubic meter of air per hour for each person. These amounts may be made available in hermetically sealed retreats or in retreats with filtered air. In many cases the hermetically sealed retreat will be sufficient, with or without regeneration of the air. The problems in providing a collective defense are complex, and practical economic

questions must be taken into consideration. The physician has to insist to get his demands respected, for the civilian population has grown weary of using the gas mask—the fundamental means of gas defense.

Aid for Tuberculous Students

The directive council of the *Federazione nazionale per la lotta contro la tubercolosi* discussed recently plans for rendering therapeutic and prophylactic aid to students of the higher institutions of learning. In accordance with existing laws, these provisions appertain to the *Opera universitaria*, which, for the attainment of such ends, pays half of the premiums for the insurance of all students against tuberculosis and by means of its own sanitary bureau provides gratuitously for the periodic examination of the students. At the time of their matriculation and also at the beginning of each school year, all the students are subjected to a medical examination, the results of which are recorded in an individual health record book, which is brought down to date by the sanitary bureau of the *Opera universitaria*. Some of the more important morphologic and objective observations are recorded, such as the essential anthropometric measurements and the results of the radiologic examination of the respiratory apparatus. The record book is returned to the student on completion of his studies.

Students who are found to be affected with tuberculous disease and who are no longer insurable in an insurance organization may receive gratuitously ambulatory treatment either at the *Opera universitaria* or at the clinics. The director of the local *Clinica medica*, who presides also over the sanitary bureau, participates in the management of the *Opera universitaria*.

JAPAN

(From Our Regular Correspondent)

May 29, 1935

The Effect of Storage on Rice

The rice control law that has been presented to the imperial diet created a great sensation. As rice is the staple food of the Japanese, the price has to be regulated by the government by controlling the quantity on the markets. The average crop of rice is about 300 000 000 bushels, and the surplus rice is going to be stored, under the new law. The sixteen warehouses for this purpose managed by the government have a limited capacity, which naturally causes from time to time disposal of the rice to provide for the new. Now comes the question of the nutritive value of old rice that has been one or two years in the warehouse. About this important matter there are two opinions: one holding that there is no difference and the other insisting that there is a great difference between the new and the old rice. The rice bureau of the agricultural and forestry department says that experiments with the old and the new unhulled rice made in feeding lovebirds show a great difference. The old unhulled rice caused symptoms of beriberi when the birds were fed only this rice, while they soon recovered their health when they began to be fed with the new rice. This fact shows that the vitamin content of the rice decreases as it grows old. Rice that is kept more than a year usually never sprouts and does not have so sweet and delicious a flavor as new rice. The price, therefore, is about one third that for new rice. On the other hand Dr. Kagawa of Tokyo Imperial University opposes the opinion of the decrease in vitamin B and asserts that there is no difference between old and new rice if it is kept with the embryo bud about it. His experiments on pigeons have been elaborate. Professor Shimazono says that wormy and wet rice loses its embryo bud, which is essential for nourishment. Whether old and new rice are the same or not depends mostly on the method of storing it.

Dr. Fujimaki of the nutrition bureau of the hygienic laboratory of Tokyo says that the rice harvested in the fall begins to

have its vitamin destroyed in the rainy season of the next year (June), 20 or 30 per cent and sometimes 60 per cent of the vitamin is destroyed by then. If rice is kept more than three years the vitamin will be entirely destroyed, he says. Dr Akutsu, an expert in the commissary department of the army, reports that the vitamin of rice is generally destroyed at the rate of about half every year. In the army it is made a rule to eat up the rice between one rainy season and the next, for the rainy season causes a great change in various respects.

All this shows that there must be some difference in old and new rice, especially when it cannot be stored under ideal conditions. Mr Nakamura, an expert of the agricultural office, says that even if the vitamin B of rice decreases as the days pass, the vitamin requirement can be easily supplied by other subsidiary articles of diet and produce no harm to the human body. The government is reported to be in a dilemma whether to adopt this new control law or not, from both the political and the health point of view, but many believe that the law will sooner or later be passed.

A Survey of the Blind

According to official report, the number of the blind throughout the country was 76,260 in 1932, or 11.67 persons per 10,000 of population, including about the same number of men and of women. The Central Association for the Relief of the Blind, having been granted a government appropriation, has begun the treatment of the blind, free of charge as far as possible. In Tokyo in April, ophthalmologists examined 622 patients, of whom 114 cases would recover their visual power if properly treated, while 355 cases were hopeless. The medical college hospital of Tokyo Imperial University reexamined 264 and announced that fifty-five will surely recover their sight and that for 195 there is some hope. Treatment is now being given 255 patients in hospitals free of charge. The real cause remains obscure why so many blind persons have not yet been examined thoroughly in Tokyo. Perhaps it is due to the ignorance or bad economic condition of the sufferers. The association will continue the work next year in much wider areas.

The Number of Physicians

According to the home office, the number of physicians registered in April was 76,516. The number of newly registered medical men was 3,294 in 1934. The registration fees amounted to 65,880 yen, each one paying 20 yen. The number of practitioners is 49,844, or 7.41 per 10,000 population. There should be an increase of about 3,000 physicians every year in the future.

Personals

Prof Kaname Komuro, ex-president of Nagasaki Medical University, died April 18, aged 55. He was an authority on otorhinolaryngology. He resigned the presidency of the university and remained a professor. He was a man of lofty character.

Dr Teisuke Komoto of Nagoya Medical University was appointed professor at Nagasaki Medical University and he is to be president before long. After his assumption of office, the university is expected to have a new chair of tropical diseases. As more than 100 medical students from the South Sea Islands have come to Japan recently, this university intends to send its graduates to the south hereafter.

Prof T. Maeda of the Tokyo Imperial University, who is to attend the international surgical conference to be held in Cairo, is earnestly planning to have the next conference, in 1941, held in Japan. The year 1940 will be the 2,600th year of the foundation of the empire, and he wants to have at least one international medical conference here.

Prof Dr K. Mizoguchi has been appointed president of the Kyushu Medical College, succeeding Dr Takayama, new president of Nagasaki Medical University.

Marriages

WILLIAM NICHOLAS FORTESCUE, Boston, to Miss Lottie Markham Hundley of Durham, N. C., June 5.

WILLIAM K. PURKS to Miss Mary Helen Kemper, both of Vicksburg, Miss., June 22.

ROBERT J. BOGAN to Miss Evelyn Frances Summers, both of Memphis, Tenn., June 1.

ROLLAND H. PRIEN to Miss Mary A. Frassetto, both of Gilroy, Calif., June 3.

FRED H. KRAMORIS to Miss Sylvia Heese, both of Milwaukee, June 1.

Deaths

Charles Andrew Fife, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1897, formerly associate professor of pediatrics, University of Pennsylvania Graduate School of Medicine, member and past president of the American Pediatric Society, served during the World War, aged 63, chairman of medical administration committee of the Babies' Hospital of Philadelphia, on the consulting staff of St. Christopher's Hospital and Frankford Hospital, Philadelphia, and the Burlington County Hospital, Mount Holly, N. J., chief of the medical service of the Children's Hospital of the Mary J. Drexel Home, on the staff of the Presbyterian Hospital, where he died, June 15.

George Thomas Moseley, Buffalo, New York Homeopathic Medical College, 1885, College of Physicians and Surgeons, Medical Department of Columbia College, New York 1886, fellow of the American College of Surgeons, at various times on the staff of the Gowanda State Homeopathic Hospital, Helmut, Erie County Hospital and the Millard Fillmore Hospital, Buffalo, J. N. Adam Memorial Hospital, Perryburg, and the Batavia (N. Y.) Hospital, aged 70, died, June 22, of myocarditis and arteriosclerosis.

Sidney J. Burleson, San Angelo, Texas, Maryland Medical College, Baltimore, 1905, past president of the Tom Green-Coke-Crockett-Concho-Irion-Sterling-Sutton Schleicher Counties Medical Society, formerly secretary of the McCulloch County Medical Society, medical director of the Western Reserve Life Insurance Company, on the staff of the Shannon West Texas Memorial Hospital, aged 60, died, April 5, in a local hospital, of perforated gastric ulcer.

Howard Barton Bryer, West Warwick, R. I., University of Maryland School of Medicine, Baltimore, 1909, formerly member of the state legislature, health officer and school physician, member of the examining board of the county during the World War, on the courtesy staff of the Rhode Island Hospital, Providence, aged 54, died, May 23, of cirrhosis of the liver.

Philip Densmore Amadon, Monroe, Mich., University of Michigan Medical School, Ann Arbor, 1926, fellow of the American College of Surgeons, formerly instructor of surgery at his alma mater, on the staff of the Mercy Hospital, aged 35, died, June 9, in the University Hospital, Ann Arbor, of pneumonia.

William H. Longmire, Elizabethton, Tenn., Lincoln Memorial University Medical Department, Knoxville, 1914, member of the Tennessee State Medical Association, aged 44, died, May 16, in the Veterans' Administration Facility, Johnson City, of hypertensive heart disease and coronary occlusion.

Connell Edward Murrin, Scranton, Pa., Jefferson Medical College of Philadelphia, 1904, member of the Medical Society of the State of Pennsylvania, served during the World War, on the staffs of the West Side Hospital and St. Mary's Keller Memorial Hospital, aged 60, died, June 5.

Joseph Thomas Herrick, Springfield, Mass., University of the City of New York Medical Department, 1883, member of the Massachusetts Medical Society, veteran of the Spanish American War, formerly on the staff of the Springfield Hospital, aged 75, died, June 2, of chronic nephritis.

Herbert William Ellam, Gardner, Mass., Harvard University Medical School, Boston, 1904, fellow of the American College of Surgeons, served during the World War, for many years on the staff of the Henry Heywood Memorial Hospital, aged 55, died, June 4, in Melrose Highlands.

Ephraim George Gray, Ludington, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905, member of the Michigan State Medical Society, on the

staff of the Paulina Sterns Hospital, aged 56 died, June 6, of cerebral hemorrhage and diabetes mellitus

William Russell Garland ♂ Plymouth, N H, Dartmouth Medical School, Hanover, 1886, member of the Associated Anesthetists of the United States and Canada, president and medical director of the Emily Balch and Soldiers and Sailors Memorial Hospital, aged 70, died, June 5

Alonzo Russell Jarman ♂ White Hall, Ill, Chicago Medical School, 1922 past president and secretary of the Greene County Medical Society, proprietor of the White Hall Hospital, aged 41 died, June 26 in the Palmer Sanatorium, Springfield, of pleurisy with effusion

Walter Cox ♂ Irvine, Ky, University of Louisville Medical Department, 1912, secretary of the Estill County Medical Society served during the World War aged 46 died, June 6, in the Good Samaritan Hospital, Lexington, of pneumonia and military tuberculosis

Frank Burr Marshall ♂ Muskegon, Mich Kentucky School of Medicine, Louisville, 1896 past president of the Muskegon County Medical Society, on the staffs of the Mercy and Hackley hospitals, aged 63, died suddenly, May 30 of angina pectoris

Gustav Adolf Mausert, Los Gatos, Calif, Hessische Ludwigs-Universität Medizinische Fakultät, Giessen Hesse, Germany, 1899, formerly adjunct clinical professor of otology, Long Island College Hospital, Brooklyn, aged 62 died, June 1, of nephritis

William A Anderson, Glencoe, Ala, Memphis (Tenn) Hospital Medical College 1906, member of the Medical Association of the State of Alabama, aged 55, died, May 26, in a hospital at Tuscaloosa, of hypostatic pneumonia and arteriosclerosis

William Emile Cramer, Kansas City Mo, Hahnemann Medical College and Hospital, Chicago, 1888, Kansas City (Mo) Hahnemann Medical College, 1906, aged 70, died May 31, in the Wesley Hospital of perforation of the gall-bladder

David Emanuel P Reed, Russellville Ind Kentucky School of Medicine, Louisville 1898, member of the Indiana State Medical Association, served during the World War aged 62, died, May 31, of cerebral hemorrhage

Wallace Ainger Armour, Kansas City, Mo Kansas City Medical College, 1895, member of the Missouri State Medical Association, formerly member of the board of education, aged 67 died, June 14 of cerebral hemorrhage

J Stuart Wallingford, Paris, Ky Medical College of Ohio, Cincinnati, 1895, member of the Kentucky State Medical Association, on the staff of the W W Massie Memorial Hospital aged 66, died, May 31, of angina pectoris

Horace O Sparks, Piedmont, Ala, Atlanta College of Physicians and Surgeons, 1902, member of the Medical Association of the State of Alabama aged 54, died, May 15, in Birmingham, of chronic nephritis and uremia

Ernest Eugene Fankhauser, New Martinsville W Va Baltimore Medical College, 1902, member of the West Virginia State Medical Association, formerly member of the town council, aged 61, died, May 31, of arteriosclerosis

John Milton Stevens, Hyde Park Vt University of Vermont College of Medicine Burlington 1897 member of the Vermont State Medical Society, aged 62 died June 17 in the Copley Hospital, Morrisville, of pneumonia

Frank Gillingham Morrill ♂ Peoria Ill Northwestern University Medical School, Chicago 1908, served during the World War, on the staff of St Francis Hospital aged 54, died, June 9, of coronary thrombosis

Harry Malcolm O'Brien, Cleveland, St Louis University School of Medicine, 1918, served during the World War aged 45 died, May 15 in the Charity Hospital of pneumonia and tuberculous anal fistulas

Richard Elmer Shurtz, Buhl, Idaho Rush Medical College Chicago, 1897, served during the World War aged 64, died, May 21, in the Twin Falls (Idaho) County General Hospital, of heart disease

Clyde Leigh Appleby, Peabody Kan Kansas Medical College Medical Department of Washburn College, Topeka 1907, aged 56 died, May 29 in Wichita, of erysipelas and bronchopneumonia

William Calvin Brice, York S C, Medical College of the State of South Carolina Charleston 1926 member of the South Carolina Medical Association aged 35 died June 11, of heart disease

Lawrence C Barrett, Garner, Texas, College of Physicians and Surgeons, Dallas, 1905, member of the State Medical Association of Texas, served during the World War, aged 55, died, April 19

Charles William Ampt, Cleveland Medizinische Fakultät der Friedrich-Wilhelms-Universität Berlin Prussia, 1895, aged 64 died May 21, in St John's Hospital, of carcinoma of the stomach

James David Jones, Sweet Water, Ala., Kentucky School of Medicine, Louisville, 1893, member of the Medical Association of the State of Alabama, aged 68, died, May 24, of angina pectoris

Richard Keith Dalrymple ♂ Pittsburgh University of Buffalo School of Medicine, 1930, aged 39 died, May 31, in the Western Pennsylvania Hospital, of lobar pneumonia and encephalitis

Torquato Martino, Hartford, Conn, Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1901, aged 60 died April 22, of arteriosclerosis, chronic myocarditis and pneumonia

Byron Douglass Pease ♂ Greenville N H, University of Vermont College of Medicine, Burlington, 1887, past president of the Hillsboro County Medical Society, aged 74, died, April 3

John Joseph Lettieri, Union City, N J, Fordham University School of Medicine, New York, 1917, served during the World War, aged 42, died, May 7, of pulmonary tuberculosis

Thomas J Colley ♂ Hominy, Okla, University College of Medicine Richmond, 1901, past president of the Osage County Medical Society, aged 64, died, June 4, of coronary thrombosis

Carlo Antonio Gambotto, Bonny Doon, Calif, Regia Università di Genova degli studi Facoltà di Medicina e Chirurgia, Italy, 1883, aged 79, died, May 24, of arteriosclerosis

Abraham Daniel Murphey, Fort Pierce, Fla, Miami Medical College Cincinnati 1887, aged 71, died, June 1 in the French Hospital, New York, of septicemia and endocarditis

Frederick W Kitzki, Milwaukee, Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Prussia, 1898, aged 70, died, May 28, of coronary stenosis and embolism

David Howard McKinley, Winchester, Ky Louisville and Hospital Medical College, 1908, served during the World War, aged 50, died, May 21, of a self inflicted bullet wound

Jesse Mark Crawford, Alto, Texas, Barnes Medical College, St Louis, 1894, member of the State Medical Association of Texas, aged 65, died, April 5, of lobar pneumonia

William Lincoln Spoor, Redlands, Calif, Long Island College Hospital Brooklyn, 1886 aged 73, died, May 21 of prostatic hypertrophy, hypertension and uremia

Numar M Hebert, Covington, La New Orleans School of Medicine, 1869, member of the Louisiana State Medical Society, aged 88, died, May 2, of pneumonia

Cassius Dudley Mansfield, Stanton, Ky, Kentucky School of Medicine, Louisville, 1889, Louisville Medical College 1889, aged 66 died, May 26, of heart disease

Robert McGehee Exley, Pineola, Ga. Atlanta College of Physicians and Surgeons, 1911, aged 48, died, April 22 of cerebral hemorrhage

Robert Berdus Pruett, Indianapolis, Meharry Medical College, Nashville, Tenn, 1913, aged 64, died, April 30 of lobar pneumonia

Matthias Marion Corwin, Ausonia, Ohio, Starling Medical College, Columbus, 1897, aged 63 died, June 4 of pulmonary tuberculosis

John D Carter, Grapevine, Ark, College of Physicians and Surgeons, Dallas, Texas 1906 aged 56, died, in April of pneumonia

George Swarz, Chicago Bennett Medical College Chicago 1912, aged 64, died June 13, in the Michael Reese Hospital, of uremia

Alexander MacGregor, Springfield, Ohio, Columbus Medical College, 1892 aged 83, died, May 27, of chronic nephritis

Bertrand M Porter, Melrose, N M Chicago Homeopathic Medical College 1889, aged 68, died, May 9, of pneumonia

Ira John Herr, Dayton, Ohio Pulte Medical College, Cincinnati, 1894, aged 68 died June 7, of chronic myocarditis

John Henry Walling, Vinemont, Ala (licensed in Alabama in 1889) aged 85, died, April 15, of chronic nephritis

John Paul Emerson, Pittsburgh, University of Pittsburgh School of Medicine 1935, aged 24, died May 25

Harry L Coffman, Los Angeles, Medico Chirurgical College of Philadelphia, 1901, aged 68, died, April 30

Bureau of Investigation

DIABETICINE

Another Fraudulent "Diabetes Cure" Debarred from the Mails

William Lee Thomas and Arthur S. Huyck have been engaged in the sale through the mails of a product fraudulently represented as a cure for diabetes, known as "Diabeticine." The two men did business under the trade name, first, "Illinois Diabeticine Company" and later "Artlee Remedy Company."

Investigation seems to show that Diabeticine is, apparently, nothing more than chopped-up wild carrot (popularly known as Queen Anne's lace). This puts the preparation in the class of ninety-nine out of every hundred quack "diabetes cures," namely, that of a diuretic. Practically every fake cure for diabetes has an irritating effect on the kidneys so that by producing a greater excretion of urine, the amount of sugar in any given specimen will naturally be decreased, although the total sugar output may actually be increased. This fact and the further fact that every swindle of this kind calls for a rigid, although not a scientific diet, explain the passing enthusiasm that sufferers from diabetes sometimes exhibit for

The exploiters of this pernicious nostrum, doubtless knowing full well that their stuff would not eliminate sugar from the urine, stated that "the occasional presence of sugar in the urine should not be misconstrued as inefficiency on the part of Diabeticine," because, according to the concern, the preparation "drives the excess sugar from the blood stream through the kidneys and out with the urine."

Diabeticine was analyzed both chemically and microscopically by the government experts. In addition, biological tests were made of the preparation in the Pharmacological Laboratory of the United States Department of Agriculture. Mr. Crowley reports in his memorandum that these tests proved that the preparation would not "purge the blood of its excess sugar" nor would it "drive the excess sugar from the blood stream through the kidneys." They found, also, that, contrary to the claims of the Diabeticine concern, the preparation would not revive or stimulate the islands of Langerhans of the pancreas to increased action.

Expert medical testimony in the case regarding the claims and representations made for Diabeticine was to the effect that the preparation would not afford any relief whatsoever, either immediately or gradually, in the treatment of diabetes. The only benefit to be expected from the treatment would be that which resulted from the diet prescribed, which benefit would be the same whether taken with or without Diabeticine.

Although the advertising and printed matter put out by Thomas and Huyck under the name of the Illinois Diabeticine Company gave the impression that they were specialists in the treatment of diabetes, the facts were that neither man had any medical training or was competent to pass on medical questions and are reported to have admitted to the Post Office inspectors who investigated the case that they did not even know the ingredients of Diabeticine, which was being sold by them.

Testimonials, as is always the case in the exploitation of "patent medicine" frauds, were used in the exploitation of Diabeticine. One of the most glowing of the testimonials published purported to come from one W. L. Thomas. This is William Lee Thomas, one of the exploiters of this fraud. At the time the matter was investigated, the postal authorities report that they interviewed Thomas' physician, who stated that Thomas was at that time suffering from diabetes!

Solicitor Crowley's memorandum to the Postmaster General closes with these words: "A reading of all the literature in this case would lead the average person to believe that the preparation will, in fact, cure persons suffering from diabetes, whereas, according to the medical evidence before me, the preparation is wholly worthless in the treatment of that disease and may cause users to lose their lives as a result of their failure to adhere to the proper treatment and diet. The evidence before me shows, and I so find, that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises. I therefore recommend that a fraud order be issued against the names set forth in the caption of this memorandum."

Postmaster General James A. Farley on June 18, 1935, issued a fraud order against the Illinois Diabeticine Company, the Artlee Remedy Company, and their officers and agents as such. The order forbids the Postmaster at Chicago, Ill., to pay any postal money order drawn to the order of the Diabeticine outfit, and directs the local Postmaster to inform the remitters of such postal money orders that payment has been forbidden, and to return all letters and other mail matter directed to the Illinois Diabeticine Company, etc., to the senders, with the word "Fraudulent" written or stamped on the outside of such letters.

Principles of Practice—The art of medicine is to observe, to correlate those observations, and to reason logically to conclusions that must finally become the true principles of practice. Those were the qualities that made Thomas great. His greatness lay in the principles upon which his practice was founded. It was upon right principles that he insisted, not upon this or that mechanical appliance.—Ridlon, John. *Personal Remembrances of Hugh Owen Thomas*, *J. Bone & Joint Surg.* 17: 506 (April) 1935.

Every DIABETIC Should Read This Book

Learn about the amazing relief discovered by Specialist in private practice. Patients treat themselves. Pleasant, easy, very successful. No drugs. Enclose 10c to cover mailing of book.

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DIABETICS *Relief* Guaranteed SUGAR FREE IN 48 HOURS

● Amazing Success! No costly or painful treatments, no drugs. Sugar removed in easy natural way. Specialist's book FREE, write ILLINOIS DIABETICINE CO., Dept. 17 P. O. Box 1314, Chicago.

products of this class. Incidentally, the Diabeticine fraud is not the only quack remedy for diabetes in which wild carrot appears. There was put out, first from Buffalo, N. Y., and later from Detroit, Mich., a nostrum "Mellitine," which also seems to have had Queen Anne's lace for its essential ingredient. While Diabeticine was said to be "derived from plants which, combined, have a highly therapeutic value in the treatment of diabetes mellitus," Mellitine was said to be "derived from certain plants which have a highly therapeutic value in the treatment of diabetes mellitus."

On May 4, 1935, the Illinois Diabeticine Company and the Artlee Remedy Company were furnished with a copy of a memorandum of charges on file in the office of the Solicitor of the Post Office Department, calling upon these concerns to show cause on June 6 why a fraud order should not be issued. No one appeared in behalf of either concern on the date set for the hearing. The Hon. Karl A. Crowley, Solicitor of the Post Office Department, in a memorandum to the Postmaster General, sets forth the essential facts found by the postal authorities in their investigation of this fraud. According to the Diabeticine advertising, the product was said to be "derived from a plant which has a highly therapeutic value in the treatment of diabetes mellitus." It was set forth that "Diabeticine purges the blood of its excess sugar" and had, it was alleged, a "tonic action upon the pancreas" which, it was said, "arrests the disease." The Diabeticine Company further stated that it was firmly convinced that insulin "actually contributes indirectly to the further progress of the disease."

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

JAUNDICE AND INTESTINAL PARESIS AFTER APPENDECTOMY

To the Editor—A patient operated on for acute appendicitis developed jaundice and abdominal distention on the second postoperative day. It is now the seventh postoperative day and the distention continues. There is little if any peristalsis. Peritonitis is questionable. He is restless and mildly delirious. Duodenal drainage and venoclysis were instituted from the start. What good or harm if any might come from the use of atropine or strychnine with especial regard to the effect on intestinal paresis? It is my understanding that atropine paralyzes the vagus endings and would be contraindicated when one is trying to maintain or stimulate peristalsis; also my impression of strychnine is that it acts only on the spinal centers and exerts no tonic effect on the autonomic sympathetic nervous system. What is your opinion as to the wisdom of morphine when there is no pain and paralytic ileus threatens? Does scopolamine added to morphine usually act as a better cerebral sedative in toxic delirium than the morphine alone? What is your opinion about bromides, chloral paraldehyde and phenobarbital as better mental sedatives than morphine in toxic delirium? Please do not publish my name.

M D Texas

ANSWER.—Following operation for appendicitis, jaundice may be due to phlebitis, infection through the portal vein, the systemic circulation or the lymphatics, with metastatic abscesses in the liver.

Extension along the lymphatics may rarely produce liver abscess formation directly but it may cause obstruction of the common duct because of enlarged glands compressing the common duct, with jaundice, and perhaps be followed by infection extending up the biliary system.

Jaundice may result from a pyemia or septicemia as a toxic or infectious hepatitis.

A local peritonitis or phlebitis in the region of the infected appendix may be the source of any of the foregoing conditions.

The peritoneum may be able to care for a moderate amount of infection but, in the event of local abscess formation, surgical drainage is indicated.

The symptoms described of a paralytic ileus with or without a local peritonitis call for fluids and duodenal drainage.

Atropine is contraindicated, while certain drugs may be of value.

Physostigmine stimulates peristalsis. Experimental work has shown that in combination with solution of pituitary the results are better than with either drug alone. Some surgeons consider solution of pituitary dangerous because of its rapid action while others use strychnine with physostigmine to stimulate peristalsis.

Strychnine increases the tone in both plain and striped muscles but alone is of little value in intestinal distention. Ephedrine is reported to be of value in paralytic ileus and is also of value in maintaining the blood pressure following operation.

Morphine quite definitely increases intestinal tone and segmental peristalsis but delays propulsive peristalsis in the colon. Morphine is indicated both in the prevention and in the treatment of paralytic ileus, as it maintains the tone in the muscle and tends to prevent the serious effects of dilatation. It is given for this beneficial effect in the absence of pain. Hypertonic sodium chloride solution either intravenously or as a retention enema is of great value in paralytic ileus. Morphine usually allays a toxic delirium but may occasionally increase it.

Scopolamine depresses the terminations of the same nerves as atropine but it differs in depressing both the cerebrum and the respiratory and vasomotor centers in the medulla. On account of the pronounced susceptibility of certain persons to the action of scopolamine, it should be given cautiously. Owing to the depressing action on the respiratory center morphine and scopolamine should be limited to small doses, although they act well when given together either as a cerebral sedative or for pain. However, large doses of scopolamine and occasionally morphine may actually increase restlessness and are contraindicated in severe toxemia.

In the absence of pain, for which morphine is the best sedative, other drugs are often better either alone or combined with it for toxic delirium.

The bromides depress the central nervous system and in mild excitement or nervousness are decidedly helpful, but feeble compared to morphine, chloral hydrate, paraldehyde or the barbitol group.

Chloral hydrate has no analgesic action. It may weaken the heart, lower the blood pressure and depress the respiratory centers. It should be given cautiously, and in toxic conditions it is usually avoided.

Paraldehyde resembles chloral hydrate in its action on the nervous system but is not so depressing to the heart. It is ordinarily considered a reasonably safe sedative in a toxic delirium.

Phenobarbital is of value in certain stages of mild delirium, but if large doses are required it may produce an uncontrolled physical restlessness. It is not free from danger, especially in low blood pressure or in persons with arteriosclerosis, and, like other drugs, it should be chosen only when the organs of its elimination are not badly damaged.

In severe toxemia, any drug should be given with great caution.

PHOSGENE AND OTHER POISON GASES

To the Editor—The Query and Minor Note on Phosgene Poisoning (THE JOURNAL July 13 p 140) gives an excellent description of the characteristic symptoms, signs and pathologic changes produced after a prolonged exposure to an atmosphere known to be saturated with a heavy concentration of phosgene. However it does not discuss the following possibility, about which I should like to be informed. Suppose that a person has been exposed for some time to a contaminated atmosphere of unknown chemical composition and death occurs from one to three days later presenting the characteristic symptoms, signs and pathologic changes stated in the note. Can it be said with reasonable certainty that the atmosphere to which the person had been exposed contained a dangerous concentration of phosgene or are there any other gases that will produce the same effect? Please omit name.

Ph D New York

ANSWER.—There are many other gases that could produce essentially the same type of pathologic effect as phosgene gas. Among these might be mentioned chlorine, chloropicrin, chloromethyl, chloroformate, trichloromethyl and phenyl carbamate-chloride, or combinations of these. As a result, unless it was definitely known that phosgene gas was present, it would be extremely difficult to say which of these gases, if present, was responsible, all have their effect on the alveoli and small bronchi of the lungs, which would be followed by lung edema. There are, however, a few clinical signs at the beginning that might be useful in determining the nature of the gas. With chlorine gas the concentration would have to be much stronger, the effect on the eyes and upper respiratory tract would be more marked, and the appearance of the edema would be somewhat delayed.

Chloropicrin, like chlorine, would cause a more pronounced effect on the eyes and the upper respiratory passages. It would also cause greater sensory irritation to the upper respiratory passages, and the pain in the chest would be more pronounced and there would probably be attacks of vomiting.

EFFECTS OF HUMIDITY

To the Editor—Can you give me any information or refer me to any literature with regard to the effect of high humidity on workers in industrial plants? In a local textile mill an attempt has been made to raise the humidity in certain processes from 55 to 65 per cent the temperature remaining at from 72 to 75 F. The employees complain bitterly of the increase claiming that acute nose and throat infections are much more common at 65 per cent and many more than usual have complained of muscular pains in various locations. Any information you can give me on this subject will be appreciated.

ARTHUR L KINNE M D Holyoke Mass

ANSWER.—Just what the optimum range of humidity is is a matter of conjecture. There seems to exist a general opinion, supported by some experimental and statistical data, that warm, dry air is less pleasant than air of a moderate humidity, and that it dries up the mucous membranes in such a way as to increase susceptibility to colds and other respiratory disorders.

For the premature infant, a high relative humidity of about 65 per cent is demonstrably beneficial to health and growth, and according to Huntington this seems to be the case for adults also. All of these studies indicate that the optimum humidity must always be considered in combination with temperature.

Until more exact information is secured, it would be desirable to restrict the comfort zones to the range of relative humidity employed in the comfort zone experiments, namely, 30 to 70 per cent. Relative humidities below 30 per cent may prove satisfactory from the standpoint of comfort, so long as extremely low humidities are avoided. From the standpoint of health, however, the consensus seems to favor a relative humidity between 40 and 60 per cent.

Dry air produces an excessive loss of moisture from the skin and respiratory tract. Owing to the cooling effect of evaporation, higher temperatures are necessary, and this condition leads to discomfort and lassitude. Moist air, on the other

hand, interferes with the normal evaporation of moisture from the skin and, again, may cause a feeling of oppression and lassitude, especially when the temperature is also high."

"In the comfort zone experiments of the A S H V E Research Laboratory, the relative humidity was varied between the limits of 30 and 70 per cent approximately, but the most comfortable range has not been determined. In similar experiments at the Harvard School of Public Health, a relative humidity of 70 per cent was found to be somewhat humid in winter by about half of the subjects who were stripped to the waist, even when the dry bulb temperature was 70 F or less. In summer a relative humidity of 30 per cent was pronounced a little too dry by about a third of the subjects wearing warm weather clothing. So long as the temperature was kept within proper limits, the majority of the subjects were unable to detect sensations of humidity (i e., too high, too low, or medium) when the relative humidity was between 30 and 60 per cent. This is in accord with studies by Howell, Miura and others."

In quoting this material from the 1935 "Guide" of the American Society of Heating and Ventilating Engineers, it is the intent to record the impression that humidity from 55 to 65 per cent is unlikely to promote nose and throat infection and instead that such conditions are much more likely to arise when humidities are low and temperature correspondingly high. Furthermore in this situation involving humidities and temperatures a third most important factor in comfort is air motion. Given even a moderate amount of movement of the air, a relative humidity near 60 per cent at 72 F may not be regarded as direful.

Following are further references

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Miura U Effect of Variation in Relative Humidity upon Skin Temperature and Sense of Comfort *Am J Hyg* 13:432 (March) 1931
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Yaglon C P Drinker Philip and Blackfan K D Application of Air Conditioning to Premature Nurseries in Hospitals A S H V E Tr 36 1930
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CONFECTIONERS ITCH OR BAKERS DERMATITIS

To the Editor—A young woman who works in a bakery handling and selling bread and cakes came to me with a skin condition on her fingers. Two fingers on each hand had round raised flat vesicles about 1 cm in diameter the borders of which appeared indurated and reddened. The vesicles dried in about twenty four hours leaving a raw chapped and fissured skin, which itched. Is ringworm infection a likely diagnosis? Could this infection have come from the bread? Would this infection be more likely to involve skin with small unhealed cuts? How could the diagnosis have been made definite? Please omit name.

M D New York

ANSWER.—Since early times bakers, pastry cooks and confectioners have been held to be liable to a wide variety of skin disorders. Modern research seems to show that "bakers eczema" is caused not by any ordinary ingredient of the bread but by one of the so called flour improvers usually ammonium persulphate, sometimes calcium acid phosphate. In regard to the former, Australian reports show that in "allergic" persons as little as one part in a hundred thousand may cause an eczema. In regard to the latter, Prosser White found confectioners' self-rising flour very irritating in patch tests and attributed this to the presence of acid calcium phosphate, from 4½ to 6 pounds in 280 pounds.

Deliquescent compounds, such as salt and sugar, are unduly active when in crystals, dehydrating the tissues they touch. Packers of sweets as well as makers frequently have skin lesions on the hands. The French have written much on the subject of the "mal des confiseurs," the typical form of which is onychia, affecting chiefly the middle and ring fingers, but there are also cases of bullae and pustules without onychia. White gives a case of dermatitis from handling cinnamon-sugar, in which the cinnamon was found to be the causative agent.

Most writers accept the term 'confectioners' itch' or dermatitis or psoriasis, but White holds that a distinction must be made between skin lesions that are merely incidental to certain occupations and those which are actually due to the occupation. An eczema can be called occupational with certainty only

if at least one of the ingredients handled gives a positive result with the patch test.

These conditions are described by

- White R P The Dermatoses or Occupational Affections of the Skin ed 4 London 1934 pp 252 259
Bowen J T in Diseases of Occupation by Kober and Hanson Philadelphia, P Blakiston & Son & Co 1916 p 358
Ullmann, Karl Oppenheim Moriz and Rille J H Die Schädigungen der Haut durch Beruf und gewerbliche Arbeit Leipzig Leopold Voss 2: 204 1926

ANXIETY NEUROSIS

To the Editor—A white woman aged 36 shows symptoms of nervousness is easily tired and has a sensation of choking or a tight feeling in the neck. She has occasional heavy and dull headaches which previously were more severe with pain starting in the supra-orbital region and radiating to the occiput. There is a slight burning sensation of the eyelids. The condition was slightly relieved by refitting of glasses eight months ago. There is no exact dizzy feeling but sudden sinking sensations occur. Slight roaring sensations in the ear are aggravated by the slightest excitement. She has a slight head cold with soreness in the region of the posterior portion of the turbinates. The teeth are poorly repaired but there are no root infections. Tonsillectomy was done in 1933. There is a continuous sensation of phlegm in the throat but the patient is unable to cough it up. There is a sensation of tightness and choking in the throat especially when the arms are raised over the head also a sensation of tightness on swallowing. No coughing occurs except a slight hacking in an attempt to clear the throat of the sensation of phlegm. Tenderness is noted on pressure on the chest in the region of the third and fourth left ribs 4 inches from the midsternum. No hemoptysis has been observed. Shortness of breath occurs on exertion and palpitation on excitement and exercise. The pulse is regular. There is no pain in the left axilla and arms. The appetite is poor but the patient must eat three times a day or the stomach feels upset. There is no flatulence or belching of gas. The bowels are regular twice daily. There is generalized pain round the umbilicus. A sensation of deep pain occurs in the midabdomen when the patient stoops; this condition is aided slightly by the wearing of a tight abdominal girdle. The urinary system is normal. Menstruation started at the age of 12 and is regular every twenty six days. There have been four normal pregnancies the last one occurring a year ago. For the last three years the patient states, one month menstruation has been normal and on alternate months it has appeared abnormal. At these times she says a heavy sensation of general ill feeling has been accompanied by swelling of the legs (varicose veins). In other words the varicose veins are aggravated every alternate month. The patient is more nervous and the condition of the throat is aggravated. This month she complains of a bearing down sensation of the pelvic organs. This condition has been present at various other times. Sensations of itching of the skin have occurred at various times without apparent cause. There are no pathologic changes in the head. The thyroid is slightly enlarged (small simple goiter?). Examination of the chest and lungs gives negative results. There is slight pain on pressure over the cardiac area. There is a slight tricuspid murmur. The pulse rate is 78. Blood pressure is 128 systolic 74 diastolic. The blood vessels are soft. There is definite tenderness in the region of the right costal margin or in the gallbladder area probably caused by chronic cholecystitis. Pain is elicited on palpation of McBurney's point and also in the corresponding area in the left abdominal quadrant. Bimanual examination reveals backward displacement of the uterus with a first degree prolapse. Definite tenderness of the appendix is elicited. The right ovary is normal the left ovary is slightly cystic. There are marked varicosities in both legs. Please give me from this meager history your opinion as to the cause of the choking sinking sensations. I am satisfied that the patient has a chronic infection of the gallbladder and appendix as well as a misplaced uterus and cystic ovary but can her complaints be due to these ailments? A basal metabolism test was made two years ago and was said to be normal. Please state also your suggestions as to treatment.

M D, Wisconsin.

ANSWER.—When one hears the story of such a multiplicity of more or less unrelated symptoms, one immediately suspects a functional rather than an organic disturbance. In such situations, painstaking diagnostic methods should be employed before an organic disturbance is definitely decided on particularly when surgical intervention is associated.

In this case the definite departures from the normal consist of pelvic disturbances, a retrodisplacement with prolapse and a cystic ovary, varicose veins, and a slight thyroid hypertrophy without change in the basal metabolism. It is difficult to attribute the symptoms in this case to these sources.

On the other hand, all the subjective symptoms described fit into the picture of an anxiety neurosis or an effort syndrome.

The dizziness choking and sinking sensations are commonly found in functional disorders. The fact that some of these symptoms are aggravated at the menstrual period is additional evidence of the functional basis.

Abdominal tenderness in the region of the colon is frequently encountered in the vagotonic and sympathicotonic types. This colon tenderness is often indistinguishable from tenderness of the appendix or gallbladder and the differential diagnosis must be based on symptoms other than the tenderness.

The alternating character of the menses has been observed. This has been attributed to ovulation from alternate ovaries with a different corpus luteum response from each ovary.

Thus, in this case the "normal periods" are the result of ovulation from one ovary, while the "abnormal periods" are the result of ovulation from the other.

Any suggestions for treatment must assume that a definite diagnosis has been made, as the treatment must be wholly guided by the cause of the symptoms. With this picture, however, great care must be used to make sure that surgical intervention offers a fair hope of improvement. It has been found that such treatment, when it fails, usually leaves the patient worse than before.

GLANDULAR DISTURBANCE WITH ALTERED METABOLISM

To the Editor—A woman aged 39 years height 5 feet 4 inches (163 cm) weight 220 pounds (100 kg) a brunette well educated exceptionally brilliant and an efficient housewife has two brilliant children aged 10 and 5 years. Both births were normal. No miscarriages have occurred and no menstrual disturbances. The patient's appendix was removed in 1915. The tonsils were removed in 1922. Abdominal adhesions were operated on in 1931. Infected upper teeth were removed in 1933. The gallbladder was removed in March 1934. There had been no other sickness or operations. The patient states that she is in an extreme state of fatigue most of the time. She says that she just does not have the power to do the things she wishes to accomplish and that it is necessary for her to limit her movements and rest each day. If she exceeds a certain pace she soon finds herself exhausted. She also states that she has pain around her heart. This pain is more or less severe and at times extends to the left shoulder arm and forearm. These signs have been rather constant for a period of two or three years and have grown worse especially since the gallbladder was removed. The pains come on at intervals and appear to be a part of the fatigue signs. Their severity varies. She states that when this pain is over her heart the heart labors and feels as if about to stop. Respiration is not much affected. However she perspires or her skin becomes moist. Examination shows the patient many pounds overweight. Her general physical condition is good except that she has a blood pressure far below normal: systolic 92 diastolic 64. The heart rate is 68. These readings are made from repeated studies over a period of time. The heart is normal in position and outline the valves are intact it is functioning normally. Rhythm is poor. There is an extrasystole. The force of the heart contractions is poor. I have seen the patient in these heart attacks. The pain is rather severe. The heart rate is slow and the force of contraction weak. Beats miss about every seventh one. Heat over the heart area gives relief. I have never given an opiate in this case. Glyceryl trinitrate and other heart stimulants do not appear to make any change. After these attacks the patient relaxes and falls asleep and after a few hours awakes in good condition. The diagnosis made early was gallbladder disease probably gallstones with anxiety neurosis (moderate). I assured the patient when the gallbladder was removed that I anticipated the heart signs and fatigue would clear up. Now that these have remained and are gradually growing worse I am asking suggestions. Are low blood pressures found in neurosis of any degree? Or am I dealing with a mild coronary condition or a fatty degeneration of the heart? Please suggest any further study I might make in the case to arrive at a better diagnosis also treatment, if any. Please omit name. M D New Hampshire

ANSWER—The picture described in this question has all the marks of a glandular disturbance resulting in a disordered metabolism. In such a complicated affair the disturbance usually involves more than one gland.

There are a number of additional observations that might aid in arriving at a conclusion. It is important to know whether the overweight condition has always existed or whether it appeared suddenly following pregnancy or following acute infection or some other factor that may have disturbed a previously normal glandular metabolism.

The fat distribution might furnish some clue to the disturbing element, as would also the presence or absence of myxedema.

A determination of the basal metabolic rate is of primary importance.

The question states that there is no menstrual disturbance but it does not state the character of the menstruation or whether it has been in any way altered.

A hypothyroidism is suggested by the overweight by the fatigue, and by the relatively slow pulse. This condition is usually associated, however, with a diminution of mental acuity and a diminution of the menstrual flow. Other signs of hypothyroidism not dealt with in the question are cold intolerance and a dry skin and hair.

A disturbance of pituitary function would account for the overweight but this condition is not usually associated with excessive fatigue and with a normal menstrual function.

A diminished adrenal cortical function would account for the fatigue and low blood pressure but not for the overweight. A combination of factors must be considered.

The cardiac pain is doubtless due to a deficient coronary circulation but it seems unlikely that this is on an organic basis or that any marked coronary disease exists, nor does it seem likely that fatty degeneration of the heart exists. Fatty

degeneration of the heart, except as an immediate sequel to severe acute infection is almost unknown as a pathologic entity, and fatty infiltration of the pericardium tends to increase the cardiac circulation rather than diminish it.

It is quite possible to have coronary pain as a result of low blood pressure. The possibility of an anemia that may contribute to the deficient coronary circulation is not determined by the question.

The carbohydrate metabolism may also play a part in the fatigue and pain in this case. Blood sugar determinations during the attack might prove helpful. An improper mobilization of sugar will result in a relative hypoglycemia, and fatigue or pain may ensue. The diet in this case is not dealt with and it is possible that the carbohydrate intake is too greatly restricted.

It is quite possible that an anxiety neurosis may be present. An anxiety neurosis frequently causes fatigue, pain and low blood pressure, but it will not cause the overweight and it is almost invariably attended by an elevation of the pulse rate. It seems unlikely that it will produce the whole picture in this case.

SO CALLED ATROPHY OF BRAIN

To the Editor—A patient of mine recently returned from a Chicago hospital where a diagnosis of primary atrophy of the brain frontal lobe was made and instructed that there was nothing to be done for her. The patient complains of severe headaches which are almost constant but vary in severity. It has been necessary to use morphine in half grain doses to obtain the slightest relief. Is there anything in the recent literature to throw light on this condition? Please omit name. M D, Michigan

ANSWER—Primary atrophy of the frontal lobe of the brain is not a clinical entity. Pathologically it is possible to get an atrophy of the frontal lobe in cerebral vascular disease, dementia paralytica, Huntington's chorea, cerebral neoplasm and Pick's disease. The latter is known also as hereditary cerebral degeneration. It was described for the first time in American literature by Hoedemaker and Matthews (*Arch Neurol & Psychiat* 28 1449 [Dec.] 1932). It is suggested that a careful neurologic examination be made with lateral stereoscopic and anteroposterior views of the skull. The optic fundi and visual fields should be examined. When all these data are assembled, one can give an impression as to the possible diagnosis. For the severe headache one may give 100 cc. of 50 per cent dextrose intravenously or 6 ounces of 25 per cent magnesium sulphate solution in a pint of lukewarm water as a retention enema. Morphine should not be used under any circumstances, because of its medullary effect. If a neoplasm is present, decompression or removal of the tumor should be done.

SIMULTANEOUS INOCULATION AGAINST DIPHTHERIA AND SMALLPOX

To the Editor—I was asked to immunize against diphtheria 113 and vaccinate against smallpox 96 children of school and preschool age. I should appreciate it if you would be kind enough to let me know the following: 1 In immunization of children against diphtheria is it better procedure to test first all children 10 years of age or older with the Schick test? (For immunization I am going to use alum precipitated toxoid.) 2 Is it possible to administer alum precipitated diphtheria toxoid and vaccination against smallpox on the same day? (According to Dr W T Harrison on account of the tendency of virus to localize at the site of precipitated toxoid injection smallpox vaccination should not be done until the nodule following toxoid injection has disappeared.)

D V OGIEVSKY M D Klickitat Wash

ANSWER—1 It is desirable to Schick test children 10 years of age and older in order to determine who are susceptible and need immunization.

2 If no emergency exists it probably would be best at this time not to immunize against diphtheria and smallpox simultaneously.

SMALLPOX VACCINATION

To the Editor—A child less than a year old has been unsuccessfully vaccinated three times. There is no question concerning the potency of the vaccine used or the method of vaccination. There is no possibility of acquired immunity but the question does arise concerning natural immunity. How many unsuccessful vaccinations should be made before it is safe to assume that natural immunity exists? Please omit name.

M D Indiana

ANSWER—According to Heman Spalding late chief medical inspector of the board of health of Chicago, "all who have not had smallpox are susceptible to vaccinia at least once. To this rule there is probably no exception. In an extensive experience I have never met with one. The operation should

be repeated until a successful result is obtained. To say a person is 'insusceptible to vaccinia' because several trials are negative is unjustifiable. I have known several to lose their lives because physicians had given this false information" (Pediatrics, by various authors, edited by Isaac A. Abt 6 169, 1925). It appears as if a child may be temporarily insusceptible to vaccination. Sometimes many attempts at vaccination must be made before a typical take is secured. Spalding wrote that he had known eight, ten and in one case thirteen attempts at vaccination before success was obtained. There is no good ground for believing that failure of primary vaccination means immunity in the absence of a previous attack of smallpox.

USE OF CONVALESCENT SERUM—TRANSFER OF ALLERGY

To the Editor—I have been unable to find satisfactory information dealing with the following questions: 1. Is there any danger in giving human convalescent serum at repeated intervals say a month? 2. Is there any likelihood of transmitting allergic states in this manner? 3. Would it be more painful if the serum in small doses was given subcutaneously rather than intramuscularly? I am aware, of course that the serum must be sterile and the Wassermann reaction negative but I was wondering whether there was any danger from serum accidents and serum sickness when human serum was repeated at rather frequent intervals. Please omit name and address.

M D, Ohio

ANSWER—1. There is probably little danger in giving properly prepared and preserved convalescent human serum in proper doses subcutaneously or intramuscularly at intervals of say one month. It is true that cutaneous and other reactions have been observed after the injection of human serum at frequent intervals.

2. It is possible to transmit allergy passively by injections of human serum. For instance, the serum of a person sensitive to horse emanations (horse protein) may transfer such sensitiveness passively on injection into a second person.

3. Most likely subcutaneous injection of serum would be less painful than intramuscular.

MARRIAGE AND SYPHILIS

To the Editor—A brother and a sister, aged 23 and 27 years have had congenital syphilis with a plus four Wassermann reaction. They have each had about thirty injections of arsphenamine and probably about twenty injections of a bismuth compound. They still have plus Wassermann reactions. They haven't had any treatments for six months. The woman who is to be married wants to know if it is safe in the first place and if she needs any further treatments. She is in perfect health otherwise. Please give me your advice about further treatments in these cases. Kindly omit my name.

M D, District of Columbia

ANSWER—Much will depend, in this instance, as to whether the patients have had lumbar punctures. It is known that the Wassermann reaction in a case of congenital syphilis is slow in its response to treatment. If the patient has had reasonable antisyphilitic treatment the tendency is more and more to ignore the blood Wassermann reaction. If the lumbar punctures were negative, it probably would be well simply to give each one of the patients a course of bismuth salicylate injections intramuscularly, eight injections each, twice a year for the next year.

With the sister, if she marries and becomes pregnant, there would be no harm, certainly with the first one or two pregnancies, in giving her two short courses of bismuth salicylate injections during the pregnancy. She should not hesitate to marry. Of course, the disease is not transmissible to the prospective husband, and transmission of heredosyphilis is problematic and is looked on askance by most syphilologists.

TOLERANCE TO MORPHINE

To the Editor—Is it possible to estimate or is there any average limit to the tolerance of morphine? In other words given two patients, one taking 6 grains (0.4 Gm.) daily and the other taking say 15 grains (1 Gm.) daily can you tell me if it is necessary to produce the same sense of well being for the second patient to take that much more or is there a top limit to any individual's tolerance? I am trying to find out how to estimate how much morphine might be wasted in the mental effect in addicts. Please omit name.

M D Tennessee

ANSWER—It is impossible to state the upper limit. The average may be placed at between 1 and 2 Gm. daily, though the dose may become as high as 4 or 5 Gm. and even exceed this figure. The addict finds it necessary to take an increasingly larger amount of morphine to produce the same degree of euphoria and to antagonize the withdrawal symptoms. As tolerance does not occur to the convulsive effects of morphine, this would set the upper limit to the dose that can be tolerated. Data are not available to state this dose categorically, because death usually occurs before this dose is reached.

HAZARDS OF WAX SPRAYING IN PRINTING INDUSTRY

To the Editor—An inquiry has come to my desk as to the possible harmful results arising from wax spraying in the printing industry. We do not use this method at the Government Printing Office and therefore have no data on the subject. Certain investigations made in one of the larger printing plants in England seem to point to harmful results to workers even to the extent that cancer may follow its use. Have you any data of investigation made along this line?

D P Busn M D, Washington D C

ANSWER—According to the U S Bureau of Standards (Lewkowitsch Chemical Technology and Analysis of Oils, Fats and Waxes, ed 6, New York, Macmillan Company, 1923, p 281) (1) printers' wax consists essentially of ozokerite, a natural bituminous product, waxlike, occurring near petroleum springs. Ozokerite used in this country is obtained from Utah and from Poland. It is freed from asphalt and minerals and is then mixed with beeswax, paraffin rosin, petrolatum, turpentine and burgundy pitch. No injurious action on the skin should follow contact with these substances. None of them are cancer producing. British printers' wax may differ from American and possibly may contain some of the carcinogenic agents that are present in the final products of tar distillation. It is well known that the oil pressed out in the final stage of paraffin production is carcinogenic (Heller, *Imre Occupational Cancers, J Indust Hyg* 12 169 [May] 1930).

ANTIRABIC TREATMENT

To the Editor—I have a patient who was exposed to rabies in December 1934. I gave him fourteen daily doses of an antirabies vaccine made by Jensen Salsbery of Kansas City which product he wished to take the last injection being on Jan 7 1935. He took the vaccine without difficulty except for rather severe local reactions. Recently he contaminated an abrasion on the fingers with saliva from a dog which today developed rabies. He did not apply any antiseptic to the open lesion on the fingers but did use soap and water. The question is whether he should have another course of vaccine. Articles to Beckman and Musser state that protection lasts for twelve to fourteen months. The patient is naturally very worried and wants to take further vaccine but does not wish to run even a small chance of postvaccinal paralysis if it is not necessary.

ALEX R FREEMAN M D, Albany Ga.

ANSWER—The patient will not require further antirabic treatment. Immunity from the treatment in January will protect against the exposure in May. Marie has found complete immunity in dogs for eighteen months. Immunity in man lasts for at least twelve to fourteen months.

BRITTLE FINGER NAILS

To the Editor—A woman aged 32 otherwise in good health is suffering from extreme brittleness of the fingernails. There is no associated pathologic condition of the nails. The brittleness always more or less troublesome has of late years become more so to the extent that it is impossible for her to keep them from cracking and breaking. Naturally being a woman and fastidious she is much concerned. The literature that I have reviewed on the subject is vague as regards etiology and offers nothing in therapeutics. I have prescribed various calcium compounds and vitamin concentrates empirically and have given mild sedatives without any appreciable effect. As I said thorough examination reveals no apparent somatic disturbance other than the complaint mentioned or neurosis. I should be grateful for any comment you may be able to make as regards etiology prognosis and treatment. Please omit name and address.

M D New York

ANSWER—The etiology of this type of nail defect is indefinite. One must rule out the contributory role that nail polishes and polish removers assume and caution the patient against their use. Hypovitaminosis is also a possible factor and vitamins B and D should be given. The daily massage of bland oil into the nails is also of value.

SCARLET FEVER IMMUNIZATION

To the Editor—I would much appreciate information concerning the frequency severity and duration of reactions to scarlatina immunization injections. Has there been any recent modification of toxin or the technique to reduce these reactions?

H A WILDMAN M D Sterling Ill

ANSWER—General reactions to scarlet fever toxin in active immunization against the disease occur in about 10 per cent. There has been no recent modification of the toxin or the technique. That the reactions are not a serious obstacle to immunization would appear to be indicated by the fact that the use of scarlet fever toxin has doubled within the last two years.

SIMULTANEOUS SCARLET FEVER AND GERMAN
MEASLES

To the Editor—At the present time there is a mild epidemic of German measles in this vicinity. Recently two brothers, aged 8 and 10, patients of mine, exposed to this infection with others developed a typical morbilliform rash, blepharitis, epiphora, slight fever, malaise, coated tongue with red edges and a slight dry cough. The rash spread from the face downward, clearing above as it progressed below. In several days they both felt as well as ever and all the rash was gone. There was no glandular involvement. About two weeks later one of the boys who a year ago had a severe urticaria following an injection of tetanus anti-toxin (he was immunized three years ago against diphtheria) developed a definite peeling of the palms of both hands. It was then recalled that mixed in with the morbilliform rash had been a finer, malarial one. A cough was present for about one week at this time. What is the real diagnosis in this case? Please omit name. M D Massachusetts

ANSWER—The description indicates that the one boy had both scarlet fever and German measles.

BURNS FROM PERMANENT WAVE MACHINE

To the Editor—I am seeing an increasing number of scalp burns due to the so-called permanent wave machines. In all these burns I have had difficulty in bringing about healing and I have used everything that I can find both old and new without any striking result. These burns are usually round and of a third degree type with little or no tendency to heal. I understand that the hair is pulled so tightly in these machines that there is little or no feeling in the scalp, hence the great possibility of burning before subjective evidence. Any advice you may give me in this regard I will appreciate. Please omit name.

M D West Virginia

ANSWER—Burns from the so-called permanent wave machines are not electrical burns but due to heat, complicated with a strongly alkaline solution used to soften the hair. These burns are slow to heal because of their depth. The scalp is not very sensitive and the tension may lessen its sensitivity. We know of no method of hastening the healing process. Ordinary burn treatment is all that is indicated.

REACTIONS TO DICK TEST

To the Editor—Can you give me information as to what the expected percentage of positive reactions to the Dick test would be in the age group of 15 to 20 years? Please omit name. M D Illinois

ANSWER—Depending on previous environment, persons in the age group from 15 to 20 years may show positive reactions in from 40 to 60 per cent. If there has been a recent epidemic in the group and the individuals live in dormitories so that contact has been close, the incidence of susceptibility may be as low as from 10 to 15 per cent.

USE OF SCARLET FEVER ANTITOXIN

To the Editor—What is the present day opinion of the advisability of administering 2,000 units of scarlet fever serum for scarlet fever in country practice? J D Michie M D Childress Texas

ANSWER—Two thousand units of scarlet fever antitoxin is inadequate dosage for the treatment of scarlet fever. This is the usual prophylactic dose.

SENSITIVITY TO LIVER EXTRACT

To the Editor—The query on the possible sensitivity to liver extract (THE JOURNAL June 1, p. 2019) prompts this brief note. I had been treating three pernicious anemia patients with Lederle solution liver extract parenteral 3 cc. vials. The injections were given at three day intervals. No patient showed any untoward reactions for the first six injections. Following the seventh injection in one patient a generalized urticaria appeared within eighteen hours. Ephedrine by mouth was sufficient to control this. The urticaria recurred after the eighth and ninth injections. It did not occur however following the tenth injection which consisted of solution liver extract Lilly nor has it recurred since the patient has been receiving solution liver extract Lederle for oral use.

MEYER BLOOM M D Johnstown Pa.

ROENTGEN RAYS FOR PROSTATIC HYPERTROPHY

To the Editor—My attention has recently been called to an answer given under Queries and Minor Notes in THE JOURNAL, March 30, concerning the use of roentgen rays in the treatment of benign hypertrophy of the prostate. The answer given hardly represents an accurate statement of the facts. Roentgen treatment has been used to a considerable extent for benign hypertrophy of the prostate and with a considerable degree of success. While it may be literally true that the size of the gland may not be greatly reduced by such treatment, there is no question that in a considerable proportion of cases the symptoms are relieved sometimes for prolonged periods. A considerable literature on this subject has already accumulated.

A U DESJARDINS Rochester Minn.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis, Nov. 18. *Application must be filed before Sept. 15.* Sec. Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY Cincinnati, Sept. 14. Sec. Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS Seattle, Aug. 8. Philadelphia, Oct. 10, and St. Louis, Nov. 10. Sec. Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY Detroit, Dec. 12. Sec. Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

CALIFORNIA Los Angeles, July 22-25. Sec. Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT Endorsement Hartford, July 23. Sec. Medical Examining Board, Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, Sept. 16-18. Ex. Sec. Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEVADA Reno, Aug. 5. Sec. Dr. Edward E. Hamer, Carson City.

OREGON Basic Science Corvallis, July 27. Sec. Basic Science Examining Committee, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO San Juan, Sept. 3. Sec. Dr. O. Costa Mandry, Box 536, San Juan.

Montana April Report

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held in Helena, April 2-3, 1935. The examination covered 10 subjects and included 50 questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. Eight physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine		(1922)	75.2
Northwestern University Medical School		(1935)	83.2
University of Minnesota Medical School		(1934)*	75.8
Marquette University School of Medicine		(1935)	82.9

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1934)	Oregon
Georgetown University School of Medicine		(1929)	Michigan
Chicago College of Medicine and Surgery		(1917)	Wyoming
University of Minnesota Medical School	(1927)	(1930)	Minnesota
St. Louis University School of Medicine		(1932)	Missouri
University of Wisconsin Medical School	(1930)	(1933)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
State University of Iowa College of Medicine		(1924)	N B M Ex.

*This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Iowa Reciprocity and Endorsement Report

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports 5 physicians licensed by reciprocity and 1 physician licensed by endorsement from Feb. 28 to June 1, 1935. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois College of Medicine		(1934)	Illinois
University of Michigan Medical School		(1929)	Michigan
Craigton University School of Medicine		(1931)	Nebraska
University of Nebraska College of Medicine		(1934)	Nebraska
University of Wisconsin Medical School		(1932)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Michigan Medical School		(1932)	N B M Ex.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 19 physicians licensed by reciprocity and 3 physicians licensed by endorsement at a meeting held April 2, 1935. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1926)	New York
Indiana University School of Medicine		(1930)	Indiana
State University of Iowa College of Medicine		(1933)	Iowa
University of Louisville School of Medicine		(1929)	Kentucky
Wayne University College of Medicine		(1934)	Michigan
University of Minnesota Medical School		(1928)	Iowa
Washington University School of Medicine		(1929)	Missouri

Creighton University School of Medicine	(1931)	Indiana
Jefferson Medical College of Philadelphia	(1927)	Penna
(1928) Colorado		
Temple University School of Medicine	(1922)	Penna
Medical College of the State of South Carolina	(1926)W	Virginia
(1933) S Carolina		
Vanderbilt University School of Medicine	(1933)	Tennessee
University of Texas School of Medicine	(1931)	Texas
University of Virginia Department of Medicine	(1930)	Virginia
University of Toronto Faculty of Medicine	(1925)	Connecticut
Medizinische Fakultät der Universität Wien	(1910)	Wisconsin
School	LICENSED BY ENDORSEMENT	Year Endorsement
Johns Hopkins University School of Medicine	(1930 2)N B M Ex	Grad
Harvard University Medical School	(1929)N B M Ex	nf

Illinois April Examinations

Mr Clinton P Bliss, assistant director, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, April 9-11, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-eight candidates were examined, 46 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Chicago Medical School	(1933) 83 *	(1935) 78	83, 85
Northwestern University Medical School		(1933)	82 †
(1934) 86 (1935) 78 78 † 80 † 83 83 83 83 † 85		85 † 85, † 89	
Rush Medical College		(1934)	83
88 88 (1935) 79 † 80 81 † 81 † 83 83, 83 † 85			
School of Medicine of the Division of the Biological Sciences	(1934) 81 83 †	(1935)	82 83
University of Illinois College of Medicine		(1934)	80
82 † 83 † 84 84, (1935) 83 83			
Creighton University School of Medicine		(1933)	81 †
New York University University and Bellevue Hospital Medical College		(1928)	83 †
University of Pennsylvania School of Medicine		(1933)	85
University of Wisconsin Medical School		(1933)	81
McGill University Faculty of Medicine		(1933)	82
Albert Ludwigs Universität Medizinische Fakultät Freiburg		(1927)	84 †
Kharkov Medical Institute		(1917)	84 †
School	FAILED	Year Grad	Number Failed
Loyola University School of Medicine		(1930)	1
Friedrich Wilhelms Universität Medizinische Fakultät Berlin		(1924) †	1

Twelve physicians were successful in the practical examination for reciprocity and endorsement applicants held in Chicago, April 11. The following schools were represented:

School	PASSED	Year Grad	Reciprocity with
University of Illinois College of Medicine		(1934) †	California
Indiana University School of Medicine		(1933) †	Indiana
State University of Iowa College of Medicine		(1933)	Iowa
Boston University School of Medicine		(1932)	Maine
University of Michigan Medical School		(1926)	Indiana
St. Louis University School of Medicine	(1922) †	(1933) †	Missouri
Washington University School of Medicine		(1933) †	Missouri
Temple University School of Medicine		(1932)	California
Marquette University School of Medicine		(1927)	Wisconsin

School	PASSED	Year Endorsement
Rush Medical College		(1933)N B M Ex.
University of Pennsylvania School of Medicine		(1930)N B M Ex.

* This applicant has received a four year certificate and will receive the M.D. degree on completion of internship. License has not been issued.

† License withheld for fee

‡ Verification of graduation in process

Idaho April Examination

Hon. Emmitt Pfost, commissioner of law enforcement, reports the written examination held by the Idaho Medical Examining Board in Boise, April 2-3, 1935. The examination covered 13 subjects and included 130 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Six physicians were licensed by endorsement after an oral or written examination. The following schools were represented:

PASSEN		Year Grad	Per Cent
School			
State University of Iowa College Medicine		(1934)	80
University of Michigan Medical School		(1932)	79
LICENSED BY ENDORSEMENT		Year Endorsement Grad	of
School			
College of Medical Evangelists		(1932)	California
George Washington University School of Medicine		(1929)	California
Washington University School of Medicine	(1932)	(1933)	Utah
University of Oregon Medical School		(1931)	Oregon
University of Tennessee College of Medicine		(1932)	Tennessee

Book Notices

Annual Reprints of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1934 with the Comments That Have Appeared in The Journal. Cloth. Price \$1. Pp 135. Chicago: American Medical Association 1934.

Each succeeding volume of reports of the Council reveals more of the long and successful fight in the interest of rational therapeutics. The Council is no longer chiefly concerned with noisome proprietaries and yet this latest volume contains reports on such articles as "Vita-Cell," a secret preparation marketed with exaggerated claims, and "Raylos," a shotgun preparation marketed in a way to promote its ill advised use by the public. Most of the "unacceptable" reports in this volume are concerned with products that may have some merit but are not offered to the public in a way which experience has taught the Council is necessary before a therapeutic agent is acceptable. Such products are Iodine Dusting Powder (Sulzberger), rejected for lack of clinical evidence of its advantage over one of its constituents, Pernoston, rejected because of lack of clinical evidence to justify routine intravenous injection of barbitals compounds, Di-Hydranol, a claimed bactericidal agent proposed for use as an "intestinal antiseptic," a claim not supported by sufficient clinical evidence, and Squibb Adex Tablets a product containing a concentrate of vitamins A and D, for which the firm could not agree to adopt a more informative name.

To those who have followed the Council's investigation of B acidophilus therapy, the report "Acidophilus Bacillus Liquid-Mulford and Mulford Acidophilus Bacillus Block Omitted from N N R" will be of interest. The Council has apparently not yet reached an ultimate conclusion concerning acidophilus therapy, but it has for years held that no product could be expected to be of value unless it could show at least one hundred million viable B acidophilus organisms at the "date of expiration." Competent bacteriologic examination showed that the two preparations here reported were inferior to this standard. Further grounds for omission were the failure of the manufacturer to comply with certain stipulations in regard to labels and advertising. Another noteworthy omission is that of Alpha-Naphco and its dosage forms omitted because the Council on reconsideration found that it is a weak antiseptic.

The Council also issues preliminary reports, which define the status of new preparations for which the evidence is not yet sufficient to justify their presentation to the medical profession generally. Preliminary reports do not imply rejection but rather postponement of consideration until more evidence is reported by competent investigators. These reports are the outposts of therapeutic progress and as such are valuable sources of information to physicians. In this volume there are preliminary reports on Adrenal Cortex Extract, concerned mostly with scientific terminology, Cysteine Hydrochloride, Dihydroxy-Anthranol (Anthranol), Gastric Mucin, Hemoprotein (Brooks), Phenylmercuric Nitrate and Phenylmercuric Chloride.

Illustrative of the Council's efforts to keep those concerned informed of the basis for its actions are the "Recent Revisions or Elaborations of the Council's Rules of Interest to Manufacturers and the Medical Profession," which have appeared in the last two volumes. These inform the profession of the various problems which arise and the care given to their consideration. To be commended also is the "Report on Sterility of Ampule Preparations."

Radologie olinique du tube digestif. Publiée sous la direction de M^{re} Pierre Duval J Ch Roux et H Bécère. I. Estomac et duodénum. Par Pierre Duval Jean Charles Roux et Henri Bécère. Fasc. I. Estomac. Fasc. II. Duodénum. Second édition. Cloth. Price 330 francs. Pp 252 with illustrations. Paris: Masson & Co 1935.

The first edition of this study, published seven years ago, has been completely revised and the newer methods are included. New chapters on such subjects as gastric syphilis and gastritis and additional material on diaphragmatic hernia and pyloric stenosis have made the work complete. The publication is in two large volumes, one of 252 double pages on the stomach and a volume of 114 double pages on the duodenum. A com-

plete description of the methods of fluoroscopic examination used by the authors is given. These methods are essentially the same as are being used in the better clinics of this country, with emphasis especially on the observations in both upright and horizontal positions and in the various oblique and tilted positions. The authors have also used the introduction of a mixture of barium sulphate solution and air into the stomach to good advantage in bringing out questionable lesions that may be ordinarily covered over with a thick layer of heavy barium solution. Both volumes are liberally illustrated with fine reproductions of x-ray plates illustrating every possible lesion of the stomach and duodenum that can be encountered as well as diagrammatic studies of every type of gastric and duodenal lesion. The two volumes make a complete x-ray atlas on the stomach and duodenum, which can be referred to either by the skilled x-ray student or by the novice in roentgen diagnosis to good advantage. The books are beautifully bound, printed on excellent paper and written in simple, understandable French.

Social Work Year Book 1935 A Description of Organized Activities in Social Work and in Related Fields. Edited by Fred S. Hall. Third issue. Cloth Price \$4. Pp 698. New York: Russell Sage Foundation, 1935.

The third issue establishes this year book as the standard reference work in the special field of social work. If one recognizes and allows for the attitude from which nearly all social workers approach the subject treated, such a volume is of considerable value. Each article is followed by a fairly complete bibliography. However, the same bias that runs through the articles tends to the omission from the bibliography of works that do not agree with the attitude of the authors. The article on medical care is written by Michael Davis and Marcella Rivers and takes its information largely from the publications of the Committee on the Costs of Medical Care. It is not accurate in its description of the Michigan Mutual Health Service and the situation in Washington and California. There is no mention of the fact that the insurance plans in Washington and Oregon were forced by compensation laws and are by no means welcomed by the physicians. Compulsory health insurance is treated by I. S. Falk, who devotes a considerable portion of the space to the "Model Bill of the American Association for Social Security." It is not probable that most physicians will turn to this work for authoritative information on medical matters, but it is indisputably the most authoritative work in its own special field of social work. It is divided into two parts. The larger part of the book consists of a treatment in alphabetical order of various subjects, the second section is a "directory of agencies." This section gives a brief summary of the organization and objectives of what seems to be a fairly complete list of the agencies concerned in any way with social work.

Repos physiologique du poumon par hypotension dans le traitement de la tuberculose pulmonaire. Observations cliniques et physiologiques. Par F. Parodi, agrégé de l'Université de Milan. Traduit par Totiana Parodi. Préface de E. Sargent. Paper Price 48 francs. Pp 232 with 59 illustrations. Paris: Masson et Cie, 1935.

This book is a well constructed, simply written discussion of the principles underlying the employment of pneumothorax in pulmonary tuberculosis. The description of the clinical technique and management is plainly based on extensive experience. In the earlier chapters, however, the discussion of mechanical principles is unnecessarily argumentative and academic. The author takes issue with the view that the negative endopleural pressure depends on the elastic tension of the lung and cites experiments both by himself and by others purporting to show that the pressure is not equal in all parts of the cavity and that therefore lung expansion cannot be equal in all parts. In this he disregards the unequal excursions of different parts of the thoracic wall. He ascribes to the weight of the lung the entire role of creating endopleural pressure, which would therefore be changed by variations in the weight of circulating blood. Also he denies, apparently on purely speculative grounds, that diffusion of fluid out of the pleural cavity can create negative pressure. This reveals some lack of familiarity with the physical laws governing diffusion. Still further he discusses the density of the lung tissue as a factor in producing endopleural pressure, overlooking the fact that density is one of the

factors contributing to elastic recoil. The ultimate conclusions and their applications are not, however, invalidated by the academic digressions. The book is well illustrated, and numerous references are cited. Withal the work is worthy of consideration by those interested in the clinical problems involved.

The Care of the Aged, the Dying and the Dead. By Alfred Worcester, M.D. Sc.D. Henry K. Oliver, Professor of Hygiene, Harvard University. Paper Price \$1. Pp 77. Springfield, Ill. and Baltimore: Charles C. Thomas, 1935.

This book considers certain obligations of the physician, which are obvious when attention is called to them but which are in a way extramedical. They have to do with ministrations of sympathy and comfort for the aged and dying and of the disposition of the dead. The attitude of its author is that of a wise practitioner of long experience and of sympathetic disposition. It will bring to every reader the suggestion of activities in emotional situations where sympathy is useful and ought to be appreciated, and the realization that he should be more thoughtful of his obligations in such situations than he is likely to be. It is a wholesome little book and worthy of reading by physicians and laymen.

Scritti medici in onore di R. Jemma nel XXX anno d'insegnamento. Redatti dal Prof. I. Nasso e dal Dott. E. Schwarz. In two volumes. Paper. Pp 1438 with illustrations. Milan: Cromotipia Ettore Sormani, 1934.

This is a beautifully prepared festschrift of the eminent Italian professor of pediatrics. It is bound in stiff paper and contains contributions from 144 pediatricians from all over the world, most of whom of course are Italian, but many French, German, English, American, Scandinavian and South American contributions are represented. The articles are published in Italian, English, French, German and Spanish. The publication is most elaborate. The articles cover a range of subjects that touch on almost every phase of pediatrics.

Selection of Risks for Life Insurance. Health Insurance, Accident Insurance. By Harry W. Dillingham, Vice President and Medical Director, Continental Casualty Company and Continental Assurance Company. Cloth Price \$5. Pp 380. Cincinnati: National Underwriter Co., 1935.

Without preface or introduction, the author proceeds directly to a discussion of the selection of risks for insurance, with an explanation of the duties of the medical examiner, inspector and home office selector. The importance of the personal and family histories and the influence of race, occupation, environment, habitat, morals, finances and physical status are then discussed. The remainder of the book is devoted to a discussion of the various diseases and conditions affecting risks in the light of the accumulated experience of life insurance companies in the past. These factors are arranged alphabetically, permitting quick reference. The sections dealing with albuminuria, alcoholism, amebic dysentery, aviation hazard, blindness, blood pressure, claim psychology, gallbladder disease, glycosuria, heart disease, peptic ulcer, pneumoconiosis, pulmonary tuberculosis and weight are of particular interest. The book is highly recommended and should prove useful to those engaged in life insurance work.

Limbs for the Limbless. A Handbook on Artificial Limbs for Laymen and Surgeons. By John Culbert Farley, Ph.D., Instructor in Orthopedic Surgery in the Post Graduate Medical School, Columbia University. Introduction by Fred H. Albee, M.D. Sc.D., LL.D., Chairman of the New Jersey State Rehabilitation Commission. Cloth, Price \$2. Pp 104 with illustrations. New York: Institute for the Crippled and Disabled, 1934.

This small book presents a strong argument for the universal use of artificial limbs whenever the type of amputation makes it possible. Children should not be allowed to wait until full growth before being furnished with a suitable prosthesis, and adults should be urged to abandon crutches and use artificial legs. The history and development of prosthetic apparatus is lightly sketched and the generally desirable features of artificial legs and arms are emphasized without mention of any specific varieties or manufacturers. The limitations of apparatus are well described in connection with the various sites of amputation, and this is the most important portion of the book from the standpoint of the patient. The points of election for amputation are shown by the familiar and valuable illustrations from the War Department's Review of War Surgery and Medicine, 1918. The preparation and care of the stump is correctly described. The importance of 'provisional'

prostheses in reducing and shaping the stump is well emphasized and might well have been supplemented by a detailed statement of the method of making these "pilons," although the author remarks that this probably is not the place to describe the technic. The appliances for hand and arm amputations are well discussed and rightly sound a note of pessimism regarding the value of the cineplastic procedures of Vanghetti and Sauerbruch. The more complicated mechanical hands are not as useful as at first they seemed to be, and the emphasis is properly laid on the more simple hooks and tool holders, with a "dress" arm merely for the sake of appearance. The book is worth reading by patients as well as by surgeons.

The Anatomy of the Leg and Foot for Students and Practitioners of Chiropody. By Philippa N. Vaus. M.R.C.S. L.R.C.P. Lecturer to the London School of Chiropody. With an Introduction by A. T. Compton. F.R.C.S. Lecturer in Anatomy to King's College, London. Cloth. Price \$2. Pp. 107 with 47 illustrations. Baltimore: William Wood & Company, 1935.

This book was written for students and practitioners of chiropody. The first essential to good chiropody is a thorough knowledge of the anatomy of the leg and foot and some knowledge also of general anatomy. The book can be highly recommended as fulfilling the purpose for which it was written. The illustrations are satisfactory and the text is easily read. There is an appendix containing the B.N.A., revised and old terminology of anatomic structures. The author believes that chiropody should not be practiced by any one without a recognized diploma. The public will realize that as much harm can be done by an ignorant and unskilled chiropodist as by an unqualified dentist. The author looks forward to the day, which she hopes is not far distant, when a recognized diploma will be necessary for the legitimate practice of chiropody in England. She emphasizes the desirability of such a situation and the benefit to be derived for public and practitioner alike.

Medicolegal

Hospitals Burns Inflicted on Unconscious Patient.—After a cesarean operation in the hospital—defendant, and while the patient was still unconscious, hot compresses and hot water bottles were applied and the patient was burned. She and her husband sued the hospital, joining with it as a defendant one of two special nurses whom the hospital had called in to care for the patient. The jury returned a verdict in favor of the nurse, but against the hospital. The hospital thereupon appealed to the district court of appeals, second district, division 2, California.

The record does not show by whom the compresses and hot water bottles were applied. The hospital contended, however, that the special nurses on the case were not employees of the hospital so as to render it liable for their negligence. The appellate court held to the contrary, on authority of *McBride v. Clara Barton Hospital*, 75 Cal. App. 161, 241 P. 941. The jury was justified in concluding from the evidence that the patient's injuries were caused either by a nurse regularly employed by the hospital or by one of the two nurses specially engaged by the hospital. The verdict that absolved the special nurse who had been joined with the hospital as a defendant did not exonerate the hospital, for she was not the only nurse caring for the patient when the burns were inflicted.

The patient's physician and her attending nurses testified that her injuries were burns. The hospital produced an expert witness who testified, in response to a hypothetical question, that the condition described could have been a herpetic condition. The hospital then complained, on appeal, that the trial court, in instructing the jury, assumed that the patient's injuries were burns. But, said the appellate court, the expert witness produced by the hospital did not see the patient, and in the absence of evidence more substantial than that offered by the hospital, the court had a right to conclude that the injuries were burns.

The trial court did not err in instructing the jury on the doctrine of *res ipsa loquitur*, for the patient was unconscious during the time the injuries were being inflicted and that doctrine was clearly applicable. Neither did the trial court err in

giving certain instructions that the hospital contended made it and its nurses, in effect, insurers against negligence and burns, since the instructions complained of, considered in the light of the court's entire charge, could not have misled the jury on any essential legal principles. When a patient is unconscious after an operation and those charged with caring for her, knowing her helpless condition, use hot compresses and hot water bottles, they must use them in such a way and keep such watch over them as not to burn the patient.

For the reasons stated, the judgment against the hospital was affirmed.—*Timbrell v. Suburban Hospital, Inc. (Calif.)*, 36 P. (2d) 435.

Malpractice Reliance on Sponge Count by Nurses No Defense.—The patient and her husband sued the physician—defendant, alleging that in the performance of an abdominal operation a sponge was left in the patient's abdomen. The "sponge" was described as "a gauze pack or pad, six inches wide and about eighteen inches long—6 ply gauze in thickness, with a tape attached to one corner, about four inches long." To it was attached a metal ring. From a judgment for the plaintiffs, the physician appealed to the supreme court of New Jersey, alleging that the trial court erred in not directing a verdict in his favor.

The physician—defendant operated on his patient in a public hospital, over which he had no control, and the hospital supplied two nurses from its staff, to assist in the operation. He asserted that by recognized custom it was the duty of the nurses who assisted him to keep count of the sponges and the duty of the head nurse to report, before the operation wound was closed, as to the correctness of the sponge count. He contended that the head nurse had so reported to him in this case and he argued that he was entitled to rely on that report, as the nurses were not in his employ or furnished by him. He claimed that under the circumstances he was not required to make any extended examination of internal conditions after the operation and was not responsible for an erroneous count of the sponges used. Any duty of independent examination that rested on him, he contended, was shown to have been adequately performed so that nothing in the evidence justified the jury in finding that he was negligent, and the case therefore should not have been submitted to the jury.

The supreme court of New Jersey, however, did not agree with the defendant's contentions. Notwithstanding the nurse's count, said the court, a duty remained with the defendant to examine independently, to make sure that no foreign body remained in the abdominal cavity. The existence and non-discovery of so considerable an object as the pad that was left in the patient's body in this case, particularly in view of the testimony of expert witnesses as to the usual practice of an independent examination by operating physicians, presented a case for submission to the jury. The very fact that the physician—defendant was operating with nurses not in his employ nor, so far as appears, of his own selection, seemed to the court to give emphasis to this view.

The court affirmed the judgment in favor of the plaintiff.—*Starwicz v. Kelley (N. J.)* 174 A. 896.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology Cincinnati Sept. 14-20. Dr. William P. Wherry, 107 South 17th Street, Omaha Executive Secretary.
Colorado State Medical Society Estes Park September 5-7. Mr. Harvey T. Sethman 537 Republic Building Denver Executive Secretary.
National Medical Association, New Orleans, Aug. 11-17. Dr. C. A. Lamon 431 Green Street South Brownsville, Pennsylvania Secretary.
Northern Minnesota Medical Association Duluth Aug. 12-13. Dr. Oscar O. Larsen Detroit Lakes Secretary.
North Pacific Pediatric Society Seattle August 9-10. Dr. F. H. Douglass 509 Olive Street Seattle Secretary.
Utah State Medical Association Logan, September 5-7. Dr. George N. Curtis Judge Building Salt Lake City Secretary.
Washington State Medical Association Everett, Aug. 12-14. Dr. Curtis H. Thomson 1305 Fourth Avenue Seattle Secretary.
Wyoming State Medical Society Lander Aug. 12-13. Dr. Earl Whedon 50 North Main Street, Sheridan, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

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- Reserve Store of Hemoglobin Producing Substances in Growing Dogs as Influenced by Diet F S Robscheit Robbins and G H Whipple Rochester N Y—p 27
- Kinetics of Elimination of Dye Water Blue from Dog Plasma After Intravenous Injection A Hemingway F H Scott and H N Wright, Minneapolis—p 56
- Increased Susceptibility to Local Infection Following Blockage of Lymph Drainage. C K Drinker Madeleine E Field H K Ward and C Lyons Boston—p 74
- *Use of Hypertonic Sucrose Solution Intravenously to Reduce Cerebrospinal Fluid Pressure Without Secondary Rise L T Bullock, M I Gregersen and R Kinney Boston—p 82
- Effect of Intravenous Injection of Sucrose and Glucose on Reducing Power of Cerebrospinal Fluid, Before and After Hydrolysis M I Gregersen and Lillian Wright Boston—p 97
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- Immediate Effect of Spinal Transection on Crossed Extension Reflex A Forbes M Cattell and H Davis Boston—p 152
- Relation Between Motor and Secretory Functions of Human Fasting Stomach Frances A Hellebrandt Madison Wis—p 162
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- Pressure Changes Induced in Vascular System as Result of Compression of Limb and Their Effect on Indirect Measurement of Lateral Pressures H C Barrett L B Laplace and J C Scott Philadelphia—p 182
- Erythrocyte and Hemoglobin Increase in Human Blood During and After Exercise E C Schneider and C B Crampton Middletown Conn—p 202
- Stimulation of Hypothalamus with Especial Reference to Its Effect on Gastro-Intestinal Motility H Kabat B J Anson H W Magoun and S W Ranson Chicago—p 214

Neutral Chloride in Secretions of Stomach and Duodenum.—In a series of ninety-five experiments on dogs, Wilhelm and his associates found that the neutral chloride concentrations of the nonacid secretions of the stomach and the mixed duodenal secretions were approximately the same, the average values ranging from 358 to 307 mg per hundred cubic centimeters. When the nonacid secretions of the stomach or the duodenal secretions are mixed with tenth normal hydrochloric acid, only about one third of the neutral chloride fraction represents neutralized hydrochloric acid.

Hypertonic Sucrose Solution Intravenously to Reduce Cerebrospinal Fluid Pressure.—Bullock and his co workers compared the effects of intravenously injected sucrose, dextrose and sodium chloride solution on the cerebrospinal fluid pressure under experimental conditions. Spinal fluid pressures were measured aseptically for from ten to thirteen hours on dogs anesthetized with sodium amylal. Control experiments showed a gradually rising pressure during the period of observation. There was also a moderate increase in the number of white cells in the spinal fluid, which was not produced by sodium amylal alone. Intravenous injection of 50 per cent dextrose (31 Gm per kilogram) and 30 per cent sodium chloride (0.61 Gm per kilogram) reduced the spinal fluid pressure for from two to three hours; the pressure then rose above the control level. From 3 to 8 Gm of sucrose per kilogram of body weight, injected intravenously in a 50 per cent solution reduced the spinal fluid pressure in from five to eight hours. The magnitude of the fall of pressure (from 50 to 150 mm.) was dependent on the amount of sucrose given and on the height of the initial pressure. Greater effects were obtained with higher initial pressures. Although observations were made for twelve hours

after injection, there was no indication of the beginning of a secondary rise of pressure exceeding the control level, except in three experiments. In these, it could be attributed to definite causes other than the sucrose. Injection of sucrose induced active diuresis lasting about three hours, during which the kidneys eliminated about four times as much fluid as was given intravenously with the sugar. The mechanisms by which various hypertonic solutions reduce cerebrospinal fluid pressure are compared and discussed. While temporarily increasing the circulating plasma volume, sucrose reduces the spinal fluid pressure without a secondary rise.

American Journal of Public Health, New York

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Am J Roentgenol & Rad. Therapy, Springfield, Ill

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- The Phrygian Cap' in Cholecystography Congenital Anomaly of Gallbladder E A Boyden Minneapolis—p 589
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- Roentgenologic Significance of Milk of Calcium Bile. K Kornblum and W C Hall Philadelphia—p 611
- Advantages of Intensified Oral Cholecystography W H Stewart and H E Illick New York—p 624
- Cholecystographic Diagnosis of Papillomas and Tumors of Gallbladder C Moore Washington D C—p 630
- Treatment of Pulmonary Cavities L H Fales and E A Beaudet Livermore Calif—p 636
- Roentgen Study of Gastro-Intestinal Tract in Chronic Idiopathic Adult Tetany E P Pendergrass and B I Comroe Philadelphia—p 647
- Congenital Anomalies of Alimentary Tract with Especial Reference to Congenitally Short Esophagus W F Manges and L H Clerf Philadelphia—p 657
- Mortality Study in Carcinoma of Uterine Cervix Treated by Irradiation R E Fricke Rochester Minn—p 670
- Radium in Treatment of Metastatic Epidermoid Carcinoma of Cervical Lymph Nodes D Quick New York—p 677
- Radium Dosage and Technic in Carcinoma of the Skin, with Especial Reference to Interstitial Irradiation with Platinum Iridium Needles H N Cole and J R Driver Cleveland—p 682
- *Radium Dosage and Technic in Carcinoma of Tonsil Pharynx and Larynx M Cutler Chicago—p 690
- Design of Flexible Radium Bomb with Adequate Protection Delivering Homogeneous Field of Radiation at Various Distances W S Newcomet and B A Hughes Philadelphia—p 694
- Use and Abuse of Interstitial Irradiation A Soiland Los Angeles—p 698

Radium Dosage and Technic in Carcinoma of Tonsil.—Cutler limits his discussion to certain observations on the effect of the total period of irradiation on the skin, the tumor bed and the local lesion in carcinoma of the tonsil, pharynx and larynx treated by the 4 Gm radium pack. He selected five cases, which are of interest as evidence in the problem of the upper time limit for total irradiation without the production of radiation immunity and as evidence on the dose necessary to produce an epidermitis and the upper limits of safety in massive radium therapy. The lesion was early and localized in one case and advanced in four cases. Complete disappearance of the lesions was accomplished in all the cases by protracted radium pack therapy. The lesions were exposed twice daily and consecutively. The distances were 10 and 15 cm. An epithelitis was produced in every instance and an epidermitis in three of the five cases. These observations are presented to demonstrate a primary disappearance of disease in response

to protracted irradiation. The patients have been free from disease for periods varying between nine and eighteen months. The short interval since treatment permits no deductions on the permanence of the results. These observations, however, seem to confirm the possibility that, if continuity of treatment is observed and the total dose is adequate, the total period of irradiation may be prolonged to forty, fifty or even sixty days without necessarily inducing a radiation immunity. Although it is possible that local recurrences may still develop in these cases because of the short interval of time, it is much more likely that reappearance of the disease—if it occurs—will take place in the form of metastases to lymph nodes outside the field of irradiation or to distant viscera.

Annals of Internal Medicine, Lancaster, Pa

S 1387 1574 (May) 1935

- Malignant Monoblastoma. Variant of Monocytic Leukemia. L. A. Mitchell. Newark, Ohio.—p. 1387.
- Clinical Studies in Electrocardiography. III. Persistent Abnormal Lead IV Findings in Serial Electrocardiograms with Negative Three Routine Leads, in Coronary Thrombosis. A. A. Goldbloom, New York.—p. 1404.
- Carotid Sinus Reflex Hypersensitivity. H. M. Moses and S. S. Feinstein. Brooklyn.—p. 1413.
- Chest Roentgen Ray Study of Adult Negro Population of Entire Community. D. O. N. Lindberg. Decatur, Ill.—p. 1421.
- *Plasma Cholesterol in Tuberculosis and Amyloid Disease. S. E. King and M. Bruger. New York.—p. 1427.
- *Arteriosclerosis in Diabetes. I. Relationship Between Plasma Cholesterol and Arteriosclerosis. II. Effects of High Carbohydrate Low Calory Diet. I. M. Rabinowitch. Montreal.—p. 1436.
- Electrocardiographic Studies in Acute Coronary Thrombosis. I. Transient Heart Block of All Grades in a T_a Q_i Type of Case with Serial Electrocardiograms from Actual Onset To and After Clinical Recovery. J. G. Knauer, Ancon Canal Zone.—p. 1475.
- Present Status of Problem of Rheumatism. Review of Recent American and English Literature on Rheumatism and Arthritis. Part II. P. S. Hench, Rochester, Minn. W. Bauer. Boston. A. A. Fletcher, Toronto. D. Christ, Los Angeles. F. Hall. Boston. and P. White. Charlotte, N. C.—p. 1495.

Plasma Cholesterol in Tuberculosis and Amyloid Disease.—King and Bruger observed in thirty-four cases of tuberculosis without amyloid disease that the predominating pulmonary lesion was ulcerative tuberculosis associated with a distinctly positive sputum and marked constitutional symptoms. The lowest cholesterol level occurred in one patient shortly before death in which only a trace was found. The highest value was 286 mg per hundred cubic centimeters of blood. There was no apparent correlation between the plasma cholesterol and the age, extent or duration of the disease. In thirteen cases with a cholesterol concentration below 150 mg per hundred cubic centimeters, death generally followed within a month. In the other twenty-one cases with normal or slightly elevated cholesterol levels the mortality over a period of six months was 22 per cent. In four cases, hypocholesterolemia was associated with an early fatal termination. In sixteen cases of tuberculosis with early amyloidosis of the kidney, severe tuberculosis was complicated by incipient renal amyloid degeneration. The amyloid was recognized by a positive congo red test and a constant urinary protein. Cholesterol values were higher in this group than in the previous ones. Only two cases with marked hypocholesterolemia were encountered, both of these terminated fatally within a brief period. The average cholesterol value for the other cases was 228 mg per hundred cubic centimeters. The mortality during a period of six months was 22 per cent in those with normal or elevated plasma cholesterol. The most prominent clinical features of twenty cases of tuberculosis with amyloid nephrosis and edema were general anasarca and marked proteinuria. Pulmonary lesions were usually extensive. In three instances, bone tuberculosis was present. A marked increase in plasma cholesterol, as high as 450 mg, was found, the lowest cholesterol observed at the time of edema was 200 mg. In four cases a fairly severe anemia (60 per cent hemoglobin or less) was associated with hypercholesterolemia. When the prognosis was bad, a tendency toward a falling plasma cholesterol concentration became evident. A falling blood cholesterol was noted in several subjects shortly before death.

Arteriosclerosis in Diabetes.—Rabinowitch studied fifty cases of diabetes, which show that excess blood cholesterol is an important etiologic factor in the production of arterioscle-

rosis in the young diabetic patient. The data also appear to indicate that treatment with the high carbohydrate low calory diet has delayed development of cardiovascular disease in the cases investigated. Time alone and further studies will determine whether this diet can actually prevent premature development of this complication. One of the most constant characteristics of the high carbohydrate-low calory diet is an immediate and sustained decrease of plasma cholesterol. The author believes that this finding is incontestable. Therefore, if the conclusion that excess cholesterol in the blood causes cardiovascular disease in the young diabetic patient is also found to be correct, the outlook of patients with diabetes has been greatly improved. Repetition of these studies is therefore warranted by others with similarly available facilities. In order that other data may be comparable, the method of investigation should be the same, the combined method of detecting arteriosclerosis should be used in every case. This includes a physical examination, examination of the fundi, roentgen examination of the lower extremities for calcification of the arteries, and roentgen examination (6 foot plate) of the heart. Any one method alone or any combination of two or three methods alone does not afford a sufficiently reliable index of the presence or absence of arteriosclerosis. For the estimation of plasma cholesterol, all blood samples should be collected in the fasting state, and in the interpretation of cholesterol data all conditions known to affect the concentration of cholesterol in the blood—that is, whether they increase or decrease it—other than diabetes and arteriosclerosis should be excluded as much as possible. In order that data of different clinics with respect to degree of control of diabetes may be reasonably comparable, the author suggests that the control index reported should be used. It appears to be a reasonably quantitative measure of control of diabetes from a statistical point of view.

Archives of Dermatology and Syphilology, Chicago

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- Dermatosis of Monocytic Leukemia. S. T. Mercer. Seattle.—p. 615.
- *Cutaneous Moniliasis Associated with Oral Thrush. Unusual Case. J. G. Downing and J. B. Hazard. Boston.—p. 636.
- Fungistatic and Fungicidal Effects of Two Wood Preserving Chemicals on Human Dermatophytes. Ortho (2 Chlorophenyl) Phenol Sodium and Tetrachlorophenol Sodium. L. M. Wieder. Milwaukee.—p. 644.
- Dermatitis from Grapes. J. M. Anderson, Salt Lake City.—p. 658.
- LXVIII. Cultivation and Study of *Pityrosporum Ovale*, So-Called Bottle Bacillus of Unna. M. Moore. St. Louis.—p. 661.
- *LXIX. Generalized Subcutaneous Gummatus Ulcerating Sporotrichosis. Report of Case with Study of Etiologic Agent. M. Moore and R. L. Kile. St. Louis.—p. 672.
- Fatality from Exacerbation of Latent Tuberculosis Due to Thio-Bismol in Cases of Yaws. C. M. Hasselmann. Manila. P. I.—p. 686.
- Contributors to History of Syphilis of Nervous System. Ulrich von Hutten (1488-1524). M. Moore and H. C. Solomon. Boston.—p. 692.

Cutaneous Moniliasis Associated with Oral Thrush.—Downing and Hazard observed a case of moniliasis in which there were markedly hyperkeratotic lesions on the face. Mild, general forms of therapy proved effective in the treatment of the lesions of the skin, whereas inhalations of ethyl iodide had no effect. The type of *Monilia* isolated in this case is not usually present on normal skin. The organisms from lesions of the mouth and the face were yeastlike in structure, produced segmented mycelia, did not form ascospores, fermented certain sugars with the formation of acid and gas, did not coagulate milk and were pathogenic for rabbits. The first four of these characteristics are specific for the genus *Monilia* or *Parasaccharomyces*. In view of their pathogenicity for rabbits, as well as the fermentations of sugar, the fungi may be placed in the group *Parasaccharomyces*, described by Nye. Except for the fact that no formation of gas was observed in galactose, these organisms might be positively identified as *Monilia*, type II, described by Stovall and Bubolz, which includes, among other species, *Monilia albicans* Craikii, *Monilia psilosis* Ashfordii and *Monilia pinoyi* Castellani. Since the most characteristic biochemical reactions are obtained in maltose and saccharose, the organism would seem to belong to *Monilia*, type II, in spite of the failure to form gas when grown in galactose. The species *Monilia albicans*, described by Benham, presents the same mycologic aspects as the organisms isolated in this case.

Generalized Sporotrichosis Cured—Report of a Case—Moore and Kile cite a case of generalized, subcutaneous, gummatous, ulcerating sporotrichosis with a possible pulmonary complication and subsequent cure. The condition closely simulated tertiary syphilis, the syphilitic type of sporotrichosis. The organism recovered from an active unruptured lesion was identified as *Sporotrichum Beurmanni*, a species that is considered as doubtfully distinct from *Sporotrichum Schenckii*. The presence of symptoms in the pulmonary apparatus with subsequent and simultaneous cure along with cure of the cutaneous lesions leads the authors to suspect a similar infection. The absence of *Sporotrichum* both in smears and in cultures of the sputum on several occasions cannot be accounted for unless one presupposes, as have several authors, a production of toxin—either exotoxin or endotoxin—which is liberated by the fungus and localized in the lungs. However, the existence of airborne spores indicates the possibility of a pulmonary complication, and the failure to find the organism in a few attempts does not rule out the possibility of infection. The patient was given a saturated solution of potassium iodide up to 40 drops (26 cc) three times a day. The lesions were dressed with a 5 per cent iodine ointment. The medication seemed to have a specific effect in clearing up the subacute inflammatory phases of the infection in the lungs. In a month the skin lesions were almost completely healed but medication was continued for another month. The patient has been free from lesions for two and a half months, without recurrences.

Archives of Internal Medicine, Chicago

55 873 1084 (June) 1935

*Cardiovascular Syphilis. Early Diagnosis and Clinical Course of Aortitis in Three Hundred and Forty Six Cases of Syphilis. E P Maynard Jr, J A Curran, I T Rosen, C G Williamson and Claire Lingg. Brooklyn—p 873.

Confusing Clinical Manifestations of Malignant Renal Neoplasms. C D Creevy. Minneapolis—p 895.

Alterations of Electrocardiogram in Diseases of Pericardium. E H Schwab and G Herrmann. Galveston, Texas—p 917.

Experimental Peripheral Gangrene. Effect of Estrogenic Substance and Its Relation to Thrombo-Angiitis Obliterans. E J G McGrath. Cincinnati—p 942.

*Metabolism in Undernutrition. Its Changes During Treatment by High Caloric Diet. J M Strang, H B McClugage and M A Brownlee. Pittsburgh—p 958.

*Fat Tolerance in Hyperthyroidism. Opal E Hepler. Chicago—p 979.

Dissemination of Amebiasis. F W O Connor. New York—p 997.

Cardiovascular Syphilis—In the hope of adding to the knowledge of cardiovascular syphilis, Maynard and his associates began a study in 1927 in the clinics of the Brooklyn Hospital for adults with cardiac disease and syphilis. Every patient in the clinic for syphilis who would consent was referred to the clinic for cardiac disease for complete cardiovascular examination. They found that syphilis of the aorta can be recognized much earlier than in the past. In order to discover its presence it is necessary that every syphilitic patient be examined regularly by methods used in making a diagnosis of cardiovascular disease. These examinations should be repeated every six months or once every year. Roentgenograms and fluoroscopic examination provide the most reliable means of deciding whether abnormality of the aorta is present in early syphilis. Heart failure occurs only in those patients in whom syphilitic involvement has passed beyond the stage of simple aortitis. In the patients studied myocardial failure appeared only after the development of aortic insufficiency, aneurysm or narrowing of the coronary arteries. Multiple gummas may be regarded as a cause of heart failure but this condition was not encountered in the present study. It is well known that these four manifestations are late lesions. Symptoms of heart failure usually prompt patients to seek relief in clinics for cardiac disease. Since these tend to occur late in cardiovascular syphilis and since no special routine effort has been made in the past to examine syphilitic patients for evidence of cardiovascular disease, the discovery of aortitis has been delayed. It is probably not true that syphilitic aortitis is a late lesion occurring on the average twenty years after the occurrence of the chancre. It is the authors' opinion that involvement of the aorta begins soon after the chancre has appeared and that, in the past, discovery of the presence of the disease has

been delayed by the late development of symptoms referable to the heart and more especially by inadequate methods of examination.

Experimental Peripheral Gangrene—McGrath derived from his experiments the fact that female rats previously intoxicated with ergotamine tartrate in amounts sufficient to produce gangrene of the tail were protected from the development of the gangrene by adequate amounts of theelin. The chi square test of probability demonstrates conclusively that the results are not attributable to the operation of chance alone. At first glance it would seem that theelin had no protective action on the male rats of the experiment. A mathematical analysis of the mean results, however, indicates that there was a significant delay in the onset of trophic changes in the male rats of the first series receiving theelin as compared with the onset in males not receiving theelin. The delay was not encountered in the later series of males. The discovery of this phenomenon of delay suggests the possibility that theelin may have some effect on the male, if administered in sufficiently large doses. Experiments testing this hypothesis are in progress. The mean times of appearance of the major trophic changes—pallor, cyanosis, blackness of the tail and demarcation of the gangrenous portion—are compiled together with the mean extent of the gangrenous process in the tails under increasing doses of ergotamine. Analysis of these means indicates a significant increase in the speed with which the trophic disturbances occur, varying directly with the increase of the dose of ergotamine. Such a relationship is not apparent in the extent of gangrene. The parallelism between the sex limitation of thromboangiitis obliterans and the protection of the female rats from ergotamine gangrene by an excess of theelin is indicated. It was noted that within this parallelism lies the suggestion that there may be in thromboangiitis obliterans a basic etiologic disturbance which is possibly endocrine, and that the failure of the disease to manifest itself in women or at least its presence in a form so mild as to escape clinical notice may be associated with a protective action of the estrogenic principle of the ovary.

Metabolism in Undernutrition—Strang and his co-workers state that studies of the basal metabolism, nitrogen metabolism and efficiency of digestion of patients with severe degrees of undernutrition showed no abnormalities in the factors that could cause the initiation or persistence of pronounced states of undernourishment. The changes in these three factors which were observed as a result of either the high caloric intake or the increases in weight dependent on it indicated no new principles of metabolism that might militate against the successful treatment of undernutrition by dietary measures.

Fat Tolerance in Hyperthyroidism—Hepler experimented on adult dogs in an attempt to determine the effect of hyperthyroidism on fat metabolism. Twenty-two adult dogs were used; four died of acute thyrotoxicosis and the observations on three others were discontinued because of infections. Thyrotoxicosis was produced by feeding 10 Gm of desiccated thyroid daily with the food. Within a week after the feeding of thyroid was begun the dogs began to show loss of weight, great excitability and diarrhea. The feeding of thyroid slightly decreased the initial blood fat during the first month, while the height of hyperthyroidism was being reached. Continued feeding of thyroid was accompanied by an increase in the initial blood fat above the normal value. During the first period of feeding of thyroid there was a decrease in the tolerance of the animal for fat as demonstrated by the increased curve for blood lipids. The cholesterol values remained within normal limits during the period of feeding of thyroid. During the rest period after the first period of feeding of thyroid, when the animal was in a state of hypothyroidism, the fat and cholesterol values increased. The blood fat and cholesterol decreased during the second period of feeding of thyroid, possibly because in part of a resistance of the animal to a second administration of thyroid. Two explanations for these results are suggested. 1 The thyroid extract injures by its toxic effect the tissue cells, rendering them incapable of maintaining their normal capacity for storing or utilizing fat. 2 In hyperthyroidism the metabolism of the body is established at a higher level and the fuel constituents of the blood—fat and sugar—likewise must be established and maintained at a

higher level in order to sustain this increased metabolism. The author believes that the second explanation is the more satisfactory.

California and Western Medicine, San Francisco

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- California State Board of Health with Comments on Its Activities During the Last Two Years H. Morrow San Francisco—p. 337
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 Herpes Zoster Some of Its Clinical Aspects M. R. Somers and Pearl S. Pouppirt, San Francisco—p. 370

Canadian Medical Association Journal, Montreal

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- Study on Blood Coagulating Substance Produced by Staphylococci and Its Relation to Disease M. Pigeon Montreal—p. 476
 Plasma Chlorides in Pneumonia and Their Clinical Significance A. F. Fowler, Montreal—p. 482
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 *Irradiated Cholesterol in Cure of Human Rickets Preliminary Communication F. F. Tisdall, T. G. H. Drake and A. Brown Toronto—p. 490
 Types of Malignant Disease Treated by Radium at the Cancer Relief and Research Institute in Manitoba D. Nicholson Winnipeg Manit.—p. 492
 *The Lipopenia of Fever E. M. Boyd Kingston Ont.—p. 500
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 Mental Disorders with Biologic Background F. N. Walker Toronto—p. 509
 Examination of the Gynecologic Patient H. B. Atlee Halifax N. S.—p. 516
 Some Simple Observations and Procedures of Assistance to the Practitioner in Diagnosis and Eradication of Tuberculosis R. G. Ferguson Fort St. John Sask.—p. 524
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 Spontaneous Subarachnoid Hemorrhage Simulating Diabetic Coma Report of Two Cases H. C. Jameson and J. W. Scott Edmonton Alta.—p. 540
 Actinomycosis Analysis of Twelve Cases E. L. Pope, Edmonton Alta.—p. 542
 Numbness in Sea Sickness F. L. McLaughlin London England—p. 544

Irradiated Cholesterol in Cure of Rickets in Premature Infants—Tisdall and his associates treated two rachitic premature infants with irradiated cholesterol. They found that the daily administration of 750 international vitamin D units of irradiated cholesterol (equivalent in rat units to 3 drops of viosterol in oil 250 D or 2 teaspoonfuls of a good grade of commercial cod liver oil) produced rapid healing of acute rickets during the winter months. Roentgenograms of both infants taken after irradiated cholesterol had been administered for seven weeks showed good healing of the rickets. At the present time there is evidence that there may be no less than four, and possibly six, chemical substances, each with a different vitamin D effect. The antirachitic potency of viosterol as measured on chickens is only about one-fiftieth that of cod liver oil, unit for unit. Blue fin tuna liver oil, unit for unit, has about one-sixth the antirachitic effect on chickens of cod liver oil. Irradiated cholesterol has been found to be just as effective in the cure of rickets in chickens as cod liver oil. Yoder has reported that cholesterolene sulphonic acid has antirachitic properties when fed to rats. Its action, however, is apparently different from the vitamin D of irradiated cholesterol. From work on human beings Hess has suggested that the vitamin D in irradiated milk is a different substance from the vitamin D in cod liver oil, although recent work by the authors does not substantiate this suggestion.

The Lipopenia of Fever—The results of Boyd's investigation demonstrate that in fever one has to deal with an alteration in the concentration not only of cholesterol but of all

the blood lipids. The onset of fever is accompanied by a temporary lipemia involving all the plasma lipids except cholesterol esters. As fever continues, a lipopenia develops, as the result of a diminished concentration of plasma phospholipids, cholesterol esters and free cholesterol, with an increased concentration of neutral fat. When the temperature subsides, all the values return approximately to the range of those in normal persons. Concurrently with these changes in plasma the concentration of lipids in the red blood cells exhibits exactly the opposite variations. Thus during fever the cellular values of free cholesterol, phospholipid and, usually, ester cholesterol are increased, while the level of neutral fat falls. The volume number of the total fatty acids of plasma rises in the early days of fever, indicating the presence of unsaturated fatty acids, which are replaced by more saturated fatty acids as fever persists. The increase in the lipid content of the red blood cells does not appear to bear any causal relationship to the fall in plasma lipids. The total amount of lipids which these cells are capable of removing from plasma is small, because fats are not oxidized to any extent, if at all, in these cells. In the early days of fever the carbohydrate reserves of the body are burned and the fats are mobilized in the blood. As fever persists the fats are used as fuel and the transport of fatty acids from the depots to the muscles, and so on, becomes very active. The transport fats are rapidly removed from the plasma and the reserves are gradually used up, producing loss in weight and, in extreme cases, emaciation.

Canadian Public Health Journal, Toronto

26 209 260 (May) 1935

- *Antiabortus Serum C. A. Mitchell, F. A. Humphreys and R. V. L. Walker Hull Que.—p. 209
 Amebic Dysentery Its Public Health Significance and Control A. Bolduc Montreal—p. 215
 Common Poisonings I. Poisonings Common in General Practice. V. F. Stock Toronto—p. 225
 Id. II. Common Industrial Poisons A. R. Riddell Toronto—p. 231
 Id. III. Poisonings Common in Children J. R. Ross and A. Brown, Toronto—p. 237
 Estimation of Common Fresh Water Plankton D. H. Matheson Hamilton Ont.—p. 244
 Safeguarding Montreal's Food Supply A. J. G. Hood Montreal—p. 247

Antiabortus Serum—Mitchell and his associates produced a filtrate by growing *Brucella abortus* strain 244 on a 2 per cent glycerin broth for three months. The organisms were separated from the filtrate by passing the liquid through several thicknesses of cotton and subsequently through a porcelain filter. The filtrate was then evaporated in a water bath at 100 C to one tenth of its original volume. Many experiments were conducted with this product. The results demonstrated that this filtrate stimulated the formation of agglutinins and complement fixing substances in the blood of the majority of inoculated animals, these substances making their appearance about the seventh day after the inoculation. This suggested that perhaps a serum containing protective properties might be prepared by inoculating a horse with the concentrated filtrate. Consequently a horse was chosen for experiment. On the thirty-fourth day, complement fixing substances disappeared from the blood. Serum drawn on the eighteenth and the fortieth day was tested on guinea-pigs and was found to possess no protective properties. It therefore appeared that any protective property which a serum might possess was not altogether dependent on its agglutinin or complement fixing substances, also that the filtrate was unable to stimulate the formation of protective substances or constantly to stimulate the formation of agglutinins and complement fixing substances. After a rest of two months the horse was again chosen for experiment. It was inoculated with 1,800 cc. of a culture of *Brucella abortus* 244, grown for ninety-six days. The horse tolerated this massive dose reasonably well. On the seventh day the agglutinin titer rose to 1:40,000 and kept on mounting, until on the nineteenth day it reached almost 1:320,000. No complement fixing substances made their appearance in the blood. Blood was drawn on the nineteenth day, identified as 43 C and tested for protective properties on guinea pigs. When administered to guinea-pigs previous to a challenge inoculation of *Brucella abortus*, serum 43 C conferred a degree of protection. When administered after infection was established,

no protection was conferred. Normal horse serum given before a challenge inoculation conferred no protection. Another normal horse was inoculated on three successive days with *Brucella abortus* 244 incubated ten days. After an interval of nine days, inoculations were used of the same strain of culture but incubated 185 days, 10 cc. was given on two successive days, but the resulting reaction was so marked that only 5 cc was given on the following day. With extreme care the daily inoculation was gradually increased until 1,500 cc caused no reaction. On the sixty-fourth day following the initial inoculation, blood was drawn and the serum tested on guinea-pigs for protective properties. A degree of protection was conferred on guinea-pigs when the serum was administered before inoculation with live organisms. Since the serum gave evidence of possessing protective properties when used on the guinea-pigs, the antiserum has been issued for the treatment of twenty-eight cases of undulant fever. Six cases showed no improvement following the administration of serum. The remaining twenty-two have shown exceptionally satisfactory improvement. In fact, in many of these cases recovery following the inoculation of relatively small amounts of serum, is remarkable.

Delaware State Medical Journal, Wilmington

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- Fear M A Tarumlanz Farnhurst —p 81
Economic and Population Situation at the Delaware State Hospital at Farnhurst Persls F Elfild Farnhurst —p 85
Alcoholic Psychoses J W Ballard Farnhurst —p 89
The Mental Examination C Uhler Farnhurst —p 92
The Work of the Observation Clinic 1931-1935 E Klein Farnhurst —p 96
Epidemic Encephalitis Case B G Lawrence Farnhurst —p 100
General Paresis Treatment with Diathermy G J Gordon Farnhurst —p 102
Senile Psychoses Joan F McGreevy Farnhurst —p 104
Treatment of Vincent's Infection W H Norris and W F Nowland Farnhurst —p 108
Study of Children of Psychotic Parents with Respect to Factors Revealed on Intelligence Examinations W C Shipley Farnhurst —p 109
Normal White and Colored Children Comparative Study Marion McKenzie Font, Farnhurst —p 111
Recreation Factor in Therapy Audrey D Deniston Farnhurst —p 114
Effect of Economic Security on Mental Health Zilpha M Guilfoil Farnhurst —p 117
Some Clues to Treatability from the Standpoint of the Social Worker Adelia Smith Farnhurst —p 119

Endocrinology, Los Angeles

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- Menstrual Dysfunctions in Disorders of Personality Their Nature and Treatment E B Allen White Plains N Y —p 255
Changes in Endometrium After Female Sex Endocrine Therapy Consideration of Effect of Antutrin S in Human Subjects J Rock Brookline Mass —p 269
Diabetes Insipidus Treatment with Intermedin and Pitmelanin Preliminary Report of Five Cases H H Turner Oklahoma City —p 275
Successful Ovarian Therapy in Case of Severe Preadolescent Eunuchoidism H Lisser San Francisco —p 284
Thyroid and Senescence Structural Transformations of Thyroid in Old Age and Their Functional Interpretation G C Dogliotti and G N Nuti Florence Italy —p 289
Anterior Pituitary Hormone Content of Hypothalamus of Dogs G Pighini Reggio Emilia Italy —p 293
Effects of Pituitrin Pitressin and Pitocin on Copper Reducing Substances in Serum and Urine of Dogs A R McIntyre R F Sievers and H F Elias Omaha —p 298
Experiments with Theelin and Galactin on Growth and Function of Mammary Glands of Monkey E Allen W U Gardner and A W Diddle New Haven Conn —p 305
The Aschheim-Zondek Test with Mature Mice A G Sar Louis Cleveland —p 314
Endometrial Studies G S McClellan Doris Phelps and J C Burch Nashville, Tenn —p 321
Acquired Resistance to Thyroid Stimulating and Pseudoluteinizing Hormone of Cattle Anterior Pituitary P Max Mary M Schmeckler and L Loch St Louis —p 329
The Relation of Blood Volume to Certain Glands of Internal Secretion Effect of Thyroid and Gonad Ablation Mae Friedlander N Laskey and S Silbert New York —p 342
Effect of Spaying on Body Growth and Organ Weights of the Albino Rat C B Freudenberg and O A Billeter Salt Lake City —p 347

The Aschheim-Zondek Test with Mature Mice—Sar-Louis states that the Aschheim Zondek test may be performed on mature, even gravid, animals. The reading of the test

may be made after thirty-six hours, although increased intensity and rapidity of luteinization are more striking after from seventy-two to 100 hours. The increased intensity and rapidity of luteinization are indicated by luteinization of interstitial tissue, giving the section a more confluent appearance, luteinization of theca of immature follicles, partial luteinization of a follicle or cyst, so that both granulosa and corpora lutea cells are seen in the same follicle. Increase in the number of corpora lutea atretica and corpora lutea cysts, and increase in the number and size of central hemorrhages. When the animal is not in the preestrous or estrous phase, the presence of hemorrhages alone is significant. These changes are so striking that there is no possibility of confusing them with the physiologic changes observed in the ovaries of mice at any stage of the sexual or estrous cycle. Further experiments are being carried out to determine whether there is any quantitative or qualitative difference between the ovarian reaction in mice following injections of the gonadotropic hormone of the anterior pituitary and those observed following the injection of pregnancy urine.

Florida Medical Association Journal, Jacksonville

21: 469 536 (May) 1935

The Physician and His Government H L Pearson Miami —p 479

Georgia Medical Association Journal, Atlanta

24 159 198 (May) 1935

- Notes on History of Medical Association of Georgia 1920-1935 A H Bunce Atlanta —p 159
Woman's Auxiliary to the Medical Association of Georgia 1924-1935 Mrs A H Bunce Atlanta —p 182
Gastro-Intestinal Complications of Pulmonary Tuberculosis Review of Case A W Hobby Atlanta —p 185

Journal of General Physiology, New York

18: 599 790 (May 20) 1935 Partial Index

- Paradoxical Relation Between Zeta Potential and Suspension Stability in S and R Variants of Intestinal Bacteria Eleanor W Joffe and S Mudd Philadelphia —p 599
Physical Chemical Difference in Antibodies Against S and R Variants of Single Bacterial Strain Eleanor W Joffe Philadelphia —p 615
Effects of Radiations on Biologic Systems II Immediate and Subsequent Effects of γ Ray Irradiation on Respiration of *Drosophila* Larvae R Hussey and W R Thompson New Haven Conn —p 669
Studies on Elimination of Dyes in Gastric and Pancreatic Secretions and Inferences Therefrom Concerning Mechanisms of Secretion of Acid and Base R C Ingraham and M B Vischer Chicago —p 695
Correlation of Oxidation and Phosphorylation in Hemolyzed Blood in Presence of Methylene Blue and Pyocyanine J Runnstrom and Leonor Michaelis New York —p 717
Theory of Visual Intensity Discrimination S Hecht New York —p 767

Journal of Immunology, Baltimore

28: 331-412 (May) 1935

- Factors Influencing Speed of Flocculation K Ando and T Komiyama Dairen South Manchuria —p 331
Diphtheria Toxin Produced on Semisynthetic Medium K Ando and T Komiyama Dairen South Manchuria —p 345
*Role of Convalescent Serum in Preparalytic Poliomyelitis M Brodie New York —p 353
Individual as Factor in Antidiphtheria Immunity I Antitoxic Responses of Groups of Guinea Pigs J M Neill J Y Sngg New York, and L V Richardson Nashville Tenn —p 363
Id II Titers of Individual Guinea Pigs at Times Remote from the Last Injection of Antigen J Y Sngg New York L V Richardson Nashville Tenn and J M Neill New York —p 385
*Incidence of Serologic Types of Hemolytic Streptococci in Recent Cases of Erysipelas Extent of Protection of Antierysipelas Serum Against These Erysipelas Strains as Tested on White Mice. Sophie Spicer Mary F Gonshorek and Emily L Spicer New York —p 399

Convalescent Serum in Preparalytic Poliomyelitis—

The use of serum once paralysis has set in, is contraindicated, as in one of Brodie's monkeys there was no muscular recovery. In two animals 230 and 295 cc of whole blood failed to hold the course of the disease in the late preparalytic stage. Although rapid and pronounced recovery after almost complete paralysis is rare in the experimental disease, it can scarcely be assigned to the effects of serum in one of these animals for it recurred in the animal receiving the smaller dose. One monkey, receiving 135 cc of serum when only a rise of temperature was present was not benefited by the serum, nor was another receiving 208 cc. of serum when only temperature rise cerebrospinal fluid pleocytosis and possibly a transient tremor of

one limb were present. One of these animals was treated at the earliest stage at which a definite diagnosis could be made, the other even earlier, and it is not likely that the course of the disease was any more severe than some of the fulminating human cases—those that really need the benefit of a therapeutic agent. Larger doses of serum than those given to patients and given earlier in the disease failed to halt the progress of the disease in experimental animals. The author's studies confirm the views of Neal and Harmon, who point out that there are no statistical data pointing to the therapeutic value of convalescent serum. The fact that 6 cc of convalescent serum given three days after an extracerebral infective dose prevented paralysis, whereas 75 cc given within the same period but after intracerebral inoculation failed to protect, suggests either that the serum failed to reach the central nervous system or else that the virus was fixed to the cells and could not be dislodged. Andrewes, working with vaccine virus, could prevent infection when the serum preceded the administration of virus, but if given even five minutes after the virus, the serum was ineffective, probably because the virus was already fixed to the tissues. Poliomyelitis virus can spread through the central nervous system of an animal in the presence of demonstrable antibody.

Serologic Types of Hemolytic Streptococci in Cases of Erysipelas—Spicer and her associates isolated sixteen strains of hemolytic streptococci of the beta type from fifty-two cases of erysipelas. Only two strains, a smooth and a coarse obtained from the erysipelatos lesion of the same patient fell into one of their previously determined groups that of type IV scarlet fever. Two other strains absorbed one from each of two serums prepared with the new erysipelas strains. The antibacterial potency of two erysipelas serums prepared by different groups proved to be of low value, as evidenced by protection tests on white mice. A rabbit serum prepared from one of the strains of the new erysipelas series while being highly potent against its own strain (homologous strain), protected against the other new erysipelas strains to about the same degree as did the antiscarlatinal serum. It protected however against the major type erysipelas strain used in the preparation of both erysipelas horse serums to a greater extent than was its own strain protected by either of the erysipelas serums.

Journal of Industrial Hygiene, Baltimore

17 73 120 (May) 1935

Application of Chronaximetric Measurement to Industrial Hygiene Particularly to Examination of Lead Workers. F. H. Lewy. Philadelphia—p. 73.

*Blood and Chronaximetric Examination of Lead Workers Subjected to Different Degrees of Exposure. Comparative Study. R. E. J. Manchester. England and F. H. Lewy. Philadelphia—p. 79.

Toxic Nephritis Following Exposure to Carbon Tetrachloride and Smoke Fumes. S. F. Dudley. Chatham. England—p. 93.

Dermatitis in Vegetable Canning Industry. W. H. Schulze and C. L. Ewing. Baltimore—p. 111.

Convenient Electrical Suction Device for Greenburg Smith Impinger. T. C. Angus. London. England—p. 114.

Blood Examination of Lead Workers—Lane and Lewy made blood and chronaximetric examinations of 825 men working in four electrical accumulator factories in England. Of the men examined 71.3 per cent were normal by both methods, 14.2 per cent were abnormal by both methods and 14.5 per cent were abnormal by one or the other method only. Chronaximetry showed changes in the nerve irritability in the presence of normal blood observations in men who had in the past worked for many years under unfavorable conditions though they had for at least the last two years worked under extremely good conditions in newly engaged employees who had been unemployed for protracted periods, in certain cases of infection quite independent of lead absorption and in a small group of workers who, in spite of heavy exposure, never developed punctate basophilia although they showed other signs of lead absorption. Pathologic blood changes were present in the absence of nerve changes in workers recently transferred to comparatively dangerous departments (this more subacute form of lead absorption leads to blood changes long before the nerve irritability becomes affected) and in various independent diseases, especially hemorrhages, that affect the blood picture but leave the nerves unchanged. As applied to the individual,

following moderate or heavy exposure punctate basophilia appears more quickly and, following the cessation of exposure, disappears more rapidly than do the nerve changes, changes in the nerve follow exposure at a greater interval and once established are far slower to disappear, and small doses of lead received over a protracted period may lead to nerve involvement without blood changes. Malnutrition, whether quantitative or qualitative, is a factor that may lead either directly or indirectly to abnormal nerve irritability or may facilitate the appearance of nerve changes following lead absorption in the absence of blood changes.

Journal of Nervous and Mental Disease, New York

81: 613 744 (June) 1935

Blood Falls in Schizophrenia. A. T. Brice, Jr. Palo Alto. Calif.—p. 613.

Further Contributions to Histopathology of Experimental Adrenal Intoxication. A. Stief and L. Tokay. Szeged. Hungary—p. 633.

Observations on Expert Testimony. F. J. Farnell. Providence. R. I.—p. 649.

*Rhinothorax and Neoplasms of Central Nervous System. R. E. Britt. Burlington. Iowa—p. 654.

Status Pigmentatus. Its Pathology and Its Relation to Haller's and Spatz Disease. M. Helfand. New York—p. 662.

Rhinothorax and Neoplasms of Central Nervous System—Britt cites the three main routes by which the cerebrospinal fluid reaches the nose in rhinothorax and neoplasms of the central nervous system: (1) communications from the floor of the anterior horn of the dilated lateral ventricle through the eroded cribriform plate with the nose, (2) openings from a persistent lumen in the olfactory bulb through the cribriform plate into the nose and (3) an opening from the basal subarachnoid cistern through the cribriform plate into the nose. The first group is the most frequent one. In these cases the increased intracranial pressure causes destruction or atrophy of the cribriform plate. The dura overlying the cribriform plate contains tiny holes, which permit the exit of the olfactory nerves. As in most of the cranial nerves, the pia arachnoid and the subarachnoid space continue for a distance along these nerves. Increased intracranial pressure will erode the cribriform plate and enlarge the tiny holes in the dura. As a result of this the ethmoid mucous membrane, which is interposed between the cerebrospinal spaces and the nasal cavity, gives way and permits the escape of the cerebrospinal fluid through the nostrils. Cerebral symptoms of intracranial pressure disappear as a result of the escape of cerebrospinal fluid. Of the symptoms of intracranial pressure, the most frequent to be relieved are the visual disturbances. The escape of cerebrospinal fluid through the nose is most frequently produced by brain tumors. Two cases are presented. In the first case a midline tumor of the cerebellum produced an internal hydrocephalus. The increased intracranial pressure eroded the lamina cribrosa and permitted the fluid to escape through the nostril. In the second case apparently a deep-seated neoplasm produced rhinothorax. The exact mechanism in this case could not be determined.

New Jersey Medical Society Journal, Trenton

32 253 340 (May) 1935

Classification and Treatment of Chronic Arthritis. J. W. Gray. Newark—p. 259.

Value of Metaphen in Treatment of Genito-Urinary Infections. C. H. de T. Shivers. Atlantic City and C. J. Cooney. Fort Wayne, Ind.—p. 264.

The Management of Idiopathic Ulcerative Colitis. M. Kraemer and M. Asher. Newark—p. 275.

Some Practical Observations Concerning Ophthalmic Lenses. A. R. Sherman. Newark—p. 282.

Deep Roentgen Ray Therapy in Treatment of Disturbances of the Autonomic System. A. J. Delario and F. R. Meyers. Paterson—p. 287.

A Plan of State Wide Medical Insurance on Contributory Basis. F. H. Glazebrook. Morristown—p. 297.

Education for Physical Well Being. W. M. Lewis. Easton, Pa.—p. 300.

Infected Submaxillary Glands in a New Born. Report of Case. F. H. von Hofe. East Orange—p. 302.

Public Health Reports, Washington, D. C.

50: 695 724 (May 24) 1935

Experimental Production of Silicosis. L. U. Gardner—p. 695.

Communicable Disease Meter. Device for Recording and Comparing Current Incidence of Communicable Diseases. R. Olesen—p. 702.

Southern Medical Journal, Birmingham, Ala

28:489-582 (June) 1935

- Treatment of Skin Cancer B Sheldmire and E C Fox Dallas Texas—p 489
- Epithelioma of Skin and Oral Mucous Membranes J K Howles New Orleans—p 494
- *The Pathology of Agranulocytosis Absolute Granulopenia J C Norris Atlanta Ga—p 504
- Electrosurgery in Laryngeal and Pharyngeal Tuberculosis G H B Terry Oteen N C—p 509
- Home Deliveries Merle E Smith America Ala—p 511
- Clinical Observations on Nontropical Sprue A M Snell Rochester Minn—p 516
- Hemolytic Jaundice G V Lewis Little Rock Ark—p 521
- Cancer of Anal Canal Survey of Twenty Five Cases C Rosser Dallas Texas—p 527
- Proliferative Lesions of Female Urethra H W E Walther and R M Willoughby New Orleans—p 531
- Sigmoid Diverticulitis and Urinary Tract Infection Case Reports R E Cone Galveston Texas—p 535
- Clinical Results in Treatment of Malaria with Combinations of Quinine Atobrine and Plasmochin During Four Years Experience E C Mitchell and D W Goltman Memphis Tenn—p 536
- *The Wassermann Reaction in Malaria G M Saunders Kingston Jamaica and T B Turner New York—p 542
- Common Ocular Phorias and Their Management W B Clark, New Orleans—p 546
- Drugs in Otolaryngology T W Moore Huntington W Va—p 552
- Hyperirritability as Related to Tetany Syndrome H T Nesbit Dallas Texas—p 555
- Treatment of Acute Nephritis in Children C H Webb Shreveport La—p 557
- The Bradycardias and the Tachycardias Bedside Diagnosis and Treatment W W Bondurant Jr San Antonio Texas—p 562
- Hypothyroidism K H Beall Fort Worth Texas—p 565
- Some Essential Principles in Administration of Rural Health Organizations W K Sharp Jr Knoxville Tenn—p 567

The Pathology of Agranulocytosis—Norris presents a review of seventy-six cases of agranulocytosis fifty-four of which came to necropsy. The pathologic lesions usually seen in agranulocytosis are bone marrow hypoplasia, profound neutropenia, secondary anemia in chronic cases, thrombocytopenia, jaundice and hemorrhages glandular and splenic enlargement, ulcerations of the buccal cavity and various parts of the intestinal tract and often thrombosis of the small arterioles. The complicating pathologic changes are abscesses thrombophlebitis septicemia terminal hemorrhage granulopemic pneumonia, either lobar or bronchial type and toxic degenerative changes in the brain, heart, liver adrenals and kidneys. It might be stated that the disease is most often fulminant in character with the organs suffering most severely from infection and general disintegration of necrosing tissues, all of which may obscure the fundamental disease process.

The Wassermann Reaction in Malaria—Saunders and Turner point out that a locality in which yaws is prevalent malaria present and syphilis rare should afford opportunity to determine whether or not malaria causes nonspecific Wassermann reactions because in contrast to syphilis yaws can be diagnosed with accuracy from the history of the disease alone. In a locality in which yaws is endemic patients showing positive Wassermann reactions gave a definite history of yaws in all but about 17 per cent. The Wassermann reactions in a series of patients with malaria agreed almost exactly with the reactions among the general population of the area. In 135 malarial patients seventy of whom had acute febrile manifestations the Wassermann reaction was negative in all cases. In 123 malarial patients whose Wassermann reactions were positive or partly positive yaws or syphilis was the assigned cause of the positive test in all but fifteen cases. Thirteen of these showed consistently positive reactions before and after the attack of malaria. Two had only one observation each. In eight yaws patients who had had positive Wassermann reactions reverting to negative after specific therapy the Wassermann reaction remained negative during subsequent attacks of acute malaria. In two patients who had had yaws but whose Wassermann reactions had become negative, there was slight fixation of the complement with 0.1 cc of serum in each case during an attack of malaria. Most of the patients with anticomplementary reactions had had yaws. The proportion of anticomplementary reactions was higher for the malarial patients than for the general population.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

10:122 (May) 1935

- *Some Menopausal Syndromes and Their Treatment by Diathermy C A Robinson—p 3
- Nervous and Mental Disorders in Middle Age R D Gillespie—p 6
- The Care of the Feet in Middle Age A T Fripp—p 8
- Deafness in the Middle Aged C H Thomas—p 10
- Nasal Catarrh in Middle Age A L Yates—p 13
- Progressive Relaxation and Diseases of Middle Age E Jacobson—p 14
- Short Wave Therapy Further Clinical Experiences M Berry—p 16
- Id Cancer Campaign Investigation R G Canti—p 18

Treatment of Menopausal Syndromes by Diathermy—Robinson groups menopausal disturbances into (1) conditions that are directly due to the menopause, i. e. menstrual disturbances, subjective vasomotor phenomena, myxedema and menopausal arthritis, and (2) conditions which precede the menopause and which are aggravated by it, i. e., backache-cervicitis syndrome and backache-cervicitis-infective arthritis. This classification is etiologic. It is of practical value in that it gives an indication for an effectual line of treatment. He concludes that menopausal and decreaser arthritis are both due to some endocrine disturbance. Menopausal arthritis is amenable to treatment by intrapelvic diathermy, combined sometimes with thyroid extract—a form of treatment that acts in virtue of its effect on the underlying endocrine condition. Toxemias, originating in most cases many years before the onset of the menopause, are aggravated by it, sometimes resulting in quite new additions to the clinical picture, such as arthritis of the infective type. These conditions are also amenable to intrapelvic and intra-cervical diathermy—forms of treatment that act in virtue of their effect on the focus of infection.

British Medical Journal, London

1 1013-1060 (May 18) 1935

- Lengthening of Life by Modern Therapy in Pernicious Anemia and Diabetes P Stocks—p 1013
- Heat Stability and Tenacity of Tuberculin H J Parish and R A O'Brien—p 1018
- Palatal Paralysis in Extraoral Diphtheria G W Ronaldson and W H Kelleher—p 1019
- *Treatment of Lymphatic Leukemia with Especial Reference to Use of Iodine M C G Israels—p 1021
- *Examination of Tuberculosis Contacts E Ward—p 1024

Treatment of Lymphatic Leukemia—Israels presents five typical cases of chronic lymphatic leukemia of moderate severity in which previous treatment had not been given. The patients were first given two or three weeks of treatment with compound solution of iodine and afterward x-rays. The results obtained bear out those reported by Friedgood so far as the reduction of the white cell count is concerned, but the beneficial effect on the clinical symptoms was not observed. It does not seem that iodine is of any effective use in lymphatic leukemia; the treatment produces results that compare poorly with those obtained by roentgen treatment even in favorable cases. In the majority of cases of chronic lymphatic leukemia roentgen therapy is capable of ensuring a rapid amelioration and may be unhesitatingly applied; it remains the therapeutic method of choice and iodine does not supplant it. With regard to the etiology of leukemia, it does not appear that the effect of iodine justifies any definite conclusions as to the relation of lymphatic leukemia to hyperthyroidism. Although in some cases the iodine caused a reduction in the white cell count, the failure of symptomatic relief, the lack of improvement in the anemia when present and the uninterrupted course of the condition suggest that the leukemic process itself was unaffected. A direct action of the iodine on the leukocytes seems to be a more likely explanation of this reduction than an action on the disease process. The evidence at present available is certainly not sufficiently clear to justify the use of thyroidectomy as a treatment for leukemia.

Examination of Tuberculosis Contacts—Ward suggests the following modifications in the methods for the examination of tuberculous contacts: 1 To omit the routine overhauling of children. Children should not be neglected in any sense, but

they are already amply covered by the activities and anxieties of parents, teachers, health visitors, school medical officers and practitioners. The clinical examination of a child's chest is of little if any value, and tuberculous disease among children is rare. Delicate children to whom attention is directed should be sent to a preventorium, and children so selected should certainly be examined and roentgenographed. 2 Careful attention should be paid to all contacts past the school age and appointments made for roentgenography. If the roentgenogram shows disease or gives rise to suspicion, this should be followed up appropriately. A poor roentgenogram is worse than useless. 3 The practitioner should take more part in the tuberculosis campaign than at present. It is easy to destroy his sense of responsibility by assiduous departmental work, and with the loss of responsibility goes all interest in the campaign. He could help by securing roentgenography for wayward contacts and for adult members of other families whose appearance or history is suggestive, and also by securing the investigation of workshop or office contacts. Any suggestive roentgen observations can be followed up without difficulty.

Edinburgh Medical Journal

42 241 292 (May) 1935

- Insulin Requirements of Diabetic Outpatients. R. M. M. Lyon—p. 241
Primary Carcinoma of Liver in a Child. E. N. Jamieson—p. 247
Sir Charles Bell: Brief Sketch of His Life and Work. E. Bramwell—p. 252
Lobar Pneumonia and Its Serologic Treatment. J. M. Johnston—p. 265

Indian Journal of Medical Research, Calcutta

22: 595 862 (April) 1935

- Further Observations on Indian Relapsing Fever. Part II. Serology of Relapsing Fever in Human Beings. J. Cunningham and A. G. L. Fraser—p. 595
Studies on Antigenic Structure of *Vibrio Cholerae*. Part VIII. Specific Carbohydrate Content and Serology of Acid Soluble Fractions. R. W. Linton, B. N. Mitra and S. C. Seal—p. 617
Id. Part IX. Dissociation and Changes in Chemical Structure. R. W. Linton, D. L. Shrivastava and B. N. Mitra—p. 633
Study of *Vibrio Filtrates*. R. W. Linton, H. Singh and S. C. Seal—p. 659
Identification of Common Rat Fleas of India. M. O. T. Iyengar—p. 675
Waves of Rhythmic Contractions and Relaxations in Perfusion Pressure Tracings of Blood Vessels of Frog (*Rana Tigrina*), with Especial Reference to Action of Adrenalin, Ergotoxine, Pituitrin, Barium Chloride, Janus Green and Ephedrine. S. A. Rahman and R. N. Abhyankar—p. 687
Modified Method of Estimating Arsenic Content of Indian Foodstuffs. A. C. Bose—p. 697
The Coccidia of Lizards. R. Knowles and B. M. Das Gupta—p. 701
Endameoba of the Gecko. R. Knowles and B. M. Das Gupta—p. 709
Carriers of *Vibrio Cholerae* Who Enter Ceylon from South India. L. Nicholls—p. 713
Biochemical Investigations on Different Varieties of Bengal Rice. Part I. Chemical Composition of Various Rice Samples. K. P. Basu and S. N. Sarkar—p. 745
Id. Part II. Enzymic Digestibility of Rice Starch. Action of Taka Diastase. K. P. Basu and S. N. Sarkar—p. 759
Chemistry and Pharmacologic Action of *Toddalea Aculeata*. B. B. Dey, P. P. Pillay, J. C. David and N. Rajamanikam—p. 765
*Action of Emetine on Activity of Adrenal and Thyroid Glands. R. N. Chopra, J. C. Gupta and A. C. Roy—p. 771
Improved Method of Recording Amplified Electrical Changes in Tissues for Pharmacologic Work. R. N. Chopra and N. N. Das—p. 777
Chemical Examination of Bark of *Moringa Pterygosperma*. S. Ghosh, R. N. Chopra and A. Dutt—p. 785
Vitamin C Value of Some Common Indian Fruits, Vegetables and Pulses by Chemical Method. B. Ahmad—p. 789
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Hematologic Studies in Indians. Part I. Hemoglobin Estimation Methods. L. E. Napier and C. R. Das Gupta—p. 809
*Incidence of Hepatic Cirrhosis in South India. T. B. Menon and D. R. Annamalai—p. 827
Splenic Enlargement in Malignant Hepatoma. Note. T. B. Menon and D. R. Annamalai—p. 837
Types of Meningococci Isolated During 1934 Epidemic of Cerebrospinal Meningitis in India, with Especial Reference to Manufacture of Prophylactic Vaccine. M. L. Abuja and N. Singh—p. 839

Action of Emetine on Activity of Adrenals and Thyroids.—The results that Chopra and his co-workers obtained from their studies show that the epinephrine content in normal rabbits, as estimated by the biologic method, varied from 1.36 to 1.44 mg per gram weight of the gland. With the colorimetric method the results were higher and varied from 3.42 to 3.64 mg per gram of the gland. The epinephrine content

of the adrenals after a series of eight injections of emetine is definitely lower, varying from 0.87 to 1.096 mg per gram weight of the gland. The results as determined by the colorimetric method show that, after a series of injections, the epinephrine content becomes less than that of the control animals and varies from 1.85 to 2.52 mg per gram weight of the gland, as compared to 3.42 to 3.64 mg. These figures, though much higher than those obtained by the biologic method, were, however, sufficiently conclusive as regards the action of the emetine injection on the adrenals. The iodine content of the thyroid is decreased and runs more or less parallel with the epinephrine content.

Incidence of Hepatic Cirrhosis in South India.—Menon and Annamalai state that an analysis of mortality returns of Madras, of the hospital admissions in the Government Rayapuram Hospital and of necropsy records of recent years shows a much higher incidence of hepatic cirrhosis there than in Europe. A study of 177 hospital cases shows that cirrhosis has no special association with alcoholism. The race incidence is more or less in relation to the race proportion in the general population, as judged by the hospital admissions. A careful study of twenty-four specimens of hepatic cirrhosis has shown that the portal type is the most common and that this is similar to the so-called alcoholic type encountered in Europe and America. Mallory's toxic type, anatomically considered, is rare. From necropsy records, some positive evidence is brought forward to show that there is a possible relationship between portal cirrhosis and dysentery, as emphasized by Rogers. But the evidence is more in favor of bacillary dysentery than amebic. This may be given two interpretations. It may be that, in cirrhosis of the liver, the resistance of the intestine is so lowered that dysenteric lesions might occur as a complication, or there may be a more direct etiologic relationship between dysentery and hepatic lesions. Cirrhosis of a capsular type has been observed in three cases of malaria.

Journal of Anatomy, London

69: 297 398 (April) 1935

- Observations on Conducting System of the Heart. D. M. Blair and F. Davies—p. 303
Growth of Pelvis in Madder Fed Pig. C. G. Payton—p. 326
Dissections of Nephrons from the Human Kidney. H. C. Pai—p. 344
Anatomy of Intercoastal Spaces in Man and Certain Other Mammals. M. A. H. Siddiqui and A. N. Mullick—p. 350
Sexual Skin in Marmoset. A. E. Russell and S. Zuckerman—p. 356
Oviductal Epithelium of the Mouse. P. G. Espinas—p. 363
*Development of Nerve Endings in Human Fetus. Evelyn E. Hewer—p. 369
Cerebral Hemispheres of the Kiwi and of the Emu (*Apteryx* and *Dromiceius*). E. H. Craigie—p. 380

Development of Nerve Endings in Fetus.—Hewer states that sensory nerve endings are almost completely developed before the motor endings begin to differentiate. Muscles and nerve endings are differentiated first in the tongue at all stages of the neuromuscular mechanism of the hand and arm is further advanced than that of the foot and leg. An argentophil fiber plexus is already present at eight weeks of development; this may perhaps be the fundamental sympathetic plexus. By twenty weeks of development, pacinian bodies and spindles are well differentiated, by twenty-eight weeks the motor plates are just beginning but are very rudimentary except in the tongue. The functional significance of the ages at which certain nerve endings develop is discussed.

Journal of Laryngology and Otology, London

50 317 388 (May) 1935

- *Cysts and Retention Abscesses of the Nasopharynx. Report of Eighty Eight Cases. B. M. Kully—p. 317
Esophageal Lesions Encountered in Cases of Dysphagia with Anemia. J. McGibbon—p. 329
*Plasmacytoma of the Petrous Temporal Bone and Base of Skull. D. F. Cappell and R. P. Mathers—p. 340

Cysts and Retention Abscesses of Nasopharynx.—Kully discusses eighty-eight cases of cysts or retention abscesses of the nasopharynx observed during the last six years. He emphasizes the importance of a more thorough examination of the nasopharynx. The so-called retention abscess of the nasopharynx is not an abscess. It represents an inflammatory closure of the mouth of an adenoid recess or of the pharyngeal bursa with retention of secretion, bacteria, cells and other inflamma-

tory detritus As the cavity dilates, owing to the accumulation of secretion, it partakes of the nature of a cyst The contents appear to be grossly purulent, but on microscopic section there may be few polymorphonuclear cells and a definite cyst wall This condition should be described as an infected retention cyst. Sixty-two of the cases in the report were of this type Postnasal discharge was the most common symptom It was rarely profuse and in two instances had a foul taste and a foul odor It was due to an overflow from the purulent cyst or to its periodic rupture, followed by discharge of contents Some of the discharge came from a frequently associated hypertrophy of the mucous glands of the adenoid or from the mucous cells present in the membrane lining the adenoid crypts Chronic pharyngitis and chronic laryngotracheitis secondary to the post-nasal discharge were invariably present Enlargement and tenderness of the posterior cervical glands were present in twenty-seven patients They were frequently associated with stiffness and rigidity of the muscles of the posterior cervical region Occipital headaches were present in twelve patients and were usually localized at or below the external occipital protuberance in contradistinction to sphenoidal headaches, which are usually diffused over the occiput In some instances the headaches were relieved immediately on puncture of the cyst Mild earache was present in only five patients Tinnitus and moderate deafness were present in seven. In nine patients there was a history of persistent fever of a duration of several months Seven of these patients became fever free after operation and remained so during observation over a period of weeks It is difficult to evaluate the relation of pathologic changes in the nasopharynx to various focal conditions

Plasmacytoma of Petrous Temporal Bone and Base of Skull—Cappell and Mathers report the case of a solitary plasma cell tumor involving the petrous temporal bone, mastoid process and base of the skull The growth resulted in extensive destruction of the bony tissues but did not invade the brain Complete paralysis of the sixth and seventh cranial nerves was produced, and there were also symptoms due to pressure on the ninth, tenth and eleventh nerves in the jugular foramen and to direct pressure on the pharyngeal wall The authors found no record of a similar case in the literature

Journal of Tropical Medicine and Hygiene, London

38 117 132 (May 15) 1935

Reoal Glycosuria Study of Its Relationship to Diabetes Mellitus Its Etiology and Diagnosis Based on Records of War Pensioners Treated Under the Ministry of Pensions S Vatcher and M Douglas—p 117

Relation of Electric and Hygrometric Conditions of Atmosphere to Surgical Skin Infections in Egypt A Knifer—p 123

Lancet, London

1: 1025 1082 (May 4) 1935

New Aspects of Deficiencies in Nutrition D Hunter—p 1025

Mandelic Acid in Treatment of Urinary Infections M L Rosenheim—p 1032

One Hundred Cases of Chronic Arthritis Treated by Gold H S Pemberton—p 1037

Study of Case of Idiopathic Hypoproteinemia C L Cope and H K Goadby—p 1038

Technic of Evipan Anesthesia A D Wright—p 1040

Mandelic Acid in Treatment of Urinary Infections—Rosenheim used mandelic acid as a therapeutic agent that might replace the ketogenic diet in the treatment of urinary infections It appears to be effective in cases of urinary infection unassociated with urinary obstruction He treated twelve cases of urinary infection six of which were pyelitis of pregnancy His object has been to obtain a high urinary concentration of the acid at a *pn* favorable to its bacteriostatic action The routine method adopted has been to give 12 Gm of mandelic acid daily in divided doses, while the fluid intake is limited to 1 quart. At the same time the acidity of the urine is increased by the administration of ammonium chloride Mandelic acid is readily soluble in water and in the form of the sodium salt is not unpalatable The standard mixture used contains 3 Gm. of the acid to the fluid ounce, just neutralized by sodium bicarbonate (16 Gm) and flavored with lemon One ounce of this mixture is given four times a day, while eight cachets each containing

1 Gm of ammonium chloride, are also given during the day as with the ketogenic diet There is no simple test for the presence of mandelic acid in urine, but extraction of the twenty-four hour urine has shown that on this dosage a satisfactory urinary concentration of the acid is obtained The following method of extraction has been employed The urine was acidified with phosphoric acid, saturated with ammonium sulphate and extracted three times with ether The ethereal layer, dried over sodium sulphate, was evaporated and the residue dried in a weighed flask in an evacuated desiccator The weight of the crude extract has been taken as a measure of the amount of mandelic acid present in the urine Improvement in the successful cases has mostly begun after a few days on mandelic acid, and the urine has usually become sterile within from ten to twenty-one days A striking feature of the treatment has been the rapid improvement in the clinical condition of the patients The toxic effects disappear rapidly The patient's condition is subjectively improved, the headaches and backache diminish, and the frequency of micturition becomes less even though the urine may still be infected The disappearance of nocturnal frequency has been taken as a rough guide to the progress of the treatment Of the six cases of urinary infection, unassociated with pregnancy, all have been clinically improved, while three have been cured

Chronic Arthritis Treated by Gold Salts—Pemberton gives the results of treatment during a period of five years of 100 cases of chronic arthritis treated with three preparations of gold salts In many of the more chronic cases, all known types of treatment for arthritis had already been tried without success and while response to gold is roughly in inverse proportion to the duration of the lesion, a considerable number of these cases exhibited a striking superiority of this to any previous method of therapy Along with gold, in the obese, the diet was reduced in calories and carbohydrate, the former roughly to 1 000 calories daily In the more usual type of rather underweight patients a full diet rich in vitamins A and D was given, but with carbohydrate restriction in those showing a diminished dextrose tolerance If hydrochloric acid was absent from the gastric juice or diminished in it 0.4 per cent of the acid was given by mouth generously When the course of gold has been completed, massage, diathermy and both active and passive movements have usually been started If effusions were large and recurrent, they were aspirated and, whenever possible, deformities such as obstinate knee flexion were treated by firm splinting The preparations of gold have all proved to be toxic to some patients Twelve cases have been cured, thirty-eight very much improved and thirty-eight improved Twelve remain the same

1: 1083 1138 (May 11) 1935

Uterovaginal Fistula A E Webb-Johnson—p 1083

Treatment of Puerperal Fever by Antistreptococcus Serum Some New Evidence and a Retrospect. L. Colebrook—p 1085

Further Studies on Etiology of Acute Rheumatism B Schlesinger A G Signy and W W Payne—p 1090

Clinical Trials with New Antityphoid Serum C J McSweeney—p 1095

The Posterior Lobe of the Pituitary Gland Its Relationship to the Stomach and to the Blood Picture E C. Dodds G M Hills R L Noble and P C Williams—p 1099

Treatment of Puerperal Fever by Antistreptococcus Serum—Colebrook states that there is no trustworthy clinical evidence that the administration of antistreptococcus serum for the treatment of human infections by hemolytic streptococci has had any specific curative effect The evidence obtained in puerperal fever cases at his hospital suggests that such administration may sometimes have an unfavorable effect on puerperal infections by hemolytic streptococci, and this impression is to some extent supported by the evidence of animal experiments It is in the best interest of the patient suffering from an infection by hemolytic streptococci not to interfere with her immunizing mechanisms until one can be sure that such intervention does no harm Although serums have been produced that would protect animals against infection by streptococci of artificially enhanced virulence, there is no satisfactory evidence that a serum has ever been produced which would afford more than a very slight protection (occasionally) against hemolytic strepto-

cocci freshly isolated from acute human infections and of various serologic types. Similarly there is no evidence that any anti-streptococcus serum has ever exerted a curative effect in animals infected by such hemolytic streptococci freshly isolated from human infections. It is a matter for regret that antistreptococcus serums should have been issued for clinical trial so long before satisfactory experimental evidence as to their curative effects in animals was available or a strong presumption existed (from unequivocal *in vitro* experiments) that such a curative effect would be obtained in man. Until the knowledge of immunization against the hemolytic streptococci has progressed further, it would seem desirable to discontinue the use of anti-streptococcus serums in the treatment (and prophylaxis) of puerperal fever and surgical sepsis.

Posterior Lobe of the Pituitary Gland—The experiments of Dodds and his co-workers on laboratory animals show that the injection of extract of the posterior lobe of the pituitary is capable of causing a temporary inhibition of the secretion of hydrochloric acid, in such a way that the stomach will not react to the histamine stimulus for a period of about six hours. Other workers have called attention to the fact that injection of pituitary extract reduced gastric acidity. Changes occur in the blood of animals injected with this extract. Thus, if a rabbit is injected subcutaneously with the preparation, it will be found on the fifth day that a severe anemia has developed, the blood count being reduced from 6,000,000 down to as low as just over 1,000,000 red cells. The hemoglobin is also reduced but not proportionately to the same extent. On the fifth or sixth days a reticulocytosis appears, which may rise to as high as 50 per cent. There is a marked anisocytosis and a definite macrocytosis. If the animals are killed, obvious changes are seen in the spleen, such as hemorrhagic infarction, and there is evidence of a stimulation of the blood destroying system. The intestine is full of bile, and it would appear that the anemia may possibly be ascribed to an increased blood destruction. If left alone, the animals will recover completely.

Medical Journal of Australia, Sydney

1 543 572 (May 4) 1935

- Massive Dosage of Intramuscular Liver Extract in Treatment of Pernicious Anemia. Hilda J. Gardner and I. J. Wood—p. 543.
Record of Last Year's Work at the Hobart Infectious Diseases Hospital (Vaucluse). C. N. Atkins—p. 547.
Detection of Hypersensitiveness. C. Sutherland—p. 549.
Value of Nux Vomica Treatment. F. Arden—p. 551.
Study of Early Infancy. Plea for Cooperation Between Sciences of Medicine, Psychology and Education. P. M. Bachelard—p. 554.

Tubercle, London

16: 337 384 (May) 1935

- Pulmonary Tuberculosis in Adolescence and Youth. P. F. Armand Delille—p. 337.
Intrathoracic Tuberculosis Among the Chinese with Especial Reference to the Province of Szechuan. H. G. Anderson—p. 350.

Journal of Oriental Medicine, South Manchuria

22: 53 64 (April) 1935

- Biochemical Study of Nitril Compound. Part VI. Fluctuation of Glutathione Content in the Living Body During Aromatic Nitril Toxication. M. Fukushima—p. 53.
Fluctuation of Glutathione in Living Body During Period of Hydrocyanic Acid Poisoning. M. Fukushima—p. 54.
Clinical Diagnostic Comparative Studies on Blood Pictures and Sedimentation of Erythrocyte of Typhoid Diseases (Typhoid Fever, Paratyphus and Manchurian Fever). M. Okamoto—p. 55.
Hot Springs in Manchuria and Mongolia in Relation to Skin and Urinary Diseases. K. Yajima—p. 55.
Standardization of Antidysenteric Serum (Shiga) by the Polysaccharide Precipitation Test (Zozaya). K. Kurauchi and S. Nagata—p. 56.
Pharmacologic Action of Opium (Alkaloid) as Observed in Tail Raising Action. B. Terada and M. Honda—p. 57.
Chuang lang 'a Chinese Drug. B. Terada—p. 58.
Intestinal Parasites of Prisoners in Dairen Prison. Y. Saito—p. 59.
Cow's Milk in Manchuria and Mongolia. Part IV. Nonprotein Nitrogenous Substance. M. Sugura—p. 60.
Abnormal Origin and Course of Right Subclavian Artery. Case. K. Miyashita—p. 61.
Pulmonary Abscess Caused by Migration of Adult Ascaris in Bronchus with Review of Literature on Injuries Caused by Ascaris Lumbricoides. Report of Case. T. Kamimura—p. 62.
Study on History of Bacteria Artificially Introduced into Body and Factors of Infection. Report IV. Effect of Cooling of Body on Pneumonias Experimentally Produced by Diplococcus Pneumoniae. N. Nishikawa—p. 63.
Changes of Blood in Kala Azar. M. T. Sei—p. 64.

Annales d'Anatomie Pathologique, Paris

12: 493 619 (May) 1935

- Histogenesis of Ectopic Chorlo Epitheliomas. H. Hamdi—p. 493.
So-Called Karyoklastic Poisons. Action of Arsenic and of Acetates of Cobalt and Nickel. M. Ickowicz—p. 501.
Acute Lesions of Aorta and Pulmonary Artery in Course of Malignant Endocarditis. G. Allot and A. Miget—p. 511.
Lymphatics of Palatine Tonsils. C. Rohlich—p. 523.
Cellular Tissue and Plantar Topography. H. Lissas—p. 537.
*What Becomes of Carbon Injected Intravenously? B. Ménétrel—p. 559.

Carbon Injected Intravenously—As a result of animal observations and a necropsy on an individual previously treated with carbon, Ménétrel concludes that the particles of carbon are deposited especially in the liver, spleen and lungs. It is, however, difficult to determine the laws that govern the distribution of the grains in these tissues. They are doubtless similar to those obtaining with thorium dioxide sol. There are some vascular reactions but never any inflammatory ones, even when the carbon has been fixed for a long time. No system is apparent unless it is the particular affinity of the carbon particles for the reticulo-endothelial tissue. No massing is found near the vessels or lymphatics. It is probably safe to conclude from these observations that carbon causes no lesion, and, having played its part in the defense of the organism against infection, is fixed in certain tissues without producing any inflammatory reaction.

Paris Medical

1 445 476 (May 18) 1935

- Surgical Possibilities in Chronic Pancreatitis Without Icterus. L. Berard and P. Mallet-Guy—p. 445.
*Aleukemic Hepatosplenic Myelosis. P. Carnot, J. Caroli and A. Bussan—p. 449.
Circulatory Role of Liver. M. Villaret, L. Justin Besaçon, R. Cachera and R. Fauvert—p. 455.
Pseudovascular Forms of Subacute Pancreatitis. E. Chabrol and M. Cachelin—p. 463.
Biliary Surgery in Light of Direct Angiocholecystography. P. Moulmouret—p. 466.
Hydatid Cyst of Spleen. P. Carnot and R. Cachera—p. 470.

Aleukemic Hepatosplenic Myelosis—Carnot and his colleagues report two cases of aleukemic hepatosplenic myelosis diagnosed during life by means of splenic puncture. The authors say that three points are especially noteworthy from their observations and examinations: 1. Aleukemic myelomatosis is an associated disorder of hepatosplenic coupling. 2. Splenic puncture must be considered an indispensable diagnostic method and is alone capable of serving as a contraindication for splenectomy. It also serves as an indication for roentgen therapy. 3. Puncture alone confirms, during life, the myelo-erythroblastic tissue reaction in the follicular forms of splenic anemia.

Schweizerische medizinische Wochenschrift, Basel

65: 489 508 (June 1) 1935

- Meralgia Paraesthetica and Appendicitis. M. Roch—p. 489.
Examination of Persons in Environment of Patients with Pulmonary Tuberculosis. M. Dressler—p. 490.
*Pseudorheumatic Pains Particularly in Shoulders and Arms in Connection with Heart Disease. H. Wantoch—p. 497.
Echinococcus Disease During Childhood. A. Bonzanigo—p. 498.
Iontophoresis in Treatment of Disorders of Nervous System. P. M. Besse and J. Erlich—p. 500.
Simple Method for Determination of Urea by Means of Chlorinated Lime and Bromide. M. Gross—p. 502.

Pains in Shoulders and Arms in Heart Disease—Wantoch calls attention to connections between pains in the joints and muscles and heart disease, giving especial attention to the pseudorheumatic pains that most frequently appear in the shoulders and in the upper extremities and are related to angina pectoris. These pains are not only an accompanying symptom of angina pectoris but quite often the initial and for a long time its only symptom. The early recognition of the character of these pseudorheumatic pains is of importance for the treatment. Although the localization in the left shoulder and arm predominates they may appear also in other portions of the body, for instance in the throat, with radiation into the neck, the lower jaw and the teeth, then there may be headaches that are chiefly localized in the occiput. The pains that accom-

pany angina pectoris may appear also in the form of epigastria and hypogastralgia, particularly on the left side, or in the form of pains in the right side of the thorax, or in the right lower or upper extremity, or in portions of it such as the olecranon or the thumb. However, such pseudorheumatic pains appear not only in angina pectoris but also in cardiac insufficiency. The author observed a number of these cases and points out that the cardiogenic pathogenesis of the pains was corroborated by their prompt disappearance following medication with digitals.

Giornale di Tisiologia, Naples

pp 69 92 (April 30) 1935

- Tuberculous Laryngitis of Hematogenic Origin Preceding Development of Acute Miliary Tuberculosis. Case. G. Mariani—p 70
*Hemoptysis Complicating Intravenous Injections of Calcium in Treatment of Pulmonary Tuberculosis. F. D. Agostino—p 74
Allergy and Immunity to Tuberculosis. A. Cantani—p 75

Hemoptysis Complicating Injections of Calcium—D. Agostino believes that the cause of hemoptysis immediately following an intravenous injection of calcium in patients suffering with pulmonary tuberculosis is due to one of the three following factors: 1 In cases in which the clinical picture is characterized by the sudden appearance of pain of the lancinating type and circumscribed to a thoracic area hemoptysis is probably due to an infarct caused by the presence in the blood of a small embolus formed during the injection. 2 In cases in which the only clinical symptom is hemoptysis, it is probably due either to the physicochemical changes of the blood produced by the entrance of calcium ions into it or to the rupture of small vessels in the vicinity of the pulmonary lesion. The mechanism of production of the rupture of pulmonary vessels is as follows: Sudden changes of the sympathetic tonus caused by the presence of calcium ions in the blood, result in a transient increase of the blood pressure, during which the vessels near the pulmonary tuberculous lesion which are more fragile than normal vessels rupture and hemoptysis results. 3 In some cases hemoptysis originates in a condition of pulmonary congestion caused by the reaction of the pulmonary tissues to the entrance of calcium in the blood.

Prensa Medica Argentina, Buenos Aires

22 987 1034 (May 22) 1935 Partial Index

- Clinical Applications and Physiologic and Pharmacologic Action of Alpha Diminophenol (1 2 4). J. J. Spangenberg, L. Munist and A. Ardaiz—p 996
Fibrin Bodies in Pleural Pneumothoracic Cavity. E. Aznarez—p 1096
Value of Systolic-Diastolic Relation in Valvular Cardiopathies. A. Nanciaras and J. E. Israel—p 1015
*Frei's Intradermal Test and Hellerstrom's Blood Reaction. E. Criscuolo—p 1917

Frei and Hellerstrom's Tests for Inguinal Lymphogranuloma—Criscuolo advises the performance of Frei's test two or three times, with intervals of one or two weeks between the injections, in all suspected cases of inguinal lymphogranuloma. He uses as an antigen sterile pus from a lymphogranulomatous ganglion dissolved in physiologic solution of sodium chloride in the proportion of one part of pus to ten parts of the solution and performs the test by the intracutaneous injection of 0.2 cc of the antigen. The pus is taken from a patient suffering with inguinal lymphogranuloma but not from the one in whom the test is going to be performed. The antigen prepared by the author by desiccating the pus and keeping it in a vacuum and dissolving it in the physiologic solution of sodium chloride just at the time the test is going to be performed, retains its activity for more than one year. Hellerstrom injects Frei's antigen intravenously in his test for the diagnosis of inguinal lymphogranuloma. The first dose is 0.1 cc and increases, if the test is repeated by 0.1 cc. at every new injection to secure positive results that manifest themselves by chills and fever, eight or ten hours after the injection. The reaction is at its climactic point twelve or eighteen hours after the injection, and the condition of the patient returns to normal thirty-six or forty-eight hours later. When the amount of 2 or 3 cc. per injection is reached, the patient reacts no more, except after a period of four or five weeks during which he receives no injections. Hellerstrom's test is harmless and because of the febrile reaction of the organism to Frei's antigen when

intravenously injected, the test is also of a therapeutic value (biologic treatment of inguinal lymphogranuloma). The test is more sensitive than Frei's and gives positive results earlier than Frei's test during the evolution of inguinal lymphogranuloma. The originators of the tests proved that the virus of lymphogranuloma is the common etiologic agent of inguinal lymphogranuloma, climatic bubo, esthiomene, chronic vulvar ulcers with elephantiasis and inflammatory stricture of the rectum.

Archiv für klinische Chirurgie, Berlin

182 159 298 (May 22) 1935 Partial Index

- *Results with Traction Therapy of Bone Fractures. H. Killian—p 159
Wet Sterilization of Silk and Linen Thread. Konrich—p 199
Studies on the Use of Alcoholic Formaldehyde Solution in Disinfection of the Operative Field. K. Daubenspeck—p 201
Maintenance of the Magnesium Blood Content in Recklinghausen's Disease. J. Marx—p 214
Arrested Development Due to Ossification of the Vertebrae. H. Meyer, Burgdorff and J. Klose-Gerlich—p 220

Results with Traction Treatment of Bone Fractures—Killian reports the results of the traction method of treatment of fractures of the extremities in the surgical clinic of the University of Freiburg (Prof. E. Rehn). Of 1,242 fractures of the extremities, 174 were treated by the method of continued traction or by a traction plaster cast. Twenty-eight of the latter were submitted subsequently to surgical intervention. Ten of these were treated by traction for the purpose of reduction only, and death from tetanus occurred in one, leaving seventeen failures to be accounted for. Analysis of the failures showed that in eight lack of union was due to failures of reduction in spite of maximum traction. All these were fractures of the femur. Interposition of muscle fibers between bone fragments prevented union in three, the cause was edema and thrombosis in two and healing was not obtained in four because of an infection spreading from an infected wound. The greatest incidence of failures with the traction method is encountered in fractures of the femur, the percentage of failures running from 10 to as high as 20. The author emphasizes that the traction method has its definite indication as well as its limitations. In the estimation of the results obtained by any method with fractures of the lower extremities, one must keep in mind not only the preservation of the length of the extremity but the proper alignment and avoidance of joint complications as well. Categorical objection to early operative treatment of fractures is no longer justified. On the other hand, an attempt to obtain reduction by conservative means to the exclusion of all others is equally fallacious. The traction method is frequently a long and expensive one because of the necessity for roentgenologic control and continued supervision. It is contraindicated in diabetes. The author considers the traction plaster cast an improvement on the method because it allows of an early discontinuance of traction.

Deutsche medizinische Wochenschrift, Leipzig

61 861 900 (May 31) 1935 Partial Index

- *Therapeutic Application of Female Sex Hormones. C. Kaufmann—p 861
Psychiatric Nosology. K. Schneider—p 867
Fluctuations in Certain Ash Constituents in Potatoes. H. Steudel—p 872
To What Extent Do Observations on Twins Permit Conclusions in Regard to Hereditary and Environmental Factors? F. Lenz—p 873

Therapeutic Application of Female Sex Hormones—Kaufmann outlines the possibilities and limitations of the therapeutic application of estrogenic and corpus luteum hormones. He discusses the application of these hormones in primary amenorrhea, stressing that this form of hormone therapy produces results in this condition only in exceptional cases. Secondary amenorrhea may be caused by other than genital factors, for instance, by tuberculosis or syphilis. For this reason it is essential to subject the patient to a thorough general examination before the treatment by sex hormones is instituted, for it is advisable only if the general examination is negative. Moreover, it should not be overlooked that an amenorrhea of one or two months duration may develop in normal women, and the author considers hormone therapy unnecessary unless the amenorrhea has persisted for a longer period. He points

out that the administration of the corpus luteum hormone is often unnecessary in the treatment of secondary amenorrhea, large doses of estrogenic substance being sufficient. He discusses the symptoms of abolished ovarian function that develop following castration, during the menopause or in women with hypomenorrhea or oligomenorrhea and shows that the administration of adequate amounts of estrogenic substance tends to counteract these symptoms in a comparatively short period. The fourth group of disorders in which hormone therapy may be indicated are the hemorrhages resulting from glandular cystic hyperplasia of the endometrium. This condition is frequently the underlying cause in the so called juvenile hemorrhages as well as in premenopausal hemorrhages. Since glandular cystic hyperplasia of the endometrium develops under the influence of a relative oversupply of follicular hormone and a deficiency of the corpus luteum hormone, the hemorrhages can usually be arrested by the administration of adequate amounts of corpus luteum hormone.

Klinische Wochenschrift, Berlin

14: 737 768 (May 25) 1935 Partial Index

*Hypercalcemia and Antitetanitic Effect of Extirpation of Zone of Carotid Gland J Collazo R Resa and A F Cruz—p 748
Decomposition of Group Specific Substances by Bacteria F Schiff—p 750

Is There a Gastrogenic Polyglobulism? D Singer—p 751

*Successful Treatment of Corrosive Mercuric Chloride Poisoning with Repeated Venipunctures and Administration of Ringer's Solution A Korányi—p 753

Relationship Between Tuberculosis and Psychosis II Stefan—p 754

Hypercalcemic and Antitetanitic Effect of Extirpation of Zone of Carotid Gland—Collazo and his associates review the literature on the function of the carotid gland and describe their observations on dogs in which the adventitia of the vessels of the zone of the carotid gland had been removed. They observed a syndrome that was characterized by general debility with reduced muscular tonus, bradikinesia, apathy, paralysis of the eyelids, conjunctivitis, lack of appetite, dyspnea, emaciation falling out of the hair and progressive cachexia. The syndrome terminated in fatal coma. The necropsy of these animals disclosed, in addition to several other changes, a hypertrophy of the parathyroids. The authors observed also that hypercalcemia is a frequent symptom in the animals in which the adventitia of the zone of the carotid sinus had been extirpated. In experiments on another group of dogs, they noted that the attacks of tetany, which were produced by the extirpation of the parathyroids, disappeared when the zone of the carotid gland was likewise extirpated on both sides.

Treatment of Poisoning by Mercuric Chloride—The observation that animals poisoned with lethal doses of uranium could be kept alive when edema formation was induced by Leiter's plasmapheretic method, induced Korányi to try plasmapheresis also in poisoning with corrosive mercuric chloride. Dogs were given lethal doses of corrosive mercuric chloride and after the first twenty-four hours blood was withdrawn every day and large quantities of Ringer's solution were given. When these measures were carried out, the anuria that regularly occurs in poisoning with corrosive mercuric chloride either was entirely prevented or was quickly followed by profuse diuresis. The animals tolerated the treatment well, and after from eight to ten days of treatment the uremic manifestations and the albuminuria disappeared completely, so that the animals could be considered cured. Of the eleven animals that had been given lethal doses, only one died following an anuria of three days' duration. This favorable result in animal experiments induced the author to try this treatment in a patient with corrosive mercuric chloride poisoning. There was beginning oliguria, albuminuria, hematuria, an increase in the rest nitrogen, mercurial stomatitis, vomiting and diarrhea. Under the influence of daily venipunctures (300 cc) and the daily oral administration of 5,000 cc. of Ringer's solution and the intravenous administration of 20 cc. of a 10 per cent solution of sodium chloride there developed a profuse diuresis, so that all uremic and toxic symptoms disappeared and the urine became normal again.

Monatsschrift für Kinderheilkunde, Berlin

G1 401-490 (May 8) 1935 Partial Index

Electrocardiographic Examinations in Children with Early Acute Diphtheritic Myocardial Impairment E. Kielhorn—p 406
Observations on Mental and Physical Development in Twins. T Brander—p 414

*Modification of Blood Sugar by Oral Administration of Fat. H Schönfeld—p 432

*Treatment of Toxicosis in Nurslings with Intravenous Continuous Drop Infusion I Grube—p 439

*Pathogenesis of Cerebral Complications of Whooping Cough. Carola von dem Esche—p 446

Modification of Blood Sugar by Administration of Fat—Schönfeld calls attention to a report by Knauer and Hirsch-Kauffmann, in which they reported that the administration of oil to children resulted in a hyperglycemia just as did a sugar tolerance test. The author, however, in repeating the tests of those investigators observed that the administration of olive oil was followed by a hypoglycemia, the blood sugar being lowest forty-five minutes after the administration of the oil, that is, at the time when Knauer stated that he observed the highest blood sugar values. Several other investigators have obtained practically the same results with the oil administration as has Schönfeld. On the basis of his own observation and of those reported in the literature he concedes that the administration of oil may occasionally be followed by slight upward fluctuations in the blood sugar, but he states that these fluctuations remain within the physiologic limits. A noticeable decrease in the blood sugar is much more frequent after a fat tolerance test. In animal experiments likewise the blood sugar reducing action of the fat tolerance test was more noticeable than occasional slight increases. However, when oil was administered to rabbits after several days of starvation there frequently was a slight increase in the blood sugar, and if after that the animals were starved further there frequently developed after twenty-four or forty-eight hours an enormous hyperglycemia. This increase in blood sugar is the more surprising since it develops at a time when the blood sugar decreases in starving rabbits as the result of the depletion of the glycogen reserves. The author assumes that this hyperglycemia is the result of the disorganization of the metabolism of the carbohydrate or the metabolism of the liver, instability of these having occurred as the result of the starvation, followed by their being overtaxed by the fat tolerance test.

Continuous Intravenous Drip in Treatment of Toxicosis—Grube resorted to treatment by intravenous drop infusion in sixteen nurslings with toxicosis. She employed the 5 per cent dextrose solution and carefully computed the quantity of fluid for each kilogram of body weight. The results of this treatment were disappointing. The exsiccation improved permanently or temporarily in some of the nurslings, but detoxication was effected in only three of the children. Only two children recovered.

Cerebral Complications of Whooping Cough—In analyzing 1,115 cases of whooping cough, von dem Esche detected 172 with signs of cerebral complications, that is, approximately 14 per cent. The mortality rate was almost 60 per cent in the cases with cerebral complications. She noted a higher incidence in young children, only twenty of the children with cerebral complications were more than 2 years old and the majority were less than 9 months old. The convulsions began frequently in the region of the facial nerve and then changed into generalized tonic-clonic spasms, the duration varying between thirty seconds and several hours. In discussing whooping cough eclampsia, the author means chiefly convulsions. She reviews the literature on the pathogenesis of this condition and then discusses the various pathogenic possibilities in the analyzed material. She knows that the convulsions that develop in whooping cough are not of a uniform nature but may be caused by various pathologic processes. In classifying her material she differentiates two groups. In the smaller group, comprising thirty-eight cases, it was presumably a specific toxic impairment that produced angiospasm and its numerous sequels. In the other group of cases it could not be decided whether the cerebral manifestations were caused by the existing complication (menin-

gritis, predisposition to convulsions, hemorrhages and so on) or whether in addition to these there existed also the same specific impairment of the central nervous system as in the cases of the first group. The author thinks that whooping cough eclampsia as such plays an important part and that it is probably due to the action of the toxins on the regulatory centers of the cerebral vessels, which in turn results in a functional disturbance of the circulation in the form of a prestasis, stasis or angiospasm. Depending on the degree of toxic impairment and the subsequent circulatory disturbance, there develop reparable or irreversible tissue changes. In the first case clinical cure may follow, while in the second case defects remain or death occurs.

Münchener medizinische Wochenschrift, Munich

82 773-814 (May 16) 1935 Partial Index

- Treatment with Red Rays in Gynecology H Kustner—p 773
Clinical Aspects of Infectious Distant Thrombosis E Krieg—p 776
Is Disinfection of Suitable Bandage Material by Means of Pressing with a Hot Iron Permissible in Case of Aerial Warfare and Other Emergencies? F Kortenhuis and Margarete Remy—p 782
Differential Diagnosis of Muscular Tears of Leg J Volkmann—p 783
Treatment of Septic Processes by Means of Artificial Abscess H von Blomberg and S von Forster—p 783
Attempt to Treat Nocturnal Enuresis with Testis Hormone F Dietel—p 787

Treatment by Means of Artificial Abscess—Von Blomberg and von Forster say that improvement is often seen in patients with sepsis when local abscess formation takes place. They produce the artificial abscess on the thigh by a subcutaneous injection of from 1 to 25 cc of sterile oil of turpentine. If the reaction capacity is poor, up to 3 cc. may be injected. It is generally advisable to postpone the opening of the abscess until the increased number of leukocytes in the blood begins to diminish again. As a rule the abscess is opened on the tenth day. The authors prefer a puncture incision on the lateral lower edge of the abscess and emphasize that the wound must be well drained. The authors resorted to the artificial abscess at first only in cases with an unfavorable prognosis. Later they produced the abscess also in septic infections, in which an accompanying parenchymal impairment of the liver or kidneys contraindicated intense chemotherapy. The authors treated twenty seven cases, of which three terminated fatally. The fatal cases were one septic angina with incipient agranulocytosis, one sepsis with renal carbuncle, and one old urosepsis with pericarditis and pneumonia. In these cases the abscess did not form. In the cases in which the artificial abscess was successful, the improved general condition indicated that the turpentine abscess increases the defense functions of the organism.

Zentralblatt für Gynäkologie, Leipzig

59: 1153-1200 (May 18) 1935

- Physiologic Increase in Blood Pressure Before and During Delivery H Ohligsmacher and E. Doerr—p 1154
Significance of Hypophyseal Emaciation for Disturbances in Ovarian Function F Stroebe—p 1156
Pregnancy and Delivery in Endogenic Emaciation W Stoeckel—p 1159
*Statistical Method in Fertility Problem and Myth of Normal Cycle of Twenty Eight Days J G H Holt—p 1161
Problem of Annular Placenta in Human Beings E Fauvet—p 1164
Autotransplantation of Ovary Following Radical Operation of Carcinoma of Uterine Cervix for Prevention of Symptoms of Abolished Function. A. Mandelstamm—p 1170

Hypophyseal Emaciation.—Stroebe calls attention to a group of women patients who are pale the musculature of the upper and lower extremities is atrophic and the subcutaneous layer of fat is almost completely absent. Cyanotic areas often appear on the hands and, after prolonged standing also on the lower extremities. The hair growth is often somewhat sparse. The appetite is impaired, and the patients complain of pains in the upper portion of the abdomen and of a dyspeptic pressure or of colic-like pains. The patients frequently complain of constipation. The systolic blood pressure as a rule, does not exceed 100 mm. of mercury. The author considers reduction in the basal metabolism and amenorrhea of primary importance in

this type of emaciation. This disorder is closely related to Simmonds' hypophyseal cachexia, in which there exists an atrophy of the hypophysis. The author thinks that in the disorder under consideration there is at least a functional disturbance in the hypophysis. He thinks it is advisable to administer hypophyseal preparations. Von Bergmann resorted to the implantation of hypophyseal tissue and obtained good results in four cases. Hypophyseal implantation has been done in seven cases and the menstrual flow was reestablished in two. Two hypophyses that had been taken fresh from calves were implanted into the omentum. Two months later, menstruation set in and since then had recurred every month. The patient's weight likewise increased following the implantation. The author's aim is not to recommend the implantation of hypophyseal tissue for all such cases but to emphasize the dominating influence of the hypophysis in cases of this nature.

The Myth of a Normal Cycle of Twenty-Eight Days—Holt declares that the regular cycle of twenty-eight days is largely a myth. He and a collaborator have kept exact records of the menstrual periods of several hundred women for several years, and so far they have not found a single woman who always had her menstruation exactly after the same length of time. He admits that he found some women in whom three, at the most four, successive cycles were of the same length, but if Ogino's demand is to be followed and at least twelve successive cycles are to be recorded it may be said that the woman with an unchangeable menstrual cycle is a myth. To talk of "normal cycles" or of "regular twenty-eight day cycles" is incorrect. There are thousands of women who assert that their menstruation occurs with unchangeable regularity, but, if exact records are kept over a period of a year or at least nine months, it will be impossible to find such a woman.

59 1201-1264 (May 25) 1935 Partial Index

- *Treatment of Benign Hemorrhages with Radioactive Substances H Eymer—p 1202
Do Pregnancy Toxicoses Result from an Allergic Condition? L. Seitz—p 1207
*Functional Interrelations Between Adrenal Cortex and Gonads S Thaddeus—p 1208
Problems of Sterilization. K. Holzapfel—p 1213

Treatment of Genital Hemorrhages with Radioactive Substances—Eymer's report is based on observations on 661 women with nonmalignant uterine hemorrhages, who in the years between 1913 and 1934 were treated with radium or mesothorium. The women were either myoma patients or had hemorrhagic metropathy. The latter condition existed in 412 women whose genitalia were otherwise normal. Since 1920, when the technic of the treatment was considerably improved, the author has observed only a small number of cases in which the treatment was a failure. In one woman, who was less than 45 years old, total extirpation was done when the hemorrhage recurred, while in another woman renewed radium irradiation produced complete cure. Slight hemorrhages recurred in four women. Radium treatment failed also in four women with myoma. Three were subsequently operated on, and in a fourth the radium treatment was followed by roentgen therapy. The author concedes that myomas are not always suited for treatment with radioactive substances. As a rule, only myomas that do not exceed twice the size of a fist are amenable to intra-uterine radium therapy. Moreover, in cases in which the uterine cavity is rather large and irregular on account of protruding myomas, radium treatment is inadvisable, as is the case also in submucous myomas. To the question whether intra-uterine radium irradiation should be preceded by curettage the author answers that it is advisable in most cases. However, curetting may be unnecessary in women with myoma in whom there is not the slightest suspicion of malignancy. Inflammations near the uterine cavity contraindicate intra-uterine radium therapy and, if inflammatory processes exist, the radium therapy must be postponed. The radioactive substance is enclosed in a brass container having a wall thickness of 1 mm. The author generally used from 50 to 60 mg of radioactive element. From 2,000 to 3,000 mg element hours is the usual dose for intra-uterine irradiations, that is, if 50 mg of element is used, it requires forty-eight hours to apply 2,400 mg element hours.

Following irradiation, a rose-colored or brownish discharge may persist for several weeks. After pointing out that radium therapy is superior to roentgen therapy in the treatment of nonmalignant uterine hemorrhages, the author stresses that for some women any form of intra-uterine irradiations is inadvisable and mentions women with hypertension and "younger" women, that is, those still capable of bearing children.

Interrelations Between Adrenal Cortex and Gonads—Thaddeus points out that experimental studies have produced evidence indicative of a modification of the gonads by the adrenal cortex. A stimulating effect on the ovaries has been observed. In children with hyperplasia or tumors of the adrenal cortex, sexual disturbances, such as pubertas praecox, premature menstruation, pseudohermaphroditism and hyperplasia of the genital organs, have been observed. In Addison's disease, on the other hand, there often exists gonadal hypoplasia or even complete atrophy of the ovaries and, as a manifestation of these morphologic changes, disturbances in the sexual cycle (irregular menstruations, oligomenorrhea and amenorrhea) frequently appear. Moreover, conception is rare in Addison's disease. However, in spite of these indications of a relationship between the adrenal cortex and the gonads, it is doubtful whether the adrenal cortex secretes a substance that acts directly on the female genitalia. It is more likely that the active principle of the adrenal cortex influences the gonads by way of the anterior lobe of the hypophysis. It is certain that the hypophysis, the regulator of the functions of the female genitalia, has relations to the adrenal cortex. In view of the close biologic interrelations between vitamins and hormones it must be assumed that the water soluble vitamin C has relations with the sexual sphere, as do the fat soluble vitamins. The author observed the extremely rare phenomenon of pregnancy in a woman with Addison's disease. In connection with this case he gave his attention to related problems: pigment formation, sodium chloride metabolism and adynamia. Clinical and experimental studies, conducted by him for the first time, disclosed radical changes in the carbohydrate metabolism in the pregnant woman who had Addison's disease and these changes furnish more information about the physiology and the functional pathology of the adrenal cortex.

501:1265-1328 (June 1) 1935

*Critical Evaluation of Indications for and Technic of Cesarean Section in Case of Fever During Birth. M. Henkel—p. 1267

Critical Report of 107 Cesarean Sections According to New Technic. H. Theiss—p. 1275

Our Cesarean Operations During Last Three Years. T. Putz—p. 1279

Clinical Aspects of Ovarian Dysgerminomas. H. Dworzak—p. 1292

*Therapy of Uterine Hemorrhages by Galvanic Irritation of Mammary Glands. L. Cronental—p. 1288

Value of Ergot Prophylaxis During Puerperium. B. Rosen—p. 1295

Cesarean Section in Case of Fever During Birth—

Henkel thinks that in aseptic cases in which a cesarean operation becomes necessary the transperitoneal, cervical intervention is the best method. He discusses the problem whether abdominal cesarean section may be done also in cases in which fever has developed in the course of the delivery. He concedes that, when signs of an infection exist, it is desirable to attempt first an evacuation of the uterus by the vaginal route. However, it is inadvisable to force a vaginal method at any price. To perform the cesarean operation in spite of an existing infection is advisable in protracted deliveries in which the termination of the delivery by the vaginal route is impossible or difficult and likely to cause tissue lesions, which may exert an unfavorable effect on the infection. Since the cervical transperitoneal cesarean operation is best for noninfected patients, there is no reason to deny that it is not for infected ones. Porro's method of complete extirpation of the uterus which by some has been considered necessary for infected patients, the author regards as unnecessary in some cases. He gives a report of the eight cases of infection, in which he performed the abdominal cesarean operation. In three cases the uterus was extirpated (once on account of atonia), but in two other cases complete extirpation may not have been necessary. All eight patients recovered.

Treatment of Uterine Hemorrhages by Stimulating Mammary Glands—Cronental calls attention to Kellat's report about the successful treatment of uterine hemorrhages by the galvanic stimulation of the mammary glands. Then he describes the method that he employed in the treatment of uterine hemorrhages. He applies to the mammary gland, with the exclusion of the nipples, flannel cushions saturated with a 0.33% per cent solution of potassium iodide, over which lead plates are fixed and then connected with the cathode. The anode is connected with the electrode introduced into the vagina. The latter is a carbon electrode, the noninsulated end of which is covered with a cotton tampon saturated with an aqueous 1:1,000 solution of calcium chloride and covered with gauze. The strength of the current varies between 15 and 20 milliamperes. The treatments are given every second day or daily, each one lasting from twenty to thirty minutes. The author employed the treatment in 334 cases and obtained improvement in more than 86 per cent. The hemorrhages were of three types: (1) metrorrhagia caused by essential endometritis, (2) metrorrhagia in inflammatory processes and (3) metrorrhagia in patients with fibrous degeneration and fibromyomas of the uterus. In the future the author intends to replace the galvanic current in some of the cases by diathermy. Moreover, he found that the vaginal electrode may be replaced by an abdominal plate electrode.

Vrachebnoe Delo, Kharkov

18 99 192 (No. 2) 1935 Partial Index

Hypertonus. Attempt at Analysis of Its Genesis. D. D. Pleiner—p. 103

Water Exchange and Sodium Chloride in Hyperthyroidism. A. S. Beryland and T. A. Donskova—p. 107

Insulin Therapy and Herri. G. I. Kats—p. 111

*Formic Acid in Urine of Cancer Patients. L. M. Golber—p. 119

Transfusion of Preserved Blood. G. K. Karavanov—p. 131

Formic Acid in the Urine of Cancer Patients—Golber states that overloading with amino acids leads to an increase of formic acid in the urine. He refers to the unpublished work of Steppun in which the author expresses the idea that in the presence of lowered oxidation, such as occurs in cancer, a portion of the amino acids is split by hydrolysis with resulting formation of formic acid. Formic acid can likewise be formed in carbohydrate metabolism. Hydrolytic dissociation of lactic acid results in an acetic aldehyde and formic acid. Theoretically, because of deficient oxidation formic acid in the urine of patients suffering from a malignant tumor should be increased. The author investigated the formic acid content of a twenty-four hour output of urine from forty patients suffering from malignant conditions, twenty-six patients having other than malignant disease and eight normal adults. The formic acid content of the urine of healthy adults varied between 16.5 and 21.1 mg. and that of patients presenting other than malignant disease between 16.5 and 31.9 mg. Diabetic patients presented a much higher content from 59.8 to 139.1 mg. The formic acid content of urine from patients presenting a malignant condition varied between 34.7 and 101.6 mg. The author concludes that an abnormal amount of formic acid in the urine is characteristic of a malignant condition and may be used as a diagnostic test in such cases.

Transfusion of Preserved Blood—Karavanov reports 102 transfusions of preserved blood in seventy-three patients. The method of preservation consisted in adding to each hundred cubic centimeters of blood 100 cc. of physiologic solution of sodium chloride and 0.6 cc. of sodium citrate solution. The mixture was kept at a room temperature of 6°C. Destruction of red cells ran parallel with the number of days of conservation. The author considered from five to seven days the permissible limit of conservation. In six instances, blood was taken from various donors of the same group without provoking a reaction. Among the 102 transfusions there were noted fifty-six reactions, or 67 per cent. A strong reaction was noted in 26 per cent, average in 25 and weak in 16.4. The author concludes that transfusion of preserved blood merits wide application in clinical work. It should be particularly valuable in cases in which an immediate transfusion is required. He stresses the necessity of reexamining the blood just before the transfusion for sterility and hemolysis.

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CRITICAL INTERPRETATION OF CLINICAL OBSERVATIONS

CHAIRMAN'S ADDRESS

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Pearl¹ defines biometry as "that branch of science which studies by methods of exact measurement on the one hand, and precise and refined mathematical analysis on the other hand, the quantitative aspects of vital phenomena." There is certainly nothing new in a critical point of view in medical science, but too often it has led to nothing more than the negative result of skepticism. This is particularly true in clinical medicine, a growing percentage of whose practitioners are becoming conscious of the numerous modifying factors, often indeterminate, that influence living subjects. The essential attribute of living matter, as distinguished from so-called nonliving matter, consists in the relatively high variability of the former. One of the major divisions of the statistical method devotes itself to the measurement of variations, and no student of living matter should regard himself as properly equipped unless he has some knowledge of such technic. While it is a truism that chemistry and physics are exact sciences in that they deal with nonliving matter, nevertheless, as methods of measurement in these fields become more accurate and more sensitive, variability manifests itself more and more and makes the line of division between living and nonliving matter less and less distinct.

It has become axiomatic that medicine is an art as well as a science. Better, it might be stated that it is an art intelligently to apply scientific knowledge. There are still many procedures applied with the art which skill and experience bring but which can be reduced to the cold logic of figures. Contrary to the implication of the unfortunate and not even humorous story that there are liars, damned liars and statistics, figures do not lie—although, it is true, they may be made to deceive in the hands of those who do not know how to use them. It is quite true, as Pearl² states, that "it is not to be expected, or perhaps even desired, that every medical practitioner or investigator shall be an accomplished mathematician." Nevertheless, in the analysis of his observations and the presentation of his results, the author should use the proper methods that are available. Many earnest workers who would scorn to

use laboratory methods or instruments that have been long out of date still employ methods of analysis that render doubtful their conclusions or may even falsify them. The intelligent reader, too, must be aware of the terminology of statistical science and learn to think in its terms. One who would do nothing more than read the lucid first chapter of Pearl's book will at least gain an understanding of what the mathematician has to offer to clinical medicine. The judgment of the physician, which so largely determines the difference between doctors and good doctors, must always be a factor, since statistical analysis is concerned with groups and not individuals. All this does not countenance the continuation of incorrect procedures or uncertainty, or the passing on from one generation to another of impressions which are susceptible of proof or of denial.

It is obvious that the time at disposal allows only a plea for more general application of statistical methods in medicine, and the illustration of a few of the simplest examples of what it accomplishes.

REQUISITES OF STUDY

The first requisite of any study is an unbiased survey of the accuracy of the observations. One must see with a clear eye, palpate with a sensitive hand, listen with a sharp ear and note with an unprejudiced brain—avoiding by all means forcing the senses to interpret as the preformed conception dictates. It is easier, furthermore, to make rigid and pure one's own method of observation than to control the mental processes of others, and, in studies in which several investigators are involved, special attention must be directed at the so-called personal equation. The difficulties mentioned have led certain biometrists to discount many clinical observations. For example, I have heard it maintained that no physician can tell when a child is suffering from malnutrition. This is a silly assertion if meant literally. One does not need mathematical proof that malnutrition exists when it is marked, any more than one requires a thermometer to tell that water is hot when it burns one's skin. In borderline cases, however, the need for accurate analysis of clinical data is greatest.

One of the commonest errors of the unwary is the assumption that certain types of observation are worthy of record. Obviously it is futile and misleading to subject to critical study data that may be false. The point can be illustrated by referring to a subject that has often been mistreated, namely, the benefits derived from tonsillectomy.³ In many conditions the results of tonsillectomy are disappointing. Part, at least, of the unfulfilled expectations is due to the acceptance of unreliable statements from honest but mistaken sources, and to the failure to take modifying factors into

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¹ Pearl, Raymond. *Introduction to Medical Biometry and Statistics*.
² Philadelphia: W. B. Saunders Company, 1918, p. 18.

³ Pearl. *Introduction to Medical Biometry and Statistics*, p. 21.

³ Selkirk, T. H., and Mitchell, A. G. Evaluation of the Results of Tonsillectomy and Adenoidotomy. *Am. J. Dis. Child.* 42: 9 (July) 1931.

consideration Thus, while positive statements are frequently made concerning the beneficial effect of tonsillectomy on respiratory infections, it is not easy to prove that this association is direct cause and effect To accept this as *post hoc ergo propter hoc* fails to take into account such factors as the individual's inherent resistance, acquired immunity, exposure, other diseases of the respiratory tract, season, age, sex, hygienic conditions and the like Furthermore, how reliable is the casual statement of the mother or patient concerning the frequency and severity of respiratory infections over a period of years? How many physicians, without having made it a matter of special record, would be able accurately to state their own medical histories in such detail? Why, then, accept such statements on their face value from parents who obviously cannot give them accurately and who may be influenced by faith in the doctor or lack of it? How often, too, has the known influence of age on the incidence of rheumatic diseases been neglected in studies on the after-effect of tonsillectomy? One could cite such examples indefinitely Parenthetically, it should be stated that no attempt has been made here to prove that tonsil-

ture and standardization of which he is willing to delegate to others I can best illustrate by a few examples from actual experience with statistical analysis of clinical problems and a demonstration of some of these mathematical devices

In our studies of the influence of various conditions on specific skin reactions, my associates and I have noted the effect of several diseases on the skin reaction to tuberculin It has been frequently stated that measles might cause the tuberculin reaction to become negative The results of our own observations⁴ in measles and other diseases may be recorded as in table 1 The mathematical criterion employed in the analysis is that if the use of the formula $\frac{K}{PE_K}$ gives a result greater than 4 the result is significant, but that if it is less than 4 it is not significant In this particular case, K equals the difference between the rates⁵ of occurrence of positive reactions in the febrile and convalescent stages, and PE_K equals the probable error of this difference It can be seen from the table that it is fair to state that scarlet fever has a greater effect on the tuberculin reaction than measles, since the figure 10.88, derived from the use of the formula $\frac{K}{PE_K}$, indicates, according to mathematical calculation⁶ that the chances are about 70 billion to 1 that the difference between the rate of the skin reaction to tuberculin in the acute and convalescent stages is not due to chance, whereas in measles the figure 4.04, while still probably significant, indicates a mathematical probability of only about 140 to 1 that the difference is not due to chance alone Such a concept certainly conveys a much more accurate idea of the existing situation than does a simple percentage difference

A further advantage of statistical analysis is the ability to indicate the amount of material necessary to elicit significant results For example, the figure 1.83 (table 1) is the difference between the rates of the tuberculin reaction in the acute and convalescent stages of diphtheria divided by the probable error of that difference This cannot be accepted as significant, since such a difference would arise by chance alone approximately twenty-five times out of 100 without the operation of any causal factor—this not being regarded as statistically acceptable proof that it might not be a chance phenomenon However, the rates of reaction in both the acute and the convalescent stage of diphtheria are stable, i. e., in any given number of cases, tests made in the same way under the same conditions should give approximately the same rate In other words, from a statistical point of view it is not necessary to study this further, since multiplication of cases would not change the result A better illustration of the value of the statistical method in this respect is obtained in our observations on the effect of scarlet fever on the tuberculin reaction Several years ago we⁷ studied the tuberculin reaction during the acute and convalescent stages in 435 cases of this disease and

TABLE 1—Depression of the Skin Response During the Acute Stage of Diseases in Persons Normally Giving Positive Reactions to Tuberculin

Disease	Num ber of Cases	Positive Reaction to Tuberculin Test				K 1 Ex
		Febrile Stage		Convalescent Stage		
		Num ber	Rate	Num ber	Rate	
Scarlet fever	854	35	0.041 ± 0.007	179	0.210 ± 0.014	10.83
Measles	283	19	0.067 ± 0.015	50	0.177 ± 0.023	4.04
Diphtheria	140	16	0.114 ± 0.027	27	0.192 ± 0.033	1.83
Miscellaneous	210	12	0.057 ± 0.016†	23	0.110 ± 0.022	
Pollomyelitis	38	3		3		
Varicella	57	4		12		
Pertussis	70	3		3		
Mumps	4	0		0		
Other diseases	32	2		5		
Total	1 437	82	0.055 ± 0.006	270	0.188 ± 0.010	11.29

lectomy is without value, and the subject has been employed merely as a familiar illustration There must be mentioned the subject of "control" It is, in fact, the thoughtless assumption that a study has been properly controlled that has led to so many errors Workers in the laboratory are often faced with considerable uncertainty in regard to the adequacy of their controls, especially when living material is involved How much more skeptical should the investigator be when he is dealing with human material, in which endogenous and exogenous factors, often indeterminable, are legion

STATISTICAL ANALYSIS

Having reasonable assurance that the data to be studied are acceptable, what shall be done with them? Sometimes their meaning is more or less obvious, at others quite obscure Under the latter conditions one can turn to the devices of the statistician, many of which are available to the ordinary intelligence That is to say, a person need not be accomplished in advanced and intricate mathematics to become helpfully proficient in the use of certain formulas He need not necessarily have knowledge of the genesis or derivation of these devices but may accept and employ them on faith, much as he does laboratory instruments the manufac-

4 Mitchell A G Nelson W E, and LeBlanc T J Studies in Immunity Am J Dis Child 39 696 (March) 1935

5 The term rate as used in biometry indicates the number of times a specific kind of event actually occurs divided by the times it might occur in the universe under consideration In this instance for example the rate of positive tuberculin reactions during the acute stage of scarlet fever was $\frac{35}{854} = 0.041$ To determine that a rate is stable it must when divided by its probable error give a figure greater than 4 In this instance the PE (probable error) was found to be ±0.007, so that 0.041 divided by 0.007 was 5.86 a significant figure which indicates that the rate was stable

6 Pearl Introduction to Medical Biometry and Statistics p 438 appendix III, table A

7 Eddy Bernice, and Mitchell A G Studies in Immunity Am J Dis Child 40 771 (Oct) 1930

found that 4 per cent of the patients had a positive reaction during the acute stage, whereas 19 per cent had a positive reaction during convalescence. If we had then applied statistical methods instead of amassing more figures, we would have found that the rates of the tuberculin reaction were stable during both the acute and the convalescent stage and that the rate was significantly higher in the convalescent stage. That is to say, the probability that the difference was not due to chance alone was about 500 million to 1. This is sufficient evidence that further study of this fact was hardly necessary, since the conventionally acceptable threshold is placed at odds of about 1,000 to 1.

The illustrations already given argue for the fact that the statistical treatment of data almost invariably leads to a clearer statement of the problem and cleaner and sharper attack on it. Too often, in clinical medicine, research consists of collecting a large amount of data and then attempting to find out what the data reveal—or conceal. The statistical technic would tend to reverse this process by first setting up the question and then indicating what data were essential to a final answer. It is of more than passing interest that the literature contains many papers demonstrating much labor in securing and gathering data from which incorrect conclusions have been drawn or in which the method of analysis is questionable. This section is not guiltless in its presentations, some of which have led to argument and discussion when statistical study would have obviated uncertainty.

The question is often asked "How many cases must be studied to answer a certain question?" A better way of stating this is "What should be the size of the sample from the 'universe'?" Investigators are almost always concerned with differences between experimental and control, and since studies on living material must of necessity be conducted on samples and never on an entire universe, there is always present the question of the sampling error or of variations arising because of the size of the sample. This is really an application of the probable error concept. The size of the sample depends on the question to be answered and the variability of the observations considered. It is evident that much work continues on matters that had previously been solved. Our own interest in the effect of scarlet fever antitoxin may illustrate this.⁸ For example, by observation of the effect of the administration of scarlet fever antitoxin on the incidence of complications in 112 patients and using as a control group in the same epidemic eighty-four patients, it was found that in the antitoxin-treated patients sixteen complications (14.6 per cent) developed, whereas forty-seven complications (56.1 per cent) developed in the patients who were not given antitoxin. Analyzing statistically by means of the chi-square test (which is a special application of the theory of probability) there remains no doubt of the significance of this difference in the two groups, since the figure 39.2 is obtained for chi square which indicates that the probability that the difference was not due to chance alone is over 500 million to 1. In the paper presented before this section last year by Lucchesi and Bowman⁹ figures were given on 3,045 patients treated by antitoxin and 2,332 patients who did not receive antitoxin. In the first group complications developed in 18.8 per cent, and in the second

group in 26.2 per cent. These figures suggest a difference in favor of the antitoxin-treated group but do not leave a flavor of finality. If the chi-square test had been applied, it could have been demonstrated that the probability that the difference was not due to chance alone was over 400 billion to 1 (chi square = 78.4). That is to say, the 196 cases that we had studied constituted a sufficient number to arrive at practically the same conclusions as the 5,377 cases of Lucchesi and Bowman. It may be stated, however, that the large number of cases presented by these workers demonstrated that it was only adenitis that could be proved to be influenced by antitoxin, and that our own series of cases was too small to permit study of the influence of antitoxin on individual complications. Any analysis such as has just been given, of course, does not consider such factors as severity, type of epidemic or age.

Statistical analysis can frequently decide on the value of clinical procedures and lead to the adoption of satisfactory technic. For example, in connection with studies on anemia in the Children's Hospital discussion arose concerning the relative accuracy of five different methods of counting erythrocytes. Only one factor—namely, dilution—need be discussed by way of illustration. If three different dilutions are made, 1:100, 1:200 and 1:500, of the same sample of heparin blood

TABLE 2.—Increase of Probable Error and Coefficient of Variability with Dilution

Dilution	Mean Red Blood Cells Million	Probable Error Million	Coefficient of Variability per Cent
1:100	3.439	±0.033	± 9.10
1:200	3.435	±0.040	±10.60
1:500	3.500	±0.074	±19.60

(other factors, as the type of pipet and counting chamber, the time and degree of shaking remaining the same) and the mean, the probable error and the coefficient of variability calculated for each dilution, it is found that, while the means are almost invariably within the limit of error, the probable error and the coefficient of variability increase very materially with dilution (table 2). Since this happens consistently with a large number of samples, even when different technicians perform the counts and provided the total count is not excessively high, the conclusion is clear that a dilution of 1:100 is more accurate from the standpoint of being subject to substantially less variability than a dilution of 1:200 or 1:500.

Time will not permit a discussion of several other frequently applicable statistical devices as correlation, the histogram, the polygon and curve fitting.

SUMMARY

The fact that clinical observations should be applied in the diagnosis and treatment of human ailments makes it essential that they shall be interpreted as correctly as possible. Statistical analysis should be employed to a much greater extent in clinical and laboratory investigation than is the case at present. The first requisite of any study is the assurance that the material to be analyzed is acceptable and that the control is really comparable. The operation of the law of chance can often be stated with precision rather than in the uncertainty of percentage comparison. Needless work and waste of time and material may often be avoided by statistical analysis. It should be emphasized that mathematical treatment relates in general to group

⁸ Veldee M. V., Stevenson F. E. and Mitchell A. G. Pub. Health Rep. 46: 3023 (Dec. 18) 1931.

⁹ Lucchesi P. F. and Bowman J. E. Antitoxin versus No Antitoxin in Scarlet Fever. J. A. M. A. 103: 1049 (Oct. 6) 1934.

reactions and not to individual instances with which the clinician may be dealing and which may not follow the average but manifest peculiarities or represent extremes in the group. Statistical analysis does not obviate the necessity for thought and judgment.

Children's Hospital

THE SIMULATION OF INTRACRANIAL TUMOR BY LEAD ENCEPHALOPATHY IN CHILDREN

WITH REMARKS CONCERNING THE SURGICAL TREATMENT OF THE LATTER

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Lead encephalopathy may present all the signs and symptoms of intracranial tumors in children. A group originally thought to be cases of intracranial neoplasm, but subsequently classified as examples of "serous arachnoiditis" because of the absence of any signs of tumor at operation, have recently been shown to be examples of intoxication with lead.

CASE 1—Roy C, aged 2 years, vomiting three months, two convulsions, staggering gait, large head, cracked pot sound, choked disks, hypo-active reflexes, glycosuria, separated cranial sutures, suboccipital decompression, no tumor found, demonstration of lead poisoning, lead line in roentgenograms, lead in blood, urine and feces, no anemia, lead line on gums or stippling of erythrocytes, complete recovery.

The patient who first drew our attention to the possibility that some of our cases of "pseudotumor" or "serous arachnoiditis" were really examples of lead encephalopathy was a small boy (Roy C), aged 2 years, who was referred to us by Dr. Joseph Brennemann of the Children's Memorial Hospital, Chicago.

History—Roy was admitted to the Bobs Roberts Hospital of the University of Chicago Clinics, Oct. 6, 1934. His parents stated that he had been a healthy child except for mumps at about 5 months of age, and a fall from his bed at 1 year, until three months prior to his admission. At that time he and his twin brother developed a diarrhea following the ingestion of some loose plaster from the kitchen wall. The twin was given castor oil, which he retained, and he soon recovered. The patient vomited the castor oil and also food taken that day. Subsequently he suffered from bouts of vomiting of increasing frequency. Six weeks prior to admission the patient had a convulsion, apparently tonic in character, which lasted about two minutes. Two days prior to admission he had a clonic convulsion which lasted for one and one-half hours. The parents had also observed that the child had become restless and irritable and that he frequently sucked his fingers. For a few days prior to admission the child seemed uncertain in walking and had fallen on several occasions.

Examination—Physical examination revealed that the child was well nourished. His head was large for his age and the superficial veins of the scalp were dilated. Percussion of the head, which distressed the child greatly, elicited a typical cracked pot sound (Macewen's sign). The child did not speak or seem to comprehend simple commands. He was able to walk, but only with his feet spread wide apart. However, he did not stagger or fall. On sitting up the patient had difficulty in maintaining his balance.

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Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

There was a definite choking of both optic disks of from 2 to 2.5 diopters. No hemorrhages or exudates were seen in either fundus oculi. The pupils were round, equal and reacted rather slowly to light. Ocular movements were full in all directions, and there was no nystagmus. There was no other evidence of any involvement of the cranial nerves. No sensory loss could be detected. All extremities were abnormally flaccid but no localized weakness was present. All deep tendon reflexes were hypo-active. Babinski's sign was not present.

Urinalysis repeatedly revealed large quantities of a reducing substance in the urine. An examination of the blood (non-fasting) revealed 138 mg of dextrose per hundred cubic centimeters. A dextrose tolerance test was reported as normal. A blood count showed 13,800 white blood cells, 65 per cent polymorphonuclear leukocytes, 4,800,000 erythrocytes and 70 per cent hemoglobin.

Roentgenograms of the skull revealed definite, though moderate separation of all the cranial sutures (fig. 1).

A diagnosis of a midline tumor of the posterior cranial fossa was made, either a medulloblastoma of the vermis or an ependymoma of the fourth ventricle being suspected.

Operation—A suboccipital craniectomy was performed, October 11. Puncture of the left lateral ventricle through the occipital lobe revealed a dilated ventricular system containing clear colorless cerebrospinal fluid under considerably increased pressure. Both the cerebellum and the fourth ventricle, which were thoroughly exposed, appeared entirely normal. At the close of the operation a flanged needle was left in the left lateral ventricle in order to prevent a postoperative rise in intracranial pressure.

Postoperatively a diagnosis of "serous arachnoiditis," similar to that seen in the case of Esther S. (case 2), who had been operated on in 1931, was made.

Following the operation the patient's condition was very satisfactory. The ventricular needle drained profusely until removed two days after operation.

Demonstration of Lead Poisoning—Shortly following the operation it was suggested by Drs. E. S. James and D. Pachman of the pediatric resident staff that the patient might be suffering from lead poisoning. Immediate and repeated examinations failed to reveal any lead line on the gums or basophilic stippling of the red blood cells. Cerebrospinal fluid was repeatedly collected until 62 cc had been obtained. This contained 0.025 mg of lead. In 703 cc. of urine 0.100 mg of lead was found, and 106 Gm (wet weight) of feces contained 0.025 mg of lead. Blood drawn on October 24, and again on November 27, was submitted to Dr. Harold Blumberg of Johns Hopkins Hospital, who examined it spectrographically and reported 0.2 mg of lead per hundred cubic centimeters of blood in the first sample, which he stated "would indicate clinical lead poisoning or an early stage of convalescence from it," and 0.1 mg per hundred cubic centimeters in the second sample, which he considered evidence of "mild clinical or subclinical lead poisoning." In addition, Dr. Blumberg's examination revealed a slight argyria and subsequent inquiry revealed that the mother had frequently dropped mild silver protein in the patient's nose. Roentgenograms were made of the various long bones, and these revealed marked bands of increased density at the ends of the diaphyses (fig. 2).

Subsequent Course—The patient's condition rapidly improved. The choked disks soon subsided, fortunately without any optic atrophy. The cerebrospinal fluid pressure soon returned to normal.

Under the direction of Dr. Bengt Hamilton of the department of pediatrics, the child was given phosphorized cod liver oil in order to facilitate the removal of lead from active circulation and hasten its storage in the bones.² Under this treatment the dense bands at the ends of the bones rapidly widened (fig. 2). This increase in the density of the bands at the ends of the long bones may indicate increased calcium deposition as a result of the administration of phosphorized cod liver oil, the continued storage of lead or both.

The child was discharged, November 29, completely recovered from the lead encephalopathy.

² The utilization of phosphorized cod liver oil for this purpose is being experimentally investigated and will be the subject of a later report by Dr. Hamilton.

Family History—The family consisted of the mother (J C, aged 30) the father (Ralph C aged 34) and three brothers (Gilbert, aged 6, Wallace, aged 3½, and Ray the twin brother of the patient). The father's history was not significant. The mother had suffered from convulsions in infancy but had had no major illnesses since. All the children had had abnormal appetites and eaten many strange things including paint from the wall furniture toys and the like. Roy the patient, had been the greatest offender in this regard and while in the hospital had amply demonstrated this perverted appetite

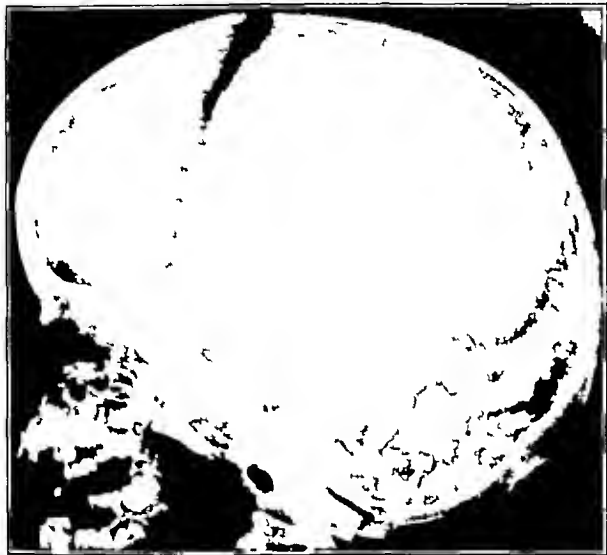


Fig 1 (case 1)—Appearance of the skull Oct 8 1934. The coronal and parieto-occipital sutures are all markedly separated.

by chewing the tables and the arms of the chairs. Except for ingestion of plaster the history of the twin brother Ray is not significant. Both Gilbert and Wallace had each had three convulsions and each such attack was associated with vomiting. These however, had occurred months or years prior to Roy's illness. Roentgenograms of the wrists of the three brothers revealed nothing abnormal, so that these convulsions could not be definitely associated with lead intoxication.

Samples of the paint and plaster from the kitchen wall were shown to contain large quantities of lead.

There would seem to be little question as to the diagnosis of lead encephalopathy in this case. The history of the eating of plaster prior to the onset of the symptoms that led to the child's admission to the hospital was unwisely disregarded in making the diagnosis of cerebellar tumor. This history should have suggested the possibility of lead encephalopathy.

The occurrence of similar clinical pictures in cases of lead poisoning in children has been reported by McKhann³ and other observers. The absence of a lead line on the gums, anemia and stippling of the red blood cells in this case is not surprising, as their absence has been noted by others in cases of proved lead poisoning in children. The definite line of increased density at the ends of the bones in a child that had had no previous phosphorus administered, no viosterol and had apparently not suffered from rickets is very suggestive if not conclusive evidence of lead poisoning, while Dr Blumberg's demonstration of lead in the blood is definite proof. The absence of any considerable amount of lead in the urine or feces is readily explained by the fact that the child had been removed from his source of lead for a considerable period of time prior to the examination of the excreta.

³ McKhann C F. Lead Poisoning in Children. The Cerebral Manifestation. Arch Neurol & Psychiat 27: 294-304 (Feb) 1932.

That the convulsions from which the mother and two older boys suffered in infancy were due to lead intoxication cannot be proved, but the two boys were known to be afflicted with perverted appetites and there exists the possibility that the metal may have played some part in their cases. Ray, the twin was probably saved from more severe lead poisoning by the catharsis with castor oil as well as by the less marked pica which he showed in comparison with his brother Roy.

It will be recalled that at the time of operation we were impressed by the similarity between this case and other cases in this clinic which have been diagnosed as "serous arachnoiditis," particularly the case of Esther S. The histories and available roentgenograms of all such cases were reviewed and new roentgenograms of the long bones were made of all patients that could be located. In only one case, that of Esther S, were we able to establish a presumptive diagnosis of lead intoxication. Too long a period of time had elapsed in all cases to anticipate the demonstration of lead in the blood or excreta in any of these old cases and thus to establish a positive diagnosis. That it was impossible to establish the diagnosis of lead intoxication in the other cases of "serous arachnoiditis" which were mostly in

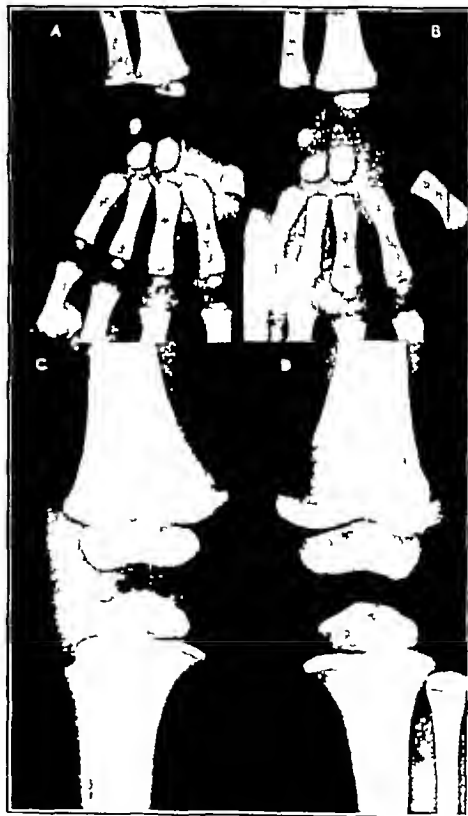


Fig 2 (case 1)—Appearance of wrist and knee. A left wrist October 17 showing definite bands of increased density at the lower ends of the radius and ulna and to a less extent at the peripheral ends of the phalanges. B, the same wrist two months later (December 10) after daily administration of phosphorized cod liver oil. The bands are more than twice as wide. C lead lines at the ends of the femur tibia and fibula before the institution of therapy directed toward the storage of lead October 19 and D the same bones two months later December 10.

children does not completely exclude that possibility as the reinvestigation was carried out several years after the acute episodes. The establishment of the proper diagnosis in the case of Esther S was largely dependent on fortuitous circumstances.

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CASE 2—Esther S aged 5 years vomiting constipation and headache three weeks crossed eyes one week and stiffness of the neck, large head cracked pot sound choked disks of 4 diopters bilateral external rectus palsies flaccidity of extremities reduced reflexes positive Babinski meoordination walked on a wide base normal blood and urine, separation of cranial sutures, diagnosis midline cerebellar tumor no tumor found at operation serous arachnoiditis? complete recovery subsequent demonstration of lead line in long bones in original and later roentgenograms elicitation of history of pica

History—Esther S, aged 5 years referred to the University of Chicago Clinics by Dr Joseph Brennemann was admitted July 17, 1931 Her parents stated that she had been perfectly well until three weeks before admission at which time she began to vomit, at first only once or twice a day The vomiting became progressively more severe and frequent, until during the ten to fourteen days before admission she had been almost unable to retain any food or fluids The vomiting was not associated with nausea and the child complained of hunger At about the same time the bowels became severely constipated and evacuation by any means was very difficult

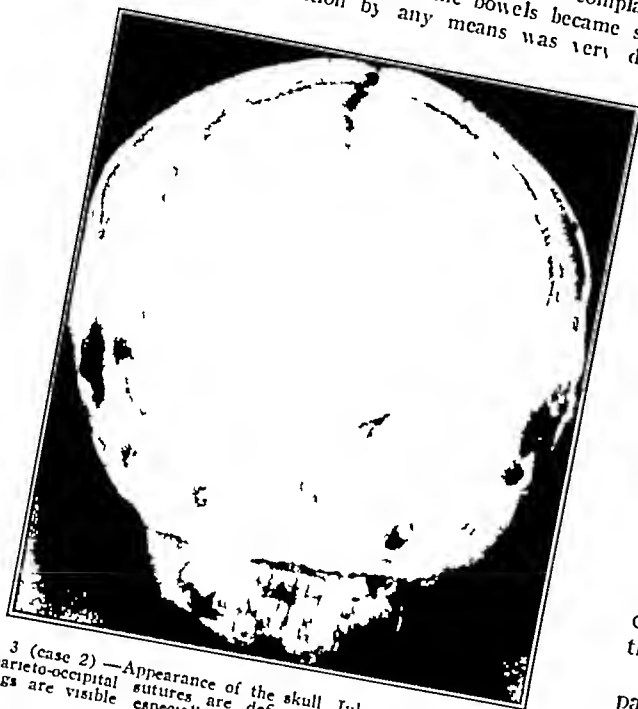


Fig 3 (case 2)—Appearance of the skull July 18 1931 The sagittal and parieto-occipital sutures are definitely separated Some digital markings are visible especially on the right

With the onset of the vomiting the patient began to complain of headache, which was present daily was variable in severity and was not localized One week before admission she began to complain of impaired vision and said everything looks funny About that time her mother noted that her eyes were crossed, the left being turned in Four days before admission stiffness of the back of the neck developed

Her birth, dietary and developmental histories were not abnormal She had suffered from measles at 17 months and scarlet fever at 2 years following which she had had an infection with discharge from the right ear

Examination—General physical examination revealed nothing abnormal On neurologic examination it was found that the head was enlarged and gave a cracked pot sound on percussion The optic disks presented a choking of 4 diopters There were many small hemorrhages over the disks a few in the retina and some patches of white exudate It was impossible to test the visual acuity or visual fields because of the lack of cooperation The pupils were round and equal and reacted normally There was a bilateral weakness of the external recti greater on the left There was definite flaccidity of all four extremities and distinct incoordination on the finger-to-nose test on the left The tendon reflexes were hypo-active,

the right knee jerk being more reduced than the left At times a bilateral Babinski sign could be elicited The child walked with her feet spread wide apart and with a staggering gait

Laboratory Examination—Urinalysis revealed no abnormality The blood examination showed 7800 white blood cells, 4700 000 red blood cells and 85 per cent hemoglobin The blood Wassermann and Kahn tests were negative, as were the intradermal tuberculin tests Roentgenograms of the skull were reported as showing only separation of the cranial sutures and digital impressions on the inner table of the skull (fig 3) A diagnosis of a midline cerebellar tumor (probably a medulloblastoma) was made

Operation—July 23 the patient was operated on by the usual suboccipital approach Puncture of the left lateral ventricle revealed a grossly dilated ventricular system containing clear colorless fluid under moderately increased pressure The cerebellum meninges, cisterna magna and fourth ventricle appeared normal The vermis was incised in the midline but no tumor was found The unsatisfactory diagnosis was made of acute internal hydrocephalus of unknown origin The patient made a rapid and uneventful postoperative recovery Following her discharge from the hospital the patient soon returned to normal activity There is at present no detectable evidence of any neurologic or mental impairment

Discovery of Lead Poisoning—After our experience in case 1 Esther was asked to return to the hospital for roentgenograms of the long bones The right knee and wrist were roentgenographed Oct 26 1934 (fig 4) The ends of the long bones as was to be expected were perfectly normal but in the shaft of the long bones there was a line of increased density about 1 mm in width This line was 37 cm above the lower epiphysal line in the femur 21 cm below the epiphysal line in the tibia and 19 cm above the epiphysal line in the radius The old films of the skull were then reviewed Fortunately in one corner of some of the films the head and upper end of the humerus was visible At the upper end of the diaphysis could be seen a very definite wide line of increased density, typical of lead lines' occurring in this location In addition, inquiry elicited from the parents a definite history of pica in this case although no specific instance of the ingestion of lead or lead containing substances could be recalled

Although the diagnosis of acute lead encephalopathy can never be positively established in this case, many things point to that as the correct interpretation

The history of the sudden onset of vomiting, constipation headache strabismus and stiffness of the neck with the finding of definite evidence of severely increased intracranial pressure and of no tumor at operation, the demonstration of lines of increased density in the metaphyses of the bones at the time of the acute illness and of similar lines at a considerable distance from the ends of the long bones after more than three years of growth and the elicitation of the definite history of pica preceding the acute illness make the diagnosis of acute lead encephalopathy as nearly certain as is possible after the elapsing of this period

Both of the preceding cases are also of great interest because of the rapid and apparently complete recovery following the making of a decompression

The third case presented a much less difficult diagnostic problem but is included, as it is the only other case of acute lead encephalopathy with sufficiently increased intracranial pressure to simulate a tumor that has been seen and recognized in the University of Chicago Clinics As the case was never seen by either of us, the record will be only briefly presented

CASE 3—Girl aged 6½ years admitted Oct 15 1930, attacks of epigastric pain for years one attack of jaundice and vomiting difficulty in walking bilateral foot drop absent ankle jerks slight blurring of optic disks anemia stippled

erythrocytes, diagnosis acute anterior poliomyelitis? or peripheral neuritis (lead)? Discharged October 27

Readmitted November 11, bilateral papilledema, right facial weakness, internal strabismus, separation of the cranial sutures, normal ventriculogram, large amount of lead in feces lead lines? in the bones, viosterol and calcium therapy, slow recovery

History—Betty, J. E., aged 6½ years, admitted to the University of Chicago Clinics, Oct 15, 1930, had for several years suffered from attacks of epigastric pain and severe anorexia. In the spring of 1928 she had been jaundiced and had vomited repeatedly. In August 1930, during an attack of whooping cough, she had vomited often and had no appetite. In September, difficulty in walking and slight aching pains in the thighs developed for which she was admitted to the hospital.

Examination—Physical examination in October 1930 revealed pallor, a systolic apical cardiac murmur and a distended bladder, which was readily evacuated. She had a bilateral foot drop and was unable to move her toes. The quadriceps extensors were also weak. The ankle jerks were absent. The right optic disk was slightly blurred.

The blood count revealed an anemia of 3,510,000 red blood cells, and smears showed marked basophilic stippling.

Discharge—The child was discharged, October 27. There was a difference of opinion as to whether the correct diagnosis was peripheral neuritis due to lead poisoning or acute anterior poliomyelitis.

Readmission—November 11 there was a bilateral papilledema of from 2 to 2.5 diopters, and the child was readmitted to the hospital.

Further inquiry elicited the fact that in April 1930 the patient had eaten an unknown quantity of white house paint.

Reexamination on November 11 and 15 revealed the foot drop and reflexes as before, a papilledema, a right facial weakness and a right external rectus paralysis. No lead line along the gums could be found. The blood showed an anemia and stippled red cells, which rapidly decreased in number, and none were found December 19.

Demonstration of Lead—December 6, Dr C. W. Muehlberger who had kindly examined the excreta, reported that 224 Gm of feces collected between November 13 and 16 contained 226 mg of lead.

Roentgenograms of the skull, taken November 13, revealed slight separation of the sutures and increased digital or "convolutional" markings on the inner table of the skull (fig 5). A ventriculogram was made November 17. The intracranial tension was greatly increased but the ventricular system was normal (fig 5). Roentgenograms had been taken of various parts of the body on October 17 and 22 and November 13, 17 and 29 and, except for those of the skull, were reported as normal. December 16, additional roentgenograms of the long bones were made. On reviewing the earlier films slight lines of increased density at the ends of the metaphyses were made out whereas those last taken showed definite and wider lines (fig 6). However, as large doses of viosterol and calcium lactate had been administered in the interval, the lines were not considered very significant.

Course—Following the ventriculogram the child was stuporous and later lethargic for more than two weeks and the papilledema was considerably increased. December 2 the choked disks were receding, but there was a bilateral external rectus paralysis complete on the right and partial on the left. Conjugate movement of the eyes upward was impossible. There was a right facial weakness. The foot drop was still present, but the ataxic gait was considered to be much more severe than it would explain. Slowly her condition improved and she was discharged, Jan 9 1931. The external rectus palsy had practically subsided. The optic disks and vision were normal. The foot drop was unchanged. She was last seen May 6. The foot drop was much better and her general condition was said to be good. Unfortunately, there is no statement as to her mental condition. Since then all track of her has been lost.

This child differs primarily from the others in that the initial symptoms were those of a peripheral neuritis. Not until several weeks later did signs of increased intracranial pressure develop, and this was much less severe than in the other two cases, in which headache and vomiting were pronounced symptoms and the lateral ventricles were grossly dilated. At no time was there any evidence of any localized intracranial lesion. The history of the ingestion of lead and the finding of a peripheral neuritis purely motor in type, an anemia, stippled red blood cells, and a large quantity of lead in the feces would seem to make the diagnosis of lead intoxication certain. In this particular case the roentgenograms of the long bones were of little or no diagnostic value.

Although there is no information concerning the child's present condition, her recovery would appear to be an unusually fortunate and exceptional one, particularly in that she recovered from a severe papilledema without developing an optic atrophy. In view of the rapid recovery in cases 1 and 2 as compared with the very slow recovery in this case, it would appear likely that this child would have been saved a long and severe illness by a decompression.

LITERATURE

Symptomatology—A clinical picture characterized by increased intracranial tension, choked disks, external rectus palsies, vomiting, headache and convulsions is particularly apt to occur in children as a result of lead intoxication. Although lead encephalopathy may occur in adults, it is not as common as in children and appears to be less commonly associated with sufficiently increased intracranial tension to be confused with brain tumor. However, that such is not always the case was pointed out as long ago as 1908 by Bramwell,⁴ who discussed the differentiation of the two conditions in adults. The differential points that he stressed were (1) evidence of lead poisoning such as a lead line on the gums, anemia, colic and wrist drop, (2) a history suggestive of previous lead poisoning, (3) occupation, (4) the character of the convul-



Fig 4 (case 2)—A portion of shoulder unintentionally included on the film of the skull taken on July 18 1931. A line of increased density is plainly visible at the upper end of the humerus. B same shoulder also included in a roentgenogram of the skull taken Jan 11 1932 six months after A. The line of increased density is now a short distance from the epiphyseal line indicating growth in the interim. C knee Oct 26 1934 more than three years after the acute illness. The lines of increased density are now several centimeters from the ends of the bones owing to growth during this time.

⁴ Bramwell, Byrom. The Differential Diagnosis of Intracranial Tumor and Lead Encephalopathy. *Clinical Studies* (Edinburgh) 7: 91-96 1909.

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sions and peculiar mental conditions unlike those seen with tumors, and (5) the finding of lead in the urine. It is worthy of note here that Bramwell was dealing with and speaking of lead encephalopathy in adults. Unfortunately, in the main, his differential points are not applicable to children. As has been previously pointed out, evidence of lead poisoning such as the lead line on the gums, anemia, stippled red blood cells, and peripheral neuritis is commonly absent in lead poisoning in children. A history of previous lead poisoning is rarely elicited. Major convulsions are rare phenomena with tumors in the cerebellar fossa in children and their occurrence should make one hesitate before making such a diagnosis but in cases 2 and 3 it is seen that major convulsions may be absent in cases of lead encephalopathy. Changes of mentality in children are largely those due to increased intracranial pressure as is true in cases with tumors. The delirium, hallucinations and delusions so frequently seen in lead encephalopathy in adults are rarely observed in the child



Fig 5 (case 3) —Skull and ventriculogram Nov 17 1930. There is very slight separation of the coronal suture. The outline of the lateral ventricles which is just visible indicates a normal ventricular system.

That lead intoxication may result in signs of meningeal irritation or in generalized convulsions has been pointed out by Thomas and Blackfan,⁶ Blackfan-Strong⁷ and Holt.⁸ However, the paper by Suzuki and Kameko¹⁰ in 1924 describing the Japanese and Manchurian cases of 'serous meningitis' in infants arising from the use of lead-containing cosmetic powders by their mothers and the report by McKhann¹¹ in 1926 of cases of lead encephalopathy in children were the first really to direct attention to the prevalence and the seriousness of this condition in children.

McKhann's first patients suffered from vomiting, headache, stupor and convulsions. He drew attention

to the increased cerebrospinal fluid pressure but was not at that time impressed by changes in the optic disks. After further experience with the condition he published his paper of 1932¹² in which he pointed out that the majority of the symptoms—vomiting, visual disturbances, delirium, stupor, coma, convulsions, often elevated arterial pressure, choked optic disks and separation of the cranial sutures—were due to cerebral edema and increased intracranial pressure. This was a valuable contribution to the complete comprehension of lead encephalopathy in children and shifted attention from the toxic action of lead on the nervous parenchyma to the edema that results from damage to the mesenchymatous elements of the central nervous system such as the vascular system and the meninges. Other papers¹³ in association with Vogt in 1933 and 1934 reemphasized this point. Various writers, including Aub and his co-workers,¹⁴ confirmed the symptomatology as outlined and pointed out that the condition may simulate intracranial neoplasms, as did also Bailey.¹⁵

The most important recent diagnostic criterion that has been described in this condition in children is the presence of lines of increased density at the ends of the diaphyses of long bones which are visible with the x-rays. They were recognized and described by Park and his co-workers¹⁶ Caffey¹⁰ and Vogt.¹⁷ And though in the absence of other confirmatory evidence these lines would be interpreted by few observers as positive evidence of lead poisoning their presence is very suggestive of the possibility of lead intoxication. There is also the advantage that the existence of such lines of increased density can be easily and quickly determined.

Prognosis—The mortality from lead poisoning in children is extremely high. Blackfan⁷ states that of Stewart's seven patients with convulsions six died, and of his own four patients three died. Holt⁹ records that in thirty cases of lead poisoning collected from the literature there were twenty deaths. Aub and his associates¹³ state that the literature indicates a mortality of from 25 to 75 per cent in lead poisoning. McKhann and Vogt¹² state that in forty-five cases of lead encephalopathy in a Boston pediatric hospital there were eleven deaths (24.4 per cent).

Sequelae—Of equal importance with the mortality is the trail of physical wrecks that lead encephalopathy leaves in its wake. In the forty-five cases of lead encephalopathy recorded by McKhann and Vogt twelve (26.6 per cent) presented sequelae. These may take various forms. Gowers⁶ long ago pointed out the occurrence of a hemiplegia as a result of the disease. Aub and his associates, McKhann and Vogt, and others have reported convulsions, blindness, paralysis, speech deficiency, delirium and melancholia, tremor, anatomic changes and the like associated with such hydrocephalus. McKhann felt that the sequelae, like the acute signs, could be attributed to the increased intracranial pressure and edema with their attendant

- 6 Thomas H M and Blackfan K D Recurrent Meningitis Due to Lead in a Child of Five Years Am J Dis Child 8 377 380 (Nov) 1914
- 7 Blackfan K D Lead Poisoning in Children with Especial Reference to Lead as a Cause of Convulsions Am J M Sc 153 877 887 (June) 1917
- 8 Strong R A Meningitis Caused by Lead Poisoning in a Child of Nineteen Months Arch Pediat 1920 37 532 537 (Sept) 1920
- 9 Holt L E Jr Lead Poisoning in Infancy Am J Dis Child 25 229 233 (March) 1923
- 10 Suzuki T and Kameko J Serous Meningitis in Infants Caused by Lead Poisoning from White Powders J Orient Med 1924 2 53 66 1924
- 11 McKhann C F Lead Poisoning in Children Am J Dis Child 32 386-392 (Sept) 1926

- 12 (a) McKhann C F and Vogt E C Lead Poisoning in Children J A M A 101 113 1135 (Oct 7) 1933 (b) Vogt E C and McKhann C F Lead Poisoning in Infants and Children Radiology 22 87 92 (Jan) 1934
- 13 Aub J C Lead Poisoning Fairhall L T Minot Anne S and Reznikoff Paul graphs Baltimore Medicine 4 1250 (Feb May) 1925 Medicine Monographs Baltimore Williams & Wilkins Company 7 265, 1926
- 14 Bailey Percival Intracranial Tumors Springfield Ill Charles C Thomas 1933
- 15 Park E A Jackson Deborah and Kajdi Laslo Shadows Produced by Lead in the X Ray Pictures of the Growing Skeleton Am J Dis Child 41 485 499 (March) 1931
- 16 Caffey J Clinical and Experimental Lead Poisoning. Some Roentgenologic Changes in Growing Bones Radiology 17 957 983, 1931
- 17 Vogt E C Roentgenologic Diagnosis of Lead Poisoning in Infants and Children J A M A 98: 125 129 (Jan 9) 1932

impairment of the circulation. It should be pointed out that the anatomic changes in the blood vessels will contribute toward the same end.

COMMENT

Differential Diagnosis—The confusion of cases such as the ones reported here, particularly the first two, with cases of intracranial tumor is not surprising. The rapidity of onset, the early appearance of vomiting, the absence of definite neurologic changes other than those due to increased intracranial pressure, are typical of certain tumors occurring in the midline of the cerebellum of children. It is true that the majority of such cases usually present considerable uncertainty in walking, such as a staggering gait, but this may be minimal or absent, as case 3 reported by Cushing²⁶ in 1927 or case 24, reported by Bailey.²⁷ On the other hand, both cases 1 and 2 reported here presented a slight staggering gait and in case 3 the ataxia observed in walking was thought to be out of all proportion to the foot drop. Such staggering and incoordination in cases of lead encephalopathy may be due to the general debility of the patient or may be the result of degeneration of the large ganglion cells of the cerebellum reported both by Hassin¹⁹ and by Freifeld.²³ Flaccidity (hypotonia) of the extremities is common in midline cerebellar tumors but it was also present in these cases of lead encephalopathy. All the other usual signs of disturbance of cerebellar function (nystagmus, ataxia of the upper extremities and the like) are characteristically absent in cases of midline cerebellar tumors in children and thus are naturally of no value in differentiating these two conditions. It would seem that in many cases from a history and physical examination alone a differential diagnosis would be impossible. In those cases in which a blue line is present along the gums or in which there is an anemia and basophilic stippling of the erythrocytes, lead poisoning will of course be suggested to all observers, but unfortunately these signs are often absent in children. But in those cases in which there is a history of ingestion of lead or of substances that may contain lead, of a rapid onset with marked vomiting and abdominal pain, in which the signs of a localized intracranial lesion are vague or absent, the possibility of lead encephalopathy should be entertained. Such cases will usually show less elevation of the intracranial pressure as evidenced by a less marked separation of the cranial sutures than is usual in cases of cerebellar tumor. Whenever the possibility of lead encephalopathy is being considered in such a case, roentgenograms of the wrists and knees should be made to determine whether lines of increased density are present at the ends of the bones. In this connection it should always be borne in mind that the lead lines may be slight or absent as in case 3, for the lines indicate the deposition of lead in an inactive form in growing bones, not the presence of lead in a toxic form in the blood stream or brain, and either may be present without the other. It should be stressed that there are no positive criteria of lead encephalopathy in children and only constant vigilance and the use, when indicated, of all the diagnostic methods available will serve to establish the correct diag-

nosis. Fortunately, as will in a moment be pointed out, the error of diagnosing a case of lead encephalopathy as one of intracranial tumor does not seem to be fraught with grave danger if the proper therapeutic indications are followed.

Treatment—The therapeutic measures directed at the storage or removal of the lead itself have been very adequately dealt with by numerous recent authors.²⁸ That phase of the treatment will not be discussed here except to say that in our opinion "deleading" is not only an unnecessary but probably a dangerous procedure in children and should not be attempted except under the most unusual circumstances.

Numerous authors, particularly McKhann, have been impressed by the difficulty of relieving the increased intracranial tension by medical means. The convulsions can often be controlled by intramuscular magnesium sulphate or other methods, but the increased intracranial pressure, little or only temporarily affected by lumbar puncture and hypertonic solutions, continues unabated and results in death in at least one case out of every four and in sequelae in a like number. In less than 50 per cent of the patients under medical management can it be anticipated that they will survive their illness without bad effects.

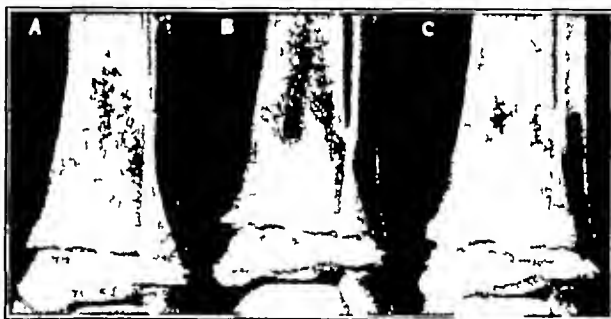


Fig 6 (case 3)—Right ankle. A Oct 20 1930 a faint indefinite line of increased density is present at the end of the tibia. B December 16 after administration of viosterol and calcium lactate for two months the line of increased density is now distinct and definite. C Feb 16 1931 the line is still wider and more dense. It is of course questionable whether this can be spoken of as a lead line in view of the therapy.

The present report, limited as it is to three cases, would indicate that every case of lead encephalopathy with increased intracranial pressure should be given the benefit of a cerebellar decompression. The three cases reported here, though recovery occurred in all, are excellent illustrations of that point. Patients 1 and 2, both seriously ill, would have been given a bad prognosis under medical management. With a decompression both rapidly recovered, and in neither is there any trace of any sequel as a result of the illness, whereas in case 3, in which no decompression was made although the intracranial pressure was much less elevated, as shown by the slighter degree of separation of the sutures and the absence of any dilatation of the ventricular system, the recovery was very slow, for weeks the patient was stuporous, her condition growing worse, and for a long time her ultimate recovery

28 In a symposium dealing with lead poisoning consisting of the following papers:

19 Hassin G B. The Contrast Between the Brain Lesions Produced by Lead and Other Inorganic Poisons and Those Caused by Epidemic Encephalitis. *Arch. Neurol. & Psychiat.* 6: 268-285 (Sept.) 1921.
23 Freifeld H. Veränderungen des Nervensystems bei Bleivergiftung. *Virchows Arch. f. path. Anat.* 287: 549-554 1933.
26 Cushing Harvey. The Intracranial Tumors of Preadolescence. *Am. J. Dis. Child.* 33: 551-584 (April) 1927.
27 Bailey Percival. Intracranial Tumors. pp. 225-227.

Lanza A J. Epidemiology of Lead Poisoning. *J. A. M. A.* 104: 85 (Jan 12) 1935.
Aub J C. The Biochemical Behavior of Lead in the Body. p. 87.
Keeho R A. Thamann Frederick and Cholak Jacob. Normal Absorption and Excretion of Lead. p. 90.
Jones R R. Symptoms in Early Stages of Industrial Plumbism. *ibid.* 104: 195 (Jan 19) 1935.
Cray Irving. Recent Progress in the Treatment of Plumbism. p. 200.
Belknap E L. Control of Lead Poisoning in the Worker. p. 205.

was actually in doubt. Surely if cases 1 and 2 are any indication at all her recovery would have been much more rapid with a decompression.

As to what form of decompression is most suitable, we have no information. In both of our cases a suboccipital (cerebellar) decompression was made. It has the advantage that the cerebellum is exposed in those cases in which the question of cerebellar tumor is not entirely settled, and it has the added value of leaving no unsightly scar or protrusion. It is obviously possible that a subtemporal decompression could prove as effective a mode of treatment. If so, it would have the advantage that it is a little more easily and quickly made but the disadvantage of the scar and of an obvious defect in the temporal bone. It is doubtful whether in competent hands the one is any more dangerous than the other in cases of lead encephalopathy.

SUMMARY

In two of three cases of lead encephalopathy in children with increased intracranial tension simulating cases of intracranial tumor, a suboccipital decompression was made. Both children recovered promptly and completely. In the third in which the intracranial pressure was less elevated no decompression was made and medical management alone was used. This child had a prolonged and stormy course but also ultimately recovered. From these experiences and from data taken from the literature it is concluded that

1 The differentiation of lead encephalopathy and midline cerebellar tumors in children from the history and physical signs alone is difficult and may be impossible.

2 Such factors as the possible ingestion of lead, rapid onset with vomiting and abdominal pain and only moderately increased intracranial pressure should warn the clinician of the possible diagnosis of lead encephalopathy.

3 The easiest and most rapid method of rendering probable the diagnosis of lead encephalopathy is the demonstration of the presence of lines of increased density at the ends of the long bones. The diagnosis may then be established by demonstrating the presence of lead in the blood.

4 Medical management of lead encephalopathy is notoriously unsatisfactory and results in a high mortality and numerous and serious sequelae.

5 Surgical decompression of the intracranial cavity offers a logical means of producing a prompt and complete relief of symptoms with less danger of sequelae.

ABSTRACT OF DISCUSSION

DR TRACY J. PUTNAM, Boston. The authors have called attention to an important point in the differential diagnosis. I have seen at the Boston Children's Hospital several patients with encephalitis due to lead poisoning whose symptoms closely simulated those of tumor. The differential diagnosis in such cases is one to which insufficient attention has been paid. In some of the cases at the Children's Hospital the intracranial pressure has been raised even more than I should judge was observed in the patients whose histories Drs. Bucy and Buchanan have reported. The sutures have been widely spread and the intracranial pressure as measured with a spinal manometer has been found to be over a 1000 mm. of water. A few of these patients have been operated on and decompression has been effected. In severe cases of increased suboccipital pressure decompression is apparently inadequate. I believe there are cases, however, in which benefit would be obtained by decompression. I am skeptical as to whether swelling of the

brain itself would be substantially reduced by suboccipital decompression, although this is strongly suggested in the cases of Drs. Bucy and Buchanan.

DR HANS REESE, Madison, Wis. Four years ago I examined a boy, 5 years of age who presented the characteristic signs of cerebellar tumor. I was not able to trace the syndrome to an intoxication or an infection and was not satisfied with the diagnosis of tumor, so I referred him to the neurologic department of the University of Chicago. Suboccipital decompression was performed but instead of a tumor, hemorrhagic arachnoiditis was found. Uneventful recovery followed this operation. The boy is alert, steady and quick, but an interesting feature is that within the last four years he has not grown. Clinical examination shows that he is normal and well nourished but undersized. His head is somewhat large but not hydrocephalic. After hearing this paper, I am of the opinion that in this case the possibility of encephalopathy due to lead poisoning was overlooked. I shall study the epiphyseal region to see if lead lines are evident.

DR ROY GRINKER, Chicago. Since attention has been drawn to the possibility of lead poisoning in the etiology of the rarely diagnosed cases of serous arachnoiditis, I have been impressed by the fact that the pathologic process in encephalopathy due to lead poisoning—changes in the ganglion cells, swelling of the brain meningeal proliferation and secondary hydrocephalus—are often found in children with a condition which Stone and I have called toxic encephalitis. These pathologic changes are so similar occur so frequently in children and lead to such similar sequelae that not only must evidence of lead poisoning be searched for as a possible etiologic factor in these cases in which a tumor is not present but in which simulating symptoms are noted and which have therefore frequently been called cases of pseudotumors but in addition one must be careful not to miss some previous acute infection that may have been responsible for the pathologic changes which later cause a rise in the intracranial pressure and thus confuse the clinical picture.

DR E. D. FRIEDMAN, New York. May I ask how the authors would explain the presence of the changes in the fundus noted in the last case?

DR L. H. LOESER, Newark, N. J. May I ask the authors to give further information as to the lead line in the bones? At what age does it appear? Is it present in adults?

DR PAUL C. BUCY, Chicago. The patient whom Dr. Reese mentioned is one in whom we were interested. However the roentgenograms taken at the clinic gave no clue as to whether or not it might have been a case of lead encephalopathy, and unfortunately we were unable to follow the patient further. I do not believe that the retardation of growth which occurred in Dr. Reese's case was due to the deposition of lead along the epiphyseal lines. As noted in case 2 such deposition does not retard growth. I am inclined to feel that the retardation of growth in his case was due to the intracranial changes produced by the disease. Although dilatation of the ventricular system is commonly associated with increased intracranial pressure its presence is by no means essential. It is well known that edema of the brain occurs in encephalopathy due to lead poisoning and I am inclined to believe that such edema is an adequate explanation of the papilledema and increased intracranial pressure that were noted in the third case. The lead line occurs only in children because it is associated with the laying down of calcium in growing bone. It is of no value as a diagnostic sign in adults.

Honored by Severe Criticisms—Bayle's contribution met with the greatest success that can come to any medical contribution in that it led to widespread consideration and discussion. In fact, the author was honored by many severe criticisms, not to mention personal attacks. As a result the question of chronic arachnitis became a lively issue in the medical world and from this original description of six cases and the conclusions drawn the subject has grown by addition to the present state of knowledge concerning dementia paralytica—Moore, Merrill, and Solomon, H. C. *Contributions of Haslam, Bayle and Esmarch and Jessen to the History of Neurosyphilis*, *Arch. Neurol. & Psychiat.* 32:804 (Oct.) 1934.

RECENT ADVANCES IN THE STUDY
OF INFLUENZATHOMAS FRANCIS JR, MD
NEW YORK

The name "influenza" usually conjures up a picture of the disease as it appeared during the pandemic of 1918-1919—a disease of widespread distribution and protean manifestations, characterized by rapid dissemination, a high frequency of complicating pneumonia, and a high mortality. In sharp contrast, one may present the milder epidemics that occur from year to year in different communities, usually limited in their scope, severity and complications. The number of cases that occur in these mild epidemics depends, to a certain extent, on the number of clinically similar infections that are included under the diagnosis of influenza.

THE DIAGNOSIS OF INFLUENZA

In fact, the lack of sharp differential features has rendered it difficult to separate influenza as a well defined clinical entity from many other mild infections of similar symptomatology that may invade a community. Thus the term "influenza" has been carelessly applied to various vague diseases of comparatively high morbidity which are associated with chills and generalized aches and pains and are of brief duration. A striking example of this tendency was reported from South America two years ago.¹ An epidemic of a mild nature, which was called influenza or grip, invaded a localized area in Brazil. When studies of the immunity reactions of individuals in this area were made, it was found that the disease was, in fact, yellow fever.

One may adopt, as requisites for the diagnosis of influenza certain criteria such as sudden onset with constitutional symptoms, chilliness, fever, myalgia, headache, mild respiratory symptoms without coryza, the presence of leukopenia and a course of from two to three days followed by considerable asthenia and exhaustion. These may serve as a working basis but are insufficient to exclude other entirely different diseases that exhibit a similar clinical picture.

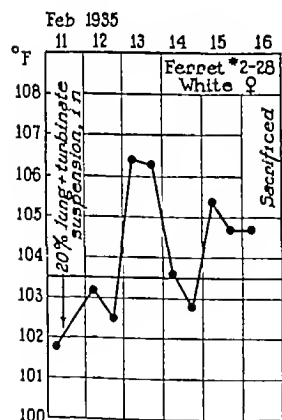


Fig 1—Temperature chart of a ferret infected with human influenza virus.

THE PROBLEM OF
ETIOLOGY

A comparable state of uncertainty has prevailed in regard to the causative agent of influenza. Many different bacteria have been implicated, particularly *Haemophilus influenzae* and *Bacterium pneumosintes*,

but in no case has the evidence been sufficiently convincing to permit of their acceptance as the specific causative factors. Certain scattered data have previously been presented which suggest that the etiologic agent belongs to that group of ultramicroscopic infec-

tious agents called filtrable viruses. Although suggestive, the demonstration of a filtrable virus has not been conclusive, since repeated attempts by other workers to transmit the disease experimentally have yielded negative results.

RECENT STUDIES OF OTHER RESPIRATORY
DISEASES IN MAN AND ANIMALS

In recent years, however, three different series of studies have been carried on which have again increased the interest in the etiology of influenza. These three series of investigations have been concerned with diseases involving the respiratory tract which in each case has permitted of study of a disease occurring in its natural host.

The first of the series comprises the studies undertaken by Dochez,² Shibley, Kneeland and Mills, and Long and his co-workers³ on the common cold. Briefly, the results of the investigation indicate that the common cold in man is produced by a filtrable virus which can also initiate a similar condition in the chimpanzee, and that the virus can be grown



Fig 2—The lung of a ferret infected with human influenza virus, posterior aspect. Complete consolidation of left lower lobe.

in artificial mediums and after cultivation still maintains the capacity to induce common colds in human individuals.

The second study, carried out by Laidlaw and Dunkin,⁴ was concerned with dog distemper, a highly infectious respiratory disease. These investigators, in addition to their work with dogs, the natural hosts, succeeded in transferring the disease to ferrets and were enabled thereby to study the disease experimentally in a stock known to be free from natural infection and maintained under conditions of rigid quarantine. They were able to establish the fact that this malady is caused by a filtrable virus.

The third set of investigations is that of Shope,⁵ relating to a respiratory disease of swine, which, so far as is known, first made its appearance at the time

2 Dochez, A. R. A Limited Consideration of Certain Aspects of Acute Infection of the Respiratory Tract. *Medicine* 12: 245 (Sept) 1933.

3 Long, P. H. and Doull J. A. Etiology of Acute Upper Respiratory Infection (Common Cold). *Proc. Soc. Exper. Biol. & Med.* 28: 53 (Oct.) 1930. Long, P. H., Doull J. A., Bourn J. M. and McComb E. Etiology of Acute Upper Respiratory Infection (Common Cold). *J. Exper. Med.* 53: 447 (Dec.) 1931.

4 Dunkin G. W. and Laidlaw P. P. Studies in Dog Distemper. I. Dog Distemper in the Ferret. *J. Comp. Path. & Therap.* 30: 201 (Sept.) 1926. II. Experimental Distemper in the Dog. *ibid.* p. 213. Laidlaw P. P. and Dunkin G. W. III. The Nature of the Virus. *ibid.* p. 222.

5 Shope R. E. Swine Influenza. I. Experimental Transmission and Pathology. *J. Exper. Med.* 54: 349 (Sept.) 1931. Lewis P. A. and Shope R. E. II. A Hemophilic Bacillus from the Respiratory Tract of Infected Swine. *ibid.* p. 361. Shope R. E. III. Filtration Experiments and Etiology. *ibid.* p. 373. Studies on Immunity to Swine Influenza. *ibid.* 56: 575 (Oct.) 1932.

From the Hospital of the Rockefeller Institute.
Read before the New York County Medical Society Feb 25, 1935.
1 Soper F. L. and de Andrade A. Studies of the Distribution of Immunity to Yellow Fever in Brazil. II. The Disproportion Between Immunity Distribution as Revealed by Complement Fixation and Mouse-Protection Tests and History of Yellow Fever Attack at Cambugy Rio de Janeiro. *Am. J. Hyg.* 18: 588 (Nov.) 1933.

of the influenza pandemic of 1918-1919. This disease has been called swine influenza, or hog flu. It is characterized by fever, loss of appetite and weight, cough, respiratory distress and pulmonary consolidation, but it is of comparatively low mortality. Shope, in a series of brilliant studies, was able to demonstrate that the disease was produced and transmitted through contact infections by a filtrable virus in symbiosis with a bacterium of the group to which the human types of *Haemophilus influenzae* belong. The bacillus alone injected into the nose of a hog except in rare instances

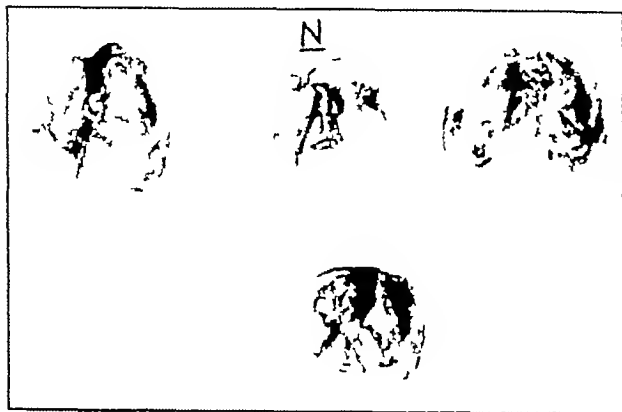


Fig. 3—Lungs of mice infected with human influenza virus in comparison with normal mouse lung (N).

produced no effect, the filtrable virus alone produced a mild and, at times, unrecognizable infection but one which nevertheless was followed by a firm immunity against infection by the two agents combined. Furthermore, it was possible by the subcutaneous injection of the filtrable agent into swine to induce a state of immunity that protected against infection when the virus and influenza bacilli were injected together into the nose of the hog.

Studies such as these have served to heighten the probability that similar conditions may obtain in other epidemic respiratory infections, especially those of man.

TRANSMISSION TO FERRETS OF A FILTRABLE VIRUS FROM HUMAN INFLUENZA IN ENGLAND

In 1933 Smith, Andrewes and Laird⁶ instilled into the noses of ferrets filtered nasopharyngeal washings obtained from human patients during the acute stage of influenza. Two days after inoculation the ferrets became ill with fever, apathy, loss of appetite and nasal catarrh. The ferrets were killed on the third or fourth day after the onset of fever, and with emulsions of the nasal turbinate bones of such animals, these investigators were able to transmit the disease to other ferrets. The only pathologic change that they found in the infected animals was inflammation of the nasal mucous membranes. Ferrets that recovered from the disease were found to be immune to reinfection. The serum of these recovered animals contained antibodies that were capable of neutralizing the action of the infective agent when the serum and infectious material were mixed and then inoculated into a susceptible ferret. Similar antibodies were detected in the serum of men convalescent from influenza and in the serum of other human individuals as well. The active agent was found to be a filtrable virus and the addition of various bacteria caused no definite difference in the experimental disease.

EXPERIMENTAL SWINE INFLUENZA IN FERRETS

In addition, the British workers were able to transmit the virus of swine influenza to ferrets, producing a disease indistinguishable from that caused by the human strain of virus. Shope⁷ was able to confirm their observations regarding swine influenza in ferrets. Furthermore, he found that, when suspensions of finely ground lung of infected hogs or bacteria-free filtrates of such suspensions were injected intranasally into anesthetized ferrets, there developed, in addition to the inflammation of the nasal mucous membranes, involvement of the lung itself. The pulmonary involvement was of lobar distribution, firm and markedly edematous. The alveolar walls were thickened with many mononuclear and polymorphonuclear cells, while in the alveolar spaces the exudate was sparse and composed primarily of mononuclear cells. After repeated passages in ferrets the virus still retained its infectivity for swine, producing characteristic swine influenza when mixed with swine influenza bacilli, while in the experimental disease in ferrets no bacterial component was required. The serum of recovered swine or ferrets was found to be capable of inhibiting the activity of the virus.

RECOVERY OF A FILTRABLE VIRUS FROM HUMAN INFLUENZA IN AMERICA⁸

With the results of these studies as a background, during the winter of 1933-1934 I inoculated material from various human respiratory infections into the nasal passages of ferrets but, with the exception of one

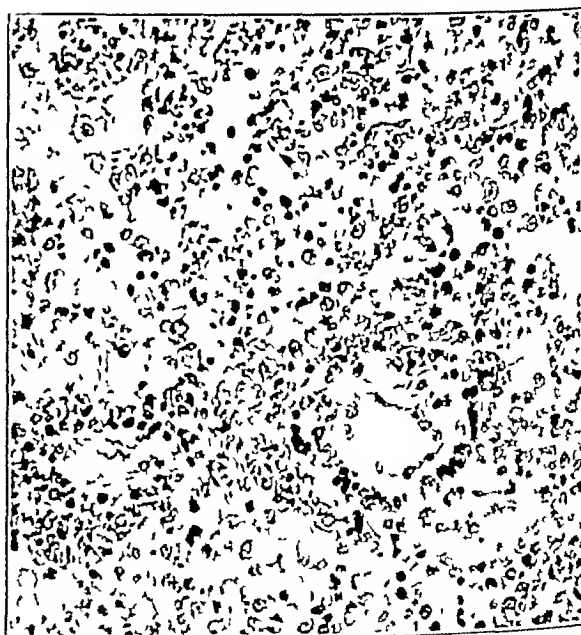


Fig. 4—Low power magnification of consolidated lung of ferret infected with human influenza virus. Atelectasis and thickening of alveolar walls, edema fluid and scanty exudate in alveolar spaces. Early perivascular round cell infiltration.

instance of definite bacterial origin, I was unable to establish any disease in the animals.

In the early autumn of 1934, however, a widespread epidemic of influenza occurred in Puerto Rico. Through the kindness of physicians of the International Health Board, sputum was obtained from patients dur-

⁷ Shope, R. E. The Infection of Ferrets with Swine Influenza Virus. *J. Exper. Med.* 60: 49 (July) 1934.

⁸ Francis, Thomas, Jr. Transmission of Influenza by a Filtrable Virus. *Science* 80: 457 (Nov. 16) 1934.

⁶ Smith, Wilson, Andrewes, C. H. and Laird, P. P. Virus Obtained from Influenza Patients. *Lancet* 2: 66 (July 8) 1933.

ing this epidemic. The sputum was placed in sealed bottles of 50 per cent glycerin packed in a vacuum jug with ice and shipped to New York by air mail. The materials were received from three to five days after collection. The sputum was washed free from glycerin and emulsified with Locke's solution, the emulsions were inoculated into the nasal passages of

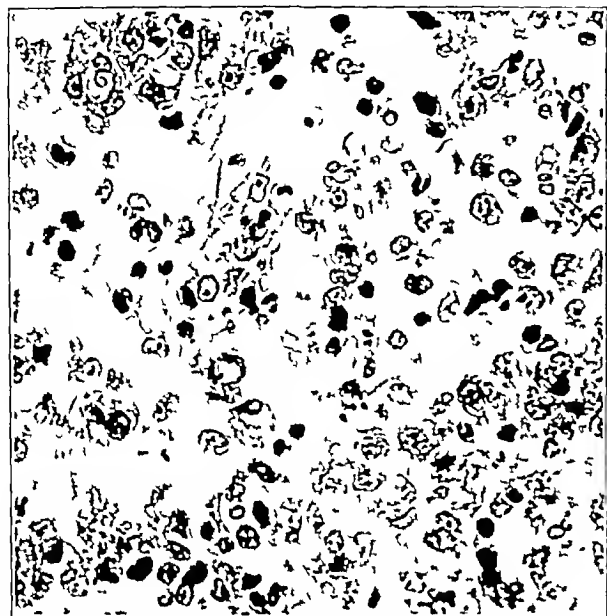


Fig 5—High power magnification of same area shown in figure 4. The predominant cell in the exudate is a large pale staining mononuclear cell resembling the alveolar phagocytes.

ferrets lightly anesthetized with ether. On the second day after inoculation, fever developed in all the animals. Three days later one of these was killed and the lungs and turbinates were removed and ground in a mortar with sand and meat infusion broth. Part of the material was centrifugated and filtered through a Berkefeld V filter. Two ferrets were given the unfiltered suspension intranasally, another was given the bacteria-free filtrate by the same route. All three animals were taken sick and with the virus recovered from these animals it has been possible to transfer the disease in serial passages from ferret to ferret by means of suspensions of filtrates of either ground lung or turbinate.

In the first few passages of the virus through ferrets the disease is characterized by a diphasic type of fever and mild apathy, but little else (fig 1). After a few passages, however, in the lungs of ferrets that are killed on the fourth or fifth day, bluish consolidation of the lower lobes is usually noted and subsequently similar involvement of the lungs has almost always occurred after intranasal infection. In animals with pulmonary involvement the disease is more severe (fig 2). Their respirations are rapid somewhat jerky and labored, and at times moaning in character. A short dry cough may be noted. There may be a watery nasal and conjunctival discharge. The animals, usually alert and active are apathetic and lie quiet in their cages, eating little. After from five to six days, recovery begins and the animal rapidly regains an apparently normal interest in food and in its surroundings. Recovery is almost invariably the rule.

On the fourth day after the original material was obtained from Puerto Rico one of the laboratory assis-

stants was taken sick, and two days later another assistant was also taken sick both with symptoms typical of influenza. The throat washings obtained from these two patients at the height of the disease were inoculated into ferrets, and a characteristic experimental disease was produced. These observations indicate the infectiousness of the material for man, since influenza was not known to be prevalent in the community at that time.

THE EXPERIMENTAL DISEASE IN MICE

With filtrates of the sputum from Puerto Rico, and of the washings of the contact cases, attempts were made to establish the infection in mice, but without success. Different groups of mice, under ether anesthesia, were also inoculated intracerebrally, intranasally and intraperitoneally with filtrates of suspensions of lung from the different passage ferrets. We finally noted in one group of mice that were killed four days after intranasal inoculation, some small areas of reddish blue consolidation in the upper portions of the lungs. The involved areas were ground with sand and bouillon, and the centrifugated suspension was then injected into the nasal passages of other mice. By repeating this process through several passages in mice, it was finally possible with bacteria-free suspensions of the mouse lung, or with Berkefeld filtrates, consistently to induce this reaction in mice. The disease in mice, after intranasal infection is primarily one of the respiratory tract and essentially of the lungs. The rapidity of the course of the disease

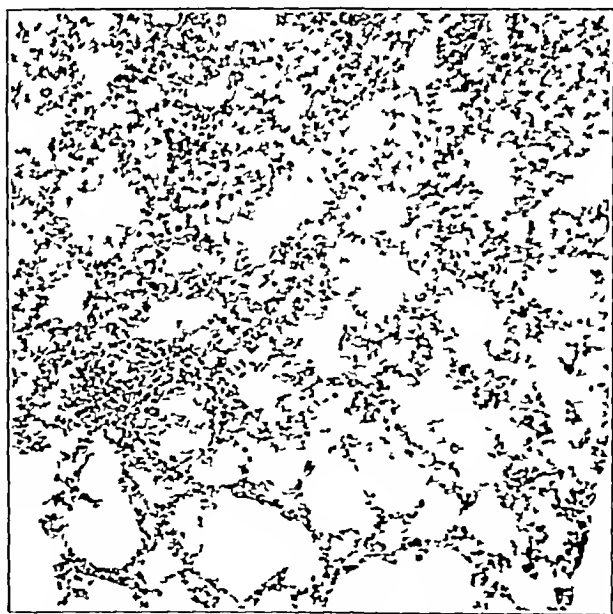


Fig 6—Low power magnification of mouse lung at margin of consolidated area. In the upper part there is a great amount of edema fluid, partial atelectasis and early perivascular cuffing. The lower portion shows uninvolved lung with compensatory emphysema.

depends, to a certain extent, on the concentration of the infectious agent in the inoculum (fig 3). After the intranasal instillation of a 5 per cent suspension of lung tissue the mice begin to sicken on the second or third day; they are quieter, their coats become ruffled, and they huddle together and eat but little. The respirations become exaggerated, labored and audible; the eyes become wet and staring, and the animal dies in from four to eight days.

At autopsy, the lungs are almost completely involved. They are distended and a reddish blue, the surfaces are smooth and glistening and when the lungs are removed from the body considerable froth exudes from the trachea. In the earlier stages, the involvement is most marked in the dorsal aspects of the upper lobes and about the roots of the lobes. It has been possible to carry the disease through many transfers in mice, with only an occasional survivor. From the lungs of the mice one can in turn infect the ferret, producing a characteristic illness.

While these studies were in progress Andrewes, Laidlaw and Smith⁹ reported independently that they had been successful in establishing the human and swine influenza viruses in mice with a resulting pathologic picture similar to that which we have described.

MICROSCOPIC PATHOLOGIC CHANGES OF THE EXPERIMENTAL DISEASE

Microscopically, the changes in the lungs of both the ferrets and the mice are similar to those described by Shope⁷ in the lungs of swine and ferrets with swine influenza. There is a marked thickening and proliferation in the alveolar walls, there is an atelectatic appearance in some areas and the cellular exudate is comparatively scanty while considerable edema fluid may be present. The type of cell in contrast to that seen in the ordinary bacterial infections is primarily the large mononuclear and there is some infiltration of small round cells about the blood vessels (figs. 4, 5 and 6).

ADDITIONAL STUDIES

The results of filtration and cultural studies indicate that the infective agent of epidemic influenza is a filtrable virus. The infection has not been transmitted readily by contact from infected to normal animals or by other routes than the respiratory tract.

We have succeeded in recovering a similar infectious agent from the nasal washings of patients during the recent mild epidemics of influenza in New York and Philadelphia. The studies with these strains have not been carried out extensively as yet but the course of the experimental disease in ferrets and mice is much the same. The blood of patients suffering from influenza, in spite of the generalized symptoms has not been found to infect the mouse or the ferret nor has it been possible with the throat washings of patients to transfer the infection directly to mice.

SUMMARY AND CONCLUSIONS

The results of these studies, together with those of Andrewes, Laidlaw and Smith, have succeeded in establishing the fact that one, at least of the mild interepidemic diseases called influenza is causally related to a filtrable virus and can be transmitted experimentally to mice and ferrets. The disease in both species of animals chiefly involves the respiratory tract and produces a typical pulmonary consolidation. A human disease studied in two widely separate parts of the world and in each instance considered typical influenza, has thus been found to exhibit similar characteristics in experimental animals. The picture of the infection in the animals may serve not only as a guide for further investigations of influenza but also as a basis for differentiating influenza from other epidemic diseases which, at the present time, because of a lack of differential criteria, are probably included in the category of influenza.

AURICULAR FIBRILLATION IN HYPER THYROID PATIENTS

PRODUCED BY ACETYL- β -METHYLCHOLINE CHLORIDE,
WITH OBSERVATIONS ON THE ROLE OF THE
VAGUS AND SOME EXCITING AGENTS IN
THE GENESIS OF AURICULAR
FIBRILLATION

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Auricular fibrillation is a serious cardiac irregularity which results from the onset of one or more circus movements in the auricular musculature (Lewis). The factors that initiate the circus movements are not too well understood. In the following study these factors have been investigated and it became clear that auricular fibrillation can be produced in hearts when they are subjected to the combined action of an exciting agent and overactivity of the vagus nerve.

THE ACTION OF THE VAGUS

Our first intimation of the nature of the physiologic mechanism involved in auricular fibrillation was obtained while observing the effects of acetyl- β methylcholine chloride on a hyperthyroid patient in whom a tachycardia had suddenly developed. As a matter of fact the patient was really suffering from auricular flutter, and administration of the drug converted the flutter into auricular fibrillation. The electrocardiogram obtained from this patient is reproduced in figure 1 and in the control record shows auricular flutter with a 2:1 block. After the injection of 50 mg. of acetyl- β methylcholine chloride the block gradually increased to 4:1, three minutes later the block was 5:1, the auricular complexes began to fragment and a coarse fibrillation was established and shortly replaced by fine auricular fibrillation. An hour and a half later when the effect of the injection might be expected to have worn off a normal slow supraventricular rhythm spontaneously reappeared (fig. 1 F). Figure 1 G is a reproduction of the electrocardiogram taken after a lapse of two days.

The increasing auriculoventricular block and the slowing of the ventricular rate are typical depressor effects and were to be expected from the well known action of the drug. The increase in the auricular rate from 316 to more than 600 was however, an entirely unexpected finding. It was obvious however that the vagus substance promoted the change from auricular flutter to auricular fibrillation.

The next logical step was to find out whether acetyl- β -methylcholine chloride might play a similar role in converting the normal heart mechanism in hyperthyroid patients into auricular fibrillation. Accordingly five patients at the Hospital of St. Raphael in New Haven were selected for study. Of these, one was doubtfully hyperthyroid, having a basal metabolic rate of plus 13. The other four were clearly defined hyperthyroid patients, with basal metabolic rates ranging from plus 26 to plus 48. All five received acetyl- β -methylcholine chloride in doses of 0.75 mg. per kilogram of body weight. Continuous electrocardiograms were taken in each case after the administration of the drug.

⁹ Andrewes, C. H., Laidlaw, P. P. and Smith, Wilson. Susceptibility of Mice to Viruses of Human and Swine Influenza. *Lancet* 2: 859 (Oct. 20) 1934.

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All five patients showed marked vagal as well as generalized parasympathetic effects similar to those described by Starr and his co-workers in man,¹ and by us in the infrahuman primates.² Accompanying these symptoms there was a rapid, and in two patients a profound drop in the blood pressure, requiring a subcutaneous injection of atropine sulphate, $\frac{1}{100}$ gram (0.0006 Gm.), to terminate the further action of the drug. In these two patients evidences of myocardial ischemia appeared and were recognized by a displacement of the ST segment of the ventricular complex (fig 2). In a series of similar studies made in a group of normal patients and animals, such a marked drop of the blood pressure was never observed with corresponding doses of the drug. Slowing of the heart rate and a partial auriculoventricular block took place in all five patients. Flushing was replaced at regular intervals of about four minutes by general peripheral vasoconstriction. These periods were found to coincide with transient increases in the heart rate. The maximum effects were reached from eight to ten minutes after injection and recovery was complete from forty-five minutes to two hours later.

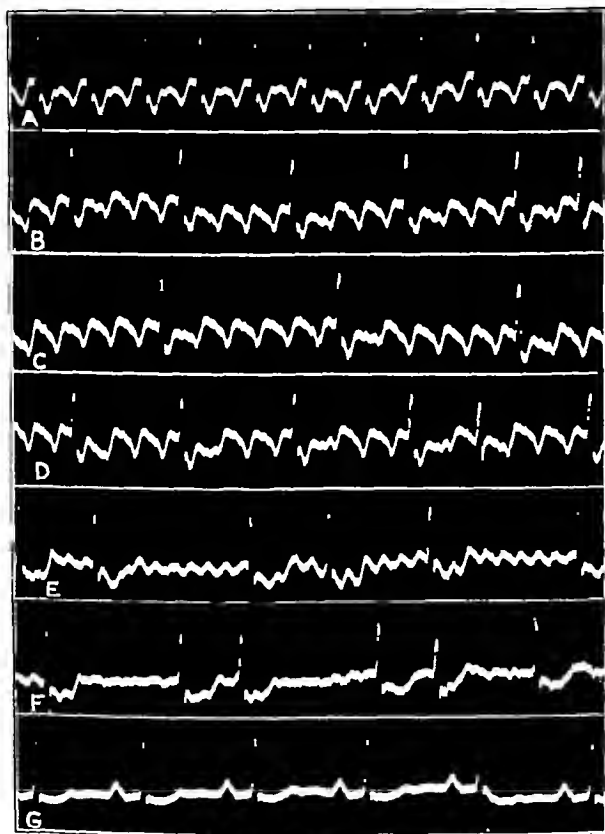


Fig 1—Lead 2 in Mrs. S. aged 46 with a basal metabolic rate of +42. Auricular flutter for two days refractory to digitalis. Electrocardiograms taken at intervals of five minutes. A, control auricular flutter with 2:1 rhythm. B, five minutes after a subcutaneous injection of 50 mg. of acetyl- β -methylcholine chloride. C, 4:1 block. D, 6:1 block. E, beginning fragmentation of P waves. F, coarse auricular fibrillation. G, fine auricular fibrillation. G, resumption of normal rhythm one and one-half hours after injection of the drug.

In the four definitely hyperthyroid patients the drug also produced a short period of auricular fibrillation but

this was not observed in the doubtful case. Auricular fibrillation appeared as the effect of the drug approached a maximum while the normal mechanism reappeared from five to twenty minutes later (fig 3).

From these observations it became clear that the drug played a predominant role in the production of auricular fibrillation in hyperthyroid patients having normal cardiac mechanism. Since the acetylcholine

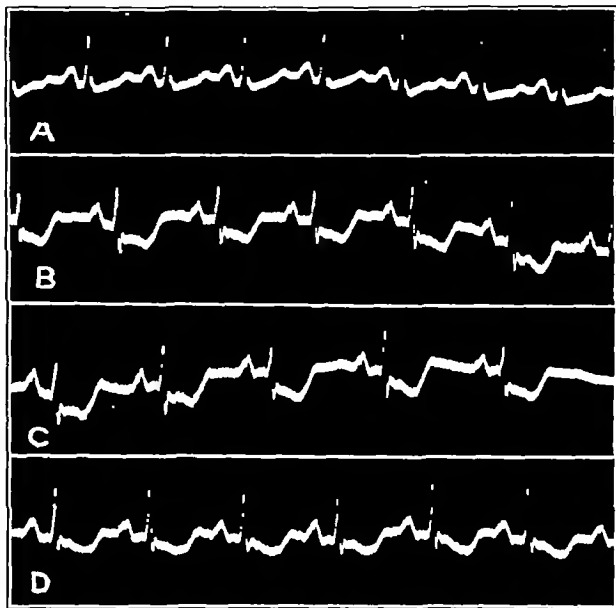


Fig 2—Lead 2 in Mrs. W. A, control. B, one minute after injection of 50 mg. of acetyl- β -methylcholine chloride, slowing of large S wave displacement of ST segment and inversion of the T wave. C, two minutes after injection. D, beginning recovery after injection of 0.01 Gm. of atropine.

derivative reproduces the same effects on the pacemaker and auricle of the heart as stimulation of the vagus nerves,³ it became clear that one factor in the spontaneous production of auricular fibrillation is the action of the vagus nerves on the heart.

Vagal excitation alone rarely causes auricular fibrillation. We have administered acetyl- β -methylcholine chloride to several normal individuals and to more than a hundred cats and monkeys and have never observed auricular fibrillation, nor was it reported by Starr and his co-workers in their studies on man. Eccles and Hoff³ observed a few extrasystoles at a rapid rate at the pacemaker following weak tetanic stimulation of the vagus of a cat but no true fibrillation, but, when Lewis, Drury and Iliescu⁴ added another factor such as faradic stimulation to the auricles of a dog during vagal stimulation, they observed incipient auricular fibrillation by faradic stimulation of the auricles alone. However, Eccles and Hoff have shown that in such instances local vagal ganglions are very likely to be stimulated even by very weak currents, in this way probably adding the vagal factor.

THE SECOND FACTOR

Thyroxine—The production of auricular fibrillation by the injection of acetyl- β -methylcholine chloride in the hyperthyroid patient and the failure to produce this disorder in the normal patient with the same or even

¹ Starr I. Jr., Elsom K. A., Reisinger J. A. and Richards A. V. Acetyl- β -Methylcholin Action on Normal Persons with a Note on Action of Ethyl Ether of β -Methylcholin. *Am. J. N. Sc.* 186: 313-323 (Sept.) 1933.

² Hoff H. E. and Nahum L. H. The Prevention of Ventricular Fibrillation Following Electric Shock of Low Voltage by the Injection of Acetyl- β -Methylcholine Chloride. *Am. J. Physiol.* 110: 675-680 (Jan.) 1935.

³ Eccles J. C. and Hoff H. E. The Rhythm of the Heart Beat. III. Disturbance of Rhythm Produced by Early Premature Beats. *Proc. Roy. Soc. Med. London* s. B 115: 352-368 (July) 1934.

⁴ Lewis Thomas Drury A. N. and Iliescu C. C. Further Observations upon the State of Rapid Reexcitation of the Auricles. *Heart* 8: 311-339 (Aug.) 1921.

larger doses of this drug makes it seem obvious that the excessive thyroxine present in the former case must in some manner account for the auricular fibrillation that is produced. Hearts under the influence of excessive amounts of thyroxine are stimulated so that they beat rapidly and also show increase in the rate of conduction and force of contraction⁵.

Thyroxine, therefore, might be considered an exciting agent on the heart. The widespread occurrence of auricular fibrillation in other than hyperthyroid persons indicates that agents other than thyroxine may operate with the vagus factor to induce and maintain this disorder. For purposes of exposition we propose to call this the E factor.

Electric Shock—The essential features of the effect of acetyl- β -methylcholine chloride on cats shocked electrically have been reported incidentally in a different connection² and may be stated briefly. In an animal given a preliminary injection of 10 mg per kilogram of acetyl- β -methylcholine chloride, electric shock with a 110 volt alternating current of short duration invariably produced auricular fibrillation. This condition lasts usually about from one and one-half to two hours, but with weaker shocks a normal rhythm returned in from fifteen to forty minutes.

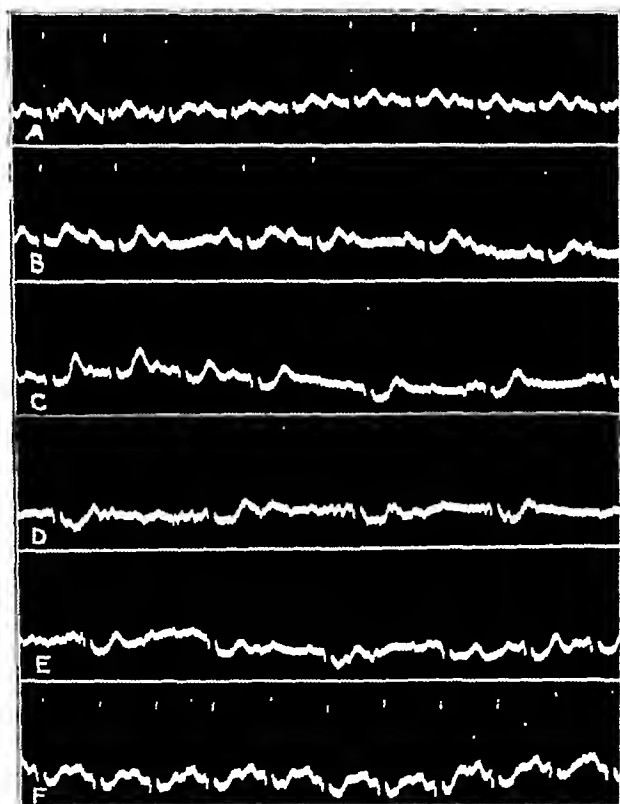


Fig. 3—Lead 2 in Mrs. C. aged 32 weighing 53 Kg. with a basal metabolic rate of +48. Records at an interval of five minutes. A control. B five minutes after injection of 50 mg. of acetyl- β -methylcholine chloride. C partial block. D fragmentation of P wave and development of auricular fibrillation. E fully established auricular fibrillation. F transition back to normal rhythm. F fully established normal mechanism.

In most of our experiments the drug was administered first and the shock given from fifteen to twenty minutes later, but in some studies auricular fibrillation

was also produced by delivering the shock first and following it with acetyl- β -methylcholine chloride within a very few minutes (fig. 4).

It is apparent that electric shock, just as thyroxine, may, when combined with the vagus factor, produce auricular fibrillation.

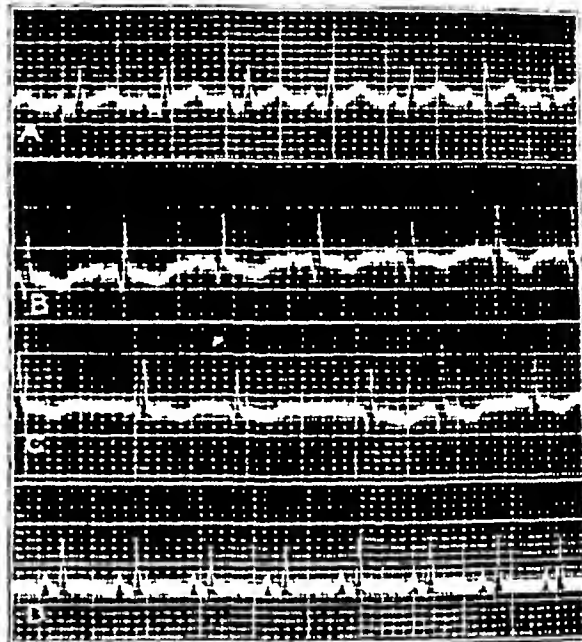


Fig. 4—Lead 2 in cat weighing 2.5 Kg. under amylal anesthesia. A control. B, ten minutes after a subcutaneous injection of 25 mg. of acetyl- β -methylcholine chloride. C immediately after an electric shock from a 110 volt alternating current with a duration of two and one-half seconds. D resumption of normal rhythm an hour after C. Note the presence of Q wave in B and C and inversion of the T wave.

The disorder was of a temporary nature in the electrically shocked cats as well as in the hyperthyroid patients although of shorter duration in the latter. The hyperthyroid subjects either were able to antagonize the action of the vagus substance more readily or received a relatively smaller dose.

It is interesting to note that in our experiments auricular fibrillation developed without passing through the stage of flutter, nor did we observe flutter when the fibrillation passed away, although almost continuous electrocardiograms were made. Flutter therefore, is apparently not an essential intermediate stage in passing to or from fibrillation.

COMMENT

In these studies auricular fibrillation is shown to result when an increased quantity of the vagus substance acts on the heart in association with some other factor (E), such as electric shock or thyroxine. The degree of vagus activity is evidently of considerable importance since in the hyperthyroid patients the disorder occurred only when additional depressor effects produced by the injection of acetyl- β -methylcholine chloride were added to those already in existence. The spontaneous development of this disorder in hyperthyroid patients must therefore occur when increased depressor effects develop. Since many factors may lead to continued reflex cardiodepressor stimulation and since some individuals exist who are naturally vagosensitive,⁶ the necessary quantity of this factor may readily develop in the course of disease. How the

⁵ Later W. M. The Tachycardia Time Factor Survival Period and Seat of Action of Thyroxine in the Perfused Hearts of Thyroxinized Rabbits. *Am. J. Physiol.* 88: 338-343 (Sept.) 1931. Priestley J. T., Markowitz J. and Mann F. C. The Tachycardia of Experimental Hyperthyroidism. *Am. J. Physiol.* 88: 357-362 (Sept.) 1931.

⁶ Weiss Soma and Baker J. P. Carotid Sinus Reflex in Health and Disease. Its Role in Causation of Fainting and Convulsions. *Medicine* 12: 297-354 (Sept.) 1933.

vagus contributes to the initiation of auricular fibrillation is not apparent from these studies. It is probable however that its chief function is to decrease the refractory period of the auricle thus permitting the initiation of circus movements.⁷

The manner in which the E factor thyroxine—or electric shock (in these studies)—acts in the production and maintenance of this disorder is also not completely clear at this time. The only factor in common between these agents is their property of exciting the myocardium.

Whether there exists a reciprocal relationship between the vagus and the E factor more of one requiring less of the other in order to induce auricular fibrillation cannot be answered from these experiments. It is interesting to note that in the ventricles a reciprocal relationship has been found to exist between electric shock and epinephrine.²

From the clinical point of view the spontaneous development of auricular fibrillation may now be explained by the simultaneous action on the heart of the vagus and an E factor.

In hyperthyroidism the overactivity of the vagus may develop reflexly from the tachycardia and growing hypertension so often found in these patients. Furthermore, we believe that increased sensitivity to the vagus substance naturally exists in such patients, for two of our subjects suffered severe reactions from normal doses of acetyl- β -methylcholine chloride and it is well known that hyperthyroid patients exhibit many parasympathetic symptoms such as sweating, flushing of the skin and gastro-intestinal hyperactivity. When the thyroxine effects on the heart reach a certain stage superimposed vagal overactivity will precipitate auricular fibrillation.

The proper combination of vagus and thyroxine may not and probably does not always exist. This is particularly true when the nerve effects are variable, in which case auricular fibrillation might occur in paroxysms a phenomenon very common in hyperthyroid patients and most frequent immediately after operation when large amounts of thyroxine are suddenly released into the blood stream.

Apart from hyperthyroidism auricular fibrillation is found to occur commonly in mitral stenosis, hypertension and congestive heart failure. In these conditions also the explanation for the disorder suggests itself. In mitral stenosis the distention of the auricle leads to an increase in the resting tension of the fibers which, as in skeletal muscle⁸ and nerve⁹ may appear in abnormal hyperexcitability. Stretch may therefore be an E factor in mitral stenosis. Active rheumatic infection might also serve as an E factor since de la Chappelle¹⁰ found a high incidence of active inflammation in the auricles of patients suffering from mitral stenosis in whom auricular fibrillation developed. At some stage of the disease should overactivity of the vagus develop or should the individual be abnormally vagosensitive¹¹ the correct combination of E factor and vagus overactivity should promote the development of auricular fibrillation.

In hypertension, vagal overactivity is probably a constant reflex phenomenon increasing in vagosensitive patients. When heart failure with auricular distention

and venous engorgement occurs, the stretch of the auricle may contribute the necessary stimulus (E) which when in association with vagus overactivity precipitates auricular fibrillation. It thus becomes clear why this irregularity is so often associated with heart failure, being rightly regarded as an important evidence of the existence of heart failure.

SUMMARY

Acetyl- β -methylcholine chloride converted the normal cardiac mechanism of four hyperthyroid patients and ten electrically stimulated cats into auricular fibrillation. In a patient with auricular flutter and 2:1 block the same substance converted the flutter into auricular fibrillation with a very slow ventricular rate. Auricular flutter did not appear in passing to or from fibrillation. The drug also altered the ventricular complex producing Q and S waves as well as displacements of the ST segments.

CONCLUSIONS

1. Auricular fibrillation is produced by the interaction of two factors on the auricular myocardium: (a) preponderant vagus activity and (b) an E factor such as thyroxine, electric shock or possibly simple auricular distention.

2. Acetyl- β -methylcholine chloride can rapidly convert auricular flutter into fibrillation and is thus a valuable agent for speedy slowing of the ventricular rate.¹¹

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EVALUATION OF THE CONSTITUTIONAL EFFECTS OF LARGE DOSES OF ESTROGENIC PRINCIPLE

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The present study was undertaken in an attempt to answer some of the questions propounded by the Council on Pharmacy and Chemistry of the American Medical Association in a recent report on the estrogenic substance theelin.¹ Without dwelling at length on the merits or demerits of the substance as a therapeutic agent, the report of the Council pertinently states: 'Evidence of deleterious effect from the clinical administration of estrogenic substance is not conclusive, but the possibility deserves serious consideration particularly if the large doses more recently employed clinically should come into common usage.' This study attempts to delineate the constitutional effects of huge doses of one of the estrogenic substances on the human female, as reflected in the ordinary laboratory and clinical studies at our disposal. This work is correlated with histologic studies of the vital organs of animals subjected to injections of enormous doses of the substance over periods varying from seven to fifty-seven days.

In the clinical study reported here only hydroxy-estrin benzoate in oil was employed, in the experimental

⁷ Lewis Thomas, *The Mechanism and Graphic Registration of the Heart Beat*, London: Shaw & Sons, 1925.

⁸ Evans, C. L., *The Physiology of Plain Muscle*, Physiol. Rev. **6**: 353-398 (April), 1926.

⁹ Legendre, R., *Action de l'étirement et de la striction sur les fibres nerveuses*, *Compt. rend. Soc. de biol.* **86**: 352-355 (Feb.), 1922.

¹⁰ de la Chappelle, C. E., Graef, Irving and Rottino, Antonio, *Studies in Rheumatic Heart Disease*, *Am. Heart J.* **10**: 62-74 (Oct.), 1934.

¹¹ Dr. W. F. Verdi gave permission to use his private patients in these studies. Dr. W. Cohen took the electrocardiograms of the clinical experiment, and Merck and Company, Rahway, N. J., furnished ample supplies of acetyl- β -methylcholine chloride (Mecholin).

From the Departments of Gynecology and Pathology of the Mount Sinai Hospital.

¹ Estrogenic Substances, Theelin. Report of the Council on Pharmacy and Chemistry, *J. A. M. A.* **100**: 1331 (April 29), 1933.

investigations on animals, dihydroxyestrin and, occasionally, theelin were injected. The three products were tested in our laboratory by the Allen-Doisy method and were found to contain the number of rat units herein indicated.

Hydroxyestrin benzoate,² 10,000 rat units per cubic centimeter

Dihydroxyestrin, 5,000 rat units per tablet (the tablets were dissolved in oil before injection)

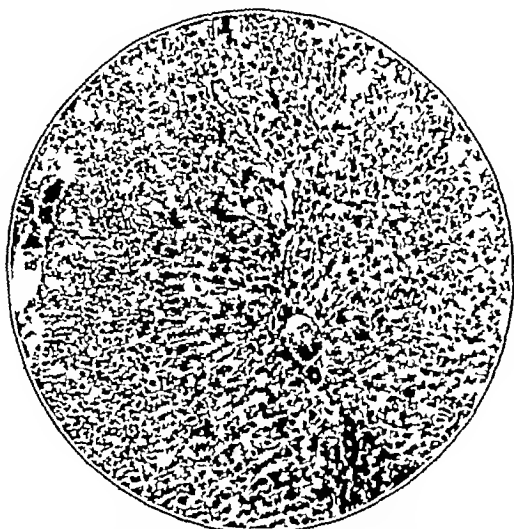


Fig. 1—Section of rabbit liver before injection of dihydroxyestrin (from a photomicrograph with a magnification of 85 diameters)

Theelin in oil, 200 rat units (labeled 1,000 international units) per cubic centimeter

The clinical survey is limited to a group of twenty-nine adult women and one pubertal girl. These thirty patients, an integral part of a larger group treated with estrogenic substance, were sufficiently cooperative to permit completion of the studies. The indications for the administration of the estrogenic principle included amenorrhea, hypomenorrhea, dysmenorrhea, kraurosis vulvae, and the menopausal syndrome. An evaluation of the efficacy of estrogenic substances in the treatment of such disorders is not within the scope of the present discussion and is reserved for a forthcoming report, which will deal with the indications, dosage and limitations of estrogenic substance therapy. We may, however, state at this juncture that the severe menopausal syndrome and kraurosis vulvae are the two conditions requiring the use of the maximum doses employed in the treatment of these patients. The clinical observations and laboratory procedures were performed, in each instance, before and after the administration of estrogenic substance. The data recorded include body weight, blood pressure, basal metabolic rate, effect on the normal menstrual rhythm, complete blood chemistry (including sugar, urea nitrogen, uric acid, creatinine, cholesterol, calcium and chlorides), bleeding and coagulation times, urinalysis and complete blood counts (including differential study of leukocytes). In some instances, data of minor importance were not available for analysis because of the patient's lack of cooperation. Thus the hemoglobin values were completed (before and after treatment) in twenty-nine patients whereas the leukocyte and differential counts were available for

computation in only twenty-seven patients. The omitted data appear as blank spaces in the tables.

The dose of estrogenic substance administered varied with the indication and the individual's response to the therapy. The substance was given intramuscularly in every instance at intervals of four days. Fifteen of the thirty patients received 10,000 rat units per dose throughout the entire period of observation. The remaining number were given initially several doses of 10,000 rat units and subsequent doses of 5,000 or 2,000 rat units, depending on the patients' responses to the treatment. The total amount of estrogenic substance given to each patient was as follows: 260,000 rat units to one, 200,000 rat units to ten, 150,000 rat units to fifteen, and somewhat less than 100,000 rat units to only four. The period of treatment averaged three months. Only two patients were treated for six months.

No ill effects, either constitutional or local, were noted other than an occasional instance of local irritation. The latter was probably caused by failure to inject the oily solution intramuscularly.

EFFECT ON BASAL METABOLISM

The basal metabolism rate of twenty-two patients was recorded before and after administration of estrogenic substance. Only one, a well woman free of symptoms other than primary amenorrhea, showed a significant change, namely a fall from plus 26 per cent to minus 9 per cent. Since the patient manifested no hyperthyroid symptoms and since the fall in metabolic rate was to a figure within normal limits, no special significance may be attached to the change. It is noteworthy that another patient with a pretreatment rate of minus 30 per cent showed a final figure of minus 36 per

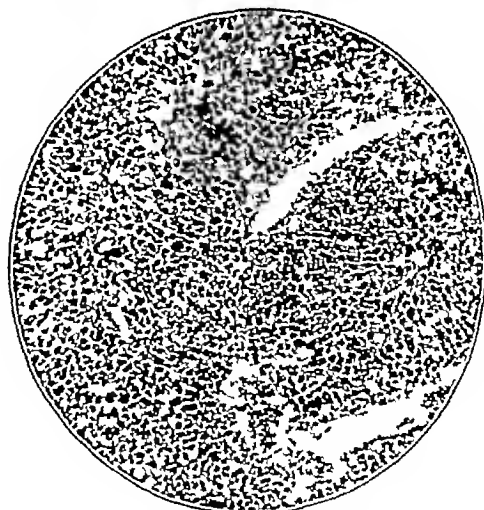


Fig. 2—Section of rabbit liver after injection of 150,000 rat units of dihydroxyestrin over a period of thirty days (from a photomicrograph with a magnification of 85 diameters)

cent. It seems that the administration of large doses of estrogenic substance has no demonstrable effect on the basal exchange.

EFFECT ON BODY WEIGHT

The body weight of each patient was observed at frequent intervals. No significant change was noted in the entire series. This is in accord with the observation of Kaufmann.³ The constancy of body weight during

² We are indebted to Drs. Gregory Stragnell and Erwin Schwenk of the Schering Corporation for the generous supply of progynon B (hydroxyestrin benzoate) and the dihydroxyestrin employed in the clinical and major part of the experimental work.

³ Kaufmann, C. Die Behandlung der Amenorrhoe mit hohen Dosen der Ovarialhormone. Klin. Wchnschr. 12: 1557 (Oct. 7) 1933.

prolonged administration of estrogenic substance was also noted in animals by Leiby⁴ and in our experimental work

EFFECT ON BLOOD PRESSURE

Twenty-six had normal blood pressures prior to the period of administration of estrogenic substance, three had systolic pressures of 140 mm of mercury, and one (patient 10), who had nephritis with hypertension, had an initial blood pressure of 170 systolic, 100 diastolic

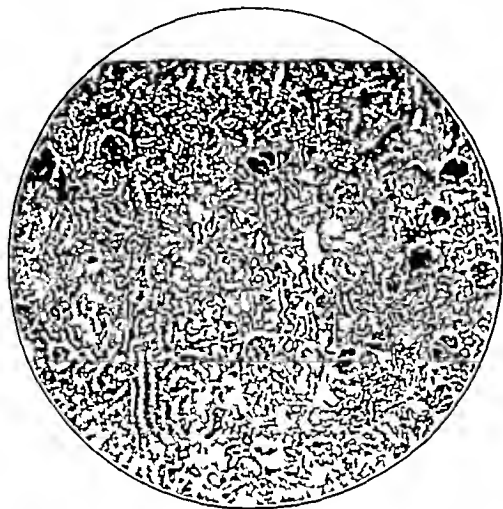


Fig 3—Section of rabbit kidney before injection of dihydroxyestrin (from a photomicrograph with a magnification of 85 diameters)

No significant change occurred in the blood pressures of the twenty-six normal and the three slightly hypertensive women. Our clinical observation is in accord with the experimental studies of Laqueur⁵ and Melchionna,⁶ who found no blood pressure changes in animals after the administration of estrogenic substances. Liebhart,⁷ however, recently reported a moderate fall in the blood pressures of normal pubertal and mature females treated with relatively small doses of the hormone. The hypertension of our patient with nephritis remained unaffected throughout the period of treatment. This is in accord with the observation of Ayman,⁸ who failed to reduce arteriolar hypertension with moderate doses of estrogenic substance. We are at present treating by means of large doses of the substance a small group of women with essential hypertension and are, thus far, unable to corroborate the successful results of Fellner⁹ and Mayrhofer¹⁰

EFFECT ON COMPLETE BLOOD COUNT

The hemoglobin estimations (Sahl) and the erythrocyte counts showed no unusual changes following the use of estrogenic substance. In twenty-nine patients, the hemoglobin values remained within normal limits, anemia did not appear in any of them. The apparent relief of a marked secondary anemia in case 11 (table

1), during the administration of large amounts of the estrogenic substance, was probably the result of simultaneous administration of iron, arsenic and phosphorus. The erythrocyte counts remained constant and within normal limits. Our results concur with those of Hirst,^{11a} who administered estrogenic substances of varying amounts to new-born infants.

We found no appreciable change in the leukocyte counts of the twenty-seven patients following estrogenic substance treatment. Those patients who, prior to treatment had a slight leukocytosis (cases 7 and 22, table 1) showed approximately the same count at the termination of the injections. The differential counts were likewise practically unchanged in the group of twenty-seven. In his series of new-born infants, Hirst^{11a} found a relative decrease in polymorphonuclear leukocytes, a moderate rise in lymphocytes, and a tendency to eosinophilia after theelin administration. Ten of our patients did show an insignificant decrease in polymorphonuclear leukocytes and a corresponding rise in lymphocytes, six, on the other hand, showed exactly the reverse change, the remaining eleven patients presented no variation from the control counts. It is therefore illogical to ascribe any changes in the relative percentages of polymorphonuclear leukocytes and lymphocytes to the administration of estrogenic substances. The variations are within normal limits. A slight tendency to eosinophilia was, however, noted in three patients who had normal eosinophil values at the beginning of treatment and 4, 5 and 6 per cent, respectively, at the termination of the course of injections. Furthermore, eleven of the twenty-seven patients who had no eosinophils prior to administration of estrogenic substances showed normal percentages (1 to 3 per cent) following treatment.



Fig 4—Section of rabbit kidney after injection of 150 000 rat units of dihydroxyestrin over a period of thirty days (from a photomicrograph with a magnification of 85 diameters)

EFFECT ON BLEEDING AND COAGULATION TIMES

As shown in table 1, there were no deviations from normal in the bleeding times of the twenty-three patients examined. Thirteen of the twenty-four patients whose coagulation times were studied showed no variations from the normal, either before or after treatment.

11 Hirst I C (a) Further Observations on the Effect of Female Sex Hormone upon the Blood of New Borns. *Am J Obst & Gynec* 28: 431 (Sept.) 1934. (b) The Influence of Female Sex Hormone upon Blood Coagulation of the New Born. *Ibid* 26: 217 (Aug.) 1933.

⁴ Leiby G M. The Effect of Theelin on the Weights of Pituitary Adrenal and Thyroid. *Proc Soc Exper Biol & Med* 31: 15 (Oct.) 1933.

⁵ Laqueur E. Ueber weibliches Sexualhormon im bes das Menormon. *Klin Wchnschr* 6: 390 (Feb. 26) 1927.

⁶ Melchionna Robert. The Effect of Theelin on the Blood Pressure, Heart Rate and Respiratory Rate. *J Biol Chem* 91: 653 (May) 1931.

⁷ Liebhart S. Ueber den Einfluss des Ovarialhormons auf den Blutdruck. *Zentralbl f Cynk* 68: 1896 (Aug. 11) 1934.

⁸ Ayman David. The Treatment of Arteriolar Hypertension with Crystalline Ovarian Hormone (Theelin). *Am J M Sc* 187: 806 (June) 1934.

⁹ Fellner O O. Hormonale Behandlung der Arteriosklerose (Hypertonie). *Med Klin* 29: 1713 (Dec. 15) 1933.

¹⁰ Mayrhofer H. Menormon in der Therapie der essentiellen Hypertonie. *Wien Klin Wchnschr* 47: 232 (Feb. 23) 1914.

Nine of this group, who had shown a tendency to prolonged blood coagulability (from seven to nine minutes) prior to treatment with estrogenic substance showed a moderate reduction (from one to three minutes) at the close of the treatment period. Hirst¹² found that the aqueous solution of progynon, unlike theelin, increases the coagulation time of new-born infants. The fact is

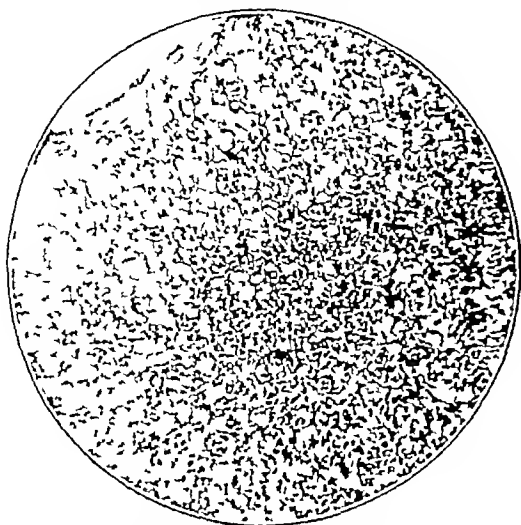


Fig 5—Section of rabbit adrenal before injection of dihydroxyestrin (from a photomicrograph with a magnification of 85 diameters)

that the aqueous solution of the estrus-inducing hormone, dispensed under the name of progynon is a mixture of theelin and theelol and therefore should not differ in its effect on coagulation time from that of theelin.

One may conclude that healthy adult females show no significant change either in coagulation or in bleeding time with massive doses of estrogenic substance. The reduction observed in the coagulation time in the nine patients who showed somewhat high values prior to treatment is in accord with the observations of Hirst¹² on new-born infants. He states: 'Abnormally long coagulation and bleeding times as well as spontaneous bleeding other than vaginal were corrected by injections of theelin.' By inference one may assume that the hormone has some beneficial influence on the course of hemophilia—an effect attributed to the estrogenic substance by Birch¹².

EFFECT ON BLOOD CHEMISTRY

Following the administration of estrogenic substance, no striking variations were noted in the chemical constituents of the blood, as measured by the ordinary laboratory means (table 2). The values were unchanged whether or not the initial study showed very high or very low figures.

The unchanged serum calcium determinations concur with those of Dixon,¹³ Frei and Emmerson¹⁴ and others in blood studies on animals. The constancy of the cholesterol values is of unusual interest in view of the close chemical relationship between the estrus-inducing hormone and cholesterol. In case 28 a low cholesterol content changed to a normal level following the treatment; in case 19 the reverse occurred (table 2). No

importance need be attached to these fluctuations, since neither of the patients showed any evidence of thyroid dysfunction.

Though the blood sugar levels of normal women remain unaffected with the use of large doses of the estrogenic substance, the blood and urine of diabetic women show an appreciable decrease in the sugar content during injections of the product. This observation is limited to only three patients, two of whom received 400 rat units of the estrogenic substance daily and one of whom received 10,000 rat units every fourth day for a period of from four to six weeks. The maximum fall in blood sugar observed in these three diabetic patients was 60 mg. There was in each instance, a return to the former level soon after withdrawal of the treatment. This clinical observation is in accord with observations of Barnes¹⁵ on the blood sugar levels of pancreatectomized dogs injected daily with 200 rat units of aminotin (one of the commercial products of the estrogenic hormone). Theoretically, the fall in blood sugar of the experimental animal following injections of the estrogenic substance is caused by inhibition of the diabetogenic function of the anterior pituitary lobe, since hypophysectomy in the pancreatectomized dog produces the same results.

EFFECT ON KIDNEY FUNCTION (URINALYSIS)

Repeated examinations revealed no albumin or casts in the urine of the twenty-nine normal women. Nor did we find any increase in the number of casts and quantity of albumin in the urine of the one nephritic patient (number 10) as a result of the administration of 120,000 rat units of the estrogenic principle given over a period of five weeks. The finer tests for kidney function other than blood chemistry determinations were not performed.

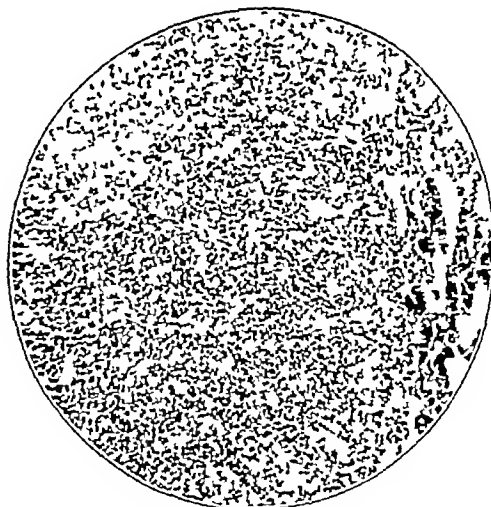


Fig 6—Section of rabbit adrenal after injection of 150,000 rat units of dihydroxyestrin over a period of thirty days (from a photomicrograph with a magnification of 85 diameters)

EFFECT ON MENSTRUAL RHYTHM

The effects produced by estrogenic substances on abnormal types of menstruation is not within the scope of this report. They will be considered in detail at a later date. However, the effect of the hormone on the regular menstrual cycle is germane to the subject under discussion. We noted the menstrual cycles of seventeen

¹² Birch, C. L. Hemophilia and the Female Sex Hormone. Preliminary Report. J. A. M. A. 97:244 (July 25) 1931.

¹³ Dixon, T. F. The Influence of Ovarian and Anterior Pituitary Hormones on Calcium Metabolism. Biochem. J. 27:410 1933.

¹⁴ Frei, W. and Emmerson, M. A. Der Serumkalkspiegel beim Rinde mit besonderer Berücksichtigung der Beziehungen zum Geschlechtsapparat. Biochem. Ztschr. 226:355 1930.

¹⁵ Barnes, B. O., Regan, J. F. and Nelson, W. O. Improvement in Experimental Diabetes Following the Administration of Aminotin. J. A. M. A. 101:926 (Sept. 16) 1933.

regularly menstruating women treated with the large doses of estrogenic substance because of hypomenorrhea, dysmenorrhea, adenosis of the breasts and the like. Only five of the seventeen are included in the present series of thirty patients (cases 4, 5, 6, 15 and 16 in tables 1 and 2)

reported intermenstrual staining of from one to two days' duration while receiving treatment. All of the six patients who showed disturbed menstrual rhythm as a result of the treatment with estrogenic substance continued to menstruate regularly during a follow-up period of nearly a year.

TABLE 1—Blood Studies Before and After Intensive Administration of Estrogenic Substance

Case	Differential Leukocytes																					
	Bleeding Time Minutes		Coagulation Time Minutes		Hemoglobin (Sahli)		Erythrocytes, Millioos		Leukocyte Count		Polymorphonuclear Leukocytes		Small Lymphocytes		Large Lymphocytes		Eosinophils		Basophils		Transferrins	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
1	2.0	1.5	7.5	5.0	85	91	4.1	4.7	7,150	7,050	55	46	44	50	1							
2	1.5	1.5	7.0	8.0	95	95	5.1	5.0	7,450	7,700	72	07	24	28	1		2	1			1	3
3	2.0	2.0	6.5	0.5	89	86	4.5	4.3	9,700	8,060	67	48	39	46	1	4			1		2	1
4	1.5	1.5	5.0	4.5	85	87	4.5	4.7	6,550	7,150	67	01	30	34		3	2	1	1			
5					83	90																
6	1.5	1.5	7.0	6.5	92	01	4.0	4.9	9,000	8,500	68	65	23	23			2	8			1	1
7	2.0	2.0	7.0	6.5	84	85	4.4	4.5	12,250	18,100	72	74	23	24				2				
8	2.0	1.0	5.0	4.0	94	92	5.1	4.0	7,400	8,250	56	54	44	34		1						1
9	1.5	1.5	6.0	5.0	87	83	4.7	4.4	8,000	7,000	63	58	36	39			1	1				
10					81	90	4.2	4.5	8,400	8,850	73	60	25	1	2	35						
11			4.5	4.0	58	74	3.4	3.8	7,400	8,800												
12	2.5	2.0	8.0	5.0	85	87	4.0	4.4	8,000	7,100	72	66	26	27		2	2	4				1
13	2.5	2.5	5.0	5.0	96	93	5.2	5.0	9,150	8,750	58	59	36	33	1	4	4	3	1			1
14	1.5	1.5	5.0	4.5	83	87	4.3	4.2	7,600	7,050	75	56	23	38		3	1				2	
15	2.0	2.5	0.0	6.0	78	72	4.8	4.9	10,300	7,500	55	71	40	27	4	1	1					1
16	3.5	3.0	9.0	8.5	81	83	4.2	4.0	7,500	7,900	50	56	42	24	1	5	1	5				1
17	(Studies not completed)																					
18	3.5	3.0	8.0	0.0	80	84	4.2	4.3	7,100	6,550	50	56	41	40	8	4			2		1	1
19	2.0	2.5	7.5	8.0	86	86	4.3	4.3	9,200	8,200	63	64	31	24		12					1	
20	1.5	2.0	7.5	8.5	83	84	4.2	4.2	6,800	7,900	56	70	39	20	2	24			3			
21	2.0	2.5	8.0	7.0	83	92	4.3	5.0	8,550	8,150	66	70	33	20		1			1	2	1	1
22					80	79	4.4	4.7	14,900	10,000	83	83	13	20	3	8					1	
23	2.0	2.0	6.0	5.5	82	83	3.9	4.0	9,150	8,750	70	69	24	23		1	1					
24	1.5	2.5	6.5	8.0	91	94	4.8	5.0	7,000	7,250	63	60	30	35	1	2	4	2		1		
25	2.0	2.0	9.0	5.5	78	80	3.8	3.8	9,900	8,350	68	60	27	34	1	4			2		4	
26	2.0	2.5	5.5	9.0	84	82	4.2	4.4	9,150	8,550	63	62	28	34	2	4	5		2			
27	1.5	1.5	3.0	4.0	87	83	4.7	4.3	9,350	8,450	56	53	42	45	2	1		1				
28					84	84																
29	3.5	3.0	8.0	8.0	80	84	4.2	4.3	7,100	8,550	50	55	41	40	6	4			1	1	2	
30					80	78	4.0	4.0	7,800	8,000												

TABLE 2—Blood Chemistry Studies Before and After Intensive Administration of Estrogenic Substance

Case	Sugar		Urea Nitrogen		Creatinine		Cholesterol		Uric Acid		Chlorides		Calcium	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
1	97	99	15.8	11.3	1.23	1.42	141	139	4.82	4.18	495	500	11.68	10.51
2	101.5	100	14.8	22.1	1.12	1.27	156	222	4.74	4.80	415	465	12.88	9.30
3	113	102	10.0	13.3	1.32	1.41	176	198	3.14	3.28	490	495		
4	119	110	9.2	8.6	1.32	1.64	184	203	3.88	3.32	490	493	8.37	10.42
5	111	114	13.8	15.2			162	168	3.26	3.34				
6	120	118	11.5	11.2	1.40	1.51	160	187	2.80	2.72	495	479		
7	122	97	11.4	8.7	1.12	1.22	153	137	2.86	2.96	500	450	9.20	10.24
8			12.2	13.1	1.30	1.47			2.70	3.42				
9	79.5	93	11.1	12.2	1.00	1.41			3.50	3.18				
10	90	96											9.00	8.79
11	81	89.5	13.2	13.9					2.00	3.00				
12			15.6	18.3	1.53	1.62	183	147	3.66	2.34	490	485		
13	132	110	7.8	9.3	1.42	1.07			5.72	5.22	473	470	10.60	11.02
14	120	94	13.1	13.4	1.33	1.29	173	160	3.84	3.26	490	503	10.47	8.65
15	87	87	10.0	9.0					4.20	3.00	504	532	9.50	10.10
16	74.5	99	11.1	10.3	1.00	1.32			3.50	2.82				
17	90	92	15.9	15.8										
18	107	94	15.6	15.7	1.24	1.29	163	173	2.66	3.02	521	493	10.92	10.14
19	100	96	13.0	10.2	1.20	1.19	160	123	3.00	3.78				
20	116	99	13.7	10.4	1.16	1.33	163	203	3.44	3.52	518	500	9.50	10.23
21	107	87	11.4	14.7	1.43	1.26	153	153	3.18	3.64	495	490	9.77	10.12
22	133	145	12.3	10.9	1.83	1.27	186	206	3.76	3.32	574	478		
23	102	85	12.7	14.4	1.16	1.29	159	147	3.22	4.12	463	483		
24			10.8	11.0										
25	111	94	10.4	15.3	1.18	1.53	192	181	3.04	2.88	490	506		
26	117	109	18.5	17.6	1.46	1.33	181	192	3.12	3.33	455	450	9.52	10.43
27	92	92	10.1	11.4	1.27	1.18	203	236	2.80	2.58	475	500		
28	120	102	12.3	15.5	1.27	1.29	127	163	4.00	4.10	495	505		
29	107	94	15.6	15.7	1.24	1.29	163	173	2.66	3.02	521	493	10.92	10.14
30	95	100	12.0	14.0										

Eleven of the seventeen patients showed no changes in the menstrual rhythm either during or after administration of estrogenic substance. Six patients experienced a single delay in the appearance of the menstrual flow varying from one to three weeks during the course of three months' treatment with large doses of estrogenic substance. Four of these six patients as well as one of the eleven who had no disturbed rhythm

illustrative of the nature of the temporary disturbance in menstrual rhythm is the protocol of one of the patients, shown in table 3. The establishment of a new date of onset of the subsequent menses following a short delay in the flow in six of the group may, in the light of present limited knowledge of sex physiology, be attributed to a temporary inhibition of the gonad-stimulating function of the anterior pituitary lobe.

which the estrogenic hormone is known to produce in the experimental animal (Leonard and his associates,¹⁶ Moore and Price¹⁷ and others)

The deleterious effects of large doses of estrogenic substances on the human ovary are conjectural. The presence of a high content of estrogenic substance of the blood during pregnancy militates against this possibility. Experimentally, Allen¹⁸ and Katzman¹⁹ have shown that the pituitary inhibition resulting from the administration of estrogenic substance is only slightly reflected on the ovarian structures of adult rodents, unless huge amounts are administered. Hohlweg,²⁰ for instance, maintains that daily injections of 100 rat units of crystalline dihydroxyestrin over a period of thirty days stimulate hyperluteinization in adult rats. Be that as it may, it seems that large doses do disturb the menstrual rhythm of regularly menstruating women, at least temporarily.

The effect of intensive treatment with estrogenic substances on the fertility of the human female is difficult to ascertain from a study of a small group of patients. Most of our seventeen regularly menstruating women are sterile for various reasons. None have as yet conceived. One of Clauberg's²¹ patients conceived shortly after the administration of 400,000 mouse units

deficiencies of the estrus-inducing factor. In this type of patient, one would not expect any increase in libido from treatment with estrogenic substance. That an increase of libido does occur in castrated women during treatment with estrogenic substance was reported by Werner and Collier²² and was likewise observed by some of our patients. The pathologic increase in libido following estrogenic substance therapy, as postulated by Poate,²³ is, we believe, restricted to the small group of patients who already have a high estrogenic content of the blood. We have found this to be true by repeated blood hormone titrations in three highly neurotic women suffering from nymphomania.

EXPERIMENTAL OBSERVATIONS

As a corollary to our clinical studies, we subjected thirty immature and adult rabbits to daily injections of enormous doses of the estrogenic substance over periods varying from seven to fifty-seven days. They received, individually, total amounts varying from 80,000 to 150,000 rat units—quantities relatively far in excess to those given our patients. Nevertheless, none of the vital organs (liver, kidneys, heart, lungs and adrenal bodies) showed either macroscopic or microscopic evidence of pathologic changes, as shown in the photomicrographs. Description of the changes in the pituitary gland, breasts, ovaries, fallopian tubes and uterus will be given in another communication dealing mainly with the endocrine response of the experimental animal to such large doses. We may state at present, however, that the response of the endocrine glands (stimulative or regressive) varies with the age of the animal, the dose, the length of the treatment and, above all, the species susceptibility of the animal to the estrogenic substance.

Experimental observations cannot, therefore, be translated accurately into human equations. We must await further clinical reports of a reliable nature before we render an opinion on the nature of endocrine response of the human being to large doses of the estrogenic substance. From a careful survey of our clinical material, only part of which is herein reported, we are inclined to believe that doses within the limits mentioned are harmless after the child-bearing age and in younger women who no longer desire offspring.

SUMMARY

From a survey of the literature and the clinical study of thirty patients, it was found that injections of from 100,000 to 200,000 rat units of estrogenic substance, given in divided doses over periods of from two to three months, produce no appreciable changes in body weight, basal metabolism, blood pressure, blood count, coagulation and bleeding times, blood chemistry and urine.

In six of seventeen regularly menstruating women, injections of these large quantities of estrogenic substance produced a temporary delay in the menstrual flow (from one to three weeks) and established in these six patients a new date of onset of the menses. This phenomenon is apparently due to a temporary inhibition of the anterior pituitary lobe which normally controls ovarian function. The effect on fertility is, as yet, unknown.

Growth of the mammary glands and increased libido were observed in a few of the treated patients.

TABLE 3—*Nature of the Delay and the Establishment of a New Date of Onset of the Menstrual Flow Incident to Intensive Administration of Estrogenic Substance*

White woman, aged 26 Menarche at 14 years, regular 31-day cycle Chief complaint: dysmenorrhea Menses: January 1	
February 2	February 10
March 5	Hormone treatment
April 18 (delay of 10 days)	
May 10	
June 20	
July 21	June 1

(80,000 rat units) of estrogenic substance. Two of our sterile patients (not included in this study) conceived shortly after the administration of 22,000 and 18,000 rat units, respectively. Experimentally, Katzman¹⁹ found no reduction in fertility of adult rats following the administration of relatively large amounts of estrogenic substance.

EFFECT ON NORMAL BREASTS

Only a few of the group of women treated showed evident growth of the mammary glands. This phenomenon is more marked in some children who are treated with relatively large doses of estrogenic substances for gonorrheal vaginitis. The growth is temporary, receding rapidly after withdrawal of the substance.

EFFECT ON LIBIDO

Absence of libido is more often caused by psychic factors and abnormal marital relationships than by

16. Leonard S. L., Meyer R. K., and Hisaw F. L. The Effect of Estrin on Development of the Ovary in Immature Female Rats. *Endocrinology* 15: 17 (Jan. Feb.) 1931.

17. Moore C. R., and Price, Dorothy. Gonad Hormone Functions and the Reciprocal Influence Between Gonads and Hypophysis with Its Bearing on the Problem of the Sex Hormone Antagonism. *Am. J. Anat.* 50: 13 (March) 1932.

18. Allen Edgar. Sex and Internal Secretions. Baltimore: Williams & Wilkins Company, 1932, p. 392.

19. Katzman P. A. A Note on the Effect of Theelin Theelin and the Luteinizing Substance on Reproduction. *Proc. Soc. Exper. Biol. & Med.* 29: 700 (March) 1932.

20. Hohlweg, W. Veränderungen des Hypophysenvorderlappens und des Ovariums nach Behandlung mit grossen Dosen von Follikelhormon. *Klin. Wchnschr.* 13: 92 (Jan. 20) 1934.

21. Clauberg, C. Studien an infantilen und insuffizienten menschlichen Uteri (Zum Problem der Ovarialinsuffizienz). *Ztschr. f. Geburtsh. u. Gynäk.* 107: 331 1934.

22. Werner, A. A., and Collier W. D. The Effect of Theelin Injections on the Castrated Woman with Histologic Report. *J. A. M. A.* 100: 633 (March 4) 1933.

23. Poate E. M. Theelin letter to editor. *J. A. M. A.* 100: 1792 (June 3) 1933.

Relatively larger doses of the estrogenic substance (from 80,000 to 150,000 rat units) than those employed clinically produced neither macroscopic nor microscopic changes in the vital organs of thirty rabbits. The response of the ovaries to huge doses of the estrogenic substance is either degenerative or stimulative, depending on the species and age of the test animals and the duration of administration of the substance.

1829 Pine Street

HEART DISEASE IN THE CHICAGO AREA

A STUDY OF THE ETIOLOGIC FACTORS IN ONE THOUSAND CASES

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Since the publication of the Criteria for the Classification and Diagnosis of Heart Disease,¹ sponsored by the American Heart Association, and the pioneer work of White² and Wyckoff,³ increased interest has been manifested in studying the etiologic factors operative in the production of heart disease. Authorities are agreed that the incidence of heart disease is increasing each year. Perhaps the pertinent point in stemming this increase may be elucidated through an examination of the causative factors.

The value of the work of the committee that has advocated the publication of the Criteria for the Classification and Diagnosis of Heart Disease in directing current thought toward the consideration of heart disease from the etiologic, anatomic and physiologic points of view is becoming more and more obvious. The standards set forth by this committee merit adoption by all hospitals and cardiologists, thus permitting uniform reports of the incidence and type of heart disease throughout the United States. The Middle West was negligent in reporting any statistical data until Flaxman's report⁴ appeared from the Cook County Hospital.

We here present our studies of 1,000 consecutive cases of heart disease encountered in private and consultation practice in the Chicago area. Both hospital and office patients are included, although the majority were ambulatory. With three exceptions, they were all of the white race, two were Negroes and one was Japanese. All ages are included, but adults preponderate over children.

A problem that confronts an author in presenting such material statistically is the frequency of more than one etiologic factor in the same individual. For example, a patient may have both hypertensive vascular disease and syphilis. The pulmonary heart (cor pulmonale) case may also show hypertension, arteriosclerosis or syphilis. Thyrotoxicosis may be compli-

cated by rheumatic infection or hypertension. A number of complicating problems of this sort might be cited.

In some of the statistical reports of the etiologic factors of heart disease, the percentages are computed by counting the total number of etiologic factors and then calculating the percentage of any given factor from this sum rather than from the total number of patients. It is our belief that this method gives somewhat an incorrect concept of the actual facts. We have been unable to devise any absolutely satisfactory method of presenting our data which takes into consideration the multiplicity of etiologic factors in single cases and still presents a true picture of the percentage basis from the total number of cases involved. Our final conclusion on this problem was to consider twelve main groups, as follows:

- 1 Rheumatic infection.
- 2 Hypertension.
- 3 Arteriosclerosis
- 4 Syphilis
- 5 Thyroid disease.
- 6 Pulmonary diseases
- 7 Congenital causes
- 8 Neurologic causes
- 9 Toxic causes
- 10 Traumatic causes
- 11 Bacterial entities
- 12 Unknown or unclassified causes

Our material will be presented under these twelve headings and subclassification made in each of these groups to demonstrate the interrelationship of the various factors.

Chart 1 is a diagrammatic representation of the number of cases in each general group. The shaded area of each block represents the number of cases complicated by secondary etiologic factors. The distribution of these secondary complications is further discussed under the separate headings. Rheumatic infection, hypertension and arteriosclerosis are overwhelmingly in preponderance. Syphilis, thyrotoxicosis and pulmonary disease are next in frequency. Bacterial, congenital, toxic and traumatic factors rank least. Functional heart disease was encountered in eighty cases, or 8 per cent, of the total. Eighty-four cases were unclassified or the etiologic factor was unknown.

RHEUMATIC HEART DISEASE

The criteria for the establishment of rheumatic heart disease were those described in the Criteria for the Classification and Diagnosis of Heart Disease,¹ which are as follows:

- 1 History of polyarthritis, chorea, muscle or joint pains, of subcutaneous nodules, and evidences of a characteristic structural lesion of the heart.
- 2 Evidence of a characteristic structural lesion plus a history of periods of recurrent fever and cardiac insufficiency.
- 3 Evidence of carditis of the type associated with active rheumatic heart disease even in the absence of other rheumatic manifestations.

Rheumatic heart disease was present in 292 cases. Of these, 22.2 per cent, or sixty-five cases, were complicated by secondary factors, as demonstrated in chart 2. Occasionally there were as many as three etiologic factors present in a single case.

The most common complicating factor was thyrotoxicosis, occurring in 9.5 per cent, or twenty-eight

¹ Criteria for Classification and Diagnosis of Heart Disease. New York: Tuberculosis and Health Association, eds. 1, 2 and 3, 1928, 1929, 1932.

² White, P. D. and Myers, M. M. The Classification of Cardiac Diagnosis. 1921. J. A. M. A. 77: 1414 (Oct. 29) 1921. The Classification of Cardiac Diagnosis with Especial Reference to Etiology. Am. Heart J. 1: 87 (Oct.) 1925.

³ Wyckoff, John and Lingg, Claire. Etiology in Organic Heart Disease. Am. Heart J. 1: 446 (April) 1925.

⁴ Flaxman, Nathan. Heart Disease in the Middle West. Am. J. M. Sc. 188: 639 (Nov. 21) 1934.

HYPERTENSION

The criteria for the diagnosis of heart disease due to hypertension as given in the Criteria for the Classification and Diagnosis of Heart Disease are as follows "Persistent hypertension associated with enlargement of the heart" The frequent association of arteriosclerosis is discussed In this study these standards were followed The most difficult problem was to arrive at a reasonably accurate decision concerning the significance of associated arteriosclerosis In general we have added arteriosclerosis as an associated factor in patients in whom there was a well marked peripheral arteriosclerosis or who presented clinical evidence of coronary, retinal or cerebral arteriosclerosis There is no doubt that our figures are inaccurate in this respect Decision has been a personal estimate of degree If one were to follow all the hypertensive cases from beginning to end, the frequency of an associated arteriosclerosis would undoubtedly be much higher

Two hundred and sixty-two patients were classified in the hypertensive vascular group, representing an incidence of 26.2 per cent of the total Chart 3 is a diagram showing the comparative frequency of the other etiologic factors associated with hypertension One third, or eighty-nine cases, were classified as having an associated arteriosclerosis Almost one tenth, or twenty-five cases were thyrotoxic Eleven cases were also classified in the rheumatic group Nine of our cases were classified as having pulmonary disease We are inclined to believe that this figure is too low In our early records, there is no doubt that we paid too little attention to pulmonary factors, and it is our impression that pulmonary disease is much more often a complicating factor in this group than our figures would indicate There were only four cases in which syphilis was associated

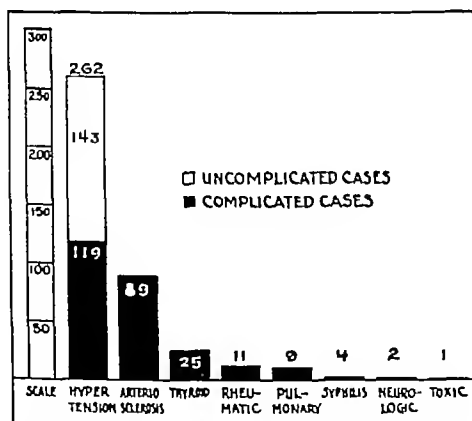


Chart 3—Demonstration of the combination of hypertensive vascular disease and other etiologic factors

Comparison may be made of our figures with those of Flaxman, who records an incidence of hypertension of 43 per cent in his studies to our figure of 26.2 per cent Again the difference is due to the material studied and to the fact that the indigent hospital group contained 28 per cent of the Negro race The incidence in New England, as reported by White,⁹ was 29.2 per cent The incidence of hypertension in other statistical reports appears to be greatest in the South where figures range from 47 per cent to 68 per cent¹² and least in the Rocky Mountain region, where Viko¹¹ reported only 14.9 per cent

In view of the fact that the majority of our patients are in the age group of 40 years or above, systemic disease of many types has been frequently tabulated as a complication in the study of this hypertensive vascular group The nephritic cases have been included in this group when associated with hypertension

In studying our older records, it appears that insufficient attention has been paid to urologic disease The

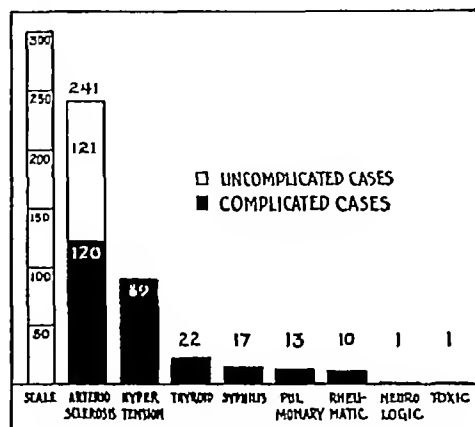


Chart 4—Demonstration of arteriosclerotic heart disease and other etiologic factors

urologic pathologic condition has been brought to our attention in cases that have been under observation for some years and in which acute problems have developed, such as cystitis, renal colic, hematuria or pyuria In the male, asymptomatic prostatism, old stricture and chronic urethral and prostatic infection were readily overlooked In the female, bladder deformities, pyelitis and hydronephrosis were overshadowed by more obvious cardiac symptomatology The relationship to the hypertensive vascular problem has not always been clear Obstruction with infection in the urinary tract, however, was seriously detrimental to the welfare of the hypertensive and arteriosclerotic cardiac patient Diabetes mellitus was another common complication Biliary tract disease was also frequently found

ARTERIOSCLEROTIC HEART DISEASE

Cases were classified under arteriosclerotic heart disease when there was evidence of generalized arteriosclerosis, coronary arteriosclerosis, aortic sclerosis (non-syphilitic), pulmonary arteriosclerosis, or fibrosis of the myocardium as defined by the Criteria for Classification and Diagnosis

Two hundred and forty-one patients or 24.1 per cent of the total, were listed under this heading The secondary etiologic factors are presented diagrammatically in chart 4 Hypertensive vascular disease was found to be the most common complicating factor, occurring in eighty-nine cases, or 36.9 per cent of the 241 cases

There were twenty-two patients with thyrotoxicosis and coronary sclerosis They were all over 40 years of age Syphilis was represented by only seventeen cases There were only ten cases of rheumatic infection in this combination These were patients in whom the rheumatic infection had apparently entirely healed and had been quiescent for years The frequent association of other diseases as mentioned in the hypertensive group also applied to the arteriosclerotic patients

THYROID HEART DISEASE

Heart disease of thyroid etiology as listed by the Criteria is as follows

Criteria for Diagnosis of Thyroid Heart Disease due to Adenoma with Hyperthyroidism or Exophthalmic Goiter

- 1 Evidence of hyperthyroidism and enlargement of the heart
- 2 Evidence of hyperthyroidism associated with abnormal cardiac function such as paroxysmal or permanent auricular fibrillation

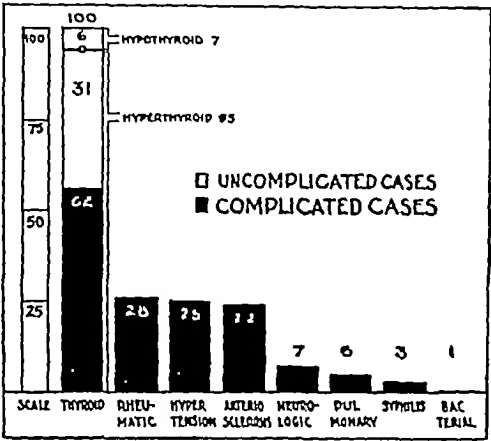


Chart 5—Thyroid group

Criteria of Heart Disease Due to Myxedema

- 1 Evidence of hypothyroidism with enlargement of the heart, with or without cardiac insufficiency
- 2 Favorable response to the administration of thyroid extract

One hundred cases, or 10 per cent of the series, were classified in this group, of which ninety-three were

TABLE 1—Incidence in Hyperthyroid and Main Group

	Hyperthyroid Group (93 Cases)	Main Group (1 000 Cases)
Rheumatic.	30.1%	29.2%
Hypertension	26.8%	23.2%
Arteriosclerosis	23.8%	24.1%
Neurologic.	7.5%	8.0%
Syphilis	3.2%	9.7%
Pulmonary	5.3%	5.8%
Bacterial	1.0%	1.6%

hyperthyroid and seven were hypothyroid. In the hypothyroid cases, six were uncomplicated by any other known etiologic factor and one was complicated by hypertension and urologic disease. The group of thyrotoxic patients was the most interesting of the series, in that sixty-two cases (66.6 per cent) were complicated by organic or structural heart disease and, in addition to this, seven cases were complicated by neurocirculatory asthenia as presented diagrammatically in chart 5.

The common complicating factors in this group were rheumatic disease, hypertension and arteriosclerosis. The other etiologic factors, except congenital, toxic and trauma, were also encountered. Comparison of the incidence of these secondary factors with the incidence of the same factors in the main group show them to be similar (table 1).

The effect of thyrotoxicosis on the welfare of the structurally damaged heart was of great importance as to operative risk, prognosis and postoperative morbidity. The thyrotoxicosis exaggerated the primary cardiac problem, and thyroidectomy relieved this burden. In

those cases in which there were no other etiologic factors than thyrotoxicosis, in which thyroidectomy was performed, the cardiac situation was no longer a clinical issue, except in a few cases of recurrence of thyrotoxicosis.

In the Criteria for Classification and Diagnosis, "evidence of hyperthyroidism, associated with abnormal cardiac function such as paroxysmal or permanent auricular fibrillation" is listed as a basis for the diagnosis of hyperthyroidism. In our studies, auricular fibrillation, either paroxysmal or permanent, has been found only in the presence of other obvious factors and structural lesions, commonly rheumatic valvular disease, hypertensive vascular disease, coronary arteriosclerosis and myocardial fibrosis. It has been our impression that the primary basis for the occurrence of auricular fibrillation was the structural lesion and the thyroid toxemia the secondary exciting factor. In this small series the arrhythmia was not encountered in uncomplicated thyrotoxicosis. We are making a further search to clarify this issue in a larger series of thyrotoxic patients, and also to study frequency of structural pathologic changes.

Comparison of our statistics and other reports shows great variation. Flaxman's report from the Cook County Hospital lists an incidence of 2.6 per cent. In the New England area reported by Cabot and White and his associates the incidence is from zero to 2.9 per cent. In the West and Northwest, Coffin and Viko report incidences of 6.1 per cent and 9.3 per cent respectively. The high incidence of goiter in the Great Lakes area and northwestern United States is commonly accepted.

SYPHILITIC GROUP

The Criteria for Classification and Diagnosis of Syphilitic Heart Disease are as follows:

- 1 History of syphilitic infection and evidence of a characteristic structural lesion of the heart or aorta

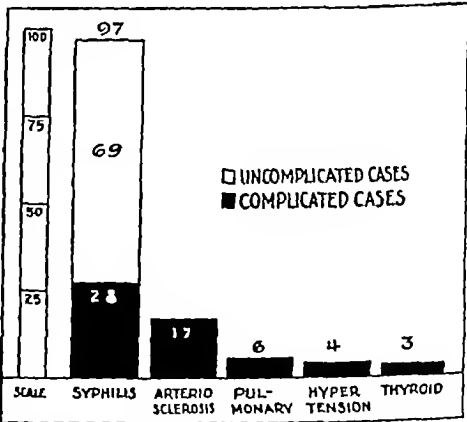


Chart 6—Demonstration of the combination of syphilitic heart disease and other etiologic factors

- 2 A characteristic structural lesion of the heart or aorta without a history of syphilis but with a positive Wassermann reaction.

- 3 A characteristic structural lesion of the heart or aorta together with evidences of syphilitic disease, elsewhere, such as cerebrospinal syphilis, even in the absence of a positive Wassermann reaction or a history of syphilitic infection.

17 Cabot, R. C. The Four Common Types of Heart Disease J A M A 63 1461 (Oct 24) 1914
18 White and Myers, White and Jones, White P D Heart Disease New York, Macmillan Company 1932

We have followed these criteria with two exceptions. We have encountered two cases of syphilitic pulmonary arteritis with a cor pulmonale, one of which was proved at autopsy. There was no autopsy in the second case, but it was equally definite clinically.

Ninety-seven cases were classified under this heading and twenty-eight cases, or 28.8 per cent, were complicated by secondary factors, as demonstrated in

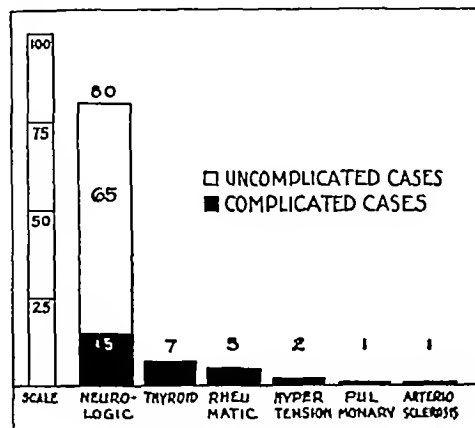


Chart 7—Neurologic group

chart 6. Only four cases of hypertension were encountered in this group, while in a similar study of indigent patients the combination of syphilis and hypertension was much more common.

Other authors report incidences of syphilitic heart disease as from 1.1 per cent to 21.4 per cent. That syphilis has been overlooked in some cases is probably true. The number of patients in this group was too small to calculate reliable figures as to age, sex and other factors.

NEUROLOGIC

The Criteria for Classification and Diagnosis gives the following:

Criteria for Diagnosis of Cardiac Psychoneurosis

1. Presence of definite psychoneurosis in the history or examination of the patient.

2. Presence of the symptoms and signs mentioned without structural cardiac disease being present or without its being present in sufficient degree to account for the symptoms.

Reflex Action. Certain patients may be subject to physiological disturbances of the heart action as a result of reflexes arising in other parts of the body and especially in the abdominal viscera. Premature contractions, paroxysmal tachycardia and sinus arrhythmia are the most frequent disturbances of such origin.

We have considered the psychoneurotic group and the reflex group together in this study. Eighty patients were classified in this category. In fifteen cases, or 18.7 per cent, an organic lesion complicated the syndrome of neurocirculatory asthenia. These complicating factors are presented in chart 7.

Thyrotoxicosis was listed in seven cases. Six of these patients came under our observation after thyroidectomy. An effort was made to determine whether the thyrotoxicosis had been an error of diagnosis or whether the two entities may occur in the same individual. These patients had been examined by numerous physicians and consultants with varied opinions. It was impossible to render a decision. We had the opportunity of studying our patient before and after thyroid-

ectomy. We failed to discern the functional syndrome of neurocirculatory asthenia prior to operation.

In this group there were five cases of rheumatic heart disease, two of hypertension and one of pulmonary and arteriosclerotic disease.

PULMONARY HEART DISEASE

Criteria for Diagnosis of Heart Disease due to Pulmonary Emphysema

1. The presence of pulmonary emphysema.
2. Evidences of cardiac insufficiency with more than usual cyanosis.
3. Evidences of enlargement of the right ventricle.

Only fifty-eight cases, or 5.8 per cent, were classified in this group, of them forty-one cases (70.6 per cent) were associated with other etiologic factors, as presented in chart 8, showing their frequency. We are inclined to believe that we have overlooked the pulmonary factor more often than any other.

TABLE 2.—Types of Pulmonary Disorders in this Series

Condition	Cases
Bronchiectasis	25
Asthma and bronchitis	18
Tuberculosis	8
Syphilis	6
Hodgkin's disease	2
Deformity of the spine and thorax	2
Unknown	2
Metastatic cancer of lung	1
Actinomycosis	1

The following types of pulmonary pathologic conditions were encountered in this series as shown in table 2.

In one case of hay fever congestive heart failure developed in the second trimester of pregnancy. One patient in this group died with coronary thrombosis, and autopsy revealed a cor pulmonale. The only cause demonstrated for the emphysema and the increased size

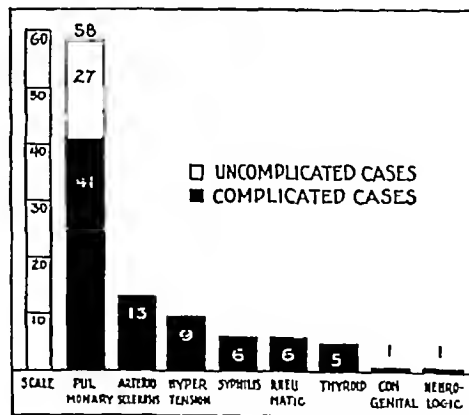


Chart 8—Demonstration of the combination of pulmonary heart disease and other etiologic factors

of the right ventricle was a history of continuous athletic training over a period of twenty-two years. A well marked pulmonary arteriosclerosis was also found.

Evidence of enlargement of the right ventricle was seldom of value in establishing this diagnosis unless the patient was under observation for more than a year, with two roentgenograms for comparison. Right axis deviation in the electrocardiogram was observed as a development in the later stage of the disease.

BACTERIAL GROUP

The criteria for the diagnosis of Bacterial Endocarditis are listed as follows

Evidence of cardiac valvular disease or of a congenital abnormality associated with

- 1 Signs of sepsis
- 2 Positive blood culture.
- 3 Embolic phenomena

Sixteen cases, or 16 per cent, were classified in this group, all due to *Streptococcus viridans*

All of these were complicated by either rheumatic (fourteen cases) or congenital disease (two cases)

One case was of unusual interest because of the combination of subacute bacterial endocarditis and a severe thyrotoxicosis

CONGENITAL GROUP

Congenital entities listed in the Criteria include Anomalies of position of the heart or great vessels, coarctation of the aorta, patent ductus arteriosus, pulmonic stenosis, patency of the septum and congenital defect of the pericardium

Only six cases were encountered five of which were complicated by other etiologic factors. In four cases a superimposed rheumatic valvulitis developed, in two cases subacute bacterial endocarditis, in two toxic factors and in one case a deformity of the thorax

TOXIC GROUP

The Criteria as listed for the toxic group are as follows

Evidence of a definite toxin (bacterial, mineral, vegetable) associated with

- 1 Structural lesion of the heart
- 2 Abnormal cardiac function

Twelve cases, or 12 per cent, were included in this group. Seven of the cases were due to diphtheritic infection and five were secondary to pneumonia. Secondary etiologic factors were present in eight cases, rheumatic infection, six cases, congenital disease, two cases, arteriosclerosis, one case, and hypertension, one case

TRAUMATIC GROUP

"Trauma. Structural cardiac lesions occur as the result of penetrating wounds, severe blow upon the chest or crushing injuries." This again is quoted from the Criteria

One case of this type is included in the series of a traumatic pericarditis as a result of a severe crushing injury of the thorax

COMMENT

While a study of this type is of value in determining the relative frequency of the various types of cardiac disease in a given geographic area and allows comparison with other areas, we were impressed that it fails to convey a correct impression of many of the practical issues in the course of a cardiac case

A majority of the minor factors are neglected in presentation of these data. Respiratory infections, dietary factors, pregnancy, emotional crises, overexertion, surgical procedures, anesthesia effects, and many other factors cannot be included or correctly evaluated

The combination of two or more etiologic factors in one patient presents an interesting field of study. In this series 31.6 per cent, or 316 cases of the 1,000, were in this group, with multiple etiologic factors. Again

it is necessary to point out the inadequacy of statistical studies to portray accurately such relationships. To have an exact analysis of this problem one should include cases that are under observation over the entire clinical course of the heart problem

In the rheumatic heart group, for example, only 22.2 per cent are complicated by secondary etiologic factors. If this entire group had been studied over the complete rheumatic heart cycle, undoubtedly a greater number would be found to have been complicated by hypertension, arteriosclerosis, goiter or syphilis. Only fourteen cases were complicated with subacute bacterial endocarditis, or 4.7 per cent. White¹⁸ quotes an incidence of 4 per cent. Karsner and Bayless¹⁹ in their studies of coronary arteries in rheumatic disease report that "rheumatic fever regularly produces disease of the coronary arteries." Only ten cases, or 2.9 per cent, in our series were classified in the arteriosclerotic group

Lisa and Chandlee²⁰ reported a study of six cases of the combination of syphilis and rheumatic infection. In one case the role of syphilis equaled that of the rheumatic infection, while in five cases the rheumatic infection preponderated. In this series we never encountered this combination. In our studies in the Cook County Hospital, however, it is of frequent occurrence clinically, and usually in Negro patients, as the foregoing observers indicate. However, we have never been able to prove conclusively the identity of the two lesions anatomically

The combination of syphilis and hypertension occurred in only three patients, and syphilis and arteriosclerosis occurred in fifteen cases. Horine and Weiss²¹ studied the relationship of syphilis and hypertension and reported that "syphilis had no etiologic bearing on essential hypertension." This again is a combination frequent in the Negro race and in the indigent patient and much less common in private cases

In completing this survey, we have been impressed with the value of classifying our patients into etiologic groups. Our attention has been better directed toward treatment of the causative factors with better therapeutic results. Prognosis has been simplified

While many cases of cardiac disease may be readily classified in the major groups of rheumatic, hypertensive or arteriosclerotic heart disease, there are no doubt frequent errors. The factor of error is reduced in those patients under observation for long periods of time. The history taken from the patient has been a factor of prime importance, as well as the physical examination. One cannot underestimate the necessity of the fluoroscopic, roentgen and electrocardiographic studies

Lastly, one cannot fail to learn that each cardiac patient presents a highly individual problem, with one or more essential causative factors and many minor issues affecting his clinical course

180 North Michigan Avenue

19 Karsner H. T. and Bayless Frances. Coronary Arteries in Rheumatic Fever. *Am Heart J* 9: 557-581 (June) 1934

20 Lisa J. R. and Chandlee Gertrude J. The Heart and Great Vessels in Combined Syphilitic and Rheumatic Infection. *Arch Int Med* 54: 952 (Dec.) 1934

21 Horine E. F. and Weiss M. M. Relationship of Syphilis to Hypertension. *Am Heart J* 6: 121 (Oct.) 1930

Economy in Buying Food—The better the economy with which food is purchased, the better the chance that the diet will contain all that contributes to positive health—Sherman, H. C. *Food and Health*, New York, Macmillan Company, 1934

Clinical Notes, Suggestions and New Instruments

ACUTE EXACERBATION OF LATENT GONORRHEAL URETHRITIS AFTER FIFTY YEARS' FOL- LOWING PROSTATECTOMY

CLARENCE K. FRASER, PH B AND W J PAUL DYE M D
WOLFFBORO N H

It is deemed of interest to report this case, since careful search of the literature reveals no similar ones. Many authors, in general discussion, mention that gonococcal infection may recur following operations but mention no specific instances. Dr A. L. Wolbarst¹ says 'It is a curious but explainable fact that a long-forgotten gonococcal infection may be revived and an acute inflammation develop as the result of an injury, inflammation, or a surgical operation in some distant part of the body'. Similar general statements are the only type that are found in the literature.

REPORT OF CASE

History—T. D. H., a white man, aged 70, retired from business, admitted to the Huggins Hospital, Oct. 12, 1934, complained chiefly of complete inability to void for the preceding twelve hours. For the past year, gradually increasing in severity to date, he had noticed dysuria, nocturia, frequency and feebleness of the stream of urine along with diminished, unrelieving amounts being passed at a single micturition.

The past history was essentially irrelevant except for a definite acute attack of gonorrheal urethritis followed by a course of metal urethral sounds fifty years previously. This attack was apparently successfully treated, and there had been no urethral discharge or other genito-urinary symptoms since that time. The patient later became married and there are now two grown mature children as a result of this union. The wife and children are and have been quite healthy in every respect.

Examination—Physical examination revealed but few senile changes consistent with a relatively rugged man of his age whose only complaint was inability to void.

Rectal examination showed a diffuse and symmetrical enlargement of the prostate the palpated surface being smooth and firm. Grams stains of prostatic smears revealed from two to five leukocytes per high power field but no organisms.

There was no urethral discharge nor could any be expressed by manual manipulation. The easy passage of a number 18 French soft rubber catheter through the urethra to the bladder evidenced the absence of any urethral strictures.

Laboratory examination on admission revealed red blood cells, 3,580,000, hemoglobin 60 per cent, white blood cells 13,900 with 80 per cent polymorphonuclear leukocytes. Several Kahn tests of the blood were negative. Blood nonprotein nitrogen was 60 mg per hundred cubic centimeters, subsequently 43 mg prior to the second stage of the operation. Urine showed a trace of albumin, many pus cells and a few red blood cells, all of which cleared under suprapubic drainage.

A first stage suprapubic cystostomy was done October 26 and on November 14 the second stage of the suprapubic prostatectomy was carried out. A pathologic report gave a diagnosis of benign diffuse hypertrophy of the prostate.

Clinical Course—The patient had a generally normal post-operative course abetted by a whole blood transfusion at the end of the second week. A creamy purulent penile discharge was noted for the first time, December 3, about three weeks after the second stage prostatectomy. Many smears were made of this urethral pus by different, competent individuals on separate days such smears being stained by Gram's method and examined microscopically. An abundance of Gram-negative intracellular diplococci typical of gonococci were found on each occasion. This discharge persisted until about three weeks

after voluntary micturition through the urethra had been established, thereafter no pus could ever be seen or expressed from the meatus.

Subsequent urologic examination showed the presence of several areas of stricture in the posterior urethra, presumably due to the gonorrheal urethritis, which required the use of sounds for dilation. The passage of sounds, however, did not stir up any further urethral discharge or symptomatic burning, and the urine has been free from albumin and pus since three weeks after the healing of the suprapubic wound and the disappearance of the urethral pus.

SUMMARY

There are no reports in the literature of exacerbation of latent gonorrheal urethritis following prostatectomy.

This patient had a definite gonorrheal urethritis at the age of 20 years. This was successfully treated without sequelae. The patient married and became the father of two normal, healthy children, and his wife never had any symptoms or signs of gonorrhea. The patient himself had no signs of urethritis from the time of the first, apparently successfully treated attack until a suprapubic prostatectomy was done fifty years later.

Prostatectomy apparently caused an acute exacerbation of the gonorrheal urethritis. Three weeks afterward typical gonorrheal pus with gonococci seen on repeated Gram's stains of the smears taken of the pus were noted. This discharge persisted for about three weeks after urine was passed through the urethra for the first time since operation and has not been seen since. Subsequent strictures of the posterior urethra, presumably due to this last attack of gonorrheal urethritis, necessitated the use of metal sounds for dilation.

SPONTANEOUS RUPTURE OF COLD ABSCESS OF CHEST WALL REPORT OF A CASE

ALLEN S. JOHNSON, SPRINGFIELD, MASS.

The following case of spontaneous rupture of a cold abscess of the chest wall with drainage of a pleural effusion is reported because of the apparent rarity of the phenomenon. Meade¹ says in regard to a tuberculous abscess of the soft parts of the chest wall that "whether it starts in the pleura or other deep seated layer the process always advances outward either directly or after a lateral deviation. Practically all writers agree that inward spread is unknown". In the case herewith reported, however, this abscess developed spontaneously, not in a needle tract after aspiration, and ruptured both inward and outward, thereby replacing the pleural effusion with a pneumothorax. The studies of Leggett² and Emerson³ indicate that such a sequence of events is most unusual in the case of a pleural effusion not secondarily infected and I can find no report of such a phenomenon in an extensive search through the literature on this subject.

G. M., a man, aged 49, a clerk, seen by another physician five weeks before admission to the hospital complained of cough and dyspnea. The patient's father had had tuberculosis and two uncles had died of the disease. The patient himself had always been susceptible to respiratory infections which were often accompanied by dry pleurisy. He frequently had a temperature and often had drenching night sweats. He had had a productive cough attributed to smoking since early adult life and had had mild hemoptyses on several occasions. It was difficult to date the onset of the present illness, but the dyspnea had been growing progressively worse for several weeks. The significant physical signs at this time were those of a right-sided pleural effusion. Roentgenograms showed the right lung to be almost entirely collapsed by fluid extending up to the third interspace anteriorly; above this was air which further collapsed the lung. This suggested that the effusion had

¹ Meade R. H. Jr. Localized Tuberculosis of the Chest Wall. *Ann Surg* 97: 247 (Feb.) 1933.

² Leggett E. A., Myers J. A. and Levine, I. Spontaneous Pneumothorax. *Am Rev Tuberc* 29: 348, 361 (March) 1934.

³ Emerson in Tice, Frederick. *Practice of Medicine*. Hagerstown, Md. W. F. Prior Company, Inc. 5: 610, 1921.

From the Huggins Hospital.
¹ Wolbarst, A. L. Gonococcal Infection in the Male. *St. Louis V. Mosby Company* 1930, p. 34.

occurred as a sequel to a spontaneous pneumothorax but a careful history yielded no evidence of such a sequence of events. The left upper lobe showed extensive tuberculous infiltration, and there was some mediastinal shift to the left.

The patient was then admitted to the local tuberculosis hospital. The sputum was loaded with tubercle bacilli on all occasions. Blood counts were not remarkable. Blood Hinton and Wassermann tests were negative. The sedimentation rate (Cooper's method) was a fast normal (70 per cent in one hour). A diagnostic chest tap posteriorly ten days after admission revealed slightly cloudy straw colored fluid. A smear showed no organisms or pus cells and culture yielded no growth.

The patient's course during the next two months was not remarkable. He ran an irregular temperature up to 100.6 °F, a pulse of 100 and respirations of 25. A reddish, brawny, itching area of induration about 6 cm in diameter then developed in the seventh interspace in the right nipple line. During the next few days this became definitely painful and fluctuant. In order to rule out rib involvement by x-ray, 3,000 cc of pleural fluid was aspirated posteriorly. Even this large amount failed to lower the fluid level below the abscess, but the danger of an abrupt shift of the mediastinum contraindicated further aspiration at this time. The fluid removed was cloudy and straw colored with a specific gravity of 1.020 and showed numerous white blood cells. No tubercle bacilli or other organisms were found in smears, and culture on ordinary mediums yielded no growth. The patient was having very little systemic reaction from the abscess and only slight local pain so that evacuation of the abscess was not imperative. While we were waiting for the return of our x-ray technician, however, the abscess ruptured spontaneously about three weeks after it was first noticed. Such pus as may have been evacuated was obscured by the enormous quantity of yellow watery fluid, which poured through the sinus from the pleural cavity, so that cultures were not obtainable before contamination had occurred. Apparently what had appeared to be a superficial abscess gradually working its way toward the surface had ruptured inward and outward at the same time. Roentgenograms now showed the pleural effusion to have been completely drained and replaced by a pneumothorax, which was maintaining the lung and mediastinum in the same relative positions. The ribs did not appear to be involved. During the development of this abscess and after its rupture the patient's temperature, pulse and respirations remained about the same, but he volunteered the information that he now felt much better and had a better appetite than he had had for months.

A few days after the rupture of the abscess, daily irrigations of the sinus tract were instituted with azochloramide, 1:3,300. These were well tolerated by the patient and cultures from the sinus and by aspiration through pipets introduced into the pleural cavity showed no growth a month after rupture of the abscess. The overgrowth of granulation tissue in the sinus then began to interfere with adequate irrigation of the cavity and secondary infection developed. The clear serous discharge became purulent and the patient began to lose the weight which he had gained during the preceding two months. A month of daily irrigation with gentian violet was of no evident benefit, and the azochloramid irrigations were resumed. Six weeks of this treatment have materially lessened the amount of the discharge, though it is still purulent. The patient feels much better, however, and his renewed appetite has resulted in his regaining all the weight that had been lost. The roentgenogram is almost identical with that taken after the rupture of the abscess four and one-half months ago. He is still afebrile and is allowed bathroom privileges. The only change in the sinus is the loss of 4 square centimeters of integument about the opening with the production of a shallow, indolent ulcer, which has gradually increased in size in spite of ultraviolet irradiation and various local applications.⁴

121 Chestnut Street.

4. A supply of azochloramid for the treatment in this case was furnished by Dr. Elliott Weyer of Wallace and Tiernan, the manufacturers, Belleville, N. J.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THE INTERNAL SECRETION OF THE PANCREAS

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed the series will be published in book form.—Ed.

The time-honored and productive physiologic methods of studying the function of an organ are (1) to remove it completely or in part and to observe the abnormal effects attributable to its absence, and (2) to make extracts of the tissue in various ways and to study the mechanism of action of the fractions that are found to possess specific physiologic potency. The pancreas has lent itself admirably to this procedure in the case of both internal and external secretions. Since this article is, in large part, a preface to a consideration of the therapeutics of pancreatic preparations, the space available will be devoted to a consideration of the internal secretion.

REMOVAL OF THE PANCREAS

When the pancreas is completely removed from a dog (and the effects in the other mammals that have been studied are similar), a characteristic syndrome rapidly develops.¹ When a diet including all the known essentials is provided, the animals may live indefinitely if adequate amounts of insulin are administered. The diets used have included preparations containing the pancreatic enzymes and a source of choline (or of related substances with similar effects), which apparently is necessary to prevent deposition of excessive amounts of fat in the livers of these animals. The dogs recover rapidly from the depancreatization and appear normal, but the diabetic state quickly supervenes when insulin is discontinued. The sugar content of the blood begins to rise within a very short time, the length of which depends on the size of the last dose of insulin, and increases from the normal level of from 0.08-0.11 per cent to 0.20-0.40 per cent or higher within twenty-four hours. The urine gives a positive Benedict qualitative test for sugar when the blood sugar rises above approximately 0.16 per cent. This point, the so-called renal threshold, is the level of blood sugar above which large amounts of sugar are excreted in the urine. In some animals the "threshold" rises when the diabetic state is allowed to persist (There are minute amounts of dextrose and some other sugars in normal urine.) The excretion of nitrogen is increased, and this may be taken to indicate protein breakdown, but some doubt exists as to the accuracy of the conventional calculation, i. e., protein-urinary nitrogen $\times 6.25$, particularly when this is applied in short-term experiments. The amount of dextrose formed from protein in the diabetic subject has been calculated from the increased dextrose output when protein is given to the phlorhizinized dog

From the Department of Physiology and the School of Hygiene University of Toronto.

¹ von Mering, Joseph and Minkowski, O. Diabetes mellitus nach Pankreasextirpation. Arch. f. exper. Path. u. Pharmacol. 26: 371 (Jan.) 1889.

It is very doubtful whether phlorhizin poisoning and pancreatic diabetes are comparable conditions, but studies of the former suggest that the amino acids glycine, alanine, cystine, aspartic and glutamic acid yield dextrose but that others, such as tyrosine, leucine and phenylalanine, do not yield dextrose but increase the excretion of ketone bodies. The ratio of dextrose to nitrogen excreted in phlorhizin poisoning is 3.6:1, but this ratio is rarely observed in depancreatized dogs and indeed that obtained is so variable that in most circumstances little significance can be attached to it. The ratio is low under certain conditions in animals on a high protein diet, and there is evidence that the addition of small amounts of fat may increase it somewhat. The question of sugar formation from fatty acids will be briefly discussed later. It is established that glycerol may be converted to sugar, so some extra sugar excretion may be expected when glycerides, i. e., neutral fats, are administered. (Glycerides are reported not to increase the sugar excretion of a phlorhizinized animal.) In the fasting diabetic subject the blood sugar and sugar excretion are maintained at high levels. The sugar is apparently formed from body protein largely in the liver, since the blood sugar of the diabetic subject falls rapidly after hepatectomy. The loss of protein contributes to the rapid decrease in body weight observed in depancreatized animals.

The disturbed metabolism of fat in the depancreatized animal is indicated by the accumulation of the ketone bodies in the blood and by the excretion of excessive amounts in the urine. The ketosis in a fat dog is greater than in a lean one, but this species is characterized by its efficiency in metabolizing fats without ketosis. The loss of body fat is rapid, but the ketosis may be so severe even in this species that the animal dies of coma before the fat reserves are depleted.

Beta-oxybutyric acid is a relatively nontoxic product. It can be estimated by oxidizing to acetone and determining the amount of the latter substance. Aceto-acetic acid, on the other hand, is more toxic probably because of its enolic form $\text{CH}_2\text{COH}-\text{CHCOOH}$. It is stated that this substance stimulates the respiratory center and depresses the higher centers of the brain, causing in these ways "air hunger" and the dimmed perception and loss of consciousness of diabetic coma. The evidence does not justify the conclusion that aceto-acetic acid is the sole cause of this syndrome. Aceto-acetic acid is decomposed in the bladder and lungs, and acetone and carbon dioxide are formed. Acetone, $\text{CH}_3-\text{C}(=\text{O})-\text{CH}_3$, is excreted in the urine and expired air. Aceto-acetic acid in blood may be converted by mild hydrolysis to acetone and the latter can be estimated by various procedures.

The neutral fat content of the blood increases, owing probably to the augmented rate of mobilization of depot fat, and there is also a rise in cholesterol esters and phospholipids. Since there are small amounts of the ketone bodies present in normal blood, it is preferable to consider these substances as intermediary products in the oxidation of fatty acids. When the rate of breakdown of the acids is excessive, as in pancreatic diabetes, these ketone bodies accumulate in the blood.

A little space may be given here to the two closely related questions (1) the formation of sugar from fatty acids in the depancreatized animal, and (2) whether pancreatic diabetes is characterized by an overproduction of sugar, an underutilization of sugar or both. With regard to the first, it is well established that this transformation takes place in plants, and there

is considerable indirect evidence that may be interpreted as favoring this possibility in animals, but direct proof of the change is conspicuous by its absence. It is difficult to prove that the change cannot take place, and failures to obtain evidence in favor of it may be due to the method of investigation. In spite of the attention this question has attracted, it must be left in this unsatisfactory state. A final answer would do much to clarify the field.

If overproduction of dextrose were the only abnormality in diabetes, fat as well as protein would be required to furnish material. Very few authorities will deny that the evidence for the increased rate of production of sugar from protein in pancreatic diabetes is satisfactory. While there is, in my opinion, an abundance of evidence that the depancreatized dog can still burn sugar—all the criteria of sugar combustion in the normal have been satisfied—it is not permissible to conclude that there is no interference with this process. Convincing experimental evidence for deficient utilization of dextrose in diabetic heart muscle was at one time thought to be available, but it now appears that the chief fuel of heart muscle is lactic acid which is taken up from the blood, and not dextrose. The amount of sugar utilized by a hepatectomized dog is apparently definitely less when the pancreas also is removed. The rapid sugar utilization in the hepatectomized diabetic animal and the production of a diabetic condition by the administration of the diabetogenic substance of the anterior pituitary, which apparently acts by stimulating the liver to produce more dextrose, tend to emphasize overproduction rather than underutilization. It is preferable to consider, however, that both mechanisms play a part in the production of the diabetic condition and to concentrate attention on the development of quantitative methods by which accurately to determine the extent of the overproduction or underutilization.

Studies of isolated muscles appeared to indicate that carbohydrate alone is burned, but there are now many facts which suggest that other food materials are used. While the possibility exists that these may be converted to sugar in the muscle before use, it is much simpler and more in accord with the evidence to consider that fat and protein as well as sugar may be used directly.

The respiratory quotient of the depancreatized animal assumes the characteristic low level of from 0.69 to 0.73 and is not raised when sugar is given. Under certain conditions in animals that have previously received a high protein diet and insulin, the quotient may be somewhat higher. The low quotient may indicate combustion of fat, but if any process, such as conversion of fat to sugar, which gives a very low quotient, should be taking place the quotient might indicate the resultant between sugar combustion, fat combustion and the conversion. When the pituitary gland is removed from the depancreatized dog, the quotient is raised. When the liver is removed from a depancreatized dog, the quotient also rises, indicating either that relatively more sugar is being burned or that conversions giving a low quotient are taking place to a smaller extent. Since more than one interpretation of a quotient is possible, great caution must be observed in drawing conclusions with regard to its significance. This ratio is often used, because of its convenience, to describe the results of physiologic research, but the investigator who makes use of this "instrument of attack" should not be accused of believing in its unitarian significance unless he specifically states his position.

While the glycogen content of the muscles of a depancreatized animal may be reduced below the normal level, appreciable amounts remain during the life of the animal. There is no diminution of heart muscle glycogen, and recently convincing evidence for an increase has been obtained. Liver glycogen falls to very low levels. A very slight increase in both muscle and liver glycogen can be produced by giving large amounts of sugar without insulin.

The excretion of phosphate is increased in the depancreatized animal. The administration of sugar or epinephrine does not cause the prompt fall in the inorganic phosphate of the blood observed in normal animals. These results suggest that sugar may produce its effect through liberation of insulin, but in the light of the effect of raising the blood sugar on the rate of sugar production by the liver in depancreatized dogs receiving a constant amount of insulin the latter organ as well as the pancreas comes under suspicion.

The diabetic animal is very susceptible to infections, but it is not established that this is due to the raised sugar content of the tissues. The specific antibodies are not significantly altered in amount, but other defense mechanisms may be made less effective by the abnormal metabolic condition that exists. Pathologic conditions are observed with considerable frequency in the eyes of diabetic animals. The liver may undergo extensive fatty degeneration and there may be an accumulation of very large amounts of neutral fat. Dietary factors play a large part in determining the extent of this change.

While there is considerable variation in the length of life of the depancreatized dog or cat, most individuals fed on a mixed diet do not live for more than two weeks without insulin. It is now established, however, that when the anterior pituitary is also removed the animal (dog) may live for at least a year and exhibit at most only a mild form of diabetes. Severe diabetes is produced under these conditions by administration of the diabetogenic substance of the anterior pituitary, but the maximum duration of this form of diabetes is not yet established. The condition is alleviated by insulin. Since the hypophysectomized pancreatectomized dog has apparently retained considerable ability to metabolize sugar (dextrose tolerance tests may give normal results), and the liver and muscle glycogen are within normal limits, it must be admitted by all that the pancreas is not essential to sugar combustion or glycogen formation under certain conditions at least.

These facts suggest to the physiologist the following classification of the diabetic state:

- 1 Increased glyconeogenesis due to lack of insulin, i. e. hypo-insulinism
- 2 Increased glyconeogenesis due to excess of the diabetogenic substance of the anterior pituitary or in part perhaps to hyperactivity of the adrenal² or thyroid glands
- 3 Increased glyconeogenesis not attributable to endocrine disturbances. While several factors, i. e. nerve impulses, products of infection, or changes in acid-base equilibrium, may affect the liver cells directly, endocrine disturbances may perhaps be an inevitable concomitant or result of these abnormal conditions. For this reason it is by no means certain that a diabetic state due solely to liver disturbances will be encountered. A type of hypoglycemia, however, attributable to extensive dam-

age of liver cells, is recognized, and there are already certain bits of experimental evidence suggesting that the reverse, i. e. an overactivity, may be produced—possibly in some cases as the first stage of injury but conceivably, in other instances, by more physiologic mechanisms.

While it is possible to produce 1 and 2 experimentally as separate entities for a time, at least, it is probable that overlapping of the factors causing overproduction may occur clinically. In each of these three types there may be an under-utilization of dextrose by the tissues. This under-utilization may be, as many contend, the primary disturbance, but, on the other hand, it may be secondarily produced by the products of abnormal metabolic conditions of the liver. The favorable effect of insulin throws very little light on the factor or factors responsible for the overproduction or under utilization.

EFFECTS OF THE ANTIDIABETIC HORMONE

It is well established that insulin restores to the depancreatized animal its ability to metabolize sugars and fats in a normal manner. The excessive breakdown of protein is prevented. The ketosis rapidly disappears. Glycogen accumulates in large amounts in the liver. Muscle glycogen may be increased. The respiratory quotient rises when sugar is made available, or in fact when insulin alone is administered. Animals recover their ability to deal with infective agents. In brief a well treated depancreatized animal is difficult to distinguish from a normal one. There is always the difficulty, of course, that in the animal without a pancreas relatively large amounts of insulin are made available two or three times a day, while in the intact animal small or large amounts are presumably liberated from the pancreas as the need arises or conceivably at an approximately constant rate. Adult depancreatized dogs on an adequate diet³ including the enzymes of the external secretion of pancreas have been maintained in good condition for more than four years. It cannot be stated, however, that these animals enjoyed at all times the fullest health, and there is ample opportunity to effect improvements in the details of treatment.

SOURCE OF INSULIN

While it is reasonable to suppose that small amounts of insulin are present in tissues other than the pancreas, methods are not yet available for their detection. Blood provides an exception to this generalization, but the active substance is detected by the intravenous administration of the whole blood and not by extraction of the insulin from the tissue. At least six groups of investigators, including the early workers on insulin in Toronto, were led for a time by errors in testing and by artefacts to believe in the wide distribution of appreciable amounts of insulin. In the mammalian organism the pancreas appears to be the only organ that manufactures or stores insulin.

The alpha and beta cells of the islands of Langerhans have been extensively studied and a third type, the gamma cell, has been detected. The beta cells, which occupy the periphery of the islets and whose granules are soluble in alcohol, are thought to be the source of insulin.

The main points of evidence which indicate that insulin is produced in the islet cells are as follows: 1. The active substance is found in degenerated pancreas

² The alleged relationship of the adrenal to carbohydrate metabolism is discussed more in detail in the papers by Rogoff (*The Adrenal Medulla*, J. A. M. A. 104:2091 [June 8] 1935) and by Loeb (*The Adrenal Cortex*, J. A. M. A. 104:2177 [June 15] 1935) in this series.—Ed.

³ Evidence is accumulating that certain accessory food factors may exert an appreciable effect on the intensity of glycosuria in pancreatic diabetes.

in which the loss of acinous tissue has proceeded much more rapidly than that of the islet cells.⁴ Ligation of the pancreatic ducts eventually produces a decrease in the insulin content of the pancreas, but, when very few enzyme-producing cells remain, moderate amounts of insulin may still be extracted.² There are relatively large amounts of insulin in the principal islet of teleostean fishes, in which few enzyme-producing cells are found.⁵ 3 Histologically, the islets are glandular structures the obvious outlet for the secretion of which is through the blood stream.⁴ When large amounts of carbohydrates are given to partially depancreatized dogs, characteristic lesions (hydropic degeneration) are found in the beta cells, which disappear when the carbohydrate is eliminated from the diet or is balanced by insulin.⁵ 5 In the clinical condition known as hyperinsulinism, the pancreas liberates abnormally large amounts of insulin. In many of these cases there are definite tumors of the islet cells. After the operative removal of these masses of islet cells the blood sugar is maintained at higher levels.

LIBERATION OF INSULIN

The arrangement of the capillary loops about the islet cells and the reported scarcity of lymph channels provide morphologic evidence in favor of the capillary blood stream as the pathway by which insulin reaches the systemic circulation. It is important to remember that insulin passes first to the liver.

While there are many pieces of experimental evidence which support the conclusion that the level of blood sugar is an important factor in the regulation of insulin liberation, the possibility that a decrease in the rate of discharge of sugar from the liver may also be produced when the blood sugar is raised is frequently overlooked. Increased deposition in or utilization by muscle is probably not an important factor in these very short experiments. When insulin liberation is maintained at a constant level in the depancreatized animal, the curve of blood sugar following an injection of dextrose may be very similar to that obtained in an intact animal. Removal of the liver produces the diabetic type of curve.⁶ However, the injection of small amounts of dextrose into the artery supplying a pancreas grafted into the neck of a depancreatized dog or into the pancreatic artery in a decerebrate cat causes a prompt lowering of blood sugar. In the latter case the effect was not obtained when the splenic or portal vein was used. If these results on decerebrate cats can be accepted, they provide evidence for the chemical control of insulin liberation through an action of the dextrose on structures within the pancreas, but the effect of a raised blood sugar on the rate of discharge of dextrose from the liver must also be considered. The results of experiments with denervated pancreatic grafts suggest that the pancreatic effect is exerted directly on the islet cells. These manifestations indicate that the nerve control is not essential. The nerve impulses that affect the islet cells are apparently conducted by the vagus. Vagus fibers have been traced to the islet cells, and nonmedullated branches are said to pierce them. The results of stimulating the vagus appeared to be clear cut and the pathway was traced by one group of investigators to the hypothalamic region, but other workers

have as yet been unable to confirm these observations. The effect of vagus impulses on the rate of sugar production by the liver requires further investigation, but the possibility that this mechanism is the one effective in lowering blood sugar must be considered.

THE MECHANISM OF ACTION

In the diabetic patient there is evidence that insulin enables more sugar to be burned, since the oxygen consumption is increased and the respiratory quotient rises. Some of the dextrose that disappears may be accounted for by the rise in liver glycogen, and there may be an increase in muscle glycogen. Increase of glycogen and rate of oxidation apparently account for all the sugar that disappears. The decreased nitrogen excretion indicates inhibition of glyconeogenesis.

In the normal animal the slight increase in oxidation and the deposition of glycogen in muscle apparently account for practically all the sugar that disappears. In adult animals of all the species that have been studied, liver glycogen does not increase.⁷ The increase in liver glycogen in young rabbits is a secondary effect, probably due to liberation of epinephrine. It has been argued that the deposition of muscle glycogen represents only an effect of abnormally large amounts of insulin, but small doses do not cause the disappearance of sufficient dextrose, in addition to that which is oxidized, to provide building material for the minimum glycogen increase, which can be accurately determined. Convincing direct evidence that large doses of insulin inhibit glyconeogenesis in the normal animal is not available, but this possibility is strongly supported by the results of several series of experiments.

INTERFERENCE WITH THE ACTION OF INSULIN

Other Hormones—There are five internal secretions the action of which may be considered to be antagonistic to that of insulin. There is no evidence of any chemical interaction of these hormones with the anti-diabetic substance. Epinephrine causes a prompt mobilization of liver glycogen and probably somewhat later the conversion of muscle glycogen to lactic acid, which is in turn converted to dextrose or glycogen or both in the liver. The suggested action of epinephrine in inhibiting oxidation of dextrose is not well supported by experimental evidence.²

Removal of the adrenal cortex leads in some species to hypoglycemia, which is alleviated by injection of extracts secured from cortical tissue. The mechanism of action of such extracts is not established.²

Thyroxine, by making liver glycogen more easily mobilized and also probably by accelerating glyconeogenesis, tends to produce hyperglycemia. On the other hand, the increased oxidation of dextrose in the tissues of a thyroxinized animal exerts the opposite effect on blood sugar. In the first stages of hyperthyroidism there is a hyperglycemia and a decreased effect of insulin. In the later stages there may be severe hypoglycemia without insulin and a great susceptibility to the antidiabetic substance.⁸

While posterior pituitary extract raises blood sugar and interferes with certain of the actions of insulin, it is not established whether the oxytocic or the pressor principle or both exert the effect. Furthermore, the evidence as to whether or not posterior pituitary extract acts through the adrenals is still controversial.

⁴ Banting F G and Best C H. The Internal Secretion of the Pancreas. *J Lab & Clin Med* 7:251 (Feb) 1922.

⁵ MacLeod J J R. The Source of Insulin. *J Metabol Research* 2:149 (Aug) 1922.

⁶ Soskai Samuel, Allweis M D and Cohn D J. Influence of the Pancreas and the Liver upon the Dextrose Tolerance Curve. *Am J Physiol* 109:155 (July) 1934.

⁷ Cori C F. Mammalian Carbohydrate Metabolism. *Physiol Rev* 11:143 (April) 1931.

⁸ Burn J H and Marks H P. The Relation of the Thyroid Gland to the Action of Insulin. *J Physiol* 60:131 (July) 1925.

In certain species, at least, the diabetogenic substance of the anterior pituitary appears to be a very powerful antagonist of insulin.⁹ Hypophysectomized dogs, even after removal of the pancreas, may exhibit profound hypoglycemia. They are very susceptible to insulin. The information at present available indicates that the liver is essential to the action of the diabetogenic substance, which apparently acts, in large part at least, by stimulating glyconeogenesis.

Enzymes—Insulin is destroyed by pepsin-hydrochloric acid and by the activated proteolytic pancreatic enzyme. The pancreas may, however, be incubated aseptically at neutral or acid reaction without loss of the antidiabetic substance. Insulin is relatively unstable in alkaline solution. There is apparently an enzyme system in blood which is capable of activating insulin, but its characteristics have not been extensively studied.

Reaction of Tissues—Since insulin acts on the cells of the liver and muscles, factors that influence these tissues, acidosis for example, may modify insulin action. Furthermore, since the liver is so largely responsible for the regulation of blood sugar, influences affecting this organ may cause a change in sugar content quite apart from the action of insulin. A change in the acid-base equilibrium of the body toward the acid side renders injected insulin less effective.

Products of Infection—The toxic products elaborated by many micro-organisms may interfere with the action of insulin. There is experimental evidence (1) that the insulin content of pancreas is decreased in certain severe infections, but this does not necessarily indicate a decreased rate of liberation of the hormone, (2) that the adrenal and thyroid glands are stimulated to release more of their internal secretions, and (3) that the synthesis of glycogen from lactic acid in the liver is inhibited. Certain toxins may act on one or more of these mechanisms, but investigation of this field is still in the preliminary stages.

Anesthetics—All anesthetics interfere more or less with the action of insulin. More or less asphyxia is produced by all general anesthetics. In asphyxia acid products tend to accumulate. Chloralose and amytal cause less disturbance of carbohydrate metabolism than some other anesthetics.

HYPERINSULINISM

The tendency to refer to all clinical cases of spontaneous hypoglycemia, which may be due to (1) liver injury or to (2) deficiency of anterior pituitary secretion, adrenal insufficiency or other causes, as well as to (3) liberation of excessive amounts of the internal secretion of the pancreas, as hyperinsulinism should be combated. The signs of hypoglycemia in these various conditions may of course be identical, but hyperinsulinism is established only when removal of a tumor of islet cells corrects the condition. It is possible that general hyperplasia of islet tissue is responsible for some cases of hypoglycemia, but further study is needed to settle this point. When a large part of the pancreas is removed and the hypoglycemia is alleviated, which is the desired clinical result, the finding does not prove that the internal secretion had been liberated in abnormally large quantities. The same result would

have been secured if the hypoglycemia was due, for example, to diminished secretion of the diabetogenic substance of the anterior pituitary. The hypoglycemia produced experimentally by extirpation of the anterior pituitary may be alleviated by complete removal of the normal pancreas. By this means two endocrine factors influencing the production and utilization of sugar in opposite directions are balanced at a new and lower level.

The signs of hypoglycemia have been frequently described. Attention has been drawn from time to time to chemical substances, the accumulation of which was thought to be responsible for these signs, but further study has failed to support the early observations. There is no convincing evidence that a toxic chemical substance accumulates when the blood sugar is maintained at low levels. The typical signs of profound hypoglycemia are dependent on the loss of integrity of nerve cells in the higher centers of the brain. There are no physical signs of hypoglycemia in the spinal animal or in one anesthetized by a general anesthetic.

CHEMISTRY OF INSULIN

The most active form of insulin is that obtained in the crystalline form (Abel).¹⁰ This material is composed of numerous amino acids (cystine, tyrosine, arginine, histidine, lysine, leucine, glutamic acid, proline and phenylalanine) and gives all the typical protein tests. It appears very unlikely that the active material is merely adsorbed on the crystalline protein. Recent work by Scott¹¹ has shown that the crystals are probably the salt of insulin with a metal such as zinc or cadmium. The free substance has not yet been obtained in crystalline form.

STANDARDIZATION

The potency of insulin is expressed in terms of the international standard powder, which contains 8 units per milligram. The crystalline preparation, which has a potency of approximately 25 units per milligram, is being substituted for the amorphous material. There will be no change in the size of the unit. Insulin should always be tested against the international or subsidiary standard. The lowering of blood sugar in rabbits or the production of convulsions in mice furnishes satisfactory effects of the hormone for the comparison of unknown and standard products.

SUBSTITUTES FOR INSULIN

Insulin therapy has two obvious disadvantages (1) the transient effect and (2) the necessity for parenteral injection of the active material. The most important of the suggested substitutes is synthalin (decamethylene diguanidine). This substance does not increase deposition of muscle glycogen and the effect on hepatic glycogenesis is accomplished in a highly unphysiologic manner. Insulin is apparently the only agent that inhibits sugar formation without damaging liver cells. Extensive deposits of fat produced in diabetic dogs by fat feeding as well as by many chemical compounds other than synthalin interfere with sugar formation. It is preferable for the diabetic organism to excrete the large quantities of sugar made by a relatively healthy liver than to be made "sugar free" by damaging liver tissue so that less dextrose is formed.

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Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING ARTICLE AND REPORT

HOWARD A. CARTER, Secretary

THE INFLUENCE AND THERAPEUTIC USE OF HEAT

PHYSIOLOGIC EFFECTS OF HEAT

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The use of external heat in the sense ordinarily understood by that term was a familiar therapeutic procedure to the ancients of Greece and Rome, who constructed elaborate establishments for the practice of hydrotherapy in various forms and also made use of naturally occurring thermal springs, such as those still frequented at Aix les Bains. Notwithstanding the application of heat to an increasing variety of conditions, the manner in which it accomplishes its purpose has been, until recently, poorly understood, chiefly owing to the fact that the actual conduct of most physical therapeutic measures has been in the hands of persons untrained in medicine.

One of the outstanding phenomena, obvious even to the layman, in the systemic application of external heat is the more or less profuse sweat induced. This occurrence has given rise to the popular idea of "elimination," which has found great favor with the public and has even crept into medical writings in an uncritical way. The conception of what is eliminated has been vague, and small account has been taken of other and equally important changes induced. The last few years have been productive of new data however and, while much remains to be investigated, a fairly clear concept is now afforded of what occurs in the physiologic sense when the human body is exposed to heat.

According to Bazett,¹ radiant energy, to which the body is normally more or less exposed in the form of sunlight and also, in recent years, through artificial means, may be classed as (a) ultraviolet rays of short wavelength, 1,850 (artificial light), 2,900 (sunlight) to 3,600 angstroms, (b) visible light, from 3,600 to 7,500 angstroms, (c) near infra-red, from 7,500 to 15,000 angstroms, (d) intermediate infra-red, from 15,000 to 30,000 angstroms, and (e) far infra-red with wavelengths greater than 30,000 angstroms. Heat from radiating objects, such as steam or hot water radiators, hot water bottles and hot water baths, consists mainly of group e, and transmission to a depth is by conduction, when derived from sources such as lamps with a dull red glow, the main energy is probably in groups d and e, and conduction is still the main method through which deep effects may be attained. However, if sunlight or luminous sources of heat are employed, much of the energy may be in groups b and c and some deep effects will result through direct transmission of the radiant energy to a depth.

According to Bazett,² the rate at which changes of temperature penetrate is relatively slow, the heat capacity of the tissues is high, and relatively large quantities of heat have to be transported before the temperature is greatly altered. The tissues can be warmed, however,

up to a temperature of 98.6 F with relative rapidity, venous blood in its return carries heat inward and does so the more rapidly the greater the extent of the vasodilatation, in addition, the increased arterial blood supply warms the tissue at the expense of the rest of the body.

In a cold environment the conditions are simpler, but the thermal conductivity is diminished as the result of the vasoconstriction induced. Zondek³ reported that an icebag in close apposition to the thigh caused a fall of temperature at a depth of 50 mm from 98.8 to 97.3 F in one hour when the skin had fallen to 44.6 F in a subject with fat 25 mm thick. In the case of a fat subject (fat 50 mm thick) an icebag applied to the abdomen for one and one-half hours caused a fall of the skin temperature to 42.8 F, but the temperature of the abdominal muscles at a depth of 50 mm fell only from 99.7 to 96.8 F.

In his study of the effects of abdominal thermal applications on the dog's intraperitoneal temperature, Brill⁴ observes that cold applications have little effect on the intraperitoneal temperature, the greatest fall noted being 2.5 degrees C, which was observed in one instance. Hot applications likewise produce no appreciable change. Such observations as these, which have been corroborated by Hepburn, Eberhard, Ricketts and Rieger,⁵ strongly suggest that the beneficial effects of hot and cold abdominal applications are due to factors other than the effect on intraperitoneal temperature.

The effects of systemic exposure to heat from various sources are much the same in principle and will therefore be discussed together, except when certain differences necessitate particularization.

One of the earliest effects to be noted after systemic exposure to heat is that on the circulation. Thus, the pulse rate rises more or less proportionately to the rise in body temperature⁶ in the ratio of about ten beats for 1 degree F,⁷ much as it does in fever.

The effects on blood pressure of external heat and cold are somewhat varied.⁸ Some observers believe that all baths at a temperature much above or below that of the body raise blood pressure,⁹ but in general in normal persons warm baths probably tend to lower blood pressure and cold baths tend to raise it. There are some exceptions to this rule, and a bath above 40 C (104 F) may give a blood pressure above normal, while a cold bath may occasionally induce a temporary fall in blood pressure preceded and followed by a rise.⁷ If exposure to external heat is in the form of a bath, there takes place, in addition, a diuresis dependent on the immersion of the abdomen in the water.

Systemic exposure to external heat generally produces a more or less well marked hyperpnea or over-ventilation of the lungs. This increases roughly parallel with the rise in body temperature, and water vapor is lost in large quantities through the expired air. Systemic exposure to heat in any form results, therefore, in a loss of fluid from the body through the lungs and sweat and, following baths, through the urine also. This causes a temporary loss of weight.⁷ Following

3 Zondek, cited by Bazett.²

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2 Bazett, H. C. Principles and Practice of Physical Therapy 1: 7

extreme sweating a slight concentration of the blood ¹⁰ tends to arise, but it is doubtful whether this takes place in any important degree under the usual conditions of clinical practice ¹¹

Next to the kidneys the skin is, in man, the most important accessory channel for the elimination of water, and the salt excreted in the sweat may amount to ten times that normally present in the feces ¹² The sweat also contains, qualitatively, certain other substances occurring normally in the urine, such as urea, ammonia, uric acid, amino acids, creatinine, phosphates and sulphates, ¹⁰ and it may also contain dextrose The elimination of these substances, especially water, salt and urea, forms the basis of the long-standing use of the sweat process in various forms of nephritis accompanied by edema or high blood urea nitrogen There has been wide clinical belief in the value of this measure in nephritis, in which its influence is undoubted as regards salt and water As regards the compensatory elimination of nitrogenous substances, there is some evidence to indicate it, but there are those who doubt "vicarious" excretion of nitrogen on the part of the sweat glands, and it seems that perspiration does not always lead to a decrease of urea in the urine ¹³

It is not generally appreciated that carbon dioxide, a chief end-product of metabolism, escapes through the urine and sweat, as well as through the lungs, and one of the most fundamental effects of exposure to heat appears to depend somewhat on the increased loss of carbon dioxide through these three channels As a result of the rise in the body temperature or hyperpyrexia, the general body metabolism is increased and carbon dioxide is formed in quantities larger than normal The overventilation through the lungs, however, washes out the carbon dioxide in even greater proportionate amounts There also results from the heightened metabolism an increase in the phosphates and sulphates from the breakdown of protein, but these acid substances find their escape through the urine In addition to the loss of all these substances, it has also been shown that the urine and the sweat contain fatty acids, including lactic acid, which are probably increased in amounts during exposure to external heat The elimination of lactic acid through the skin during the sweating process constitutes one of the significant factors in the maintenance of the acid-base equilibrium in the body Because of the low degree of ionization of lactic acid, the excretion of lactic acid and lactates results in the sparing of fixed base ¹⁴ The sweat produced under the influence of heat, induced by the radiotherm in the cases studied, contains lactic acid in concentration greater than that of the blood

The net result, therefore, of the loss of these various acid substances, chiefly carbon dioxide, is to leave a relative excess of alkali in the blood and probably in the tissues ¹⁵ The blood becomes too alkaline, a systemic alkalosis results, and the excess of alkali is then eliminated through the urine and sweat until the normal acid-base equilibrium is restored The urine and sweat

thus generally change their reaction, becoming less acid, alkaline, or more alkaline A sustained alkalosis may lead to tetany, it constitutes one of the sources of danger in the improper therapeutic use of external heat ¹⁶

A great loss of water and salt consequent on exposure to heat induces serious consequences unless this loss is partly compensated by ingestion This loss may be one of the factors, together with the alkalosis referred to, which induce the severe cramps in the muscles occasionally seen among stokers and other workers in extreme heat The clinical application of external heat with excessive sweating may likewise be followed by serious consequences Water is usually given to the patient, and saline solution is occasionally administered to compensate for the losses of fluid and salt It is obvious however that, unless the temperature and amounts of fluid are considered, the anticipated sweating and the benefits of it may be prevented or delayed

The physiologic changes induced by local exposure of a part to heat are along the lines just described, but more intensive treatment is obviously possible because the process can be longer continued Relaxation of tissues is induced, especially of the muscles, together with a hyperemia probably due to dilatation of blood vessels and a greater total blood flow in the area concerned Another physiologic factor involved is the increased rate of transfer of fluid across the capillary wall during the vasodilatation induced by heat, as shown by Gibbon and Landis ¹⁷

Local sweating also takes place, and the tissues are put in a condition to benefit more than they otherwise would by such measures as massage and passive motion or even active motion If the local use of heat is continued too long, a systemic response may take place, dependent on a general hyperpyrexia comparable to that following systemic exposure This may be an advantage or a disadvantage, according to the conditions present, but must be considered in feeble patients or those already being exposed to systemic heat The effects of heat locally will be further developed under the local use of heat in surgery

A recent development in the use of heat is the artificial induction of fever A variety of measures is useful to this end, namely, those already mentioned and those depending on exposure of the body to radiation, to induced electric fields and to the actual passage of the electric current through the tissues The measure last mentioned is that which has been most fully studied

Another means of producing much the same result is the injection into the body of material such as killed bacterial organisms, foreign proteins and the like, the reaction to which includes the production of fever It is probable that the results achieved by these several respective measures, however, depend largely on common factors for their effects The use of hyperpyrexia through diathermy ¹⁸ permits rather more controlled study of the conditions arising and is in other ways preferable in a majority of cases suitable for such therapy The alterations of physiology achieved through it include, apart from the usual results of external heat, the change in the blood formula recognized to accompany the use of nonspecific protein reactions, as well as some other phenomena referable to disturbances of the nervous system and even of the renal system brought

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16 Cajori Crouter and Pemberton ¹¹

17 Gibbon H J and Landis E M *J Clin Investigation* **11**:1019 (Sept.) 1932

18 Neymann C A and Osborne S L *Arch. Phys. Therap* **15**:149 (March) 1934

about through the higher and more sustained febrile state. The kidney occasionally experiences detriment, under vigorous applications, and this may result, in part, from damage to it by the high temperatures immediately adjacent to the organ itself. Similar considerations apply to the use of ultra high frequency induced electric fields which cause eddy currents in tissues with resultant heating effects. This procedure permits of deep penetration and can be used locally or systemically. It has the added advantage of obviating immediate contact with the patient.

The treatment of disease by means of hyperpyrexia originated with the use of the malarial parasite in dementia paralytica and has been extended to include a considerable variety of disease states. Omitting discussion of the therapeutic effects on diseases of the central nervous system, which will be considered elsewhere, the diseases chiefly submitted to this form of therapy have been various forms of arthritis and asthma.

The treatment of disease states by raising the body temperature through various electrical means is a powerful therapeutic measure capable of real benefit and also of undoubted harm unless carefully controlled. At the present time, therapy of this nature should be conducted under hospital auspices.

FORMS OF APPLICATION

Dry Heat—The various means and methods of applying physical therapy in almost any of its forms constitute specialties in themselves, and within the small compass of the present article only those features can be considered which are essential to a general understanding of the subject.

Apart from the familiar hot water bag, the most common mode of application of dry heat is that afforded by the electric light bulb. For local application, the apparatus usually takes the form of a parabolic mirror, suitably mounted, with the lamp at the focus so that the issuing rays are parallel. The apparatus can be held in the hand, or it is mounted on a stand and can be directed toward any part. For more intensive local use a boxlike container, with or without an internal reflecting surface, open at the ends and equipped with light bulbs, is placed over the limb or part, with the patient in the sitting or the reclining position.

For systemic exposure, lamps are usually placed within a "cabinet" or large box containing a reflecting interior surface and large enough to allow the subject to sit on a chair, the head emerging through the doors or other covering at the top. The number of lamps in such an apparatus may be from twenty to fifty or more, subject to control in small groups. For exposure in the recumbent position, the lamps are placed within a troughlike semicircular container, also bearing a reflecting interior surface and about 5 feet in length. This is placed, with the concave side down, over the subject, whose head is allowed to emerge at one end. Blankets are placed over the whole and drawn snugly around the neck and face in order to prevent undue radiation.

Dry heat is also administered in the form of hot air, but this usually requires elaborate equipment for the purpose of heating the air and is hardly available to the general practitioner, except in a few institutions. Electrical resistance coils placed within a boxlike container also afford a useful means of obtaining dry heat, especially for application to limited areas such as a knee or an ankle. These various forms of apparatus can all be obtained on the market under various trade names,

and they can be improvised at home with excellent results when necessity demands. Dry heat of lesser intensity can also be supplied for local purposes in the form of a resistance coil of flexible wires, properly insulated and covered with cloth, for such uses as those to which the familiar hot water bag is put.

One of the most important uses of dry heat in a local sense is that afforded by the actual cautery, which may be heated by flame or fire, as in the old days, or, more appropriately, by the electric current. The chief use of this is for destructive purposes in dermatologic conditions, including new growths, and will be discussed under that heading. The actual cautery has also long been used as a "counterirritant" in sciatica, though less so now than formerly. Probably some of its effects are due to the reaction from protein split products and the "shock" of the burn.

Hydrotherapy—Probably the oldest form of the systemic application of heat is the hot bath. The presence of thermal springs scattered throughout the world has given rise to elaborate establishments for their utilization, but as far as heat per se is concerned almost equally satisfactory results can be obtained in many instances by the simplest forms of apparatus, such as the ordinary bath tub. The water used may be pure or it may contain various salts or other substances, such as magnesium sulphate or carbon dioxide, intended to increase or add to the effects. The temperature of the water varies, of course, according to the purpose of the bath, and this question will be considered under therapeutic indications.

Next to the hot bath, the most frequently employed form of moist heat is that afforded by the so-called hot pack. This consists in principle in wrapping the body in a sheet or blanket made hot by being dipped in hot water of about 82 C (180 F) and subsequently wrung out more or less thoroughly. Obviously the severity of application will depend on the temperature of the enveloping sheet or blanket, and this effect will be further influenced by the number of blankets superimposed on the subject to prevent evaporation and cooling. Occasionally, the sheet or blanket placed on the body is below body temperature, constituting the "wet pack," under which circumstances the effect of heat is achieved through a conservation of the body heat by wrapping the subject with many blankets to prevent as much evaporation as possible.

Another form of exposure to moist heat is the steam bath, although this is by no means so widely employed as the hot water bath. A home-made apparatus can usually be "rigged up" in any household by means of large steam kettles, an oil lamp and a frame to elevate the bedclothes. The steam "room" has long been in use and consists simply of a chamber into which steam under low pressure is allowed to escape. The disadvantages here are that the patient must breathe the hot moist air, and a better form of application is that in which the subject sits in a cabinet or lies in a sort of box with his head outside. There is some danger, however, in this procedure, as burns have occasionally been caused by faulty steam pipes or joints. In some instances, electric resistance coils supply steam under low pressure in a manner well adapted to this purpose.

The mud bath is an old form of application of moist heat but, in general, depends on the availability of certain soils, heated by thermal springs or artificially, and need hardly be considered at length here.

The forms of wet heat that have been described are used chiefly for systemic treatment, but a useful local application of moist heat can be made by means of the so-called whirlpool bath. This consists of a receptacle of suitable shape, usually deep and rather narrow, containing warm or hot water made to circulate rapidly by means of a laterally placed water jet. The part to be treated, usually an arm or a leg, is placed within the receptacle, and the temperature of the water is gradually raised to the desired point. The motion of the water intensifies the effect of the heat for any given temperature and has other advantages through its impingement on the tissues.

THERAPEUTIC INDICATIONS AND PRACTICE

The therapeutic indications for the use of external heat can be grouped under the two general headings of general exposure and local exposure, according to whether a systemic or a local effect is desired. Systemic effects find their application for the most part in medical, as contrasted with surgical, conditions and have been widely used in the following disease states or syndromes: nephritis, acute or chronic, arthritis and rheumatoid conditions, in which either local or systemic heat or both may be used, and neurologic conditions, including neurasthenia, functional psychic disturbances and the true insanities.

The therapeutic indications for the use of heat locally are chiefly in the following fields: surgery, especially orthopedic, following fractures, dislocations, sprains, cicatrization after operative procedures and the like, and arthritis, when a limited influence on a joint or joints is desired.

NEPHRITIS

There is probably no other condition in medicine in which the systemic use of external heat has been longer thought to have consequences of value than that of nephritis. Whatever other pathologic manifestations may accompany nephritis, certain symptoms demanding treatment are apparently dependent on the retention of toxic material, possibly of a nitrogenous nature, salt or water, and acid products of metabolism, especially phosphates and sulphates.

As already pointed out, some workers doubt the vicarious removal of nitrogenous substances through the skin, when elimination through the urine is reduced, but clinical experience is in favor of the view that something of this nature may occur. Furthermore, it is possible that some other toxic substances the nature of which is not yet known may be removed at the same time. It is well recognized, however, that the degree of toxicity does not run precisely parallel with the accumulation of nitrogenous substances. Thus, patients with uremia may show a disproportionately small rise in the urea nitrogen and, on the other hand, patients with marked increase in the urea nitrogen may present few or no clinical evidences of intoxication. Again, the figures for the "urea clearance" test may fall as low as 20 to 40 per cent in the presence of a normal blood urea.¹⁹ It is safe to say, however, that in nephritic conditions accompanied by marked laboratory evidences of retention of nitrogen, or by clinical evidences which suggest the toxemia consequent on such retention, the sweating process is to be considered. There is some

evidence that in conditions accompanied by retention of blood nitrogen the sweat may contain nitrogen in amounts larger than normal.²⁰

The argument has been advanced that, in the presence of toxemia from renal insufficiency and retained nitrogen, sweating serves only to concentrate the blood and to add to the danger from the retained substances.²¹ There is some doubt as to the validity of this, however, as the blood maintains its water balance with great tenacity, drawing on the tissues for this purpose, and the evidence is not final that under conditions of ordinary therapeutic procedure the blood undergoes any true concentration.⁸ Furthermore, in the absence of inability to excrete water there would seem to be no objection to the administration of fluid to prevent concentration, as is indeed the practice in many hospitals. It is to be borne in mind, however, that the elimination of water constitutes one of the functions of the kidney, and, as O'Hare²² points out, a further burden may be added and even pulmonary edema may arise from undue administration of fluids.

Finally, it should be stated that the results believed to be achieved may be due to changes induced by heat in the blood flow, to an alteration of metabolism, or, in nephritis accompanied by acidosis, to the production of a systemic alkalosis as already described. Whatever the mechanism and whatever the difference of opinion as to the theoretical benefits to be obtained, however, it is probable that some experienced clinicians would be unwilling to withhold application of the sweat process as a practical method of treatment in the toxic nephritis under discussion.

Another phase of renal dysfunction in which the sweat process has long been regarded as of value is that accompanied chiefly by retention of salt and water. While the bowels may be made the channel for elimination of water in large quantities by hydragogue cathartics, water can be eliminated in equal or even greater amounts through the sweat. Evidence has been presented that salt may be removed through the sweat channels in amounts equal to or larger than those occurring in the feces.

In the presence of edema or anasarca of renal origin, the hot pack or general body bake may at times have significant consequences and the loss of fluid from the tissues may be obvious almost from the start. Usually, however, many treatments are required.

The practice of giving sweat baths in nephritis is less common than formerly. The modern view of therapy in chronic Bright's disease is directed toward the elimination of toxins which, in passing through the kidney, may aggravate the renal lesion. This means the eradication of infection, proper elimination from the bowel, and finally a diet so devised as to avoid undue strain on the renal system by all products of excretion. This, of course, may include the ingestion of water. It would appear that proper adjuvant use of the sweat channels would be complementary to the foregoing procedures, but the problem is fraught with many difficulties that have not been wholly threshed out.

In all these conditions the physician must be guided by good judgment in the application and severity of the measures used. The guiding principle must be

19 Beaumont, G. E. and Dodds, E. C. *Recent Advances in Medicine*. Philadelphia: P. Blakiston's Son & Co. 1934, p. 49.

20 Cajon, Crouter and Pemberton. *Ann. Int. Med.* 2:1243 (June) 1929.

21 *Textbook of Medicine*, edited by Cecil R. L. and Kennedy Foster. Philadelphia, W. B. Saunders Company, 1927.

22 O'Hare, J. P. *The Treatment of Chronic Bright's Disease*. J. A. M. A. 103:1373 (Nov. 3) 1934.

that benefit can be forthcoming only when the patient is in a position to withstand treatment of such severity and respond to it, and the physician must be on his guard lest contraindications appear, such as cardiac decompensation, circulatory collapse or high fever. It is sometimes necessary, however, to push treatment even in the presence of such contraindications.

The particular manner in which heat is systemically applied in nephritis is of secondary importance, but the simplest form, and one that can be carried out in any household, is the hot pack already briefly mentioned. This properly comes under the topic of hydrotherapy, however, and the further details of its application will be discussed there.

Considerable prostration may occasionally follow the general procedure referred to, and, furthermore, although the effect of any one "bake" may be inappreciable, the effect of many treatments is sometimes cumulative. In few diseases is any single measure to be regarded as the only one to be relied on, and this is eminently true of the use of the sweat process in nephritis. The use of the skin as an emunctory organ must be accompanied by full use of the other channels, especially the bowels, and by such medication and control of protein, salt and fluid intake as modern conceptions of medicine require.

The systemic application of heat is beneficial in meeting the conditions generally included under the head of shock. In this connection mention should perhaps also be made of the use of the mustard bath or the mustard pack, especially in relation to collapse in infants. Some clinicians²³ believe that there is no medicinal agent, with the exception of epinephrine, which is so dependable. The water should approximate 105 F, and mustard should be added in the amount of a heaping tablespoonful to each quart of water. Care must be exercised to protect the eyes of the patient, and constant friction should be maintained while the subject is in the tub. Baths of this general nature are useful also in relation to the convulsions which children experience, but this subject properly belongs under the use of heat in diseases of the nervous system.

Heat in the form of hydrotherapy has long constituted part of the process known under the name of the Nauheim bath, extensively used at Nauheim, Germany, in relation to cardiac disorders of various kinds. The temperature of the water begins at 92 F, and the measure in general can therefore be properly placed in the category of systemic heat. The benefit to be derived by the Nauheim bath is a matter over which there is much difference of opinion. The beneficial consequences alleged to arise have been referred to the carbon dioxide content of the water and also to the friction employed while the subject is in the bath, as well as to various other factors, such as rest and change of scene.

It must be confessed that the favorable clinical evidence adduced by those who have the greatest familiarity with this form of treatment is considerable, and it is also only fair to say that the conditions which obtain at Nauheim cannot necessarily be duplicated elsewhere through the use of artificial baths of the same general nature.

This form of treatment has never had very wide use in the United States, and it would profit by further study at the hands of disinterested observers.

ARTHRITIS AND RHEUMATOID CONDITIONS

The field in which the application of external heat, both systemically and locally, has its most extensive and varied application is probably that of arthritis and rheumatoid conditions. The full benefits to be derived from the systemic use of heat in this connection are not always forthcoming from the heat alone, however, and sometimes depend on contrasting and accessory applications of cold. The latter phase of treatment constitutes an essential part of hydrotherapy, and the details of the conduction of this measure in its various forms will be considered in the section devoted to that topic. The matter will be discussed here sufficiently merely to indicate the general application of heat to the rheumatoid syndrome.

In view of the considerable confusion that still exists regarding the nomenclature and classification of the arthritides, as well as of the underlying pathologic changes concerned, there is no stereotyped guide to be followed in selecting cases appropriate for this treatment.

Those patients who are fairly robust afford the best opportunity for this practice. It is important to remember that systemic exposure to heat in any form may occasionally have distressing consequences, either immediately or after a course of treatment, and it is therefore essential to exercise caution in subjecting to such treatment patients who are ill equipped to stand it. Those forms of arthritis which are thought perhaps to withstand such therapy best and to benefit most from it are cases of the degenerative or so-called hypertrophic type in middle aged, well nourished women, although the proliferative or so-called atrophic type may be equally helped. It must be pointed out here, as in connection with nephritis, that exposure to heat or hydrotherapy constitutes only one measure of treatment in the rheumatoid problem and must not be followed except in correlation with other established principles of treatment. Especially is this true in relation to the important influence of focal infection. A patient with arthritis should not be subjected to the measure under discussion unless and until a complete medical examination has indicated the justifications and indications for it. For generations the public has frequented sanatoriums of all kinds where these measures have been applied in a wholesale way with the result that, although these measures have undoubted therapeutic value, failure and detriment also have followed.

As mentioned in the section on physiology, belief in the value of "elimination" in this disease has long been popular, but there is only limited evidence to support this as an important factor in itself. Elimination of water²⁴ in the form of sweat may in itself contribute to a betterment of the disturbances of physiology accompanying the rheumatoid state. The possibility that a low-grade "edema" of some tissue accompanies certain phases of the arthritic syndrome cannot be dismissed from consideration. There is, however, definite evidence that some of the other effects achieved by exposure to heat play an important role in the treatment of arthritis. These effects are chiefly those arising from the heightened circulation and the increased metabolism induced. Evidence of changes in the circulation is to be seen in the obvious influence on the skin capillaries of the contrast baths or douches so success-

²³ Ward J B Arch Pediat 45 556 (Sept.) 1928

²⁴ Pemberton Ralph and Scull C W M Record 140: 653 (Dec 19) 1934

fully used in institutional treatment at the conclusion of the "bake" or hot bath. A true "metabolic whip" is afforded by cold water properly used.

This procedure has application to a variety of debilitating conditions, thus, Knopf in his "Report to the United States Government on Tuberculosis with Some Therapeutic and Prophylactic Suggestions," expresses the opinion that a judicious course of hydrotherapy is of value in helping to "strengthen the cutaneous and nervous systems against the changes of temperature" and has prophylactic value toward the development of "colds" among certain classes of tuberculous patients.

The "bake" or bath may be given alone, however, in which case profuse sweating is induced and the subject is allowed to rest for an hour or more to compensate for the somewhat debilitating effects, or, more frequently, the exposure to heat is briefer and sufficient only to inaugurate or induce a mild diaphoresis. Following this procedure, which is generally administered with the patient in a sitting posture, a "tonic" shower or douche is given, beginning considerably above body temperature and shortly reduced to slightly below body temperature. This is best accomplished by an attendant who directs on the patient a jet of water, the temperature of which is under control. An exposure of about eight minutes to the electric cabinet "bake," followed by a so-called scotch douche or other form of cooling hydrotherapy, permits the subject to go at once out into the air with a sensation of exhilaration and well being instead of lassitude. There is also exercised at the same time an influence on the nervous system, which in the end may be quieted by the process described, notwithstanding the apparent "shock" of the cool or cold water. Even persons of robust constitution should be subjected only gradually to these procedures, but by beginning cautiously even highly asthenic types can be educated to stand them and be benefited by them.

The sweating process alone, without the cooling contrast shower, is easier of attainment and can be brought about by means of the hot pack or hot bath in almost any household. In many instances the metabolic stimulus given by this single procedure is of great value and should be utilized when circumstances justify it. Some of the effects of cooling hydrotherapy can be achieved by means of the bed sponge or bath, but care must be used to avoid chilling. If the sweating process is prolonged and perspiration is profuse, the patient must rest for an hour or more before rising, or depletion and fatigue will result.

The general regimen briefly outlined can be carried out more or less successfully in the home, but the full achievement there of such results as follow the conduction of these measures by skilled hands in adequately equipped institutions can hardly be expected.

Much of the benefit of treatment at institutions is made possible by the incidental removal of the patient from causes of worry and fatigue, and to this can often be added the stimulus of new surroundings.

Some further mention must be made of the influence of induced fever,²⁵ probably most conveniently achieved in the rheumatoid syndrome through diathermy. The whole subject of the influence of induced fever on various disease states is still far from being thoroughly understood, and this limitation applies equally in respect

to the treatment of arthritis by means of it. There is some evidence to indicate, however, that in certain phases of the arthritic syndrome, especially perhaps the more acute states, beneficial results may follow the induction of sustained fever up to 104 or even 106 F. Differing uses of nomenclature as well as uncertainty as to diagnosis make it difficult to attach finality to the value of the beneficial results reported to date. Gonorrheal arthritis has also been reported, on more substantiated evidence, to be benefited. In view of the varied etiology of arthritis, however, conservatism should be exercised in applying this potent measure indiscriminately to large groups of cases, in that many of them are asthenic and poor candidates for radicalism of any sort.

LOCAL APPLICATION OF HEAT IN ARTHRITIS

The application of external heat locally to a joint or joints in arthritis is often of the highest value. The principle obtains here, as elsewhere, that reliance must not be placed on this measure alone. It must be considered in conjunction with other principles of treatment of the disease as a whole, and the joint in particular. The measure most often used in conjunction with local external heat in arthritis is massage and, although often misused in ignorant hands, it constitutes an almost necessary adjunct to the use of heat alone, especially in the form of effleurage. The forms of heat available for local use are discussed at the beginning of this article. The value of the heat can sometimes be enhanced by incorporating with it some other principle, as in the use of a hot saturated solution of magnesium sulphate applied to the affected part and kept hot by repeated application or a radiant lamp. This procedure sometimes greatly relieves pain. Application of heat should not be carried to the point of irritation and should depend for its effects on repeated use, once or twice a day, over a period varying from about ten minutes to half an hour. The temperature within the apparatus should not be above about 82 C (180 F), or the duration of treatment greater than twenty minutes at the outset. Temperature and length of exposure can be slowly increased. Local sweating generally occurs, and the part should be kept warm after the treatment. If a region such as the shoulder is baked for a long period, a systemic reaction may occur comparable to that following systemic exposure, the results of which may be depleting or otherwise undesirable.

Heat is of value also in disturbances of circulation in the peripheral vessels, such as thrombo-angitis obliterans, diabetic gangrene, Raynaud's disease and intermittent claudication. Heat has been recommended systemically²⁶ in thrombo-angitis obliterans to control pain but can be more conservatively used locally.

In advanced peripheral vascular diseases, Starr²⁷ recommends heat at an "optimal temperature" in conjunction with rest, desiccation and exposure of the part to oxygen. A temperature of from 33 to 35 C usually relieves pain and is preferable to less controlled variations.

There may also accrue a beneficial effect on the indolent lesions often encountered in such conditions. Coincident care of the underlying state is of course imperative. Contrast baths may have value when the local vascular function permits.²⁸

25 Stroud W D Year Book of General Medicine 1934 p 628
26 Starr Isaac Jr Am J M Sc. 187:498 (April) 1934
27 Perlow Samuel Ann Int Med 8:743 (Dec) 1934

BURDICK SHORT WAVE DIATHERMY MACHINE (SWD-5) ACCEPTABLE

Manufacturer The Burdick Corporation, Milton, Wis

This unit is recommended for medical diathermy as used for producing heat within the body tissues, and for surgical diathermy. The apparatus is available in either cabinet or portable style. The machine is of the single tube, simple oscillating type. Raw alternating current is fed into the plate circuit and thus only the positive half of the alternating current 60 cycle is used. Proper tuning to resonance, in conjunction with the relative power output of the patient's circuit, is indicated by a milliammeter of the thermocouple type. A protective circuit breaker switch is provided to guard the vacuum tube oscillator against injury to excessive variations in line voltage and line surges.

Under full load this unit was operated for two hours and the temperature of the cabinet and transformer did not rise above the limits of safety previously established by the Council. The wavelength was found to be approximately 15 meters. The input power is about 386 watts. So far as it is known, there is no reliable or acceptable method of measuring the output power of short wave diathermy machines.

The machine was tested in a clinic acceptable to the Council and the investigator reported that the unit supplied sufficient energy to heat the body tissues whenever such treatment is indicated. The tissue heating effect in the human thigh was investigated. The technic was that recommended by the manufacturer. Cuff electrodes about 20 inches long and 3 inches wide were used, one wrapped round the thigh proximally to the knee, and the other one close to the hip. When they are applied to the patient, the rubber cuffs are separated from the skin by one-eighth inch felt and one thickness of toweling.



Burdick Short Wave Machine.

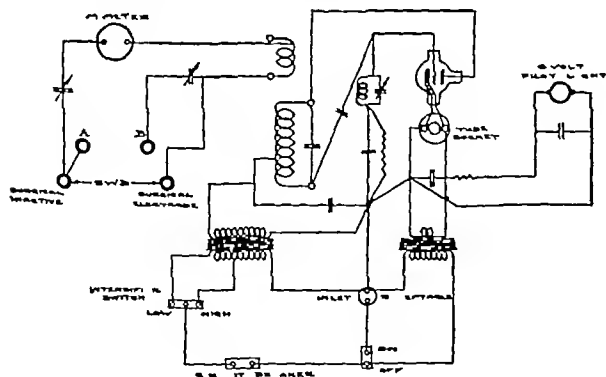


Diagram of circuit

This technic was used throughout the tests. Thermocouples were introduced into the subcutaneous deep lying tissue (quadriceps extensor).

After twenty minutes treatment the machine being operated at the patient's tolerance the temperature rise (average of seven tests) was observed to be more than that for conventional diathermy using two electrodes one on the medial and one on the lateral aspect of the thigh.

Electrosurgical investigations were carried out by the investigator in his clinic. The performance and efficacy of the surgical currents generated by this machine were reported to meet the standards expected by the Council.

Burns may be produced by this machine, but with ordinary care they may be avoided, their likelihood to occur is much less than with conventional diathermy.

In view of the foregoing report the Council on Physical Therapy voted to include the Burdick Short Wave Diathermy Machine (SWD-5) in its list of accepted apparatus.

Council on Pharmacy and Chemistry**PRELIMINARY REPORT OF THE COUNCIL**

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT
PAUL NICHOLAS LEECH Secretary

ACETYL-BETA-METHYLCHOLINE AND MECHOLYL (MECHOLIN)-MERCK

Under the name Mecholin, the firm of Merck & Co, Inc., recently submitted to the Council its brand of acetyl-beta-methylcholine. Subsequently the firm informed the Council that, on account of possible trade mark interference it was obliged to give up the name 'Mecholin' and that it would suggest the name 'Mecholyl' instead. The question of the firm's right to the use of a proprietary name has not yet received definitive consideration by the Council. Any decision that the Council might reach in this matter would apply as well to the name 'Mecholyl' as to the originally proposed name. The Council has voted that the product be not accepted until more extensive clinical studies have been made. In considering this product the Council decided to publish an article on acetyl-beta-methylcholine in the form of the following preliminary statement.

The numerous investigations on acetylcholine have indicated that its action resembles that produced by stimulation of the parasympathetic nervous system but in addition causes dilatation of blood vessels which are not known to be innervated by parasympathetic nerves (limbs, for example). Indeed, there is considerable evidence that acetylcholine is identical with, or at least similar to, the intermediary substance liberated by parasympathetic stimulation, and capable of exerting an action on structures in the body which are distant from the stimulated nerves (Hunt and Taveau¹, Dale², Loewi,³ Babkin, Gibbs and Wolff,⁴ Gibbs and Szelöczy,⁵ Feldberg and Rosenfeld⁶). On the mode of liberation or formation of this intermediary substance in the body, practically nothing is known.

The widespread distribution of choline in the organism has been shown by the many workers who have investigated the problem since Strecker's⁷ original isolation of this base from bile in 1849. Since choline is a product of the hydrolysis of phosphatides, it is found wherever lecithins occur.

The demonstration of the presence of free acetylcholine in the tissues is attended by numerous difficulties. Whether appreciable amounts exist in any tissues other than those of the spleen, placenta and adrenal medulla appears, at the present time, exceedingly doubtful (Dale and Dudley,⁸ Chang and Gaddum⁹, Minz¹⁰, Feldberg and Minz¹¹). It is of interest that Hunt¹² as early as 1899 discovered choline in adrenal

- 1 Hunt Reid and Taveau R DeM J Pharmacol & Exper Therap 1 303 1909 1910
- 2 Dale H H J Pharmacol & Exper Therap 6 147 1914 1915
- 3 Loewi O and co-workers Arch f d ges Physiol (1921 1930) 189 239 193 201 203 408 204 361 206 135 208 694 210 550 214 678 217 610 225 721
- 4 Babkin B P Gibbs O S and Wolff H G Arch f exper Path u Pharmacol 168 32 1932
- 5 Gibbs O S and Szelöczy J Arch f exper Path u Pharmacol 168:64 1932
- 6 Feldberg W and Rosenfeld P Arch f d ges Physiol 232 212 1933
- 7 Strecker A Ann d Chem 70 196 1849 123 353 1862 148 77 1868
- 8 Dale, H H and Dudley H W J Physiol 68 97 (Oct.) 1929
- 9 Chang Hsi Chun and Gaddum J H J Physiol 70: 225 (Oct.) 1933
- 10 Minz B Arch f exper Path. u Pharmacol 167 85 1932
- 11 Feldberg W and Minz B Arch f d ges Physiol 233 657 1933
- 12 Hunt Reid Am J Physiol 3: 18 1899

extracts Shortly after he was able to demonstrate that the extract contained a substance which readily yielded choline on chemical manipulation¹⁸

Kapfhammer and Bischoff¹⁴ reported the isolation of considerable amounts of acetylcholine from oxblood, and Vogelfanger¹⁵ and Parnas¹⁰ have confirmed their observations. The work of Dale and Dudley,¹⁷ Dudley,¹⁸ Wrede and Keil,¹⁹ Strack, Neubaur and Geissendörfer,²⁰ Chang and Gaddum,⁹ and Gollwitzer-Meier,²¹ however, makes it appear likely that the acetylcholine found by Kapfhammer did not exist as a free substance in the tissues but was formed in the process of the isolation. Strack and his co-workers found that, whereas fresh liver tissue contains practically no free choline or acetylcholine, rapidly increasing amounts of free choline are formed after the circulation is interrupted. They think it not unlikely that the acetylcholine isolated by Kapfhammer arose through the esterification of phosphatides

PHARMACOLOGY

The pharmacologic actions of acetylcholine comprise two groups (1) The 'muscarine' or 'parasympathetic' action and (2) the 'nicotine' action. The 'muscarine' action is shown by the inhibitory effect on the heart, the vasodilator effect with an accompanying lowering of the blood pressure, and the stimulation of gastric and intestinal peristalsis. All these effects can be prevented or abolished by atropine.

The 'nicotine' effects are less conspicuous and are usually masked by the parasympathetic effects unless these are prevented by a preliminary dose of atropine. They are due to stimulation of sympathetic ganglions and result in a considerable rise in the blood pressure. While all derivatives of acetylcholine show essentially the same pharmacologic actions, they do so in varying degree. Hunt and Taveau²² in 1911 made an extensive study of various compounds of acetylcholine and found that acetyl-beta-methylcholine (trimethyl-beta-acetoxy-propyl-ammonium chloride) possesses marked 'parasympathetic' actions and practically no 'nicotine' actions. These observations were recently confirmed by Simonart²³. Menge²⁴ found that this substance is much less readily hydrolyzed to the less active substance choline than is acetylcholine. Acetyl-beta-methylcholine was first prepared by Taveau²² and by Menge²⁵ and was studied pharmacologically by Hunt²⁶ and by Hunt and Renshaw²⁷.

These studies have been extended by a group of workers at the University of Pennsylvania. Comroe and Starr,²⁸ in a series of experiments on animals, have confirmed Hunt and Taveau's, and Simonart's observations that acetyl-beta-methylcholine possesses practically no 'nicotine' action. They compared the duration of the activity of this drug with that of acetylcholine, as observed by Dale,² and concluded as had Hunt and Taveau that acetyl-beta-methylcholine is more slowly destroyed in the body. Their data show that the effect on the heart rate and blood pressure lasts for about one minute, whereas the effect on the gastro-intestinal tract often persisted for from ten to twenty minutes. Starr, Elsom, Reisinger and

Richards,²⁹ Abbott³⁰ and Starr³¹ have studied the effects of acetyl-beta-methylcholine in normal persons and in patients with a variety of clinical conditions. In normal subjects the subcutaneous administration of 20 mg of the drug was followed by prompt and marked effects. Within a minute after the injection, flushing of the face and neck, generalized sweating, salivation, slight fall in blood pressure, and increase in the pulse rate were observed. The effect on the blood pressure and the increase in the pulse rate passed off within a few minutes. This was usually followed by a pulse rate that was slower than before the injection. The other effects lasted for several minutes. In most of the subjects a transient sinus arrhythmia appeared during the period in which the heart was slowed.

In one subject a typical asthmatic attack occurred immediately following the injection of the drug. The authors consider this the only observed reaction that was at all alarming. Three of the twenty subjects experienced a sense of constriction under the sternum. When the drug was administered by mouth, the symptoms were gradual in onset and mild in character. To produce a significant effect by oral administration, between fifty and a hundred times the subcutaneous dosage was required. Intravenous administration was not attempted.

The effects of intravenous injection of acetylcholine in man were recently studied by Carmichael and Fraser.³² They found that within a few seconds 'after injection the heart rate would slow abruptly and simultaneously the subject experienced a sense of obstructed breathing, causing him to cough, or a feeling of constriction in the chest and other minor sensations, such as burning in the throat. Increased rate and depth of breathing was often noticed. The slowing of the heart, the sensation in the throat, and the desire to cough lasted only a few seconds and were followed by a rise of heart rate to a level greater than before injection, by the appearance of a flush over the face and neck, by a sensation of heat throughout the face, trunk and limbs, and in some subjects by palpitation. This second phase passed off gradually and the whole reaction was over in a half to one minute.' During the phase of slow heart rate the blood pressure fell but returned to the original level or a little higher during the phase of rapid heart rate. The action of the acetylcholine was found to be increased definitely and prolonged slightly by a previous injection of physostigmine, as Hunt³³ had shown in 1917. In one subject, the injection of 30 mg of acetylcholine after a previous administration of physostigmine stopped the heart beating for 118 seconds, and a convulsive attack followed with auricular fibrillation, which lasted two hours.

CLINICAL STUDIES

The effect of acetyl-beta-methylcholine in the treatment of tachycardia was studied by Starr.³¹ Forty-nine attacks of paroxysmal tachycardia were observed. In twenty of these, when pressure over the carotid sinus was the only procedure employed, normal rhythm was reestablished. The other twenty-nine attacks (in nine patients) were treated by the subcutaneous administration of about 30 mg of the drug, and in a few instances carotid pressure in addition was used. Twenty-four attacks in seven patients were promptly terminated. The patients experienced the same symptoms as did the normal subjects, and after a brief cardiac pause, followed by a period of irregularity of both rhythm and intensity of heart sounds and pulse, normal rhythm occurred. Electrocardiographic observations showed a prolongation of the PR interval and an occasional extrasystole. In two cases this was accompanied by blocked auricular beats and a few aberrant ventricular complexes. This momentary disturbance was followed by normal rhythm. The authors ascribe these effects to vagus stimulation. In one patient, who had been receiving digitalis, a complete heart block was momentarily established, followed by a return of the tachycardia. Whether this was due to any summation of the actions of digitalis and acetyl-beta-methylcholine is uncertain.

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- 31 Starr Isaac Jr Am J M Sc. 186 330 (Sept.) 1933
- 32 Carmichael E A and Fraser Heart 16 263 (June) 1933
- 33 Hunt Reid Am J Physiol 45 197 (Feb) 1918 Hunt and Taveau²²

tain In their experiments on animals, Comroe and Starr were unable to demonstrate such an effect In preventing the occurrence of attacks, quinidine was found to be much more effective

In tachycardia accompanying thyroid disease, and in auricular fibrillation, acetyl beta-methylcholine was without therapeutic effect.

Nahun and Hoff³⁴ recently reported that acetyl-beta-methylcholine prevents the development of ventricular fibrillation in animals suffering from acute benzene poisoning These interesting observations await further confirmation.

Starr studied also the effects of the drug in a variety of conditions involving the blood vessels In Raynaud's disease acetyl-beta methylcholine did not prevent or alleviate the spasm when the extremity was exposed to severe cold, but it appeared to have some beneficial effect in spasm following moderate exposure. Only four cases were studied In four cases of occlusive type of peripheral vascular disease, some relief was noticed in two cases, but it is uncertain whether this can be attributed to the action of the drug Villaret,³⁵ who introduced acetylcholine into medicine by using it in the treatment of various types of peripheral vascular disease, considers its use of therapeutic value Ruiter³⁶ in 1931 reported therapeutic effects following the use of acetylcholine in the treatment of leg ulcers due to circulatory disturbance, and Waters³⁷ has observed similar results However the number of cases they observed was relatively small, and adequate controls are lacking

Whereas Villaret³⁸ believes that the esters of choline which he employed are of some therapeutic value in hypertension Eldahl³⁹ observed no beneficial action of acetylcholine in his twelve patients with hypertension and arteriosclerosis He attributed his failure to the organic changes in the vessels In patients with hypertension, Starr could demonstrate no definite clinical improvements following the use of the drug Moderate doses given subcutaneously cause a momentary fall in the blood pressure, during which period the patients were more uncomfortable than before Oral administration was followed by a decrease in systolic pressure of between 38 to 16 mm of mercury lasting about thirty minutes In some of the patients, the drug exhibited no effect on the blood pressure

The data presented by Starr on the possible clinical improvement in one case each of Cheyne Stokes breathing, one-sided headaches and Meniere's disease are not sufficiently complete to justify an interpretation of the value of the drug in these conditions

The action of acetyl-beta-methylcholine on the gastrointestinal tract has been studied by Abbott⁴⁰ While there was an increase in gastric acidity following the use of the drug in two of the nine normal subjects and in three of the six cases of hypochlorhydria, histamine gave a greater response and caused less systemic reaction than did the acetyl-beta-methylcholine These observations confirm those of Wilkinson⁴¹ who observed that the effect of acetylcholine on the gastric secretion is uncertain and much less pronounced than that of histamine.

In 1921 Le Heux⁴² found that choline increased the peristalsis of the small intestine but that the substance had relatively little effect on the large intestine Arai⁴² a year later reported that with choline he was able to relieve intestinal paresis produced by laparotomy in cats Kuelhewen⁴³ made similar observations in intestinal paresis following prolonged chloroform anesthesia In his normal subjects Abbott found that when acetyl-beta methylcholine was administered subcutaneously while the stomach was empty, the effect was a cessation of the normal hunger contractions When the stomach contained food

the drug increased gastric motility Oral administration of the drug was observed to increase peristalsis of the small intestine, whereas the effect on the colon was much less certain.

Of the fourteen cases of postoperative abdominal distention treated with acetyl-beta-methylcholine Abbott reports nine as exhibiting some symptomatic relief Three cases in which the most favorable results were obtained are reported in some detail While all three patients undoubtedly had severe abdominal distention, only one showed this condition as a complication immediately following operative procedure

COMMENT

Acetyl-beta-methylcholine is a drug of considerable pharmacologic interest. Its actions resemble the "parasympathetic" actions of acetylcholine and appear to produce little or no "nicotine" effect Unlike acetylcholine it is capable of exerting a physiologic effect when administered orally When injected subcutaneously its actions appear to be more prolonged than those of acetylcholine, although the effect on the heart rate and blood pressure persists for only a few minutes, whereas with acetylcholine the effect persists for about a minute. The intravenous injection is likely to prove dangerous (Villaret and Justin-Besançon)⁴⁴

In selected cases of paroxysmal tachycardia not responding to the usual therapeutic measures, the careful administration of graded doses of acetyl-beta-methylcholine is probably of value Overdosage of the drug and administration to patients with asthma should be avoided. For preventing attacks the drug is inferior to quinidine In other forms of tachycardia and in auricular fibrillation, the usefulness of the drug is not apparent.

The clinical data presented are not sufficiently complete to justify an evaluation of the results obtainable in Raynaud's disease. A larger series of such cases should be observed.

In hypertension the value of the drug appears to be limited to the temporary relief of headache. The discomfort experienced by the patients would constitute a contraindication in most cases

The therapeutic value of the drug in intestinal paresis following laparotomy should be more definitely established Unfortunately the evidence presented is insufficient. That the drug increased intestinal peristalsis in normal subjects or in patients with nonsurgical abdominal distention is no indication that the paralyzed intestinal tract of the postoperative patient can be effectively stimulated These effects of the drug should be studied in a larger series of controlled cases

The Council cannot at this time accept acetyl-beta-methylcholine (mecholyd Mecholin) until further evidence is available In the meantime, this preliminary report is issued

The foregoing preliminary report was sent to Merck & Co before publication. The firm replied that it hoped publication and consideration of the name could be deferred. Further consideration of the name is deferred for the present. A few minor revisions have been made in the original preliminary report prior to its publication The Council points out that since the clinical status of the drug is still experimental, a preliminary informative article should be published, that the report is not derogatory to the product but the available evidence is not sufficient to justify its acceptance for general use by the profession at this time. The Council commends Merck & Co for the type of investigation planned or under way, and for its cooperative spirit in dealing with this product The Council will again consider the product and related questions when further evidence is available⁴⁵

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(Dec) 1932 abstr Lancet 1 812 (April 15) 1933

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45 Since this report was prepared the following two noteworthy publications on the subject have appeared the important article on the methylcholines and analogous compounds by Reid Hunt and R R Renshaw⁴⁶ and a preliminary report by Grace A. Goldsmith (Proc Staff Meet Mayo Clin 9 337 [June 6] 1934) Working at the Mayo Clinic she administered acetyl-beta-methylcholine orally in doses of from 50 to 1500 mg to twenty nine patients with peripheral vascular disease In all but a few patients there was a marked rise in the surface temperature of the fingers and toes In some cases of vascular spasm doses of from 50 to 100 mg were effective in patients with organic disease it was necessary to give from 1000 to 1500 mg

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SATURDAY, JULY 27, 1935

BONE MARROW INSUFFICIENCY

The bone marrow is considered today to be an integral organ with many important functions. According to Middleton and Meyer,¹ under normal conditions it is the sole source of the red blood cells, the polymorphonuclear leukocytes and the thrombocytes in adult life. The functioning red bone marrow occupies the entire shafts of the long bones at birth. By the sixteenth year of life, active bone marrow is found in the ends of the long bones, in the flat bones, and in small, spongy bones. The histogenesis of the mature blood cells arising in the marrow is not completely understood. However, it is generally accepted that the root cell or hemoblast is responsible for the development of the polymorphonuclears, the erythrocytes and the platelets. The megakaryocyte of the marrow is believed to be the only source of the thrombocyte, but under disease conditions these large cells may appear in other than myeloid tissue. The delivery of the cellular products of the bone marrow into the circulating blood probably is accomplished by two mechanisms, namely, amoeboid movement of the cells and extrusion by growth pressure. The polymorphonuclear elements and the blood platelets migrate from the marrow into the circulating blood by means of their amoeboid activity, while growth pressure is the potent factor in delivering erythrocytes into the blood stream. There may be separate stimuli to the production of each type of cell derived from the bone marrow, or the energizing force may be a common one for all types of cells. Hemorrhage stimulates the production of blood platelets. Chemotaxis plays an important part in stimulating the production of leukocytes. While there has been a great advance in the knowledge of erythropoiesis made by the well known work of Minot, Murphy, Peabody, Castle, Whipple and others in recent years, the theory of a constant tempo of red blood cell production still appears sound. Bunting holds that a given quantity of bone marrow can produce erythro-

cytes only at a given rate and that for an increased production there must occur an extension of the erythrogenic centers.² Middleton and Meyer say that, so far as is known, lowered oxygen tension is the only normal stimulus to the extension of the bone marrow.

Insufficiency of the bone marrow may result from primary disease of the myeloid system or from a disease that involves this structure secondarily. In either case the result is some form of anemia or other blood dyscrasia. In patients suffering from aplastic anemia there is an absence or extreme paucity of evidence of regeneration of blood cells. There may be little change in the individual erythrocyte. There is usually leukopenia. The platelets are reduced also, and sooner or later purpuric manifestations complicate the picture of anemia. The cases of aplastic anemia reported usually have followed exposure to the toxic action of arsenphenamine, radium, x-rays or benzene. An infection may occasionally lead to total paralysis of the bone marrow. No etiology can be ascribed in some of the cases. The prognosis of idiopathic aplastic anemia is grave, death usually supervening within three months, regardless of the treatment. At necropsy, as would be expected, there is found acellular yellow bone marrow.

Insufficiency of the bone marrow that causes a reduction in the blood platelets may occur from many causes. In cases of essential thrombocytopenia, for example, the most conspicuous feature is the hemorrhagic tendency. According to Minot,³ 60,000 platelets per cubic millimeter is the level below which bleeding occurs. In the purpura haemorrhagica that attends this condition, bleeding occurs in the skin and mucous membrane with epistaxis, hemoptysis, hematemesis, melena and sometimes hematuria. The clotting time is about normal, but the bleeding time is usually prolonged. Simple measures in hemostasis may stop slight attacks of bleeding, again, transfusions will be effective. No one therapeutic agent has been found to be specific. Such measures have been recommended as vitamins A, B and C, viosterol, iron and calcium, ultraviolet therapy, liver therapy, and dietary measures. When the simpler measures fail, roentgen therapy over the spleen or the removal of that organ has been advised. Splenectomy, however, has not been uniformly successful.

Serious bone marrow insufficiency may also manifest itself in the clinical syndrome of agranulocytosis, in which there is a failure of leukopoiesis. Following depletion of the circulating neutrophils there are prostration, fever, and areas of necrosis usually in the mouth, rectum or vagina. The leukocytes alone are affected in most cases, but there may be an extension

1 Middleton W S and Meyer O O Marrow Insufficiency Ann Int Med 8 1575 (June) 1935

2 Bunting C H The Regulation of the Red Blood Cell Supply Contributions to Medical and Biological Research dedicated to Sir William Osler in Honor of His Seventieth Birthday July 12 1919 by His Pupils and Co Workers New York.

3 Minot G R Diminished Blood Platelets and Marrow Insufficiency A Classification and Differential Diagnosis of Purpura Haemorrhagica Aplastic Anemia and Allied Conditions Arch Int Med 101 1062 (June) 1917

of the bone marrow insufficiency producing anemia or a hemorrhagic tendency. The prognosis in agranulocytosis depends largely on the presence of a recognizable cause. Idiopathic neutropenia may undergo remissions, but there is no regularity in their appearance or duration. Middleton and Meyer advise that, by means of appropriate doses of pentnucleotide intramuscularly, every precaution be taken to forestall serious declines in the neutrophils.

Bone marrow insufficiency therefore may manifest itself clinically as aplastic anemia when the marrow fails as a unit, as thrombocytopenia when the blood platelets fail, and as agranulocytosis when there is leukogenic failure.

ACETYL BETA METHYLCHOLINE

For a quarter of a century the cholines have commanded the attention of research workers in medical science. The choline compounds, widely dispersed in nature, have been obtained from many vegetables and organic extracts as well as from certain drugs (especially ergot). The cholines may be considered to be quarternary ammonium bases, they produce two sets of actions: a "muscarine" effect and a "nicotine" effect.¹

As early as 1914, Hunt and Taveau² in an intensive study of cholines reported that one derivative, acetylcholine, was 100,000 times more depressant and only three times more toxic than choline itself. Another derivative in this group that has recently been used in therapeutic trials is acetyl beta methylcholine, described by Taveau² in some of his earlier work. Hunt, at the time he was working in the Hygienic Laboratory of the United States Public Health Service, found that Taveau's preparation differed pharmacodynamically from acetylcholine and the other cholines.² It had the advantage of being effective when given by mouth. It was more slowly destroyed in the body. It possessed a marked "muscarine" effect and practically no "nicotine" effect. The so-called muscarine effect consists of three actions: an inhibitory effect on the heart, a peripheral vasodilatation with an accompanying fall in blood pressure, and a stimulation of gastric and intestinal peristalsis.

The inhibitory effect on the heart led to the use of acetyl methylcholine by Starr³ in paroxysmal tachycardia. The results indicate that carefully graded doses are useful in selected cases not responding to other measures. He found it ineffective in other forms of tachycardia and in auricular fibrillation. The occurrence of a peripheral vasodilatation suggested to Starr that this agent might also prove useful in the spastic types of peripheral vascular disease. His clinical trials point to an effectiveness in these cases and also in cases

of the occlusive type in which there is some degree of spasm. Eldahl⁴ had previously found acetyl methylcholine ineffective in hypertension and arteriosclerosis. He concluded that the presence of organic change in the vessels prevented this action of the drug. Goldsmith⁵ subsequently reported a rise in skin temperature in all types of peripheral vascular disease following the administration of acetyl methylcholine. The stimulation of gastric and intestinal peristalsis has led to its trial by Abbott⁶ in postoperative abdominal paresis.

Elsewhere in this issue of THE JOURNAL is a preliminary report of the Council on Pharmacy and Chemistry (page 281) reviewing the evidence for acetyl beta methylcholine. The Council declares that it is not warranted at present in accepting the product for inclusion in New and Nonofficial Remedies. The character of research developments under the direction of the manufacturers is commended. The Council points out that the evidence for use of the product in abdominal paresis is inadequate, that its use in peripheral vascular disease needs further study, and that it has a limited usefulness in certain types of tachycardia.

Of further interest is the fact that all the "muscarine" effects may be prevented or abolished by atropine. This action of atropine was attributed by Mueller⁷ to a resultant paralysis of the dilator elements. The "nicotine" effect, practically absent in this particular choline, results in a considerable rise in blood pressure. This rise did not usually occur unless the "muscarine" effects had been prevented by previous administration of atropine.

Starr³ described the clinical response to the subcutaneous injection of 20 mg of acetyl beta methylcholine. One minute after injection there was flushing of the face and neck, generalized sweating, salivation, a slight fall in blood pressure, and an increase of pulse rate. The blood pressure and pulse rate returned to normal within several minutes. The other symptoms lasted for a brief interval. In most cases there was a transient sinus arrhythmia.

Additional experimental and clinical evidence may prove acetyl beta methylcholine useful in these clinical conditions. In the meantime, the report of the Council on Pharmacy and Chemistry warns that the present status of this drug does not warrant its recommendation as an established therapeutic measure. The intravenous use of the drug is definitely not recommended. It apparently should not be used in allergic patients. Thorough knowledge of its action and caution are necessary if it is to be used at present. Acetyl beta methylcholine, however, is deserving of further clinical trial by those who have the facilities to conduct controlled therapeutic investigations.

1 Dale H H J Pharmacol & Exper Therap 6 147 1914
2 Hunt Reid and Taveau R deM Bull 73 Hyg Lab U S P H S 1911
3 Starr Isaac, Jr Am J M Sc 186: 330 (Sept) 1933

4 Eldahl A Bibliot f laeger 124 237 (July) 1932
5 Goldsmith G A Proc. Staff Meet Mayo Clin 8: 337 (June 6) 1934
6 Abbott W O Am J M Sc 186: 323 (Sept) 1933
7 Mueller F Arch f d ges Physiol 134 289 1910

Current Comment

THE EVALUATION OF TESTS FOR SYPHILIS IN STATE AND LOCAL LABORATORIES

During the past year the United States Public Health Service in cooperation with the American Society of Clinical Pathologists and participating serologists published the results of a study undertaken to investigate the relative efficiency of complement fixation and flocculation tests as described by serologists in the United States¹ In determining the relative efficiency of these tests the serologists who originally described the methods were permitted to perform their own tests The conditions under which the specimens were collected and submitted to the serologists have been published² Since the specimens in the original study were examined by the serologists who had described their own methods, or in their laboratories by other specially trained workers, it is possible that the efficiency of the tests may vary considerably when performed by others not so familiar with the details of the procedure The Committee on Evaluation of Serodiagnostic Tests for Syphilis proposes during the next few months to furnish samples of blood to state and local laboratories and possibly to a few private laboratories in order that the efficiency of the serologic work in these laboratories may be studied The conditions under which specimens will be collected and transported will follow those in the original evaluation study The directors of state and local laboratories who desire to participate in the extension of the evaluation of serodiagnostic tests for syphilis are requested to forward an application immediately to the Surgeon General, U S Public Health Service, Washington, D C, in order that careful consideration may be given to all applicants Applications should state the name of the serologic test or tests for syphilis employed in the laboratory, if the test has been modified, the extent of the modification should be specified After all applications have been received, the laboratories will be classified according to the type and modification of serologic tests employed Specimens will then be sent to selected laboratories performing a given test and to the original serologist who described this test About 200 specimens from normal presumably nonsyphilitic individuals and 200 specimens from known syphilitic patients will be collected in sufficient quantity to furnish a comparable sample to all laboratories performing a given test as well as to the serologist who originally described this test A direct comparison between the work of the originator of the test and the work of the technicians in the laboratories performing his test will therefore be possible From time to time the committee will publish the results of this extended evaluation work, showing the reports of the serologist who originated a test compared with the

reports by the laboratories employing his technique The method followed by the committee in evaluating serodiagnostic tests for syphilis has been endorsed by the American Dermatological Association The Conference of State and Territorial Health Officers with the United States Public Health Service also passed a resolution during its 1935 meeting approving the method and its extension to include the work in state and local laboratories

EXPERIMENTAL HYPERTENSION

The introduction of an effective method for the production of experimental hypertension by Goldblatt and his associates¹ has opened a new field in research Until recently, no method had been available to produce in animals a persistent rise in blood pressure comparable to that which occurs in human beings By means of an ingenious silver clamp applied to the renal arteries, Goldblatt induced lasting renal ischemia in dogs with resultant increases in systolic blood pressure to from 200 to 240 mm of mercury, in occasional animals the arterial pressure approached 300 mm The hypertension lasted indefinitely, often with no detectable change beyond normal limits either in renal function or in the concentrations of urea, total nonprotein nitrogen, creatinine or guanidine in the blood The condition produced by this means in animals resembles closely that associated with so-called benign nephrosclerosis or so-called malignant nephrosclerosis in man, depending on whether the renal ischemia is moderate or severe The suggestion has been made that the arterial hypertension associated with disease of the kidney in man may be due to impulses conducted from the kidneys by way of the extrinsic renal nerves to the vasomotor center Page² of the Rockefeller Institute, employing the method of Goldblatt, undertook to test this theory experimentally He confirmed in detail and extended the observations reported by the latter investigator and his collaborators, he found further that severing the extrinsic renal nerves was without detectable effect on the hypertension induced by renal ischemia A second method also was employed by Page This consisted in explanting the kidneys to a position under the skin of the back, after the wound had healed, the kidneys were exposed to roentgen radiation The rise in blood pressure induced by this means was less severe and of shorter duration than that induced by applying a clamp to the renal artery With this method also, renal denervation had no effect on the resultant hypertension Page concludes, "Since the production of arterial hypertension in dogs by constricting the renal arteries, or by irradiation of the kidney with x-ray, is not affected by preliminary stripping of the renal pedicle of its extrinsic nerve supply, these nerves do not appear to participate in the genesis of renal hypertension" Measurements of blood urea nitrogen, plasma protein, total fat, total cholesterol,

1 Cumming H S Hazen H H Sanford A H Sencar F E Simpson W M and Vonderlehr R A The Evaluation of Serodiagnostic Tests for Syphilis in the United States Report of Results Ven Dis Inform 16:189 (June) 1935 J A M A 104:2083 (June 8) 1935

2 Cumming and others The Evaluation of Serodiagnostic Tests for Syphilis in the United States Ven Dis Inform 15:387 (Dec.) 1934 J A M A 103:1705 (Dec 1) 1934

1 Goldblatt Harry Lynch J Hanzal R F and Summerville W V Studies in Experimental Hypertension I The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia J Exper Med 59:347 (March) 1934 An Investigation into the Cause of Hypertension editorial J A M A 102:1610 (May 12) 1934

2 Page, I H The Relationship of the Extrinsic Renal Nerves to the Origin of Experimental Hypertension Am J Physiol 112:166 (May) 1935

lipid amino nitrogen, total lipid nitrogen and phosphatide showed no significant changes following production of renal ischemia by arterial constriction, a slight rise in blood hemoglobin occurred. The solution of various problems in cardiovascular and renal disease has been advanced by means of these new methods of research.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Graduate Courses in Pediatrics—The Alabama State Medical Association is sponsoring a series of graduate lectures in pediatrics, the first of which will be given some time this summer in cooperation with the Children's Bureau, U. S. Department of Labor. The course will be patterned along the lines of courses in obstetrics which have been conducted in recent years by Dr. James R. McCord, Atlanta, in various states. Dr. T. Cook Smith, assistant professor of pediatrics, University of Louisville School of Medicine, Louisville, Ky., and Dr. John M. Saunders, instructor in pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn., will direct the course, with others assisting.

CALIFORNIA

Plague Infected Ground Squirrel—A plague infected ground squirrel was shot on a ranch in Lassen County, near Adin, according to the director of the state department of public health, June 24.

Personal—Dr. Alfred C. Reed, director of the Pacific Institute of Tropical Medicine, University of California, received the doctorate of science at the annual commencement of Pomona College, where he gave an address on "Environmental Medicine."—Dr. Mary B. Ritter, Berkeley, received the honorary degree of doctor of laws recently from the University of California.

ILLINOIS

Hospital News—A new \$100,000 building at the Elgin State Hospital for the Insane collapsed, July 3, injuring seven people. Steel trusses that were being set in the foundation gave way, it was stated.

Committee on Infantile Paralysis—The appointment of a committee on infantile paralysis is announced by the Illinois State Department of Health, to coordinate all control activities incident to an outbreak of the disease. With Howard J. Shaughnessy, Ph.D., Springfield, the following physicians make up the committee:

Sidney O. Levinson, Chicago
Philip Lewin, Chicago
Paul H. Harmon, Chicago
George W. Staben, Springfield
Winston H. Tucker, Springfield
Lloyd L. Arnold, Chicago
Frank Garm Norbury, Jacksonville
Frank J. Jirka, director of the state department of health.

Chicago

Annual Golf Tournament—The Chicago Medical Society will hold its annual golf tournament at the Medinah Country Club, August 7. Those eligible to play are the officers, trustees and past presidents of the society, and members of the council and officers of the branch societies. The trophy is a cup named in honor of the late Dr. J. Warren Van der Slice and donated by Dr. Herman L. Kretschmer in 1933. These tournaments were inaugurated in 1932 by Dr. Austin A. Hayden.

Dr. Hudson Goes to Ohio State—The appointment of Dr. Noel Paul Hudson since 1930 professor of bacteriology, University of Chicago, as professor and chairman of the department of bacteriology at Ohio State University School of Medicine, Columbus is announced. He succeeds Dr. Charles B. Morrey, who has resigned. Dr. Hudson took with him as assistant professors in the department Floyd S. Markham, Ph.D., Jergen M. Birkeland, Ph.D., and Dr. Oram C. Woolpert, all graduates of the University of Chicago. Dr. Hudson graduated from Harvard Medical School in 1925.

IOWA

Death from Rocky Mountain Spotted Fever—The death of a child, 8 years of age, at Marion, Linn County, June 11, as the result of Rocky Mountain spotted fever, following nine days of illness, is reported in the *Journal of the Iowa State Medical Society*. It is the first case of the disease reported in the state in 1935. A tick was found in the child's scalp, May 31, several days before onset of symptoms, after she had been playing in her front yard.

Society News—At a meeting of the Davis County Medical Society in Bloomfield, June 25, Drs. Glenn C. Blome and Harold H. Webb, Ottumwa, discussed fractures.—Dr. Everett D. Plass, Iowa City, addressed a joint meeting of the Dickinson and Emmet County medical societies, June 27, in Spirit Lake, on "Diagnosis and Treatment of Leukorrhea."—At a meeting of the Johnson County Medical Society in Iowa City, June 5, Dr. Samuel S. Steinberg spoke on "The Beneficial Effect of High Sodium Chloride Intake in the Treatment of Irradiation Sickness" and Dr. Ernst Freund, "Hypertrophic Arthritis of the Hip."—An illustrated lecture on "Gonorrhea in the Female" was presented before the Washington County Medical Society, June 25, by Dr. William F. Mengert, Iowa City.—Dr. Charles Corbin Yancey, Sioux City, addressed the Sioux County Medical Society, June 20, on "Early Diagnosis of the Adult and Childhood Types of Tuberculosis."

KANSAS

Court Upholds Revocation of Brinkley's License—The revocation of the license to practice medicine of Dr. John R. Brinkley by the Kansas Board of Medical Registration and Examination was upheld in an order, June 14, issued by U. S. District Judge Tilman D. Johnson, Salt Lake City. Contending that he had been deprived of property without due process of law, Brinkley sought in his action to enjoin the state board from enforcing its order revoking his certificate. The ruling of the judge was a complete endorsement of the board's action in revoking Brinkley's license in 1930. In answering Brinkley's attorneys the judge said, according to the bulletin of the Sedgwick County Medical Society:

I think that under the general terms of the statute the board is empowered to protect the public against conduct which is clearly against public interest and therefore necessarily unprofessional the same as if the legislature had specifically denounced and prohibited such practice. Dr. Brinkley's methods were so notorious that ignorance of them by members of the board was an impossibility.

It is, I think, perfectly clear from these quotations [from the testimony before the medical board at its hearing] that Brinkley made the practice of medicine a business adopting usual present-day methods of propaganda by use of mail and radio.

These methods are not only in conflict with ethics of the profession but are in my opinion in conflict with the best interests of the public and irrespective of the value of the operations performed by him at the hospital or the benefits to individuals using prescriptions given through radio broadcasting the possibilities of injury to the general public resulting from such methods are so apparent that if such methods became general its mere statement is sufficient.

MARYLAND

Tularemia in Baltimore from Tick Bite—A case of tularemia transmitted by a tick bite was reported in Baltimore early in June. It is the first instance of insect transmission of tularemia to be reported in the state, according to the state department of health, proving that the infection may result not only from handling infected wild rabbits but also from the bites of infected Maryland wood ticks. The patient had not been in contact with rabbits for several months prior to his illness. After he had removed a wood tick that had been engorging for two or three days, an ulcer developed at the site of the tick bite. The patient's lymph glands enlarged he had fever, headache and muscular pains. Laboratory tests confirmed the diagnosis of tularemia.

MICHIGAN

Memorial to Dr. Warthin—A bronze plaque of the late Dr. Aldred S. Warthin was presented to the University of Michigan School of Medicine, Ann Arbor, June 15 by persons who had been in the department of pathology when he was director. The memorial hangs in the West Medical Building. Dr. Warthin was associated with the university from his graduation there in 1891 until his death in 1931, since 1903 he had been professor of pathology and director of the pathologic laboratory.

Dr. Parker Honored—The honorary degree of doctor of science was conferred on Dr. Walter Robert Parker by the University of Michigan at its recent commencement. For twenty-eight years Dr. Parker was professor of ophthalmology at the university, since 1933 he has been professor emeritus.

In 1915 he was chairman of the Section on Ophthalmology of the American Medical Association and, in 1916, he was awarded the Knapp Medal by that section for his research on "The Relation of Tension of Eyeball to Papilledema"

MINNESOTA

State Medical Meeting and Election—Dr William W Will, Bertha, was elected president of the Minnesota State Medical Association at the annual meeting in Minneapolis, June 24-26. He will take office January 1, succeeding Dr William A Coventry, Duluth. Drs Eugene G McKeown, Pipestone, and Carl W Rumpf, Faribault, were chosen vice presidents, and Drs Edward A Meyerding, St Paul, and William H Condit, Minneapolis, were reelected secretary and treasurer, respectively. The next annual meeting will be held in Rochester. The society held joint sessions with the American Association for the Advancement of Science, which was holding its annual meeting in Minneapolis. Guest speakers at the state medical meeting included the following physicians:

Harry L Alexander, St. Louis: Present Status of Clinical Allergy.
Frank H Lahey, Boston: Newer Developments in Hyperthyroidism and Hyperparathyroidism.
Edmund Andrews, Chicago: Pathogenesis of Gallbladder Disease.
Theodore L Sawyer, Milwaukee: Symposium on Diseases of the Blood: Role of Drug Allergy in the Etiology of Primary Granulocytopenia.
Walter A Bloodorn, Washington, D. C.: Role of Iron in the Treatment of Anemia.
William F Murphy, Boston: What We Have Learned About Pernicious Anemia During Ten Years of Treatment with Liver.
Louis W Sauer, Evanston, Ill.: Prevention of Whooping Cough with Bacillus Pertussis Vaccine.
Elmer L Sevringhaus, Madison, Wis.: Endocrine Therapy.
Everett D Plass, Iowa City: Simplification of Obstetric Care.
John F Birnhill, Miami Beach, Fla.: Suppurations of the Neck: Cause, Diagnosis and Treatment.
William S Middleton, Madison, Wis.: Prognosis and Treatment of Coronary Occlusion.
Thomas G Orr, Kansas City, Mo.: Venoclysis—A Consideration of Its Possible Dangers.

Dr Murphy addressed a joint meeting of the society with the association for the advancement of science, Monday evening, June 24, on "Diseases of the Blood," and Dr Percy Brown, Egypt, Mass., delivered the Russell D Carman Memorial Lecture at an afternoon session, Tuesday, on "The Inception and Development of Fluoroscopy: The Influence of Carman on Its Status in America."

MISSOURI

Dr Muckenfuss Receives New York Appointment—Dr Ralph S Muckenfuss, assistant professor of medicine, Washington University School of Medicine, St. Louis, has been appointed temporary assistant director of the bureau of laboratories of the New York City Department of Health. Within a few months the New York Times stated, a civil service examination will be held to select a permanent appointee for the position who will be assistant and later successor to Dr William H Park, the present director, who will retire on account of the age limit. Dr Muckenfuss graduated from Emory University School of Medicine, Atlanta, and served for a time on the staff of the Rockefeller Institute for Medical Research, New York.

NEW YORK

Physicians Appointed to Industrial Council—Governor Lehman has appointed the following physicians to the state industrial council: Drs William D Johnson, Batavia; Edward C Podvin, Horace E Ayers, New York; and William Linder, Brooklyn. They will represent physicians in their relation to the department of labor in matters concerning the new workmen's compensation law passed by the last legislature. Albert W Bailey, D. O., Schenectady, was also appointed.

Heads Letchworth Village Twenty-Five Years—Dr Charles S Little, superintendent of Letchworth Village, Thells, recently celebrated his twenty-fifth year of service at the state institution. Dr Little went to the colony in 1910 and lived in a tent while the first buildings were being erected. It was said: "There are now eleven buildings and two more will be required to finish the building program, which will provide adequate care for 3,650 patients, at a cost of \$10,000,000."

New York City

United Hospital Fund to Seek Nine Millions—A campaign for \$9,440,000 will be launched in the fall by the United Hospital Fund, it was announced at a luncheon June 25. Mr David H McAlpin Pyle, president of the fund, estimated that this amount would be needed by the fifty-two voluntary hospitals participating in the fund, to stop pyramiding of deficits. Notwithstanding inroads on capital, the hospitals had unpaid bills amounting to \$5,700,000 in addition to mortgage and long term liabilities of \$14,000,000.

Hearing Tests on School Children—According to a report of the Emergency Relief Bureau, tests of the hearing of 606,546 school children, made as a special project of the bureau, showed that about 10 per cent had a hearing loss in one ear or both. Of the total number, 4,000 were found to be seriously afflicted and are receiving lip-reading instruction from seventy-nine teachers, who would otherwise be unemployed. The workers were trained in the use of the audiometer at the New York League for the Hard of Hearing, and all children were examined by physicians, who prescribed treatment. Parents who were unable to afford the services of a physician were advised to take their children to clinics, it was said.

Dr Park to Receive Roosevelt Medal—Dr William Hallock Park, director of the bureau of laboratories of the New York City Department of Health, will receive the Roosevelt Medal for 1935, it was announced July 12 by the Roosevelt Memorial Association. The medal will be presented at a banquet at Roosevelt House October 27, the seventy-seventh anniversary of the birth of Theodore Roosevelt. The citation refers to Dr Park's "distinguished service in the administration of public office." Dr Park has been director of the health department laboratories since the bureau was established in 1894 and is professor of bacteriology and hygiene at New York University College of Medicine. In recent years he has received the Public Welfare Medal of the National Academy of Sciences and the Sedgwick Medal of the American Public Health Association, of which he was president in 1923. The Roosevelt awards were established in 1923 and are given annually in some field associated with Mr Roosevelt's career.

OHIO

Dr Thompson Honored on Hundredth Birthday—The town of Bethel, under the leadership of the local chapter of the Independent Order of Odd Fellows, held a community celebration July 6, in honor of the one hundredth birthday of Dr William Eberle Thompson. At a public reception Dr John A Caldwell, Cincinnati, president of the Ohio State Medical Association, paid tribute to Dr Thompson's long career and an oil painting of him was unveiled. Dr Thompson was born in Bethel of a family in which there have been twelve physicians including his father. He graduated from the old Cincinnati College of Medicine and Surgery in 1860. During the Civil War Dr Thompson was assigned as surgeon in the Seventh Ohio Infantry. He has had an office throughout all these years on the same street and still conducts a limited practice.

OKLAHOMA

Society News—Speakers at the quarterly meeting of the Southern Oklahoma Medical Association at Sulphur, June 4, included Drs Richard M Burke, Sulphur, on "Differential Diagnosis of Tuberculosis and Nontuberculous Chest Diseases"; John B Morey, Ada, Purpura Haemorrhagica; and Anson L Clark, Oklahoma City, Fever Therapy—Its Possibilities and Limitations. At a meeting of the Southeastern Oklahoma Medical Association in Durant, June 27, speakers included Drs Benjamin B Kies, McAlester, on "Lymphoid Tissue"; Charles R Huckabay, Idabel, "Management of Genito Urinary Diseases by the General Practitioner"; and Rufus H Sherrill, Broken Bow, Common Complications in Obstetrics. Dr William H Bailey, Oklahoma City, among others, addressed the Woodward County Medical Society at Supply, June 11, on early diagnosis of malignant tumors.

PENNSYLVANIA

Law Enforcement Activities—The state bureau of enforcement has prosecuted the following persons among others, in the past few months, for illegal practice of the healing art:
Ashton Will Somerset fined \$100 and costs with six months imprisonment.
R D Singh, Mechanicsburg, \$50 and costs with sixty days in jail.
A R Daley, Sharon, fined \$100 with six months imprisonment.
Theodore R Anderson, Philadelphia, one to five years imprisonment.
Eugene Harsch, Pittsburgh, fined \$100 and costs.

Philadelphia

Faculty Changes at Jefferson—During the past session the following promotions and appointments have been made in the faculty of Jefferson Medical College:

Dr Warren B Davis, clinical professor of surgery.
Dr Edward F Corson, associate professor of dermatology.
Dr Benjamin P Weiss, associate professor of neurology.
Drs Clifford B Lull, Harry Stuckert and Thaddeus L Montgomery, assistant professors of obstetrics.
Dr John T Farrell, Jr., assistant professor of roentgenology.
Dr Henry B Decker, assistant professor of dermatology.

TENNESSEE

Personal—Dr John W L Cooper has been appointed health officer of Chattanooga, to succeed Dr Frederick C McIsaac.

Hospital Superintendents Appointed—Dr Eugene B Elder, superintendent of Knoxville General Hospital for about seven years, has been appointed superintendent of Erlanger Hospital, Chattanooga. Dr Andrew Smith, chief of staff at the Knoxville hospital for the past three years, has been appointed to succeed Dr Elder as superintendent.

Faculty Changes at Vanderbilt—The following promotions in the faculty of Vanderbilt University School of Medicine, Nashville, were announced recently, to be effective July 1.

Drs William R Cate Robert C Derivaux and Hollis E Johnson to be associate professors of clinical medicine.

Drs William Bush Anderson and Milton S Lewis associate professors of clinical obstetrics.

Dr Benjamin H Robbins associate professor of pharmacology.

Dr John M Lee associate professor of clinical pediatrics.

Dr Henry Carroll Smith associate professor of clinical ophthalmology.

Dr Edward H Barkadale associate professor of urology.

Dr John S Cayce assistant professor of clinical obstetrics.

W Ray Bryan Ph.D assistant professor of physiology.

Dr Henry L Douglass assistant professor of clinical urology.

VIRGINIA

Dr Broders Appointed Professor—Dr Albert C Broders, Rochester, Minn., has been appointed professor of surgical pathology and director of cancer research at the Medical College of Virginia, Richmond. Dr Broders is a native of Virginia and a graduate of the Medical College of Virginia. He has been on the staff of the Mayo Clinic for several years.

Society News—The Warwick County Medical Society held a joint meeting with the Peninsula Dental Society at the James River Country Club May 14, with Dr Fletcher D Woodward, University, as speaker on 'The Management of Recent Fractures of the Nose'.—A discussion of state medicine, social medicine and compulsory sickness insurance featured a meeting of the Clinch Valley Medical Society at the Lonesome Pine Country Club near Norton, May 24, speakers were Drs Francis H Smith Abingdon president of the Medical Society of Virginia, Alex F Robertson Jr, Staunton and Irl C Riggan, Richmond, state health officer.

Medical College News—A portrait of the late Dr George Paul La Roque, professor and head of the department of clinical surgery at the Medical College of Virginia, Richmond, was presented to the college May 28 by Omega Upsilon Phi and Phi Beta Pi. Dr William Lowndes Peple made the presentation address and President William T Sanger accepted the portrait, which will be hung in the college library. Gov George C Peery made the principal address at the annual commencement, May 28, at which seventy-six physicians were graduated. Dr Karl S Blackwell, Richmond was elected president of the alumni association.—The medical graduates of 1925 presented to the University of Virginia Department of Medicine at the annual commencement activities, June 8 a portrait of the late Dr John Staige Davis, professor of medicine from 1900 to 1930. Dr David R Lyman, Wallingford, Conn. of the class of 1899, gave the commencement address, June 11, when fifty-four medical graduates received diplomas.

WASHINGTON

State Medical Meeting at Everett—The forty-sixth annual meeting of the Washington State Medical Association will be held in Everett, August 12-14. A tentative program lists the following guest speakers:

Dr Olin West Chicago Secretary American Medical Association
Dr Edward B Shaw San Francisco Acute Anterior Poliomyelitis
Dr Albert H Rowe, San Francisco Food Allergy
Dr Charles Ulysses Moore Portland, Ore. Studies in Rickets. Report of 1,000 Cases
Dr Herbert W Riggs Vancouver B C Pain Its Relation to Diagnosis

The program also announces the following addresses by Washington physicians:

Dr James F Scott Yakima Extraperitoneal Cesarean Section
Dr Kenneth A Sherwood Kirkland Prognosis in Chronic Arthritis
Dr Arnold W Hackfield Seattle Influence of Modern Psychiatry on Medical Thought
Dr Henry H Skinner, Yakima Abruptio Placentae
Dr Arthur C Crookall Seattle Internal Hemorrhoids Determination of Method of Treatment
Dr Charles E Hagyard Seattle Acute Pancreatic Neurosis
Dr Frank J Clancy Seattle What About State Medicine?
Dr Walter W Ebeling Burlington, Rate of Absorption of Various Fluids by the Bowels

The Washington State Medical Golf Association tournament will be held Monday August 12 at the Everett Golf and Country Club followed by the golfers annual dinner.

WISCONSIN

Personal—Dr William C Felton was recently appointed health officer of Appleton to succeed Dr Frank P Dohearty.—Dr Amy Louise Hunter, New Haven, Conn., has been appointed supervisor of the state bureau of maternity and child welfare to succeed Dr Charlotte J Calvert, who recently retired. Dr Hunter graduated from Yale University School of Medicine in 1930 and received the degree of doctor of public health at Yale in 1934.

State Society to Collect Historical Material—Pertinent papers, books and instruments bearing on the history of medicine in Wisconsin are to be collected by the State Medical Society of Wisconsin to form a museum and it is expected that after several years a history of medicine in the state may be written. The State Historical Society has agreed to act as custodian of the material. The *Wisconsin Medical Journal* asks the interest and assistance of physicians in assembling relics and mementos and in preparing articles on individual physicians, institutions, medical practices and the like for publication.

Society News—Dr George W Crile Cleveland addressed the Green Bay Academy of Medicine at its annual meeting, recently, on 'Surgical Treatment of Polyglandular Disease, Hypertension and Epilepsy'.—At a meeting of the Sixth District Medical Society in Oshkosh, June 7 speakers were Drs Philip W Brown and Claude F Dixon, Rochester, Minn., on 'Medical and Surgical Treatment of Rectal Carcinoma' and Oscar Lotz, John O Dieterle and Samuel G Higgins, all of Milwaukee on "Diagnosis of Early Tuberculosis," 'Use of Kirschner Wire in Maintaining Reduction of Joint Fractures' and "Surgical Care of Eye Injuries," respectively.

Test of Birth Registration—The bureau of vital statistics of the state board of health recently completed a test on the accuracy of birth registration in all cities in the state with a population of 20,000 or more. It was found that in sixteen cities samples ranging from 11.6 to 25 per cent of the total number of births reported over a period of thirteen years showed 98 per cent completeness of registration. Janesville had 100 per cent registration in 15.3 per cent of all births. The lowest percentage found was 96.8 in Green Bay. In the survey letters were sent to nearly 50,000 couples whose names were taken from the marriage records in each city. Only couples in which the bridegroom was 30 years old or younger and the bride 25 or younger were considered and only first marriages for both were included. Births reported by the parents were checked against certificates in the state board's files. It was found that the accuracy of registration has increased from 94.6 in 1921 to 98.6 in 1933. Practically all births in Wisconsin are attended by physicians. The percentage increased in the thirteen years from 90.7 to 97.2 per cent, the study showed.

GENERAL

Society News—The American Dietetic Association will hold its annual meeting in Cleveland, October 28-31. Among speakers will be Drs Morris Fishbein Chicago Editor of *THE JOURNAL*, on 'Food Fads and Fallacies,' and Wingate Todd, Cleveland, "Food for Fitness".—The American Psychiatric Association announces removal of its offices to the New York Academy of Medicine 2 East One Hundred and Third Street New York.

Association for Study of Goiter—Dr Nelson M Percy, Chicago, was chosen president-elect of the American Association for the Study of Goiter at the annual meeting in Salt Lake City June 24-26, Dr Julius R Yung, Terre Haute, Ind. was installed as president. Among speakers were:

Dr Robertson Ward San Francisco Malignant Goiter—Statistical Survey of Sixty Cases with Comparison of Geographical Types
Dr Russell M Wilder Rochester Minn. The Etiology of Hyperparathyroidism
Dr George W Swift Seattle Wash. Malignant Exophthalmos
Dr Frederick A Collier Ann Arbor Mich. Riedel's Struma
Dr Willard O Thompson, Chicago Quantitative Observations on the Effect of Iodine in Exophthalmic Goiter in Chicago
Dr Arnold Minning Denver Tendency Toward Medical Treatment of Exophthalmic Goiter

Dr Wilder addressed a public meeting Monday evening June 24 on 'Prevention and Cure of Goiter'. It was voted to hold the next session in Chicago.

Pacific Northwest Medical Meeting—The fourteenth annual meeting of the Pacific Northwest Medical Association was held in Spokane Wash., June 27-29. Lecturers were Drs Fred W Rankin, Lexington, Ky., who discussed, among other topics cancer of the breast and of the rectum and selection of gastric and duodenal lesions for surgery. Loyal Davis, Chicago neurologic surgery. James Edwin Wood Jr, University, Va., rheumatic fever cardiac edema, pregnancy and hyper-

tension, Tracy B Mallory, Boston, pathology of asthmatic paroxysms, hyperparathyroidism and pathogenesis of peptic ulcers, Arno B Luckhardt, Chicago, physiology of the hypophysis and analgesic drugs, and George E Brown, Rochester, Minn, diseases of the circulation and of the sympathetic nervous system. Dr Russell T Congdon, Wenatchee, Wash, was chosen president-elect, Drs Banner R Brooke, Portland, Ore, and George O A Kellogg, Nampa, Idaho, vice presidents, and Clyde W Countryman, Spokane, secretary. Dr Charles T Sweeney, Medford, Ore, was installed as president. The 1936 meeting will be in Portland.

First Tuberculosis Cottage Rededicated—In a rededication ceremony during the annual meeting of the National Tuberculosis Association in Saranac Lake N Y, June 25, a bronze plaque was placed on "Little Red," the first cottage in America for open air treatment of tuberculosis, erected by Dr Edward Livingston Trudeau in 1884 in Saranac Lake. The plaque was designed and executed by Mr A di Bona, a patient at Trudeau Sanatorium "Little Red," which is now used as a museum, was recently moved to a new location on the main entrance road to the sanatorium. Using a picture of the cottage on the 1934 Christmas seal, the National Tuberculosis Association commemorated the fiftieth anniversary of the building of the cottage which was the nucleus of the Trudeau Sanatorium. Dr Trudeau was the founder and first president of the association. On the eighty-sixth anniversary of his birth, Oct 5, 1934, officials of the New York state committee on tuberculosis and public health presented to the sanatorium a picture of the cottage in a ceremony attended by physicians from all parts of the state.

Birth and Infant Mortality Rates Rose in 1934—The Bureau of the Census announces in its annual summary of statistics on live births, infant mortality and stillbirths in the United States that the birth rate in 1934 was 17.1 per thousand of estimated population as compared with 16.6 in 1933. The infant mortality rate for 1934 was 59.9 per thousand live births, as compared with 58.1 in 1933. The stillbirth rate was slightly lower, 3.6 as compared with 3.7 in 1933. New Mexico had the highest birth rate (27.9) as well as the highest infant mortality rate (132.1). States with the next highest birth rates were North Carolina and Utah, each 24.1, South Carolina, 24, Alabama, 23.4, West Virginia, 23.2, and Mississippi, 23. The lowest rates were in California, 12.7, and New Jersey, 12.9. The highest infant mortality rates after New Mexico were Arizona, 103, South Carolina, 86.1, Georgia, 78.9, and North Carolina, 77.4. The report points out that the two Western states have large numbers of nomadic Mexicans and Indians and the Southern states large Negro populations. The lowest death rates were those for Oregon, 39.8, and Washington, 43. Mortality rates in several large cities were New York, 52.1, Chicago, 47.7, Los Angeles 53.2, Detroit, 50.4, Boston, 57.5, Baltimore, 64.9, New Orleans, 81.5, and Seattle, 41.3. All these rates represent decreases from the figures of 1933 except the last three.

Medical Bills in Congress—Change in Status H R. 8554, the Second Deficiency Appropriation Bill, has been reported to the Senate, with amendments (S Rept. No 1085). As passed by the House, this bill proposed an appropriation of \$20,000,000 to provide additional hospital and domiciliary facilities for veterans. To this sum the Senate Committee on Appropriations added \$2,000,000 "to be expended for hospital and domiciliary facilities, subject to the approval of the Federal Board of Hospitalization and the President at the following existing facilities: Newington, Conn., Fort Lyon, Colo., North Little Rock, Ark., and Johnson City, Tenn." **Bills Introduced** S 3276, introduced (by request) by Senator La Follette, Wisconsin, propose to pay compensation of not less than \$10 monthly to any person totally blind who is or may hereafter become entitled to hospital or domiciliary care under veterans' regulations and, further, to permit such persons to elect to receive monthly the monetary value of hospital care, in lieu thereof. S 3271, introduced by Senator George, Georgia, proposes, for the purposes of income tax, to permit corporations to deduct charitable and other contributions. H J Res 354, introduced by Representative Wallgren, Washington, proposes to establish a commission to formulate a national policy relative to benefits for veterans and their dependents. H R 8849, introduced by Delegate Dimond, Alaska, proposes to construct a hospital for the insane of Alaska. H R 8874, introduced (by request) by Representative McSwain, South Carolina, proposes that for the purposes of promotion there shall be credited to officers of the Medical Corps all active service as officers of the Medical Reserve Corps rendered by them between April 23, 1908, and April 6, 1917.

Changes of Status of Licensure—At a meeting of the Florida State Board of Medical Examiners in Jacksonville, June 17, the following action was taken:

Dr Albert J Coleman, Cotuit, license restored.

The New York State Board of Medical Examiners reports the following action:

License of Dr Julius Phillips, Brooklyn, revoked April 26 following his conviction on a charge of manslaughter by an illegal operation.

The Public Health Council of West Virginia reports the following revocation of licenses, dated March 19:

Dr William J Porter, Charleston, and Dr Clavius Clyde Coffindaffer, Shinnston, for violation of the Harrison Narcotic Law, both are serving sentences in the federal prison at Leavenworth, Kan.

The Texas State Board of Medical Examiners has reported the following action taken at a meeting in June:

Dr Gustav Raphael Gerson, Houston, license restored provided he does not apply for a narcotic permit or use narcotics within the next five years.

The Massachusetts Board of Medical Registration recently announced the following action:

Dr Rafael Reyes Garcia, formerly of Springfield, license restored June 20.

At a meeting of the Arizona State Board of Medical Examiners in April, the following action was taken:

Dr Richard McClellan Francis, Flagstaff, license revoked following his conviction of a narcotic charge.

Typhoid Epidemic in a Circus—Final Report—The U S Public Health Service has recently published a final report of its investigations of the epidemic of typhoid that occurred in the Ringling Brothers and Barnum and Bailey Circus in the summer of 1934 (THE JOURNAL, Aug 4, 1934, p 350). The disease was first recognized in Detroit, where sixty-eight employees were hospitalized July 23 and 24 with symptoms of typhoid. The circus physician asked the help of the Detroit and Michigan state departments of health and because of the interstate operations of the circus the federal health service was invited to participate in the investigation. Nine persons were sent back to Detroit July 25 from Flint, making seventy-seven hospitalized in Detroit, forty-four of whom proved to have typhoid. As the circus proceeded on its schedule, 141 persons were left in hospitals in various cities, seventy-four of them proved to have typhoid. Exhaustive investigation of the personnel for carriers, and of the food and ice supply gave no significant information. Bathing in polluted waters was ruled out. An outbreak of diarrheal enteritis affecting almost the entire personnel occurred July 7, 9, when the circus was in western Pennsylvania. Many of those who had typhoid dated their illness back to this outbreak. The typhoid epidemic began about fourteen days after this, the usual incubation period. The distribution among the circus personnel was more or less uniform, all groups being affected except trammens, porters and elephant men, whose water supply was separate from that of the rest of the circus. Water for the general use of the circus is obtained from city water supplies on contract and it was therefore difficult to account for the fact that the circus personnel became infected while local communities were free from typhoid. Sanitary practices within the circus were found to be extremely crude. Water was usually served in a barrel, keg or bucket equipped with a common dipper or cup. Sewage and garbage disposal were far from efficient, and practically no precautions were taken against flies. Dishwashing was inefficiently done in lukewarm water with insensitizing dish towels. Food handlers had not been examined for communicable disease, and their personal cleanliness was far below standard. No effort had been made to require or encourage typhoid inoculations. On recommendation of the health officials, sanitary measures to remedy these conditions were instituted and a physician and a sanitary officer were added to the personnel for the rest of the season to supervise the changes. For future guidance of the circus regimen a set of standard sanitary regulations was drawn up by the federal investigators. The regulations were published in *Public Health Reports*, June 7, 1935, page 797.

LATIN AMERICA

Congress of Physical Therapy—The first annual meeting of the Latin America Congress of Physical Therapy, X Ray and Radium will be held in Mexico City August 29-September 5, with the National University of Mexico as host. Delegates to the congress wishing to present papers will submit the titles of their papers together with an abstract to Dr Madge C. L. McGuinness, 1211 Madison Avenue, New York, or Dr Cassius Lopez de Victoria, 1013 Lexington Avenue, New York. The program will be divided into sections representing medicine and

surgery, fractures in their various specialties, electrosurgery, fever therapy, short and ultra-short wave therapy, light therapy, massage, radium and x-ray therapy and exercise. A special nineteen day convention cruise has been arranged with steamer, rail, hotel and sightseeing costs included in one all-expense fee, under the direction of the American Express Company

Government Services

Positions Open in Children's Bureau

The U S Civil Service Commission announces open competitive examinations for several positions in the Children's Bureau, Department of Labor. Applicants must have graduated from a recognized medical school and must have served one year of internship, in addition, certain experience is required. Optional subjects are pediatrics, obstetrics, orthopedics and general practice (maternal and child health). Entrance salaries range from \$2,600 to \$5,600 a year, less a deduction of 35 per cent toward a retirement annuity. Full information may be obtained from the secretary of the U S Civil Service Board of Examiners at the postoffice or customhouse in any city which has a postoffice of the first or second class or from the commission at Washington, D C

Positions Open for Statisticians

The U S Civil Service Commission announces competitive examinations for six positions with the Bureau of the Census, Department of Commerce, two of which are in the division of vital statistics principal statistician and senior statistician. Applicants for these two positions must have been graduated from medical schools of recognized standing and must have had thorough training in statistics and also in public health, psychiatry or psychology. They must not have reached their fifty-third birthday and must be in sound physical health. Forms for applications, which must be filed not later than July 29 with the Civil Service Commission at Washington, D C, may be obtained from the commission, from any first class postoffice or from the commission's district offices in Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, San Juan P R, and Balboa Heights, C Z. The exact title of the examination desired should be stated in the application form.

Wellcome Prize Competition

The Wellcome Prize for 1935 a gold medal including a cash prize of \$500, will be awarded for the research most valuable for the military service performed in any branch of medicine, surgery or sanitation. *Military Surgeon* announces. Reports of not more than 10,000 words (tabular matter excepted) must be forwarded to the Secretary Association of Military Surgeons of the United States, Army Medical Museum, Washington, D C so as to arrive not later than August 15. Five copies should be sent, signed by a nom de plume or a distinctive device and accompanied by an envelop marked on the outside with the nom de plume and containing the true name of the writer. The winning report will be the property of the association and will be published in *Military Surgeon*. The competition is open to all medical department officers former such officers, acting assistant and contract surgeons of the army, navy, public health service, organized militia veterans administration U S volunteers and the reserves of the United States and all members of the Association of Military Surgeons, except that no person shall be awarded a prize more than once in these contests.

CORRECTION

Dr Kolmer Has Not Resigned—Dr John A. Kolmer Philadelphia, has not resigned as professor of medicine at Temple University School of Medicine as reported in *THE JOURNAL*, July 13, page 127. The chair of medicine is now held jointly by Dr Kolmer and Dr Charles Leonard Brown, an arrangement that allows Dr Kolmer time to conduct research work at the university and at the Research Institute of Cutaneous Medicine.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 29, 1935

After the Osteopaths' Fiasco

At a meeting of the council of the British Medical Association Dr Bone, who presented the report of the osteopathic committee, complained of the large expense incurred by the association, as well as by other professional organizations, in opposing the osteopaths' bill, which went simply to show that no such committee of investigation as was appointed by the house of lords should have been set up at all. He did not know whether there was any redress, but it seemed an inequitable phase of parliamentary procedure. The committee held twelve sittings extending over a period of six weeks and the association, as well as some of the other opposing bodies, was represented by lawyers. Sir William Jowett, the association's attorney, concentrated on clearly defined issues. He made the principal witness for the osteopaths admit that he could not claim state registration without proof of the scientific basis of their claims. He also secured repeated admissions that osteopaths claim to treat all varieties of disease, acute and chronic, that their theory is in conflict with scientific medicine and can give no reasonable explanation of many diseases, and that their theory conflicted with their practice. Before the evidence against the bill could be completed its promoter sounded the retreat, giving the reason that the committee was not competent to try the issue that had been raised as to the want of a scientific basis for osteopathy. This amounts to an admission that the committee should never have been appointed and that the medical bodies which opposed the bill should never have been put to such trouble and expense. But apparently they have no remedy. They must suffer for the want of intelligence of the members of the house of lords who gave the bill a second reading, leading to the appointment of the committee. Before the socialist issue dominated British politics, the reform of the house of lords was a constant demand of many liberal politicians. They ridiculed the hereditary chamber as indefensible. Why should a man legislate because he happened to be the son of a peer? He might be quite unfitted for the task. The fiasco of the osteopaths' bill gives a new point to this argument. It is noteworthy that in the house of commons, which, unlike the house of lords, is an elected and not a hereditary chamber, the attempts of the osteopaths have always failed. Since 1931 four bills were introduced for their registration and were all defeated. The minister of health sensibly took up the position that he could not countenance the registration of an inferior order of medical practitioners and that osteopaths who wanted registration should go through the same course and pass the same examination as physicians.

A point that has come out more strongly since the proceedings terminated is the confounding of osteopathy with bone setting in the press and in the public mind. This has been encouraged by the osteopaths in their desire "to cast the net" as widely as possible. Mr Blundell Bankhart, an orthopedic surgeon, has stated that he was informed that every one who supported the osteopaths' bill in the house of lords thought that he was voting for bonesetters. Bone setting, he points out in the *Lancet* is a much older procedure and is British while osteopathy is American. He might have added that the one is a proper and straightforward procedure (though the competence of its practitioners is in question), while the latter is a fantastic stunt. In a communication to the *British Medical Journal*, Mr Bankhart states that, while many osteopaths do a certain amount of straightforward manipulation of joints, that

is not osteopathy. Though this divergence from osteopathy in the practice of osteopaths has previously been pointed out, much confusion exists on the subject and was even shown by some of the medical witnesses at the inquiry.

Is Sugar Injurious?

It has been taught for a long time that sugar taken by children in the form of sweets promotes dental caries and also is injurious in other ways. On the other hand, some authorities deny this and consider sugar an excellent food. There seems to be no end to this controversy, which has been revived in the *Times*. Dr. A. C. Jordan, radiologist, who has written a good deal on 'intestinal stasis,' attacks the practice of giving sweets to children. He declares that they are not sufficiently masticated and therefore not digested by the enzymes of the saliva, and that they pass into the lower reaches of the intestine, where they undergo putrefaction and pour poisonous products into the general circulation, impairing the natural resistance of every organ and tissue. These views were vigorously attacked by Sydney W. Cole of the University of Cambridge School of Biochemistry. He points out that cane sugar (sucrose) is not digested by the salivary enzymes, so that no useful purpose would be served by prolonged mastication. Recent radiographic studies show that it passes through the stomach very quickly. It is rapidly absorbed from the blood in the form of dextrose and fructose, a rise in the blood sugar being obtained within ten minutes of taking an ounce. After one has taken as much as 4 ounces absorption seems to be complete in two hours, while the whole of a pint of raw milk does not leave the stomach in six hours.

Cole also points out that it is impossible for sugar to accumulate in the lower reaches of the intestine, and the lurid picture of it serving there as 'a perfect food for pathogenic microbes' is ridiculous. If soluble carbohydrates did exist in the intestine they would be converted by the intestinal bacteria into lactic and other acids the production of which inhibits the formation of toxins from proteins. In the Cambridge School of Biochemistry Cole teaches under the direction of his chief, Prof. Sir Gowland Hopkins, that cane sugar is a valuable foodstuff. It is absorbed much more rapidly and with much less digestive effort than an equivalent amount of cooked starch. He also claims that there is no satisfactory evidence that cane sugar is responsible for dental caries or for the increase in the incidence of diabetes. He tells the students that by mouth sucrose is the equal and probably the superior of the more expensive dextrose. He holds that it would be difficult to give a diet of adequate caloric value if sugar, sweets and jams were excluded. All young people engaged in strenuous exercise should have an ample sugar ration. It is well absorbed and has a unique effect in warding off exhaustion. Hence boat crews training on brown sugar do extremely well.

As regards dental caries the physiologist Prof. Sir Leonard Hill supports the view that sugar promotes caries. It might have been thought that, as sugar is the simplest of all foodstuffs, with a definite chemical constitution, and as it is obtained easily in the pure state, these questions should have been settled long ago.

Loss of Life in the Quetta Earthquake

The loss of life in the Quetta earthquake has been enormous. It is officially stated that the death roll, including the countryside, probably exceeds 40,000. Casualties among people of European birth amount to more than 190 killed and 240 injured. In Quetta itself, out of a population of 45,000, between 20,000 and 30,000 have been killed. The number of destitute refugees is 15,000 of whom many thousands are injured. The public health commissioner, Lieut.-Col. Russell of the Indian Medical Service, is proceeding to investigate the health situation in consultation with the local medical and public health authorities.

Some 30,000 Indians and 6,000 Europeans, including troops, have been fed in the refugee camps. Evacuation is still steadily proceeding. Salvage operations were commenced but had to be suspended for hygienic reasons, and in the interests of public health the city remains closed under guard. Only such operations as are consistent with safety and public health are being carried on. The area of the earthquake is estimated at 130 miles long and 20 miles broad. Besides Quetta and the towns of Kalat and Mastung at least 100 villages have been totally destroyed.

PARIS

(From Our Regular Correspondent)

June 14, 1935

Tuberculosis and Pregnancy

At the March 15 meeting of the Société médicale des hôpitaux of Paris a paper on whether or not pulmonary tuberculosis is influenced by pregnancy was read by Professor Brindeau and his associates, followed by much discussion of the subject, in which leading phthisiologists of Paris took part. During a period of three years 230 cases were followed from a clinical and a roentgenologic point of view. Their conclusions were as follows:

1 A distinct influence on the evolution of a case of pulmonary tuberculosis can be observed only in multiple pregnancies that occur at short intervals in which the child is being nursed, thus weakening the maternal resistance. When tuberculosis shows signs of development during pregnancy, the association of the two conditions is only accidental. The tuberculosis was already incipient and would have developed even though pregnancy had not taken place.

2 One cannot deny the harmful influence of pregnancy on the evolution of tuberculosis. Such a stimulation of the pulmonary lesion is especially to be feared when the latter first presents itself at the beginning of the pregnancy, particularly if the pulmonary lesions are extensive, active and accompanied by febrile reaction. Twelve patients who presented signs of the acute bronchopneumonic type during the first months of pregnancy died. In three fifths of the cases in which there were evidences of the subacute type of tuberculosis at the beginning of pregnancy, death also occurred. In cases in which the lesions had been present for six months before pregnancy began a fatal outcome occurred in eleven of fifty-four. The harmful influence of pregnancy can be observed even in cases in which there is a slow evolution of the pulmonary lesions. Hence the problem with which one is confronted is to evaluate the intensity of the degree of development and destruction, on the one hand, and the period at which the last acute exacerbation has taken place. This is easy in the acute and subacute forms of recent lesions with cavity formation but is difficult in the chronic fibrous ulcerative forms, necessitating in the last named a visualization of the most recent former evolution and a periodic comparison of the films to determine the date of the last exacerbation as well as the temperature range and a general clinical balance, in order to determine when the next exacerbation is likely to occur. In nine of thirty-six cases there was a recrudescence during pregnancy in the fibrocalcifying type.

3 The harmful influence of pregnancy is most marked during the first three months and during the postpartum period. In the last months the tuberculosis seems to be less active. The latter observations hold true for pregnancy complicated by surgical tuberculous lesions.

In general, one can say that the harmful influence of pregnancy is proportional to the intensity and the length of time the destructive or caseating lesions have existed. The more acute, the worse the outlook. Before interruption of pregnancy is to be considered every possible measure should be

employed to control the pulmonary lesions. Twenty-nine patients with subacute evolutive and ulcerative pulmonary lesions treated adequately by artificial pneumothorax were able to be confined at term without perceptible aggravation of the pulmonary lesions. Four out of eleven women in whom the artificial pneumothorax treatment was inadequate died, and seven others required therapeutic abortion. The latter is indicated first, in recent, evolutive febrile cases in which the tuberculosis is concomitant with the pregnancy, and secondly, in the dense diffuse, fibrocaseous chronic type, and finally in cases in which there are ulcerative lesions and an acute exacerbation has occurred during the months immediately preceding the pregnancy.

In the discussion, Professor Sergent stated that every effort should be made to save the life of the mother by therapeutic abortion, when indicated, rather than attempt to deliver at term and lose the mother rather than the fetus. He did not agree with Professor Brindeau when the latter stated that the evolution of the pulmonary lesions at the beginning of the pregnancy was a mere coincidence. In 25 per cent of the cases he has examined a pregnancy or delivery had preceded by ten months the onset of the pulmonary lesions. The apparent improvement that is observed during the latter months of pregnancy is due to the upward displacement of the diaphragm, thus creating a sort of bilateral artificial pneumothorax.

Danger of Treatment of Epilepsy by Protein Shock

Marinesco and Kreindler of Bucharest reported a case at the March 15 meeting of the Societe medicale des hopitaux of Paris in which treatment by protein shock was applied in a case of severe convulsive attacks. The patient was a girl aged 18 years. The history of epileptic attacks dated back to the age of 18 months and they had been gradually increasing in frequency, duration and severity. The first injection, of 2 cc of sterilized milk, was not followed by any reaction. The second injection, of 5 cc., was followed about eight hours later by a series of attacks that were almost continuous. Death occurred thirteen hours after the injection. The temperature before death was 106 F.

The authors maintain that there is a direct relation between the epileptic attacks and the type of anaphylactic shock that follows injection of substances producing anaphylactic shock in animals. Clinically cases have been frequently observed of attacks following the ingestion of cheese, eggs, meat or milk. In certain cases of epilepsy there is a certain pathogenic relation between the attacks and spontaneous or artificially produced anaphylaxis. Bouche and Hustin have observed that frequently the attacks are preceded by vascular phenomena analogous to those seen in anaphylactic shock. Claude Tinel and Santenaise found that marked lack of balance of the neurovegetative mechanism existed in patients with epilepsy, hence it seems possible that a marked vagotonicity favors the occurrence of an anaphylactic shock. The authors had previously directed attention to the part played by the carotid sinus in the physiopathology of the epileptic seizure and it seems probable that the anaphylactic shock temporarily influences the excitability of the carotid sinus thus favoring the appearance of convulsive attacks.

Number of French and Foreign Medical Students in 1935

Dr Desfosses, editor of the *Presse medicale*, has published statistics on a subject that has caused a great deal of agitation in France. In 1935 there are 10,148 French and 3,021 foreign students in the various medical schools, hence more than a fourth of the total number of 13,169 are foreigners. Ten thousand French students are far more than are necessary to fill the needs for medical men in France and its colonies. Some

foreign countries, like Poland, now refuse to allow students to return to their native land to practice, and the same will soon be true of other countries that will not recognize a French diploma. The only method to decrease the plethora in the medical profession lies in the Portmann law, which aims to eliminate students during the first two years who cannot attain a certain grade in their examinations and who have not sufficient preliminary training.

Removal of Thyroid in Cardiac Insufficiency

At the March 27 meeting of the Societe nationale de chirurgie Lian, Welti and Facquet reported three cases of removal of the thyroid in cardiac insufficiency. The cardiologist Lian stated that he had studied the velocity of the circulation in fifty cases of cardiac insufficiency and found the velocity uniformly slower than in normal individuals. His observations confirm those of American investigators to the effect that the circulatory velocity is increased in hyperthyroidism and slower in myxedema. There is a distinct relation between the velocity of the circulation and metabolism. In cardiac insufficiency, Lian has found that the basal metabolism is often above normal, hence the hope to reduce the latter by removal of the thyroid in such patients. In the three cases in which Welti operated the complete thyroidectomy was followed by a marked improvement of the cardiac condition. The removal of the thyroid was not followed by any evidence of myxedema. In all three cases, medical treatment over a prolonged period had been of no avail. There has been a marked decrease in the dyspnea, in the size of the liver and in a return to normal of the venous pressure as measured with Villaret's apparatus. Operation in the first case was done five months and in the second and third cases three months before being reported. From a technical standpoint, care should be taken not to injure the parathyroids or the recurrent laryngeal nerve in leaving the posterior portion of the capsule.

Committee to Study the Use of the BCG Vaccine

A committee composed of bacteriologists and clinicians, whose chairman is Professor Marfan, has been appointed by the administrative council of the Pasteur Institute. Owing to the fact that several specialists in children's diseases have maintained that the BCG vaccine does not prevent the development of tuberculosis in infants, this committee aims to establish a close cooperation between the institute and those who are occupied in the application of the vaccine.

Masked Forms of Infarct of the Myocardium

Nine cases of the masked form of infarct of the myocardium were reported at the March 5 meeting of the Societe medicale des hopitaux by Laubry and Walser. In its typical form myocardial infarct is readily recognized by the severe anginal attack accompanied by digestive disturbances, fever, drop in blood pressure and signs of pericardial reaction. Roentgenoscopy and electrocardiography furnish confirmatory evidence but are not essential for the diagnosis. In some cases the pain is the outstanding and only symptom.

In a first group of atypical or 'masked' cases, either the pain in the chest was referred to the base of the lung, leading one to think of a pleuropulmonary congestion or there was pain in the right upper abdominal quadrant, as observed in cholelithiasis. In a second group there was a complete absence of any pain and the clinical picture was dominated by symptoms usually considered of lesser importance such as those of the type of a gastrointestinal intoxication or of a cardiac collapse of resistant cardiac insufficiency or of insular myocarditis with arrhythmia of sudden onset. It is not uncommon to find at the necropsy of elderly persons, who have never had anginal attacks, cicatrices indicating myocardial infarcts. The absence of pain depends on the location, rapidity of development and extent of the infarct.

The masked forms can at times be recognized by a pericardial friction sound. This is a finding of great value from a diagnostic point of view but is seldom present. More constant is a sudden drop in blood pressure. Roentgenography may reveal an aneurysm of the heart, but a great many infarcts are located deeply or on the anterior and posterior surfaces where they cannot be visualized. The electrocardiogram yields more useful information at an earlier period of the condition, but as yet it does not permit localization of the infarct.

BERLIN

(From Our Regular Correspondent)

May 20, 1935

New Regulations Affecting the Medical Profession

Until recently, ethical questions pertaining to the medical profession were settled by the medical societies or the "chambers of physicians" (*ärztekammern*). These functions have now been taken over by the *Kassenärztliche Vereinigung Deutschlands*. Some of the regulations are particularly emphasized. As a rule, no consent to the holding of office hours and to the paying of medical visits in a town in which other physicians are permanently located will be given, nor will consent be given to the holding of regular office hours in a town where there is no physician, or at two separate addresses in a physician's own place of residence. Panel physicians who have been holding special office hours in clinics or hospitals must give them up by July 1, 1935. In a building in which a general practitioner has established a practice, no other general practitioner may open up a practice. The same rule applies to specialists in the same field or in overlapping fields. Seasonal changes in one's place of practice are prohibited. The buying and selling of medical practices is prohibited, but a certain amount by way of compensation for the delivery of a physician's leasehold and equipment, including instruments, may be agreed on, in which transaction the local chairman of the *Kassenärztliche Vereinigung* must serve as an intermediary. In the future, no consent for the creation of a joint practice, or medical partnership, will be granted. However, the joint use of expensive diagnostic apparatus, such as x-ray apparatus, will be permitted. The age-old designation "general medical practitioner, surgeon and obstetrician," occasionally seen on physicians' signs, must be replaced, before July 1, 1935, by "praktischer Arzt" (general medical practitioner). The designation "praktischer homöopathischer Arzt" (homeopathic general practitioner) may be used only by those physicians who can furnish evidence of adequate training in this field, and who aside from certain exceptional cases, confine themselves to the homeopathic mode of prescribing. Until the question has been finally regulated, no special designations, such as "biologischer Arzt" (biologic physician) and "Naturarzt" (nature cure physician) will be permitted. No mention of a physician's hospital practice may be made on a physician's sign. Only the following specialties in medicine are officially recognized: (1) surgery, (2) gynecology and obstetrics, (3) orthopedics, (4) ophthalmology, (5) otorhinolaryngology, (6) dermatology and venereal diseases, (7) urology, (8) neurology and psychiatry, (9) roentgenology and phototherapy, (10) stomatology (for which a license to practice dentistry is necessary), (11) internal medicine, (12) gastrology, enterology and disorders of metabolism, (13) pneumology, (14) pediatrics. Designations of specialists which concern other branches or several of the branches mentioned are prohibited. It is not permissible to combine a designation for a specialty with that of a general practitioner. Likewise the designations "Badearzt" (spa physician) and "praktischer homöopathischer Arzt" are to be considered as referring to general practitioners and hence may not be combined with a title of a specialist. The period of special training for the following specialties is four years

surgery, gynecology and obstetrics, urology, internal medicine, gastrology, enterology and disorders of metabolism, pneumology and pediatrics, for the other specialties the period of special training is three years. Specialists in gastrology, enterology and disorders of metabolism, and also in pneumology, must spend two years of their special training in a department of internal diseases, pediatricians must spend one year in such a department. Candidates for recognition as specialists in urology must furnish proof of three years of clinical activity, in which an opportunity for training in general and urologic surgery was afforded. In addition, a candidate must have had one year's experience in a urologic polyclinic or with a specialist in urology. Service in other fields of medicine that are important for a given specialty may be counted up to one year. The training must be obtained at university clinics or in large hospitals of the German reich, or, by way of exception, at a German university clinic or in a large German hospital in a foreign country. The training must be in charge of recognized specialists, and the institution in which it is given must be suitably equipped for thorough and comprehensive special training. The training must extend to all fields of the specialty concerned and hence may not be given exclusively at special centers. Training received in polyclinics and in the office practice of recognized specialists must be discounted one half in point of time and can be counted only up to one year at the most. Service in welfare centers and in bureaus of health may not be counted. Approval of a candidate's claims for recognition as a specialist is left to the local chapter of the *Kassenärztliche Vereinigung*. Such recognition holds good for the whole territory of the reich. Before recognition can be given, candidates must show that they have the necessary special equipment for the practice of their specialty. Specialists must confine themselves, in the main, to their chosen specialty. Specialists who are directors of clinics or of large hospitals or hospital departments must confine themselves, as a rule, to office practice and to consultative activities. Specialists outside this group may make house visits. But they must ascertain whether there is a family physician who commonly treats members of the family and, in that case, they must insist on a joint visit and must reach an understanding with the family physician in regard to further treatment. The house visits of specialists must by no means take on the form of visits of a family physician, and particularly, other members of the family must not be advised or treated for their various ills. Pediatricians may treat only children under 14 years of age. In private practice, specialists should usually charge higher fees than are charged by general practitioners. A physician serving as a locum tenens of a specialist must be a specialist in the same field as the physician he is representing. These regulations, which go into effect immediately, take away from the *Deutscher Aerztevereinsbund* many of its most important functions. Even those physicians who do not belong to the *Kassenärztliche Vereinigung* are, in matters pertaining to professional ethics and to the recognition and conduct of specialists, subject to the decisions of the chairmen of the *Vereinigung* and must give heed to their instructions.

Congress of Psychotherapy

The specialists in psychotherapy ("seelenheilkunde" is the term now used in Germany) held their congress recently in Nauheim. Some time ago a reorganization of the society according to the racial views of the political party in power was effected, and it is held that psychotherapy, after breaking with the dominant ideas of the past epoch, which claimed Freud as its champion, has not lost its importance. Psychotherapy is not regarded as identical with psychoanalysis as set forth by Freud, and an endeavor is being made, after overcoming the dogmatic psychoanalysis, to create a new "seelen-

heilkunde," or psychotherapy, which will satisfy better the German type of mind. Under the chairmanship of C G Jung of Zurich, a number of papers were presented. Zimmer of Heidelberg reported the results of his studies on Indian views concerning psychotherapy. Van der Hoop of Amsterdam presented a paper on "The Personal, the Impersonal and the Hyperpersonal in Psychotherapy." Rümke of Amsterdam spoke on "The Particular Life Phase of the Patient in Connection with Treatment for a Neurosis." He emphasized the idea that psychotherapy is effective only when it considers at the same time what stage of development the patient has reached. From this thought he developed the principle of neuroses, for the various phases of life present widely different demands and every phase has its own peculiar reactions. From this fact result various tasks in connection with the application of psychotherapy, as the physician must take a different stand toward each phase of life and must bear in mind that man's problems vary greatly with each stage of his existence. In dealing with persons who are in the stage of growth and in their best strength, it appears proper to apply psychoanalysis in its complete form. At the turning point of life (age 40-50 years), psychotherapy as outlined by Jung is the sovereign method. In dealing with elderly persons, care should be taken not to insist too fanatically on the patient unburdening his mind completely, as he no longer possesses the elasticity of former days.

Göring of Wuppertal spoke on "The Chances of Success of Psychotherapeutic Treatment." He presented statistics that comprised all patients, over a period of four years to whom psychologic treatment was applied, organic cases and cases of schizophrenia and manic-depressive insanity having been excluded. The statistics (423 cases) revealed that the prospects of success are worse, the more constitutional factors are involved in a neurosis. On the other hand, more than 70 per cent of successes were attained when there was evidence of a marked influence of environment. With regard to the time necessary for the treatment, Göring found relatively short periods (from three to four months) adequate in most cases. He consistently refused to give treatment extending over several years. Other psychotherapists have had about the same experience, but the technic of the specialists varied considerably, since the personality of the physician played an important part.

Another main topic dealt with the teachability of psychotherapeutic science. In this connection it was emphasized that experience in general medicine is desirable and even necessary before practice as a specialist is begun and that psychotherapeutic training more than any other depends for its success on the individual aptitudes.

Professor Dr Wilhelm Kolle

The death of Professor Dr Wilhelm Kolle, who is well known as having been for many years director of the Staatsinstitut für experimentelle Therapie and the associated Georg Speyer-Haus in Frankfurt on-Main, at the age of 66, has been announced. After receiving his training as assistant physician at the Berlin Robert Koch Institute for Infectious Diseases he conducted a scientific expedition in South Africa under the auspices of the government of South Africa and later an expedition in the Sudan under the commission of the Egyptian government. In 1906 he was summoned to the University of Bern, as ordinarius in hygiene and bacteriology and became in 1917 the successor of Paul Ehrlich in Frankfurt on Main. Kolle manifested great pride in the fact that he was a pupil of Robert Koch. In collaboration with R. Pfeiffer he worked out the bases for immunization against cholera and typhoid and also performed the first immunizations on man. Collaborating with Wassermann he established the evaluation of the

meningococcus serum and also of the dysentery serum, the plague serum and the arsphenamine preparations. His researches on symptomless syphilis are well known. Kolle was a member of numerous scientific bodies, also a member of the standardization commission of the health committee of the League of Nations. Arsphenamine therapy, the experimental bases of which Kolle had taken over from his predecessor Ehrlich, he developed further in a successful manner.

BUCHAREST

(From Our Regular Correspondent)

June 15, 1935

Rioting Students Reprimanded

In view of the continuous antisemitic disturbances, chiefly at the faculty of medicine of the university, the universities called a conference with the aim of establishing order. The conference established the fact that the disturbances perpetrated against fellow Jewish students originate partly in the university and student demands, and partly in social and political causes. Formerly the interuniversity council limited the number of students, not on a religious or racial basis but on a basis of individual fitness and competence. A committee was appointed to establish the program of examinations to be passed before enrolment. The official communique published in connection with the limitation of the number of students contains the following paragraphs:

- 1 As an excessive number of students endangers adequate training, the interuniversity council will in the future fix the maximal number of students enrollable four months prior to the opening of the sessions.
- 2 First year enrolment will be subject to a special examination, the conditions of which will be stabilized by the ministry of instruction and by the board of the universities.
- 3 Owing to the fact that, in consequence of this measure, the income of the universities will be reduced, the ministry will increase the subsidies due to the universities.
- 4 The attendance at lectures, seminars, laboratories and institutes is compulsory for every student.
- 5 Any student who within two years does not successfully pass the examinations prescribed for one year will be excluded as unfit and will not be enrolled in any of the inland universities.

These measures are intended partly to reduce the number of students and partly to remove students who spend their time in street demonstrations and in politics, thereby neglecting their studies.

Induced Abortion and the New Rumanian Penal Code

The parliamentary committee entrusted with the preparation of the new penal code accepted the following draft. Section 480: Whoever performs or assists in the interruption of the normal course of gestation commits the crime of abortion and is liable to punishment as follows: 1 If the crime is committed without the consent of the woman, the punishment is imprisonment for from three to five years. If the woman succumbs in consequence of the operation, the punishment is from seven to ten years imprisonment. 2 If an unmarried woman performs the operation on herself or causes the operation to be done by another person she is liable to punishment of from three to six months in prison, if she is a married woman, the prison term is from six to twelve months. Section 481: The same punishment is due for the attempt of this crime. Section 482: If the operation is performed by a physician, no punishment is due in the following cases: 1 When the pregnancy is the result of criminal violence. 2 If the life of the woman is in danger as shown by the physician performing the operation and also by another physician prior to the operation. 3 If the pregnant woman was insane, which fact was established also by another physician prior to the operation, and if the legal representative or guardian of the woman gave his consent.

in an authentic form. In such cases the physician performing the operation is obliged to make notification of the case within twenty-four hours to the competent magistrate.

The Control of Foreign Graduates

While the proportion of Aryan young men studying abroad is not more than 0.5 per cent, that of Jewish lads is considerably higher. They take refuge in foreign universities. It is not a luxury on their part but rather a restraint. Studying abroad is an expensive undertaking. They have to attend lectures and pass examinations in a foreign language. These young doctors then have to come back to Rumania after graduation, because no European country allows them to practice.

The interuniversity council has adopted the following resolution in regard to foreign diplomas. The notification of diplomas acquired abroad, when there is a reciprocity between the respective country and Rumania, can take place only in those cases in which the permanent public instruction committee established the right of the candidate to study abroad and provided the applicant studied the number of years required in Rumania and passed all examinations required at Rumanian universities. The council, in certain cases, may require the applicant to repeat certain examinations. The application for notification must be sent to the ministry of public instruction, which passes it on to one of the inland universities.

BUENOS AIRES

(From Our Regular Correspondent)

June 10, 1935

Long Distance Transportation of Blood for Transfusion

A transfusion department was organized by Drs. R. Palazzo and J. Tenconi in the Hospital Italiano of Buenos Aires, more than a year ago, with the aim of supplying preserved blood that can be transported long distances for transfusion. The main reason for establishing the department was to have at hand a stock of cells and plasma already classified for emergencies. The results have been satisfactory. Drs. Palazzo and Tenconi have sent suspensions of erythrocytes in a dextrose solution to colleagues in Rio de Janeiro, Bordeaux and Pavia, in order to prove the possibility of keeping and transporting erythrocytes. Dr. Servant of Bordeaux performed without any inconvenience transfusions with erythrocytes that had been taken from the blood of persons in Buenos Aires twenty days before. The methods of Drs. Palazzo and Tenconi are based on the studies of Rous.

Antituberculosis Federation

The several separate tuberculosis societies recently merged into one organization, the Federation Against Tuberculosis. The alliance is voluntary, being neither legal nor administrative, and was accomplished by the combined efforts especially of Drs. C. Mammi of the Sociedad de Fisiología of Buenos Aires, G. Araoz Alfaro of the Liga Argentina de la tuberculosis, G. Sayago of the Instituto de Fisiología of the University of Córdoba, A. Raimondi of Buenos Aires and the members of the different beneficent societies and hospitals of the country. The national committee of regional hospitals and asylums voted for the construction of four new tuberculosis sanatoriums simultaneously with the fusion of the antituberculosis centers.

Ventriculography with Iodized Oil

Drs. M. Balado and R. Carrillo of Argentina in an article published in *La semana medica*, March 7, emphasize the diagnostic value of ventriculography with iodized oil. They regard this method as safer than Dandy's encephalography with injection of air and Egas Moniz's arteriography. The latter two methods make difficult the visualization of lesions in the posterior cranial fossa. The authors have performed more than 303

ventriculographies with iodized oil since 1928. In seventy cases of this group they were able to make an anatomic study of the brain post mortem. Ventriculography with iodized oil is, they believe, harmless and permits the visualization of the third and fourth ventricles, the Sylvian aqueduct and the foramen of Monro. The authors discuss in detail the technique. They believe that a diagnosis of exact localization of the lesion in the brain can be secured in 90 per cent of the cases by the injection of air and in 100 per cent by ventriculography with iodized oil either by itself or combined with the injection of air.

Special Lectures

Dr. Policard of Lyons, France, delivered lectures on the histophysiology of the lung, silicosis, osteogenesis and spectrography, at the Faculties of Medicine of Buenos Aires, Rosario and Montevideo, during May and June.

Dr. B. A. Houssay has been invited to deliver the Dumbarn lecture at Harvard, the Hanna lecture at Cleveland, the Harvey lecture at New York and some other lectures at the Academy of Medicine of California and at Stanford University.

Personals

The following appointments have recently been made. Drs. Belou, correspondent member of the Academia Chilena de Ciencias Naturales, M. R. Castex, B. A. Houssay and C. Bonorino Udaondo, honorary members of the Academia de Medicina of Mexico, Arce, Vaccarezza, Bosch Arana and Bonarino Udaondo, honorary members of the Academia de Medicina of Rio de Janeiro, B. A. Houssay, honorary member of the Physiological Society of Great Britain, F. de Paula Miranda of Mexico, A. Turenne of Montevideo and A. Policard of Lyons, corresponding members of the Academia Nacional de Medicina of Buenos Aires. Drs. E. Savino and R. Sammartino were given scholarships from the Guggenheim and Devoto foundations for studies on public health at Harvard, and on cancer in Germany, respectively.

RIO DE JANEIRO

(From Our Regular Correspondent)

June 15, 1935

São Lourenço Balneary

The São Lourenço Balneary, recently opened in Minas Geraes, is the first of its kind in the South American countries. There are modern installations for bathing in natural gaseous waters, the therapeutic value of which has been demonstrated in several pathologic conditions. There are also showers and departments for massage. São Lourenço Balneary has twenty-four private baths. About thirty persons can take baths in an hour. A physician is the technical director of the balneary.

First Brazilian Congress Against Cancer

At the first Brazilian Congress, organized by the Sociedade de Medicina e Cirurgia of Rio de Janeiro, with the collaboration of the medical societies of the country, at Rio de Janeiro, the official topics will be: In the medicosocial section (1) mortality from cancer in Brazil, and (2) actual resources for the anticancer crusade. In the clinical section: clinical aspects of precancer (synthesis). In the pathologic section (1) classification of cancer, and (2) localization and dissemination of cancer in Brazil. The problem of cancer in Brazil will be discussed from several angles. The topics will be presented by two official speakers, one resident at the federal district and the other resident at any of the states of the country, thoroughly discussed by them and then by the attendants to the congress, including those who were previously registered for attendance. The Associação central brasileira de luta contra o cancer will represent, after the congress, the organized body for the crusade against cancer and will have branches in the various states of the country.

A Home for Needy Brazilian Physicians

The building of the institution La Casa del Medico was recently inaugurated. It was constructed with donations from all Brazilian physicians on a site given by the late Dr. Felicio Torres. It is a three story structure at present but has been built to allow for the construction of five additional floors. The accommodations meet all the requirements for comfort and beauty expected in modern living. Its purpose is to house physicians who are in need of a comfortable home. Those who can pay are given special apartments on the first and second floors. Those who cannot are given apartments on the third floor. There are special wings for old and invalid physicians who can remain there as long as they wish. The Brazilian syndicate of physicians is in charge of the administration of the building. Prominent Brazilian physicians attended the inauguration ceremonies.

Marriages

JOHN R. RODGER, Boyne City, Mich., to Miss Katherine Johnston of Greeneville, Tenn., in New York July 3

FLOYD ALTON MCCANNON Payne Ohio, to Miss Ardola May Lechner of Ossian, Ind., May 22

ELBERT ERVIN MUNGER JR., Spencer, Iowa, to Miss Millicent Christner of Rosamond, Ill. June 29

RAIPH J THOMPSON to DR. BERTHELLA E JARVIS, both of Huntington Park, Calif., recently

JAMES PORTER BAKER JR. to Miss Louise Herbert Rogerson both of Richmond, Va., June 8

RALPH F HELZERMANN, Tecumseh, Mich., to Miss Edna A Mackenzie of Adrian, June 19

TOM VANN WILLIS Brunswick, Ga., to Miss Ouida Jayne Temples of Statesboro, June 8

SAMUEL R ZOSS, Cleveland, to Miss Sadye R Hoffman of Youngstown Ohio June 16

EVERETT C FOX, Dallas, Texas to Miss Ella Gertrude Boyce of St Louis June 5

CLYDE O ANDERSON, St Petersburg Fla., to Miss Eileen Masters of Tampa, June 20

LEON BANACH to Miss Marguerite N Fitzgerald both of Jersey City, N J, June 15

WILLIAM W SHORTAL to Miss Minnie Bell Graham both of Dallas, Texas, June 14

JUDSON D DOWLING to Miss Fleta McWhorter both of Birmingham, Ala June 8

HARRY E BACON to Miss Althea Hildegard Wahle both of Philadelphia, June 21

THOMAS OSCAR VINSON, Macon Ga., to Miss Roesel Stanford of Augusta June 6

RAPHAEL J HENNES Oxford Iowa to Miss Alberta Bauer of Iowa City, April 29

PHILIP E. BLACKERBY JR Louisville Ky to Miss Clara Mae Hartmetz, June 1

JOHN H BOWLES to Miss Mary Joanna Kelsey both of Muncie, Ind. June 14

DONALD A COVALT to DR. NILA GALE KIRKPATRICK both of Muncie Ind., recently

FRANCES M JOHNSON, Marion Ind. to Mr Alyn G Price of Cleveland, recently

ROBERT PHELPS BARDEN to Miss Virginia Gates both of New York June 15

ISRAEL ROBERT FRANK Boston to Miss Vera Witkin of Brookline July 17

HAROLD OYER, Angola, Ind to Miss Doris Bauer of Fort Wayne, June 7

VICENTE R LAZO to Miss Alice Bennett both of Shelburn Ind May 18

JAMES A WIGLEY, Mulberry Ark to Mrs Lillian Bencux May 18.

Deaths

Benjamin S Warren ☉ Medical Director, U S Public Health Service, Chevy Chase, Md., Tulane University of Louisiana Medical Department, New Orleans, 1891, appointed assistant surgeon in the U S Public Health Service in 1900, passed assistant surgeon in 1905, surgeon in 1912, assistant surgeon general in 1918 and medical director in 1930, professor of hygiene, St Louis University School of Medicine, 1909-1911, sanitary adviser to the U S Commission on Industrial Relations 1913-1915, medical officer of the U S Employees Compensation Commission in 1917, author of various government bulletins and articles relating to open air schools, and relation of wages to public health, aged 63, died, May 19, in the U S Marine Hospital, Baltimore of cerebral hemorrhage.

John Westley Wright, Columbus, Ohio, Cincinnati College of Medicine and Surgery, 1873, member of the Ohio State Medical Association and the American Academy of Ophthalmology and Oto-Laryngology, professor of ophthalmology, Ohio Medical University and Starling-Ohio Medical College, 1891-1910, formerly emeritus professor of clinical ophthalmology at the Ohio State University College of Medicine, Civil War veteran, at one time on the staff of the Protestant Hospital, now known as the White Cross Hospital, author of 'A Textbook of Ophthalmology', aged 92, died, May 23.

James Granger Poe ☉ Dallas, Texas, University of Tennessee Medical Department, Nashville, 1894, since 1919 instructor in anesthesia, Baylor University College of Medicine and Dentistry, demonstrator in anatomy at his alma mater, 1895-1896, member of the Associated Anesthetists of the United States and Canada, chief anesthetist to the Baylor Hospital, author of 'Modern General Anesthesia', aged 62, died, June 15, of coronary occlusion.

Paul Colson Perry, Jacksonville Fla., College of Physicians and Surgeons, Baltimore, 1897, past president of the Florida Medical Association and the Duval County Medical Society, formerly on the staffs of St Luke's, Duval County and St. Vincent's hospitals, aged 60, died, June 5, in a hospital at Richmond, Va., of pulmonary embolism, following an operation.

John Port Shaw, Brockton Mass. Trinity Medical College Toronto Ont., Canada, 1886, member of the Massachusetts Medical Society, for many years on the staff of the Brockton Hospital, aged 76, died, June 5, of myocarditis, arteriosclerosis and nephritis.

Eugene Arthur West, Chicago, Marquette University School of Medicine, Milwaukee, 1913, member of the Illinois State Medical Society, aged 50, on the staff of the Frances Willard Hospital, where he died, June 18, of pulmonary edema and cerebral hemorrhage.

Parker U Wagoner ☉ Carlisle, Pa., Temple University School of Medicine, Philadelphia 1911, past president of the Cumberland County Medical Society, served during the World War, aged 48, on the staff of the Carlisle Hospital where he died, June 14.

Perry Woolery, Bedford, Ind. Louisville (Ky) Medical College 1897, member of the Indiana State Medical Association, past president of the Lawrence County Medical Society, aged 65, died May 22, of arteriosclerosis and cerebral hemorrhage.

Charles Carr Morrison, Bar Harbor Maine, Hahnemann Medical College of Philadelphia 1883, member of the Maine Medical Association on the staff of the Mount Desert Island Hospital, aged 78, died, May 5, of lobar pneumonia and acute appendicitis.

Julius Niemack ☉ Charles City Iowa Georg-August-Universität Medizinische Fakultät Göttingen, Prussia, 1891, fellow of the American College of Surgeons, surgeon to the Cedar Valley Hospital, aged 75, died May 5, of cerebral thrombosis.

Asa L T Williams ☉ Vandalia, Ill., Marion-Sims College of Medicine, St Louis 1898, president and formerly secretary of the Fayette County Medical Society, on the staff of the Mark Greer Hospital, aged 64, was found dead June 13.

Joshua Zadok Sexton, Waco Texas Vanderbilt University School of Medicine Nashville, Tenn., 1897, member of the State Medical Association of Texas, aged 63, died June 3, in a local hospital of cerebral hemorrhage and hypertension.

Bayard Taylor Mousley, Walpole, N H Baltimore Medical College, 1905, served during the World War, formerly member of the state legislature and school board, health officer of Walpole, aged 56, died May 30, of coronary thrombosis.

Thomas A Wash, Harrodsburg, Ky, Hospital College of Medicine, Louisville, 1903, member of the Kentucky State Medical Association, mayor of Harrodsburg, aged 56, died, June 12, of chronic myocarditis and arteriosclerosis

Albert Edward Smethurst, Philadelphia, Medico-Chirurgical College of Philadelphia, 1898, member of the Medical Society of the State of Pennsylvania, aged 63, died, June 12, in the Episcopal Hospital, of coronary thrombosis

James A Stevens, Easton, Md, Jefferson Medical College of Philadelphia, 1882, formerly member of the state board of medical examiners, aged 81, died, June 8, of endarteritis obliterans and gangrene of the left foot

Charles H Christian, Fulton, Mo, St. Louis Medical College, 1890, member of the Missouri State Medical Association, past president of the Callaway County Medical Society, aged 74, died, May 9, of arteriosclerosis

Martin Luther Bradley, Springfield, Tenn, Vanderbilt University School of Medicine, Nashville, 1882, member of the Tennessee State Medical Association, aged 75, died, June 26, of chronic valvular heart disease.

John Henry Rice, Hopkinsville, Ky, Hospital College of Medicine, Louisville, 1904, member of the Kentucky State Medical Association, aged 64, died, June 7, of gangrene of the left hand and anemia

Alfred W Pearson, Gold Beach, Ore, Hahnemann Medical College and Hospital, Chicago, 1888, aged 72, died, April 27, of shock and inanition, following an operation for carcinoma of the bile ducts

George R Rohrer @ Lancaster, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1880, on the staffs of Lancaster General and St. Joseph's hospitals, aged 81, died recently

Edward Porter Webb @ Crestview, Fla, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1902, past president of the Walton-Okaloosa Counties Medical Society, aged 63, died, May 26

Elizabeth Matthews, Springfield, Ill, Woman's Medical College, Chicago, 1890, served with the American Red Cross during the World War, aged 73, died, June 9, of cerebral hemorrhage.

Richard Henry Moers, Houston, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1910, aged 49, died, May 24, in a local hospital, of embolism and coronary thrombosis

Albert C Stephens, Barren Springs, Va, University of Maryland School of Medicine, Baltimore, 1894, member of the Medical Society of Virginia, aged 65, died, May 15, of angina pectoris

Robert Finney Miller, Brenham, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1893, served during the World War, aged 69, died, April 5, in a local hospital

Milton Walborn Phillips, Chapman Quarries, Pa, Medico-Chirurgical College of Philadelphia, 1906, member of the Medical Society of the State of Pennsylvania, aged 65, died, May 28

Fabian Blanchard, Lindsay, Ont., Canada, University of Toronto Faculty of Medicine, 1893, member of the Associated Anesthetists of the United States and Canada, aged 64, died, May 4

Mendes Smyle Wechsler @ New York, University and Bellevue Hospital Medical College, New York, 1919, aged 39, died, May 25, of acute encephalitis and bronchopneumonia.

Charles Arthur Walter, Glenside, Pa, Jefferson Medical College of Philadelphia, 1910, member of the Medical Society of the State of Pennsylvania, aged 52, died, April 25

Marvin Jesse Arthur Miller, Minneapolis, University of Minnesota Medical School, Minneapolis, 1935, aged 24, was accidentally drowned, May 30, in Lawrence Township

Harry Clemmens Payne @ Pella, Iowa, Keokuk Medical College, 1897, president of the Marion County Medical Society, aged 64, died, June 23, of carcinoma of the lung

Henry G Maxey, Woodville, Ga., Georgia College of Eclectic Medicine and Surgery, 1913, aged 43, died, June 14, in a hospital at Atlanta, of furuncle and erysipelas

Martin John Nolan, Cheyenne, Wyo, University of Nebraska College of Medicine, Omaha, 1919, aged 41, died, April 11, in Rochester, Minn., of duodenal ulcer

Simon F Earnest, Hummelstown, Pa, University of Pennsylvania Department of Medicine, Philadelphia 1891, aged 68, died, May 6, of uremia due to prostatic disease

George Napoleon Gaboury, Springfield, Mass., Harvard University Medical School, Boston, 1910, aged 51, died, June 4, of angina pectoris and coronary thrombosis

John William Patterson, Oconee, Ill, College of Physicians and Surgeons of Chicago, 1893, aged 67, died, June 7, of abscess of the middle ear and meningitis.

Earle Stanley Prindle, Portland, Ore., Hahnemann Medical College and Hospital, Chicago, 1893, aged 65, died, May 26, of coronary thrombosis and angina pectoris

Hugo Gutmann @ Schenectady, N Y, Medizinische Fakultät der Friedrich-Wilhelms Universität, Berlin, Prussia, 1896, aged 62, died, June 3, of angina pectoris

Mary J Whittett, Anchorage, Texas (licensed in Texas under the Act of 1907), member of the State Medical Association of Texas, aged 81, died, May 24

James A Lester, Fayetteville, Ga, Atlanta Medical College, 1894, member of the Medical Association of Georgia, aged 65, died, June 24, of angina pectoris

William T Mahon, St. Louis, College of Physicians and Surgeons, Keokuk, Iowa, 1880, formerly mayor of Chamoss, Mo., aged 82, died, May 13, of pyelitis

Edward Clint Allen, Wayland, Iowa, St. Louis College of Physicians and Surgeons, 1898, member of the Iowa State Medical Society, aged 63, died, May 19

Leon B Gordon, Williamsville, Vt., University of Vermont College of Medicine, Burlington, 1906, aged 59, died, June 10, of cerebral hemorrhage.

Edward Benedict Taylor @ Huron, S D, Northwestern University Medical School, Chicago, 1894, aged 66, died, June 2, of cerebral hemorrhage.

Robert Arthur Mathew, La Veta, Colo, Rush Medical College, Chicago, 1897, aged 62, died, May 20, in the La Veta Hospital, of chronic nephritis

Harry Haynes Rowland @ New York, Columbia University College of Physicians and Surgeons, New York, 1903, aged 58, died, May 18.

James Angus Monroe, Wheeling, W Va, Eclectic Medical Institute, Cincinnati, 1882, aged 82, died, May 30, of coronary occlusion

Isaac Singleton Garthwaite, Santa Monica, Calif, University of Maryland School of Medicine, Baltimore, 1896, aged 70, died, May 18

Fred Young, Demorest, Ga, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1908, died in April, of cerebral hemorrhage

Isaac Hale Rathbun, Spring Valley, Ill, Rush Medical College, Chicago, 1878, aged 84, died, June 11, of carcinoma of the larynx.

Joseph S Martin, St. Martinsville, La, Tulane University of Louisiana Medical Department, New Orleans, 1895, aged 62, died, May 15

George H Brannon @ Manhattan, Ill, Hospital College of Medicine, Louisville, Ky., 1889, aged 72, died, May 15, of heart disease.

George Chester Pope, San Marino, Calif., University of the City of New York Medical Department, 1889, aged 73, died, May 4

Edward A Schnell, Greenwich, Conn. (licensed in Connecticut in 1893), aged 67, died, June 12, of cerebral hemorrhage.

Paul Jean Woolsey, Kalamazoo, Mich, Detroit College of Medicine, 1896, aged 69, died, June 21, of carcinoma of the prostate.

Albert J Fisher, Toronto, Ont., Canada, Queen's University Faculty of Medicine, Kingston, 1887, aged 76, died, May 16

Edmund Emmet O'Donnell, New York, Yale University School of Medicine, New Haven, Conn., 1898, aged 59, died, May 16

Ella Batchelder Lefavour Dean, Beverly, Mass., College of Physicians and Surgeons, Boston, 1920, aged 64, died, May 6

Charles Albert Mooers, Attleboro, Mass, New York Homeopathic Medical College, 1876, aged 87, died, April 25

James D Weddell, Tyro, Kan., Washington University School of Medicine, Baltimore, 1872, aged 86, died, in May

Winifred M Byrne, San Francisco, California Medical College, San Francisco 1896, aged 76, died, May 1

Irvin Sheppard, Sheridan, Ark. (licensed in Arkansas in 1903), aged 67, died, June 16, of encephalitis

Bureau of Investigation

SIROIL

A "Patent Medicine" for Psoriasis

"Siroil" is a "patent medicine" sold on the mail-order plan by the Siroil Laboratories, Inc., of Detroit. The concern is said to be a Delaware corporation organized in July, 1934. One Ben Kaufmann was reported to have been originally the president of the Siroil Laboratories and to have connected with him two sons, Irvin (who is now president) and Marvin (who is vice president). Among the directors there are said to be Frank V Martin, Dr R J McClellan and S Meisner. Mr Ben Kaufmann is reported to have been in the cleaning and dyeing business for some years and later to have incorporated a jewelry concern that did business on the installment plan, and also to have been vice president of a liquor distributing company. Irvin Kaufmann is reported to have been employed by the jewelry concern already mentioned. Frank V Martin it appears, is in the advertising business. Dr McClellan is reported to be a Detroit physician, and Mr Meisner is said to have formerly been engaged in the retail jewelry business in Columbus, Ohio.

which the dermatologist is confronted. Yet it is equally well known by medical men that many cases of psoriasis clear up in a remarkable way with treatment. However, the likelihood of recurrence is ever present.

More recently the Siroil concern has brought out two additional products "Ecoil" for eczema and "Siroil Shampoo the Perfect Hair Conditioner."

Because of the number of inquiries that the Bureau of Investigation has received regarding Siroil, the Chemical Laboratory of the American Medical Association was asked to analyze the preparation. The chemists' report follows:

CHEMISTS' REPORT

"Two original bottles of Siroil (Siroil Laboratories 1214 Griswold St., Detroit, Mich.) were submitted to the A. M. A. Chemical Laboratory for examination. The specimens were not identical in appearance. In general, the preparation appeared to consist for the greater part of a yellow oil together with a small amount of a suspended material which had settled to the bottom of the bottle. No information concerning the composition of Siroil was given by the manufacturer on the label or in the accompanying circular. On shaking, the mixture emulsified, on long standing, a yellow liquid separated and an insoluble material settled to the bottom of the container. When centrifuged, the product separated into two separate liquid layers and a solid. The upper layer was a yellow iridescent oil, indicative of an unbleached mineral oil, the lower layer was a colorless liquid, suggestive of water. The solid material was mostly 'centrifuged' to the bottom of the tube, but some solid substance remained between the two layers. The product had an odor of phenol. The reaction toward moistened litmus paper was alkaline.

"Qualitative tests for heavy metals, such as mercury, salicylic acid, chrysarobin and ammonium compounds were negative. A large amount of mineral oil (suggestive of an unbleached liquid petrolatum) was found. Tests also indicated the presence of phenol sodium chloride (probably as dairy salt), glycerine, water, and a very small amount of saponifiable material, and a small quantity of a waxy substance.

"The specific gravity was found to be 0.894 (approximately 0.9). On heating a specimen for six hours on the steam bath, the loss in weight was approximately 10 per cent. Further investigation indicated approximately 78 per cent liquid mineral oil and the presence of sodium chloride (approximately 0.2 per cent), phenol (approximately 0.15 per cent), a saponifiable material and an insoluble wax-like substance (suggestive of beeswax) approximately 0.25 per cent.

"The foregoing examination indicates that Siroil consists essentially of an unbleached mineral oil roughly 16 parts, water about 3 parts, glycerine approximately $\frac{1}{10}$ part, and $\frac{1}{10}$ part of each phenol and sodium chloride (salt), and $\frac{1}{10}$ part of a saponifiable material and beeswax.

"A preparation having essentially similar properties to those of Siroil may be prepared as follows:

Liquid mineral oil (yellow)	800 cc
Dairy salt	0.5 Gm
Phenol (crystals)	0.5 Gm
Glycerine	0.8 cc
Beeswax (yellow)	0.5 Gm
Water	170 cc*

* While tests indicated a very small amount of saponifiable matter—probably a fatty oil—it was not deemed worth while to identify the saponifiable matter. Tests indicate that if present it was in amounts less than one per cent.

"Dissolve the dairy salt and phenol crystals in the glycerine and water, add the mineral oil and beeswax, finally warm and shake.

According to the advertising, Siroil is 'a positive relief for psoriasis.' In circular letters sent out by the Siroil Laboratories, signed "I G Kaufmann," the sufferer from psoriasis is told "No matter how difficult or longstanding your case may be, Siroil will give you surprising relief." In advertisements published in the New York Times (a newspaper which, before the depression did not carry "patent medicine" advertising) we read:

Siroil applied externally to the affected area causes the scales to disappear, the red blotches to fade out and the skin to resume its normal texture.

Yet the Siroil concern declares that 'We are making no extravagant claims for Siroil.'

The alleged genesis of Siroil falls into one of the well-known patterns common to "patent medicine" exploitation. The public is told that "an outstanding chemist who had psoriasis and was 'unable to obtain relief from the best skin specialists' began the inevitable 'intensive research in an endeavor to find a cure. After six years he is alleged to have developed the preparation which 'successfully treated his own condition.' This was born Siroil.

It is unnecessary to tell physicians that there is probably no skin disease more difficult to treat satisfactorily than psoriasis. The condition is frequently among the most intractable with

for PSORIASIS

LEARN ABOUT SIROIL

THE GUARANTEED RELIEF

Siroil, the new relief for psoriasis has brought expressions of gratitude from men and women throughout the country. You owe it to yourself to try it. Unless it relieves your condition within two weeks—and you are the sole judge—this treatment costs you absolutely nothing. Our guarantee covers that fully Siroil applied externally to the affected area causes the scales to disappear, the red blotches to fade out and the skin to resume its normal texture.

SEND FOR THIS FREE BOOKLET TODAY

SIROIL LABORATORIES
1214 Griswold St., Dept. T Detroit, Michigan

Please send me full information on Siroil—the new treatment of psoriasis

PSORIASIS
The Siroil Method and the Siroil Booklet
SIROIL LABORATORIES
1214 Griswold St., Detroit, Mich.

Reports have come in from persons who have tried Siroil and are enthusiastic about it. On the other hand, a Philadelphia woman writes that after using Siroil "a rash is beginning to appear on my body. A Pennsylvania physician reports that a psoriasis patient of his used Siroil and "developed an eruption on the neck, face and hands characteristic of dermatitis venenata. A Massachusetts physician reports that a patient of his used Siroil and developed a severe rash wherever it came in contact with her skin."

In other words the letters to the Bureau of Investigation reflect what one would expect to be the opinions on a preparation of this character. Siroil occasionally helps occasionally harms and frequently does neither one nor the other.

Correspondence

A PROBLEM IN DIETETICS

To the Editor — Anent the timely article of Alvarez and Hinshaw in *THE JOURNAL* of June 8 on "Foods That Commonly Disagree with People," may I be allowed to make a comment or two?

I have observed in several of my patients and in my own self that many of the so-called offending foods turn on us, so to speak, because they are not eaten in a state of perfect freshness or after being naturally ripened. This is especially true of the vine-producing vegetables and fruits such as cucumbers and cantaloupes.

If such articles are served "fresh from the vine" and not from market shelves, where they may have reposed for hours and days, there will be noticed a total lack of digestive disturbance or at any rate a greatly reduced upset. Doubtless chemical changes take place in such products of the soil after they are separated from the mother stem, and there would seem to be but one moral to draw, viz., "Own your own garden." With modern refrigeration it is a simple problem to have the two 'offenders' mentioned thoroughly chilled for fifteen minutes before they are served, and all will be well with the eater.

I have made the same observation regarding the use of sweet corn, for here too its preparation for the table should be expedited after its plucking, just as one would snatch a rainbow trout from the cold, limpid stream and throw it almost writhing on the savoring broiler.

There is no standstill in nature's kingdoms, either vegetable or animal, and it does not hesitate to visit punishment on many an eater of foods that are improperly or insufficiently matured or tardily prepared for consumption. The Englishman may prefer his beefsteak or lamb chop very "high," but he surely flirts with digestive disturbances in so taking it.

Undoubtedly much of the discomfort or distress attending an indulgence in shell-fish is primarily due to the fact that toxins develop during the period following its removal from native haunts to the hour of its consumption. It would seem to me that the chemistry of many foods will yet bear closer study regardless of their content in vitamins.

Why does the lowly onion "in the raw" so frequently retrace its course upward from stomach to palate, whereas, if eaten after floating on waves of acetic acid or after a thorough steaming and delicious creaming, it stays "put"? Chemical and physical changes, both gross and fine! Similarly, and yet paradoxically, on the contrary raw cabbage versus boiled cabbage. Again, compare the result of eating under-ripened fruits, such as the highly thought of banana, with that following the partaking of the same fruit thoroughly ripened on the tree. Similarly with the citrus family.

These points may be looked on as unpractical, but they must be taken into account in any logical discussion of dietetics.

When one stops to consider the excellent quality of milk as a culture medium, is it to be wondered at that so many individuals apparently in normal or average health complain of this food in their diets? What though the bacterial count is low at the laboratory or that pasteurization has been done, what is really known as to the changes that have taken place from the time of its withdrawal from the giver until it is consumed? There is nothing to govern one's decision as to its fitness for use except the taste of it, and this may be far misleading.

The same observation must be equally true of so unstable a product as the altogether worthy egg, which when "gathered" from the still warm nest of the cackling biddy is food fit for the gods.

I recognize in this discussion a factor known as allergy so far as the protein content of foods is concerned, but I believe

that the term is being used to cover a big bit of ignorance regarding the composition of a strictly fresh or naturally ripened food as compared with that of the same food kept for varying periods either in cold storage or at ordinary temperatures, or brought to the consumer through an artificial process of ripening. It may be that in this instance as in many others "our greatest assets will prove to be the things we do not know."

Practically speaking, what we as physicians need to do in formulating diets for our patients is to guide the individual along sane lines of thought not only as to food values but as to the advantage of procuring foods as fresh or as naturally matured as possible and of serving them as best befits the individual, for it may still be true that "what is one man's food may be another's poison."

MAURICE B. BONTA, M.D., Los Angeles.

ANAPHYLAXIS AND ANESTHESIA

To the Editor — It has come to my attention that an answer to a question on the effect of a general anesthetic on anaphylactic shock appearing in *THE JOURNAL*, Oct. 1, 1932, page 1194, has been referred to in medical teaching as implying "that a general anesthetic is likely to prevent or at least delay anaphylactic shock, if, during anesthesia, foreign protein is injected in a sensitized patient." Although this answer includes the caution that its apparently favorable effect should not be allowed to displace other precautionary measures, nevertheless I believe it goes too far when it implies that general anesthesia is of any aid. The literature on anaphylaxis is generally opposed to such a view. The apparent origin of the opinion that anesthesia would prevent or alleviate anaphylactic shock was Besredka's report that ether narcosis would prevent anaphylactic shock in guinea-pigs. This was not confirmed by Anderson and Rosenau in their early work and has failed of confirmation by other workers. Bally (*J Immunol* 17:223 [Sept.] 1929) has shown that ether anesthesia does not deter anaphylactic shock in the rabbit. Krafka, McCrea and Vogt (*J Physiol* 68:292 [Nov.] 1929) have obtained anaphylactic shock in cats under anesthesia. The great majority of the work on anaphylaxis in the dog has been done under anesthesia of various kinds. The nature of the anesthetic used has not been mentioned in many instances apparently because of the writer's conviction that it was generally known that anesthesia would not vitiate the results. Weil, however (*J Immunol* 2:525 [Oct.] 1917), saw fit to comment as follows: "Parenthetically it should be added that ether anesthesia does not in the least inhibit acute anaphylactic shock with death in dogs." Manning and his collaborators in numerous papers, Simonds, Voegtlin and Bernheim, Heymans and many others have reported work in which various anesthetics were used without preventing shock. In the dog, my associates and I have used ether, chloroform, paraldehyde, barbital and vinethene, with and without morphine, and often in combination, without any apparent ameliorating effect. To be sure, vomiting is prevented in the dog by anesthesia and perhaps the bronchial constriction in the guinea-pig may be somewhat less intense, but there is no substantial evidence that if sensitization is high the fatal issue has been either postponed or prevented. I know of no adequately controlled observations in man that warrant a conclusion of any sort. However the experiments on laboratory animals but partially referred to here, together with the evidence that anaphylactic shock is largely a histamine intoxication (Gebauer-Fuelnegg and Dragstedt, *Am J Physiol* 102:520 [Nov.] 1932) and that ether anesthesia (Dale, *Brit J Exper Path* 1:103 [April] 1920) increases the susceptibility to histamine not only lend no support to the idea that anesthesia would diminish anaphylactic shock but actually indicate the reverse.

CARL A. DRAGSTEDT, M.D., Chicago

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

OPTIMUM AIR CONDITIONS

To the Editor—A man aged 55 who has an old fibrous tuberculosis of the left lung now inactive has had his office air conditioned. What is the optimum humidity for him? What the temperature in relation ship to the outside air? W P ANAMSON MD Tampa Fla

ANSWER.—The human body functions best in a temperature of from 68 to 70 F with a relative humidity of from 40 to 50 per cent. However, the factor of safety is such that no great harm comes from somewhat higher or lower temperatures and corresponding changes in humidity.

There is no good evidence to prove that humidity has any significant influence on old fibrous tuberculosis. At one time it was believed that the rales indicating moisture, which one often elicits over an area of progressive tuberculosis, could be influenced by reducing the humidity of the air. More logical thinking, however, convinces one that the moisture elicited over the area of disease is produced in and about the pathologic process rather than by the outside air that one inhales. A tuberculous process is often spoken of as becoming dry. By this it is meant that less evidence of moisture is elicited on physical examination and that there is decrease in expectoration. If the tuberculosis is of the chronic type, there is evidence of fibrous tissue deposits. Here again the deposition of fibrous tissue is not dependent on presence or absence of moisture in the air that one inhales but on the proliferation of connective tissue cells. One sees persons who develop clinical tuberculosis while working in places where the air is extremely dry and yet moist rales may be elicited over the lesion. Again, one sees patients whose lesions show marked decrease in moisture and the deposit of much fibrous tissue while they are being treated in very humid air. It appears, therefore, that the air one inhales, so far as its humidity is concerned, has but little to do with the progressiveness or retrogressiveness of the tuberculous process. Therefore, air conditioning is a matter of providing air free from dust contamination with the temperature and relative humidity in which the body not only is most comfortable but also functions best.

In the winter it is customary to heat houses and buildings where people work to approximately 70 degrees, although the outside temperature is freezing or below. This has proved satisfactory. Therefore it is just as logical during the summer months to cool the air in buildings to approximately 70 degrees when the outside temperature is high. For a patient with an old fibrous tuberculosis that is inactive, an attempt through air conditioning to keep the temperature of his office at approximately 70 degrees and the relative humidity at 40 to 50 per cent should not only add much to his comfort but also contribute to his health.

RECURRENT SWELLINGS

To the Editor—A man aged 61 has had recurrent swellings of the face, throat, tongue, hands and feet for four years. The swellings almost always come on at 3 o'clock in the morning and apparently involve the tissues deep to the skin although there may be some slight swelling and irritation of the skin but not accompanied by urticaria. The first attack apparently dated from an attack of jaundice which lasted about three months and according to the history was suggestive of catarrhal jaundice. These have recurred every one to three weeks since and swellings as large as a hen's egg are somewhat relieved by epinephrine hypodermically. Investigation has revealed no sensitivity to common foods. The patient's blood calcium is normal and he has had no history of asthma or hay fever and has not been benefited by the administration of calcium. He has also had his teeth removed without benefit. At present I am giving him three-eighths grain (0.025 Gm) of ephedrine at bedtime with the idea of warding off the attacks. What further investigation or treatment would you suggest? Please omit name.

M D Ontario

ANSWER.—The cause of the swellings is problematic. The fact that they occur at 3 o'clock in the morning would indicate that something taken just before bedtime either a food or a drug may be the cause or the patient may be hypersensitive to some article in the bedroom such as a horsehair mattress, a feather pillow, or a camel hair blanket.

It is suggested that, if any of these are present in the bedding they be removed and then if symptoms clear up that they be brought back one at a time to see if the swellings recur.

Drugs are a common cause of swellings especially drugs containing quinine or coal-tar derivatives such as acetosalicylic acid, amidopyrine and acetanilid. These are often taken not

only in the form mentioned but also frequently combined in proprietary and 'patent' medicines. There are many cases of idiosyncrasies to certain sleeping medicines, such as barbitol preparations some of these contain coal-tar derivatives and barbitol. Occasional cases have also been reported from the use of ephedrine, even though ephedrine is used with the idea of combating attacks.

It is suggested also that a food diary be kept, especially of the evening and night meals, and that the foods which are commonly eaten at those times be omitted one at a time for a period of about one week to see what effect will follow, if any.

If skin tests were completely carried out, they need not be repeated, but, if the tests were incompletely done, information may be obtained by such methods in many cases.

MEDLAR'S RATIO FOR LEUKOCYTES IN TUBERCULOSIS

To the Editor—Can you give me any information about Medlar's ratio as mentioned herewith. The leukocyte count affords us a method of obtaining a biopsy so to speak which mirrors the pathological tuberculous process and thus gives valuable prognostic information. In Medlar's interpretation the polymorphonuclear, the lymphocyte and the monocyte are all concerned in the pathological processes at some time during the infection. Some investigators favor the polymorph ratio others the monocyte-lymph ratio. Recently a slide rule has been devised by which Medlar's pathological conception based on the leukocyte count can be expressed in the form of an index. While the Schilling count is of distinct value yet considering the extra time the skill required in differentiating the cells and the possibility of error it is our belief that with the possible exception of the acute tuberculous process it does not give added information that cannot be obtained from Medlar's formula.

G WARD DISBROW MD Summit N J

ANSWER.—Medlar has published in the *American Review of Tuberculosis* (20:312 [Sept.] 1929) a study of the leukocytic reaction in the blood in tuberculosis. He performed weekly total and differential leukocyte counts in 120 cases. In all the charts 5,000 neutrophils, 2,000 lymphocytes and 700 mononuclears were used as the base lines.

The mononuclear leukocyte (the epithelioid cell of the tubercle being the mononuclear leukocyte of the circulation) forms the primary tubercle and takes a large part in the repair of the tuberculous lesion following caseation. The neutrophil is the chief cell in the formation of tuberculous abscesses that leave cavities and ulcers. As long as these continue to enlarge, the neutrophils are increased. The lymphocyte appears in the process as the predominant cell only when the lesion (primary tubercle, caseous lesion or ulcerated lesion) is in the healing stage. The lymphocyte remains in the healing or healed area long after the other leukocytes have ceased to play a part.

From the leukocytic graphs, made from the numbers of each of these three types of cells found in the blood, certain conclusions can be drawn regarding the progress of the disease in each case. The leukocytes respond to the type of damage done to the tissue. In general, the mononuclear leukocyte increase indicates new tubercle formation, the neutrophil tuberculous abscess formation, and the lymphocyte healing of the tuberculous process.

In the majority of cases there is a close agreement between the clinical progress of the case and the leukocytic interpretation. The leukocytes are often the first indication of an exacerbation, even before the appearance of clinical symptoms or x-ray evidence. The majority of tuberculous cases present a stable leukocytic picture. Patients with a septic leukocytic picture are liable to have hemorrhages or exacerbations. Patients with a high lymphocyte, low neutrophil count and only slight mononuclear increase do not have hemorrhages or serious spread with such a leukocyte picture. A lowering of the neutrophils and mononuclears with rise of the lymphocytes, indicates a tendency toward healing.

There are three types of leukocytic formulas indicative of three phases of tuberculosis. These types may shift from one to another with changes in the disease process.

1 In the septic leukocytic picture the total count is usually above normal. The neutrophils are above 65 per cent, usually 70 or more. The lymphocytes are never above 25 per cent and usually below 20. The mononuclears are usually above 8 per cent and may be as low as 5 per cent. This type indicates that the lung process is undergoing abscess formation or extension. Healing is not taking place. A mononuclear count above 9 per cent speaks for new tubercle formation.

2 In the hyperplastic picture the total white count is usually within normal limits, never greatly increased. The mononuclears are above 10 per cent, the neutrophils below 60 per cent, the lymphocytes 25 per cent or more. This indicates new tubercle formation, but without abscesses. With lymphocytes above 30 per cent there is a tendency toward healing.

3 In the nonseptic picture the total count is not over 10,000. The percentage of lymphocytes is high, approaching closely the neutrophil percentage. There may even be more lymphocytes than neutrophils. The mononuclears are below 10 per cent. This picture indicates healing, with no abscess formation and but little indication of new tubercle formation.

Flinn has recently concluded that a high monocytic count, with a normal or low lymphocytic count, suggests an active proliferative lesion. A rising monocyte count suggests an extension or exacerbation of the proliferative process or a complicating extrapulmonary lesion. A high neutrophil percentage suggests an exudative lesion. A rising neutrophil percentage suggests extension or exacerbation of the exudative process. A high lymphocyte count suggests an increased tendency to heal.

The blood picture, therefore, may give valuable aid in determining the kind of changes occurring in the tissues. The leukocytic reaction often agrees closely with the clinical status at the time the blood is taken. Blood counts at frequent intervals are of real value in determining the trend of a case of tuberculosis. The blood picture may reveal an extension of a lung lesion before the physical or roentgenographic signs.

HAY FEVER

To the Editor—A boy, aged 10 years, has always been delicate, is growing fast, is about 2 inches over the average height and is about 2 pounds under the average weight. He has always been active and more energetic than most boys of that age. Large adenoids had to be removed at 2 years of age, the tonsils at 3 and the appendix at 6. He had whooping cough at 2 years, measles at 5 and chickenpox at 8. When he was 4 years old he was exposed to poliomyelitis and was given one dose of antipoliomyelitis serum. Within half an hour he was covered from the top of his head to the soles of his feet with an urticaria. There was absence of vomiting or other symptoms. This condition lasted ten days and was controlled with maximum doses of epinephrine and ephedrine with atropine. Last January a slight attack of influenza lasted three days but following that there was a slight elevation of temperature, less than 1 degree during some part of the afternoon lasting two months during which time he was kept strictly at rest. Nothing could be found in the lungs, sinuses, teeth, abdomen or ears to account for it. Roentgen examination of the chest and abdomen proved to be negative, as also were four tuberculin tests with old and new tuberculin. About three weeks before this was written some congestion of the eyes and nose developed which tended to clear up and was made much worse one day when he picked a few dandelions. This was very suggestive and skin tests were made. It was found that he was sensitive to a great many of the foods including milk, eggs and cereals and to almost all the pollens usual for this district, including dandelions which was very marked. No nasal tests have been made but all the blood counts have been practically normal. The kidneys have always been normal, except that at 5 years he had a slight pyelitis but frequent examination since then has never shown any pus cells or abnormality. At the present time the only symptom is some congestion of the turbinates with some obstruction of breathing, especially during the night. I would appreciate knowing if there is anything that can be done for this generalized allergy to both foods and pollens. No foci of infection have been found anywhere in repeated examinations. Please omit name and address.

M D Canada

ANSWER—The fact that congestion of the eyes and nose occurred about three weeks before the query was written coincides with the beginning of hay fever due to grass pollen. If this is correct, and the positive skin tests would seem to confirm this, the symptoms will continue until the grass pollen season is at an end, somewhere about the first of August.

If, in addition, the boy is hypersensitive to ragweed, the hay fever will start up again about the middle of August and carry on until the first frost.

The picking of the dandelions and the positive skin test to dandelions signifies little, as dandelion pollen is carried little by the wind and therefore is not important as a cause of hay fever.

The child should receive coseasonal injections, small doses, intracutaneously, at this time of dilute grass pollen extract, e.g., 1:10,000. The first dose might well be 0.1 cc. and this dose should be repeated every day or every other day for a week or two and then gradually increased until August 1. This procedure might clear up the condition promptly. All foods that gave positive skin tests should also be thoroughly eliminated from the diet, at least during the hay fever season, and if they cause symptoms at other times of the year they should also be avoided. However, before it is concluded that the boy is clinically sensitive to these foods, such as milk, eggs and cereals, he should be tested out at some future time outside of the pollen season by removing the foods and then prescribing them to see whether symptoms result.

Clinical sensitivity and positive skin tests are not synonymous by any means. Many patients have given positive skin tests to certain foods but may eat these foods with impunity. On

the other hand, many individuals with negative skin tests cannot tolerate certain foods. In other words, every positive skin test, either to proteins or to pollens, must be corroborated clinically before definite conclusions can be reached.

In addition, the fact that the boy gave a reaction to serum suggests extreme caution in receiving any further doses of any kind of serum if this should be necessary at some time in the future. Such serum should be administered very slowly and in many divided doses.

PAROXYSMAL TACHYCARDIA

To the Editor—A man, aged 51, an oil well driller, with an irrelevant past medical history, has had typical attacks of paroxysmal tachycardia since he was 20 years of age. Until the last three years the attacks were mild and infrequent, occurring about once a year and lasting from a few minutes to two or three hours. During the last three years the attacks have occurred on an average of once in two months and last from fifteen to thirty hours. During the last three attacks, alarming symptoms of acute circulatory failure, i.e., marked venous congestion, orthopnea, marked cardiac distress, cyanosis and a feeble uncountable pulse with a heart rate around 250 a minute have developed near the end of the attacks. He complains of agonizing precordial pain, when the attack suddenly ceases. Between the attacks the patient has no symptoms referable to the cardiovascular system, no evidences of cardiac disease are demonstrable by ordinary clinical means and the patient enjoys robust health. In the recent attacks none of the ordinary means of vagus stimulation have had any influence on the condition. Choline chloride was tried once without any effect. Can you suggest any treatment that might be useful in terminating these attacks? Would continuous administration of quinine be indicated in hope of preventing the condition? Kindly omit name.

M D, Wyoming

ANSWER—A heart that can stand the stress of the rapid rate of an auricular paroxysmal tachycardia at the age of 20 cannot do so as readily at 51. At that age there are usually changes of some degree in the coronary arteries and in the heart muscle and the conducting tissues, which make such a rapid rate a more serious matter. A rate of 250, however, is too rapid a rate to maintain an adequate circulation at any time, and attacks lasting from fifteen to thirty hours, even with a slower rate, usually show evidence of circulatory failure.

If it is possible to obtain an electrocardiogram during an attack, it would be interesting to see what it would show. The same case that showed a typical tracing in early life may show aberrant ventricular complexes during the attack in later years, with bundle branch block or even a condition resembling a ventricular tachycardia. Attacks of auricular fibrillation may be interspersed with attacks of paroxysmal tachycardia. A rate of 250 is much more rapid than is found in auricular paroxysmal tachycardia, which rarely goes over 200. An auricular flutter, with 1:1 block, should be ruled out. Quinine in daily doses, adequate to prevent the attacks, is indicated. It should be discontinued at once, however, if there are any evidences of untoward results. Morphine may be of use during the attacks or vagus (carotid sinus) stimulation may be more effective after the morphine.

At the end of an attack there is often a slow, irregular pulse with long pauses between the beats, and anginal pain may occur consequent on the decreased coronary flow.

CYST OR GANGLION OF GREAT TOE

To the Editor—A man about 40 years of age came to me about two months ago with a tender swelling on the inside of the left great toe about one fourth inch from the nail. Thinking it was an abscess I incised it, and to my surprise several drops of a jelly like fluid came out. It was light colored and a good deal like the vitreous of the eye. A few days ago he came in again and said that since the previous visit the swelling had recurred several times and each time he had opened it up and the same kind of fluid escaped. I was unable to probe it to any depth so I incised the tumor and curetted the wound. Now after a lapse of ten days it still continues to drain and does not heal. I can find nothing in my books to give me an indication of what it is and have asked other physicians but they say they do not know. Can you tell me what it is and the proper treatment. I would appreciate your help greatly.

A W PATTERSON M.D., Fonda, Iowa

ANSWER—This condition is doubtless a cyst, which is exactly similar to that which frequently develops over the dorsal aspect of the wrist and is commonly known as a ganglion.

Concerning the origin of these cysts there is considerable dispute. By some they are considered extrusions of the synovial membrane of a joint or of the synovial lining of a tendon sheath. By others they are considered a degenerative process arising in the fibrous tissue of the joint capsule or fibrous tissue overlying a bone. The cysts that form alongside the nail of the fingers or toes can often be traced by careful dissection to the region of the distal interphalangeal joint and may arise from this joint.

The proper treatment is careful excision of the entire cyst wall. This excision can be accomplished with the help of an adequate skin incision and of a bloodless field, secured with the help of a blood pressure band or a tourniquet. Unless one can visualize the involved area exactly, it is easy to leave a small portion of the cyst wall behind and have a recurrence of the trouble.

FACIAL FLUSH IN TUBERCULOSIS

To the Editor—Many years ago while on duty in a government hospital for the tuberculous I was impressed with the observation that, when a tuberculous patient flushes, the color in his face appears in streaks or splotches alternating with streaks or splotches of a pallid hue. This streaking of the face has no relation in appearance at least to the familiar hectic flush, nor is it the pallid condition about the lips and nostrils observable in almost any very ill patient. These last named conditions have often been described as has the peculiar facial expression of the tuberculous. Standard textbooks devote pages to this subject, yet the condition of which I speak has never, so far as I have been able to learn, been mentioned in literature. When a person in health flushes, as from exertion, coughing or blushing the increased color in his face is uniform. When such a person turns pale as from shock fright or in a faint the blanching is uniform. Not so with the tuberculous. I have observed this coloring in streaks chiefly in ambulatory patients and have observed it with sufficient frequency to be convinced that it is always present in patients with advanced pulmonary tuberculosis. I am convinced that the condition is an indication of pulmonary disease but I do not know that it is more marked in tuberculosis than in pulmonary impairment due to other causes. To what extent the condition is the result of a vasomotor disturbance, or to what extent it is due to defective aeration I have not been able to determine. The condition may be observed by simply having the patient lower his head for a few moments or by having him cough. He should be under a good light. I am asking that clinicians who see a large number of pulmonary cases look out for and report on this sign, which may or may not prove to be of value in diagnosis.

BENJAMIN K. HAYS Oxford N C

ANSWER—Formerly, it was believed that the hectic flush is due to toxemia. However, it was observed that the flush is often unilateral and always on the side of the diseased lung. When both lungs are diseased, the flush is more marked on the side of the greater activity of the disease. If the condition were due to toxemia, one would expect both sides of the face to be flushed to an equal degree. Therefore this phenomenon has been explained on a reflex basis. When the sensory fibers of the trigeminal nerve are stimulated, dilatation of the vessels occurs in the area which these fibers supply. The irritation produced by disease in the lung results in stimuli which pass over the afferent fibers of the vagus nerve. In the trigeminal nerve there are dilator fibers of cerebral origin. Thus, the impulses carried over the vagus from the area of disease pass reflexly over the trigeminal nerve, to result in dilatation of the blood vessels, giving the hectic flush. Such a flush or burning sensation over other parts of the body, such as the lobe of the ear or even the skin over the chest wall, may be brought about in the same manner but over different nerve paths. Just why the color in a tuberculous patient's face appears in streaks or splotches alternating with streaks or splotches of a pallid hue is difficult to explain. In such a case there probably is some defect in the vasomotor mechanism, possibly due to afferent impulses from the irritated lung, since other reflex disturbances, such as those mentioned, spasticity of muscles, and so on, are also observed. Defective aeration probably could have such an effect only by affecting the vasomotor mechanism. As was mentioned, further observation of a large number of cases will be necessary to determine whether the impairment is always due to tuberculosis or other pulmonary diseases.

BLACK TONGUE AND HALITOSIS

To the Editor—For more than twenty years a patient has had on the posterior part of the tongue a grayish thick covering with a strong foul smell. The patient is now about 40 years old. The reaction of the saliva is slightly acid. With an alkaline mouth wash the patient gets a stomatitis. Weak solutions of boric acid and Burrow's solution burn. Chamomile flower tea a teaspoonful to a glass of water is well tolerated. Internal iodide medication had to be dropped repeatedly as signs of intolerance developed. Brushing the tongue morning and night with a soft toothbrush has been tried with no success as yet. Aside from the described condition the patient has a vasomotor rhinitis. May I ask you for advice as regards the treatment and is there any hope for cure of this condition? Kindly omit name and address.

M D New Jersey

ANSWER.—Bad odor of the breath associated with either coating of the tongue or a hypertrophy of the papillae just in front of the circumvallate papillae and in the median line is not a rare condition. Apparently the odor is generated by a growth of fungi about the base of the elongated papillae or beneath the coating. The condition described may be a variety of the clinical entity known as black tongue, as the pigmentation

in this defect varies from brownish black to light gray. Foul odors emanating from the mouth as well as from the nose occur in such forms of atrophic rhinitis as ozena but not in vasomotor rhinitis. In any event, treatment is indicated only for the purpose of eliminating the bad odor. Usually thorough swabbing of the region with strong hydrogen dioxide followed by irrigation with warm physiologic solution of sodium chloride is effective if repeated a number of times. In stubborn cases a suitable brush with soft bristles may be used, but, because the foul smelling deposits are located at the base of the papillae, patience and persistence are required. In obstinate cases of black tongue, Prinz (Diseases of the Mouth and Their Treatment, Philadelphia, Lea & Febiger, 1935, p 436) recommends the use of a 10 to 15 per cent solution of salicylic acid in equal parts of alcohol and glycerin, applied on a swab and followed by irrigation with salt solution. The use of scrapers or other methods of mechanical removal has been advocated, but, as Prinz warns, such treatment is likely to promote recurrence.

URTICARIA DURING MENSTRUATION

To the Editor—A married woman aged 30 gives a negative history as to illness other than having had an operation for anchoring the uterus about two years ago. She has been married for five years and has had three abortions one being followed with a tubal infection which required a month's treatment to clear it up. A few months later she noticed that around her menstrual period there were several fair sized swellings below the knees to the ankles. These swellings are painful when they develop and are at first red and after about three days become bluish. After the operation she did not notice them for several months but she has had them again for the past several periods now they develop all along the inner side of the left thigh although formerly both legs were affected. The bluish discoloration did not entirely disappear the last time and there is still some tenderness where the swellings were and an area about the size of a half dollar at each site. Her last period was about two weeks ago and she expects the same condition at the next period. There is no swelling of the feet or ankles and when a tourniquet is used at the top of the thigh the areas do not swell as a varicose vein does although she states that in the morning when she is first out of bed the swellings are smaller and increase in size during the day. One physician told her that they were due to allergy and dieted her without results and another one told her they were due to the condition of her uterus and that after an operation she would be cured. She was relieved for a few months but has had this condition again for several months. I cannot find any mass in the pelvis but there is some tenderness about the left side of the uterus which is larger than normal and down lower in the pelvis than normal. I expect to see her again when these swellings develop and wish you would give me your opinion as to what is the cause of this trouble. It seems that they may be due to an old phlebitis which developed a month or two after a salpingitis, but I cannot make the veins distend so that I can be certain about it and the location of the swellings is not exactly along the course of the veins as they are scattered about the surface of the thigh. The patient states that when they are swollen they are rather hard and they will pit on pressure. The urine is normal. Kindly omit name and address.

M D Minnesota

ANSWER.—The lesions described sound like either erythema multiforme or giant urticaria.

If, as suggested, there is a definite relationship between menstruation and the appearance of the nodules, erythema multiforme is unlikely.

Recurrent attacks of urticaria sometimes accompany menstruation, notably in patients with pelvic disorders. In the majority of such cases, disturbances of the alimentary tract are present also and the recurrence of the nodular swellings may be prevented by careful attention to diet and to elimination.

EXERCISE TOLERANCE TESTS

To the Editor—Please state the significance of the exercise tolerance test from an insurance standpoint in regard to the pulse rate and blood pressure not increasing after exercise or increasing to an excessive degree.

M D South Carolina

ANSWER.—Life insurance companies, although they have been greatly interested in the development of tests of circulatory efficiency that are significant from the standpoint of prognosis, have been unable as yet to arrive at any test or group of tests of definite value in this field. In fact, many medical directors are becoming dubious about ever being able to do so.

In general the pulse rate and the blood pressure are expected to increase after exercise. Failure of the blood pressure to do so may indicate a poor cardiovascular reaction or a very stable vasomotor system while little or no increase in the pulse rate is considered a favorable reaction. It is assumed also that the pulse rate should return to the preexercise rate within two minutes after the prescribed exercise. If it does not do so, further study of the circulatory condition is indicated, but the finding in itself warrants no definite unfavorable conclusion.

In other words, the reaction to exercise is just one of the many points to be considered in arriving at an estimation of the condition of the cardiovascular system.

PERSISTENT FURUNCULOSIS

To the Editor—A man, aged 51, has suffered from multiple furunculosis involving any portion of the body for eighteen years. He is a foreman in a paper and rag warehouse but does little or no hard work himself. While it may seem at first that the dusty atmosphere may be an etiologic factor in his condition may I remark that he has had boils even when away to the country and when at home away from work for a period of a month. He has been treated with regard to hygienic measures such as daily bathing with bland soaps and daily change of underclothing and attention to bowel regulation. He has had all the vitamins in high dosage also calcium compounds in high dosage liver and iron. He uses a sun ray lamp at home which I ordered and have graduated the dosage slowly and progressively for full body exposures. He has had numerous parenteral treatments with vaccines both stock and autogenous nonspecific therapy staphylococcus toxoid, and bacteriophage made from culturing his own pus from the furuncles. (The organism incidentally has always been *Staphylococcus aureus*.) He has had large doses of tin oxide tablets and sulphur by mouth. Diet has likewise been to no avail. The boils have varied greatly in size the largest are about 9 cm in diameter. The patient weighs 201 pounds (91 kg) and is 5 feet 9 inches (175 cm) tall. Physical examination is negative. The blood count is normal as is the blood chemistry including sugar urea and creatinine. Frequent urinalysis is negative. He takes no medication such as might cause or favor skin eruptions. The blood Wassermann reaction is negative. I know of nothing further that I can do for this man. Have you any suggestion as to etiology and therapy? Please omit name.

M D New York

ANSWER—Persistent furunculosis lasting over eighteen years is rather unusual. After a series of furuncles there is usually a rise in the body immunity, which effectively overcomes the infection and protects the individual.

In this instance an effort must be made to raise the skin resistance, as metastatic infection in other tissues has not developed.

It seems that most of the well known remedies and some very doubtful remedies as well have been tried except the use of the x-rays. Several authors report the beneficial effects of roentgen treatment. It has proved helpful in aborting furuncles, in hastening their healing and in stimulating resistance to protect against infection.

It should be used in conjunction with surgery in the larger furuncles but may prove more valuable here as a preventive of further infection. The exposure should be made under the supervision of a competent roentgenologist.

The intracutaneous method of administration of vaccine or toxoid is believed to be superior to the subcutaneous route through stimulating the immunizing bodies in some specific manner. This should be tried at least in resistant cases.

The actual details of personal hygiene should be outlined and checked up repeatedly. Since furunculosis is the result of skin infection, some method of staphylococcus destruction by antiseptics should have some value here, in addition to cleanliness and avoidance of irritation or friction by clothing.

It may be of value to apply an ointment to the skin with or without an antiseptic after bathing.

Regardless of the normal blood sugar, the carbohydrates and sugars should be reduced to a minimum.

PROSTATITIS AND ASSOCIATED SYMPTOMS

To the Editor—A white man aged 40 had a prostatic abscess of idiopathic origin five years ago which ruptured spontaneously and drained through the urethra. He had vague discomfort in the perineum following this which at times became a heavy ache which radiated into the right leg. He had only a few massages of the prostate at the time. During the past year and a half the patient has had migraine-like attacks with typical aura scintillating photophobia increase of nervousness dull boring headache sometimes bilateral and finally nausea. These attacks have varied greatly in frequency and severity. When more frequent they are less severe. The worst ones ended by vomiting. About one year ago he had two very light prostatic massages on different days each of which was followed by atypical attacks of migraine within two hours. The prostatic secretion was essentially normal under the microscope. Since then no massages have been given. The attacks continue and at times incapacitate the patient for twenty-four hours. Is it probable that these attacks are caused by the prostatitis? What method of treatment would you advise in such a case? Are vaccines valuable? Is there any form of heat to the gland worth while? Kindly omit name.

M D Indiana

ANSWER—In rare instances nervousness, headaches and dizziness may be due to chronic infections in the prostate gland, so that this symptom complex may be due to a chronic prostatitis although this is exceedingly rare. On the other hand, the fact that the patient does not have pus in the prostatic strippings when examined with the microscope would lead one to believe that the prostate is normal and hence not a factor. On the other hand the fact that light prostatic massage produces these atypical attacks of migraine must necessarily cause one to stop, look and listen. Because of this occurrence, further investiga-

tion of the prostate is indicated, that is, the prostate should be massaged at weekly intervals and the strippings examined with the microscope. If the strippings show no pus, obviously there is no infection of the prostate that can be drawn into the picture. Without this, the natural impression would be that the attacks of migraine following massage are purely accidental. If there is no pus in the prostate, no treatment would seem to be called for. If, however, repeated examinations of the strippings show pus, heat by rectum and massage should be employed. Whether or not vaccines are indicated will depend entirely on whether cultures from the strippings show infection.

SPONTANEOUS IDIOPATHIC PNEUMOTHORAX

To the Editor—A man, aged 30 worked at the chloreal thermometer trade for some eleven years. During this time he did much glass blowing in molding the bulbs for thermometers. Before starting his day's work on this particular date he was suddenly seized with a severe pain, referred to the abdomen. The diagnosis was finally collapse of the right lung. The day before the lung collapse he stated that he was blowing through much finer tubes than usual and that extra effort was required. However he does not recall any particular time when he felt any sensation other than that due to slightly increased effort. Was the lung collapse caused directly or indirectly by his occupation? Was the collapse aggravated by his occupation? His previous health was excellent. Please omit name.

M D New York

ANSWER—Pulmonary emphysema is a frequent occupational disease lesion in work people who are required to practice deep and forceful inspiration and expiration. In glass blowers and players of wind instruments, among other trades people, through slow changes in the lung tissues, the lungs lose their normal elasticity and the alveoli become distended so that the occurrence of a spontaneous pneumothorax is favored.

The etiology of spontaneous idiopathic pneumothorax is still uncertain. It may occur without any immediate obvious cause or may arise in the course of more or less violent effort in a patient up to then apparently well. About 16 per cent of all cases arise as a sequel to well characterized emphysema. In the absence of known diseases it is quite reasonable to suspect glass blowing to have been a factor in the causation of this spontaneous pneumothorax. A number of actual cases are on record, appearing, however, for the most part in foreign publications.

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Additional information may be found in

J. Clin. Investigation 13:295 (March) 1934
Am. J. M. Sc. 183:695 (May) 1932

SIMULTANEOUS DIPHTHERIA AND SCARLET FEVER

To the Editor—I should like very much to know what the possibilities are of diphtheria and scarlet fever occurring in one patient at the same time. Have these two diseases occurred in one person and what is the relative frequency? Please omit name.

M D Iowa

ANSWER—Diphtheria and scarlet fever may occur in the same patient at the same time. It is not uncommon that both diseases are present in patients admitted to hospitals for acute infectious diseases. Of 1,039 patients with scarlet fever admitted to the Edinburgh City Hospital twenty, or nearly 2 per cent, had concurrent diphtheria (Ker. *Infectious Diseases*, 1909). Of 14,025 patients with acute infectious diseases, mostly children, admitted to the Durand Hospital from 1913 to 1933, eighty had scarlet fever and diphtheria on admission (Weaver, G. H. *Medical Report of the Durand Hospital of the John McCormick Institute for Infectious Diseases for Twenty Years 1913-1933*). In this group of cases it would be difficult and in many cases impossible to decide whether the infections developed at the same time or one after the other. Diphtheria may develop as a secondary infection in scarlet fever and vice versa.

TEMPERATURE OF FLUID FOR PHEBOCLYSIS

To the Editor—I am about to write a paper on the problem of maintaining a uniform temperature in infusions. I would appreciate any information you can send me concerning medical opinion as to the proper temperature the method of regulating and the results with the method now in use.

SISTER M CARMELITA R N Convent Station N J

ANSWER—With the modern drop by drop method of phlebotomy, the matter of temperature of the fluid to be injected is generally considered relatively unimportant. It is certainly much less important than is slowness of infusion. It is never

theless of possible advantage to introduce hot fluid, even up to the point of 110 F, if the patient's temperature is subnormal. To maintain such temperature safely at the point of delivery, Paul Titus (A Combined Needle Adapter and Thermometer for Intravenous Infusions, THE JOURNAL, May 19, 1934, p 1676) has devised a needle adapter and thermometer. In general the practice of maintaining the temperature in the container at 120 F ensures delivery into the vein at a temperature of not less than 100 F. If the patient has a high temperature, the solution in the container may be at room temperature.

DERMATITIS FROM ENAMELS

To the Editor—I should like to know whether you have any information regarding what chemicals are present in Cook's Baking Enamel that would produce a very severe dermatitis. I have a patient who has worked in the enameling department of a large corporation for the last eleven years without any trouble. The firm changed the kind of enamel it was using and in three or four days the patient had a severe dermatitis of the arms and feet. Any information you can give me regarding this will be appreciated. HENRY F. HYNEMAN M.D. Wichita Kan.

ANSWER.—The number of possible combinations of the many constituents in Cook's baking enamels aggregates a thousand. This does not mean that a thousand dissimilar chemicals enter these products but instead that the twenty-five or more constituents through quantitative variation may lead to a thousand different formulas. Among other constituents are toluene, xylene, petroleum distillates, (rarely) turpentine glycerin, phthalic anhydride, butyl acetate and butyl alcohol. Almost any of these ingredients might lead to a dermatitis, particularly in persons with increased susceptibility to the action of chemical irritants. It is not possible to advise in this instance that a change be made to any particular type of enamels, since all contain similar ingredients and all are likely to lead to at least an occasional case of dermatitis.

INDICATIONS FOR CESAREAN OPERATION

To the Editor—A primipara aged 28 has the following external pelvic measurements: interspinous 20 cm, intercrural 27 cm, conjugate 17 cm. She does not show anything else abnormal. I have not as yet made a definite attempt to make internal measurements. Would you try to let this woman deliver at term or would you do a cesarean operation? Please omit name. M.D. Texas

ANSWER.—The external measurements have but little value in determining the size of the pelvis, although a diagonal conjugate of 17 cm. would indicate some contraction in the anteroposterior diameter, but one is not justified in performing a cesarean section on external measurements alone, even if they are small. Nature will terminate 75 per cent of cases of contracted pelvis unaided or helped by a simple low forceps operation.

This patient should have a careful, competent internal pelvic mensuration and, unless a high degree of pelvic contraction is discovered, she should be given a good conscientious test of labor. Entirely too many cesarean sections are being done on the basis of the slimmest indications.

POISONING FROM OLEANDER AND YUCCA PLANTS

To the Editor—Will you kindly inform me whether the oleander or yucca plants of Florida can cause a dermatitis which is similar to that produced by ivy poisoning in the North?

EDWARD J. KEMPF M.D. EUSTIS Fla.

ANSWER.—No reports have been found of a dermatitis simulating 'ivy poisoning in the North, produced by the oleander or yucca plants of Florida. The yucca plant is apparently nontoxic. The oleander shrub has been reported as producing poisoning in children and adults. In the case of the oleander, a milky juice exudes from the leaves when punctured, and this juice has poisonous properties.

TYPHOID VACCINATION AND ENCEPHALITIS

To the Editor—Please give me an opinion as to the advisability of revaccination with vaccinia and triple typhoid of a patient with epidemic (lethargic) encephalitis of the Parkinson type ten years arrested in good general condition except for frequent ocular spasms. He is planning a sea voyage through the Canal Zone and way points.

DELL T. LUNDQUIST M.D. Palo Alto Calif.

ANSWER.—There is no apparent good reason why the patient should not receive the vaccines mentioned.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY. The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis Nov. 18. Application must be filed before Sept. 15. Sec. Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY. Cincinnati Sept. 14. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg. Omaha.

AMERICAN BOARD OF PEDIATRICS. Seattle Aug. 8. Philadelphia Oct. 10 and St. Louis Nov. 10. Sec., Dr. C. A. Aldrich, 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF RADIOLOGY. Detroit Dec. 12. Sec. Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

NATIONAL BOARD OF MEDICAL EXAMINERS. The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination Sept. 16-18. Ex. Sec. Mr. Everett S. Elwood, 225 S. 15th St. Philadelphia.

NEVADA. Reno Aug. 5. Sec. Dr. Edward E. Hamer, Carson City.

NEW HAMPSHIRE. Concord Sept. 12-13. Sec. Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW YORK. Albany Buffalo New York and Syracuse Sept. 16-19. Chief Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg. Albany.

OKLAHOMA. Oklahoma City Sept. 10-11. Sec. Dr. James D. Osborn, Jr., Frederick.

PUERTO RICO. San Juan Sept. 3. Sec. Dr. O. Costa Mandry, Box 536, San Juan.

Connecticut March Examination

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held in Hartford, March 12-13, 1935. The examination covered 9 subjects and included 70 questions. An average of 75 per cent was required to pass. Twenty-one candidates were examined, 17 of whom passed and 4 failed. Eleven physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Medicine	(1929)	84.9	
Georgetown University School of Medicine	(1932)	75	
(1934) 78.2 * 80.2 *			
Boston University School of Medicine	(1933) 77.2	(1934)	78.1 *
Tufts College Medical School	(1934) 82.1 *		86.3 *
Washington University School of Medicine	(1933)		82.1
Columbia University College of Physicians and Surgeons	(1934) 80.8		84 *
Cornell University Medical College	(1932)		83.9
Long Island College of Medicine	(1934)		82.9
University of Wisconsin Medical School	(1934)		79.7
Queen's University Faculty of Medicine	(1934)		81.1 *
Magyar Királyi Pazmányi Petrus Tudományegyetem			
Orvosi Fakultása Budapest	(1931)		75†
Regia Universitatē di Napoli Facoltà di Medicina e Chirurgia	(1933)		78.3

School	FAILED	Year Grad.	Number Failed
George Washington University School of Medicine	(1934)		1
University of Texas School of Medicine	(1933)		1
Osteopath			2

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College	(1934) N B M Ex		
Tufts College Medical School	(1930) New Jersey,		
(1932) Vermont			
University of Michigan Medical School	(1931)		Michigan
Columbia Univ. College of Physicians and Surgeons	(1929)		New York
Cornell University Medical College	(1933) N B M Ex		
Duke University School of Medicine	(1933) N B M Ex		
Vanderbilt University School of Medicine	(1931)		Tennessee
University of Virginia Department of Medicine	(1926)		New York
Marquette University School of Medicine	(1934) N B M Ex		
University of Wisconsin Medical School	(1927)		Michigan

* License has not been issued.
† Verification of graduation in process.
‡ Examined in medicine and surgery.

Hawaii April Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the written examination held in Honolulu, April 8-11, 1935. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Three candidates were examined, one of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Pennsylvania School of Medicine	(1932)		83

School	FAILED	Year Grad.	Per Cent
Chicago Medical School	(1920)		75 *
Loyola University School of Medicine	(1934)		74

* Failed in three subjects.

Book Notices

A Manual of Obstetrical and Gynecological Pathology By John H. Teacher M.D. Edited by Alice J. Marshall M.B. Cloth Price \$15.25 Pp 407 with 320 illustrations New York & London Oxford University Press 1935

This contribution to the specialty of obstetrics and gynecology was planned and outlined by Professor Teacher prior to his death. He had also prepared nine chapters for the work, which chapters have been edited carefully by Alice J. Marshall, who had been previously a co-worker with Professor Teacher. The author acknowledges a considerable debt to Professor Frankl, whose work on gynecologic pathology influenced him considerably. The editor has carefully scrutinized and revised the original chapters of Professor Teacher and accumulated new material from relevant notes and papers that were placed at her disposal by Mrs. Teacher. The illustrations have been carefully selected, and most of them represent microscopic changes. A considerable portion of the volume is devoted to a consideration of histology and embryology in relation to cyclic changes and other physiologic alterations associated with menstruation, ovulation and early and late gestation. Aside from the pathology of the placenta and the membranes, little attention is given to pathologic changes relative to the fetus. Various other authorities have contributed to this careful work. A consideration of the bacteriology of the genital tract has been presented by Robert Cruickshank. The author has included a short chapter on technique. This pertains particularly to the collection and primary preservation of tissues and should be of help as a guide to the surgeon in securing and transmitting tissues in their proper manner to the laboratory for microscopic examination. Teacher was so well qualified on account of his studies that the chapters pertaining to cyclic changes, pathology of the endometrium and the implantation and early development of the ovum, together with consideration of early abortions, are in themselves almost classic. One cannot give detailed consideration to the various other chapters in the book but, on the whole, one has a feeling that less attention is given to a consideration of the gross pathology than to the microscopic. The volume would therefore be of much greater value to those who are interested in the microscopic appearance of genital lesions. It constitutes an excellent work on the histopathology of the female generative tract and is well worthy of careful scrutiny. It would, of course, be impossible to include within the pages of the volume all the gross and microscopic pathology of the female generative tract. The authors have concentrated and succeeded in making a definite contribution to current literature.

Traité de gastroscopie et de pathologie endoscopique de l'estomac. Par François Moutier, chef de laboratoire de la Faculté de médecine. Préface du Professeur P. Duval. Travail de la clinique de thérapeutique chirurgicale de la Faculté de Paris (Professeur Plerro Duval). Paper Price 120 francs. Pp 347 with 113 illustrations. Paris: Masson & Co 1935

This excellent work constitutes the first atlas of gastroscopy since Schindler's atlas appeared in 1923. Duval has written the preface, in which he calls special attention to the fact that gastroscopy has now become an indispensable clinical method. Moutier, whose many papers on gastroscopic problems are well known, follows closely in the technical part the statements of the German authors and gives a precise description of the modern flexible gastroscope and its use. He underlines the sentence that danger in gastroscopy is only of historical importance in that it existed for the rigid instruments but not with the modern flexible gastroscope. An exact description of the normal gastric mucous membrane is given. It is important to note that Moutier does not hesitate to enumerate the various possibilities for being mistaken and for considering as pathologic formations that are quite normal. In a method such as gastroscopy, in which the subjective factor is large, such mistakes are always possible and must be avoided. These chapters on the normal gastric membrane show the great advance in our knowledge of the gross anatomy of the stomach resulting from the use of the gastroscope. In the sections dealing with pathologic alterations, Moutier describes carefully and critically the great variety of pictures that are well known

to every gastroscopist. In an important chapter on chronic gastritis Moutier goes his own way, subdividing this disease on a purely anatomic basis. The chapter on syphilis is of special value, because no similar observations exist in the gastroscopic literature. The sections on the benign gastric ulcer and tumors are lengthy and well written. In the chapter on the postoperative stomach Moutier confirms the observations of earlier authors, all of whom noted the frequency of an extremely severe chronic gastritis. He shows such pictures as well as several jejunal ulcers. This book will doubtless have a profound influence in aiding the introduction of gastroscopy as a safe routine clinical method and in affecting the conceptions of gastric disease in French speaking countries, as the German gastroscopists did in German speaking countries many years ago.

Aids to Embryology By Richard H. Hunter M.D. M.Ch. Ph.D., Lecturer in Anatomy Queen's University Belfast. Second edition. Cloth. Price \$1.25 1 p 172, with 39 illustrations. Baltimore: William Wood & Company 1934

The chief object of this little book and others in the same series is to provide a summary of the facts needed by medical students in order to pass the examinations set in Great Britain. It should be useful to others who wish to review the subject for similar purposes. There have been some additions and considerable revision of the first edition. The subject is presented only so far as it helps in the understanding of adult relations and of abnormalities in development. The chief problems of general embryology are outlined (twinning is omitted, however) and the development of the fetal membranes and of the various systems of organs in man are described. Considering the small amount of space available, the author has succeeded admirably with the help of a series of clear simple diagrams. Under the circumstances, ambiguities are unavoidable. Thus the definitions of the chorion frondosum and anencephaly give false impressions. Attention should be called to certain faults. The accounts of the menstrual cycle and of the central nervous system are not abreast of present knowledge. All "blue babies" are explained on the basis of the patency of the ductus arteriosus. The statement that true hermaphroditism has not been found in man is incorrect.

Handbuch der Kinderheilkunde. Ein Buch für den praktischen Arzt. Herausgegeben von Geh. Med. Rat Prof. Dr. med. M. v. Pfaundler, Direktor der Kinderklinik in München und Geh. Med. Rat Prof. Dr. med. A. Schlossmann, Direktor der Kinderklinik im Düsseldorf. Band X. Die Hautkrankheiten des Kindesalters. Bearbeitet von J. Becker et al. Fourth edition. Paper Price 169 marks. Pp 884 with 383 illustrations. Berlin: F. C. W. Vogel 1935

This work needs no introduction to the medical world. The tenth volume has all the merit of the preceding volumes and not only complements them but also forms an important independent addition to the literature of pediatrics and dermatology. The first edition of the *Handbuch*, which appeared almost thirty years ago, contained a restricted section on skin diseases of childhood. In the preparation of the second edition, four years later, it became apparent that a special volume on skin disorders was necessary, and this was to have been edited by Schlossmann. The World War, the death of Leiner who was to have been the main contributor, the illness of Schlossmann, and other circumstances delayed the appearance of the special volume. After Schlossmann's death in 1932 the preliminary work was taken up again and carried forward under great difficulties. Dermatologists experienced with the dermatoses of children, and pediatricians interested in skin diseases have contributed to the volume. It is thus a product of expert contemporary thought in both pediatrics and dermatology. In accordance with the basic principles on which the "Handbuch" was constructed, the main emphasis is on practical diagnostic and therapeutic questions. The authors consider those dermatoses which occur only in childhood and also those which have special symptoms and characteristics in this period of life, though occurring at all ages. No attempt is made to maintain a strict systematic classification, because this presents many difficulties. In a book of this kind some overlapping in the various articles is unavoidable, but the editors have taken precautions to reduce reduplications and contradictions as far as possible. That certain authors touch on subjects which are

considered more fully by another (Pringle's disease, Schüller-Christian syndrome) is due to differences of opinion as to the origin and nature of these conditions. Attention is called to erythema annulare rheumaticum (Lehndorff-Leiner), page 584, which receives fuller treatment than has heretofore been accorded it. This book is in the same format as the other volumes and is richly illustrated. Attention should be called to the many excellent colored plates, which are of special value in the study of skin diseases. The full table of contents, nine pages long, the marginal outline notes, the clear divisions and subdivisions of the material, and the many bibliographic citations at the end of each chapter make this a handy book to use. As the work is chiefly valuable for reference, a good index is desirable, and the subject index, compiled by Dr Erna Eckstein-Schlossmann, appears to be entirely adequate. However, many will feel keenly the lack of an index of proper names. The book is a noteworthy contribution to the study of skin diseases in childhood. It is one of the most important contributions of the year to the pediatric literature.

The Curriculum in Sports (Physical Education) By Seward C Staley Professor of Physical Education University of Illinois Cloth Price \$2.50 Pp 373 Philadelphia and London W B Saunders Company 1935

This is designed primarily as a textbook for students and teachers of physical education or, as the author prefers to call it, sports education. A considerable portion of the first half of the book is devoted to a philosophical discussion of education and physical education in general, to a review of the history of physical education, and to a defense of the substitution of the term sports education for the conventional physical education. The author argues that physical education in the literal sense is impossible and that consequently the use of the term is unjustified. Gigantic sports events and competitions primarily for the entertainment of the public are condemned as an abuse of the function of the school. In enumerating the objectives of the physical activities program, the author emphasizes mental and social values as well as physical development. The most useful portion of the book is a detailed consideration of the formulation of a curriculum of sports education with suggestions concerning activities, instructional methods, and procedures for measuring accomplishment. As this is distinctly a textbook and not easy reading, it probably will have little interest for the general reader, but it should be distinctly useful to those engaged in this aspect of education.

Sammlung psychiatrischer und neurologischer Einzeldarstellungen Herausgegeben von Prof Dr A. Boettroem und Prof Dr J. Lange Band V Konstitution und Prozesse in der Schizophrenie Von Medizinialrat Dr Skälweit Privatdozent für Psychiatrie und Neurologie an der Universität Rostock. Paper Price 4.50 marks Pp 88 with 6 illustrations. Leipzig Georg Thieme 1934

This volume is a complete analysis of the process of schizophrenia as analyzed by means of the Rorschach test, the observations being correlated at the same time with the body structure types of Kretschmer. The study consists of an analysis of ninety chronic cases and twenty-three acute cases. The chronic cases are tabulated individually, the acute cases are also studied by themselves, and the type of intelligence and the "life type" of each is analyzed. The third part of the research consists in a direct investigation by means of the Rorschach psychogram of the patient's status in different periods of the disorder. In this part the data are tabulated and case histories are presented. Section III is especially interesting for it shows certain factors that have not been indicated by previous investigators as regards the form of the psychosis. The speed of its course and other features of the mental disorder have only been suggested by previous studies but are here gone into more deeply. The report concludes with a ten point summary in which the author attempts to show various differences between the schizoid make up and the manic-depressive make up as well as the nature of the basic defect of the schizophrenic. The work is a contribution to our knowledge of this disorder but is of more value to psychiatric research workers than to psychiatric clinicians for the style is complicated and a knowledge of the basic techniques of Rorschach and of the postulates of Kretschmer is presumed.

Veterinary Helminthology and Entomology The Diseases of Domesticated Animals Caused by Helminth and Arthropod Parasites By H. O. Mönnig B.A. Dr. Phil. B.V.Sc. Professor of Parasitology Faculty of Veterinary Science University of Pretoria Cloth Price \$9 Pp 402 with 264 illustrations. Baltimore William Wood & Company 1934

This was written especially as a textbook for veterinary students, but it lists fifty-seven parasites affecting man. Forms that are relatively unimportant from the veterinary aspect, such as *Necator americanus*, are accorded but little space. Parasites of veterinary significance are discussed briefly as to life cycles, pathogenicity, symptoms, diagnosis, treatment and prophylaxis. A convenient host-parasite list gives all the parasites of each host, together with the page reference. The book is not intended to be a complete and exhaustive treatise on all human and animal parasites. As a ready reference work for the more important forms, it should be of service.

Les encéphalites psychosiques Par L. Marchand médecin chef de l'Asile Clinique (St. Anne) et A. Couriole Préface du Dr E. Toulouse Paper Price 25 francs Pp 144 with 31 illustrations Paris Librairie E. Le François 1935

This is an elaborate and ambitious study of 120 cases, 101 fatal, of acute, subacute and chronic psychosis, without any abnormal neurologic signs or symptoms but with inflammatory and degenerative microscopic alterations in the brain. Of the 101 fatal cases, forty-four were "primary," nineteen arose in the course of a chronic psychosis, sixteen followed the puerperium, twenty followed various infections, and two were postoperative. A state of acute delirium was present in all. Nitrogen retention was such a constant feature that the term "encephalite azotémique" is proposed. It is admitted that this is no clinical entity, that the etiology varies and that predisposition plays an important part, but claim is made for a definite and fairly uniform histologic picture. Although one may take issue with the authors on many points, they must be given credit for originality and great industry. It is a valuable contribution to the study of the vague group of psychoses usually designated in the acute state as "acute delirium," "toxic-infectious psychosis" or "collapse delirium."

Aids to Surgery By Cecil A. Joll M.B. M.D. B.Sc. Senior Surgeon and Lecturer on Surgery to the Royal Free Hospital and Reginald C. B. Ledlie M.B. B.S. F.R.C.S. Surgeon to the Miller General Hospital Sixth edition. Cloth Price \$2.75 Pp 612 with 44 illustrations Baltimore William Wood & Company 1935

This compendium represents one link in a long chain of compact booklets that cover the entire field of medicine and surgery and are especially designed to assist students in grouping and memorizing the subjects on which they are to be examined. The call for a new edition of this handsome volume proves its popularity. The work has been rewritten, enlarged and supplied with illustrations, the first of which is a tribute to American surgery, as it reproduces incisions recommended by Kanavel for the treatment of infections of the hand. The scope of the volume has restricted the authors in the main to a description of essential surgical principles and practice. Nevertheless, owing to an enviable ability to say what they want in a brief and lucid manner, the authors have succeeded in squeezing into their little book an immense amount of information. Not only the student but a general practitioner wishing to brush up his knowledge of surgical conditions will find this small volume inexpensive and extremely handy.

Thirty Second Annual Report 1933-1934 of the Imperial Cancer Research Fund Under the direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. Paper Pp 31 London 1934

The first part of this report gives a concise review of the content of the eleventh scientific report, which was reviewed in THE JOURNAL May 18. The most important new feature of this report is a table listing the strains of transplantable tumors maintained by the Imperial Cancer Research Fund. Twenty-eight strains are listed. The average success of grafting and the effect of reinoculation in positive animals with the same strain and with another are reported for each strain. The importance of the reinoculation behavior is understandable from the fact that it is bound up with the occurrence of spontaneous regression and the behavior of the tumors to changed environment and other conditions of growth. It was formerly

shown by Russell and by Foulds that two distinct mechanisms may be responsible for the progressive growth of transplantable tumor strains. In some strains the parenchyma does not excite a significant degree of resistance. In the majority of progressively growing strains, however, resistance is produced but the parenchyma of the strain is insensitive to it. In such cases the presence of the resistance can be demonstrated by a re inoculation of tumor bearing animals with another sensitive strain.

Medicolegal

Hospitals Rendition of Emergency Treatment Not Acceptance of Patient—The regulations of the defendant hospital forbade the acceptance of patients afflicted with contagious diseases. The plaintiff took his 2½ year old daughter, desperately ill with diphtheria to the hospital. There under direction of the house physician, Dr Stock, the child was carried to the emergency room a swab was made of her throat and oxygen and 20 000 units of antitoxin were administered. A few minutes later 20,000 more units of antitoxin was administered after a consultation between Dr Stock, the hospital superintendent and another physician. Soon thereafter the superintendent ordered the child to be removed from the hospital. Dr Stock advised the plaintiff to obtain a physician immediately and gave him a memorandum of what had been done. The plaintiff then drove with the child about seven miles to his home. About ten minutes later the plaintiff's family physician arrived but the child died within about five minutes thereafter. The plaintiff then sued the hospital. He did not contend that the child's death was caused by failure to receive her in the hospital but that death was accelerated by the negligence of the hospital attendants, in that after receiving her and after rendering proper treatment for a while, they abandoned her when her condition demanded that she remain in bed receive further treatment and be kept where oxygen could be given in case of heart attack. From judgment in favor of the plaintiff, the hospital appealed to the Supreme Court of Alabama.

The defendant hospital, said the Supreme Court of Alabama, was under no duty to accept the child for treatment and may have made itself liable to other patients if it had admitted her. For the plaintiff to recover, the evidence must show that the death of the child resulted from or was accelerated by the failure of the hospital to render some service which it was duty bound to render. The hospital could become duty bound to render service either (1) by undertaking to provide full hospital service or, (2) without undertaking to provide full hospital service, by rendering knowingly emergency treatment which created an extremely dangerous condition unless further partial hospital service was rendered until that hazard voluntarily created by the defendant was passed. The court was of the opinion that the evidence did not justify a finding that the defendant hospital undertook to provide any hospital service except such as may have been rendered reasonably necessary by the treatment that was given. The only fair inference to be drawn from the facts, said the court, is that the treatment given the child was but an emergency treatment. There was no evidence that the hospital undertook to provide full hospital service in violation of its regulations. To uphold the plaintiff's contention, said the court, we must assume that if the hospital did not propose to render hospital service it should have sent the child away in a desperate condition without emergency treatment, when such treatment was available and provided the only hope of recovery. The willingness of the hospital to provide such treatment should not be used to its prejudice.

Could a jury, the court asked, reasonably find that the treatment administered by the defendant accelerated her death and that careful attention at the hospital after it was given would have prolonged her life? What effect on her vitality did the antitoxin produce? The physicians who testified at the trial all agreed that a patient suffering from diphtheria should abstain from any physical exertion, whether or not antitoxin

is administered. But, said the court, this requirement is not violated when the father of a small child takes her in his arms to his home in a car. None of the physicians testified that antitoxin depresses the heart. On the other hand, one physician stated that it does not have that effect. The court could find no evidence that the antitoxin created a condition which was a proximate contributing cause of the immediate death. The judgment of the lower court in favor of the plaintiff was therefore reversed and a new trial ordered.—*Birmingham Baptist Hospital v Circus (Ala.), 157 So 224*

Accident Insurance "Complete Fracture" Defined.—The defendant insurance company promised to pay certain benefits to the plaintiff "upon receipt of satisfactory proofs including an x-ray photograph, indicating the complete fracture of one of the long bones of the arm." Contending that he had suffered a complete fracture of the ulna of the left arm, the plaintiff sued the insurance company. The lower court gave judgment for the insurance company, and the plaintiff appealed to the court of appeal of Louisiana, second circuit.

The question to be determined, said the court of appeal, is whether or not the injury to the ulna of the plaintiff's left arm amounted to a "complete fracture," which has been defined as "a total separation of the boneal alignment of a given bone, one in which the bone is entirely broken across." The roentgenogram of the plaintiff's injured arm, with the findings of a physician consulted by him that the fracture was complete, was sent to the defendant's home office. The roentgenogram, according to two radiologists testifying for the insurance company, revealed an incomplete fracture of the ulna. On behalf of the plaintiff two physicians testified that they believed that the ulna was completely broken across. They stated that by manipulation of the lower arm at the situs of the injury they could hear mild crepitus, which they attributed to the broken ends of the bone grinding together even though they found the fracture not discoverable by simple touch. Medical experts, called by the insurance company, testified that mild crepitus may be produced from an incomplete fracture, hardened tissues ligaments and muscles. Since it was shown that roentgenograms will unquestionably reveal fractures of the bones of the arm with such clearness that experienced roentgenologists may not err in interpreting them, since roentgenologists testified that the fracture was not complete, and since, according to the evidence crepitus may spring from causes and conditions other than a complete fracture, the court concluded that the plaintiff's physicians were mistaken in their diagnosis of the injury to the arm. Accordingly the judgment of the lower court in favor of the insurance company was affirmed.—*Mervether v Columbian Mut Life Ins Co (La) 157 So 156*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology Cincinnati, Sept 14-20. Dr William P. Wherry 107 South 14th Street, Omaha, Executive Secretary.
American Association of Obstetricians Gynecologists and Abdominal Surgeons Sky Top Pa. Sept 16-18. Dr James R. Bloss 418 Eleventh Street Huntington W. Va. Acting Secretary.
American Congress of Physical Therapy, Kansas City Mo. Sept 9-12. Dr Nathan H. Palmer 921 Canal Street New Orleans Secretary.
Colorado State Medical Society Eates Park September 5-7. Mr Harvey T. Selthman 537 Republic Building Denver Executive Secretary.
National Medical Association New Orleans, Aug 11-17. Dr C. A. Lanon 431 Green Street South Brownsville Pennsylvania Secretary.
Northern Minnesota Medical Association Duluth Aug 12-13. Dr Oscar O. Larsen Detroit Lakes Secretary.
North Pacific Pediatric Society Seattle August 9-10. Dr F. H. Douglass, 509 Olive Street Seattle Secretary.
Oregon State Medical Society Gearhart Sept 19-21. Dr Blair Holcomb Stevens Building Portland Secretary.
Utah State Medical Association Logan, September 5-7. Dr George N. Curtis Judge Building Salt Lake City Secretary.
Washington State Medical Association Everett Aug 12-14. Dr Curtis H. Thomson 1305 Fourth Avenue Seattle Secretary.
Wisconsin State Medical Society of Milwaukee Sept. 17-20. Mr J. G. Crownhart, 119 East Washington Avenue Madison Secretary.
Wyoming State Medical Society Lander Aug 12-13. Dr Earl Whedon 50 North Main Street Sheridan Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

Alabama Medical Association Journal, Montgomery

4: 409-440 (June) 1935

- Fracture Problems H E Conwell Birmingham—p 409
Safety of Low Cesarean Section in Obstetric Emergency T K McFatter Dothan—p 413
Foreign Bodies in Air and Food Passages C C Perdue and G T Johnson Mobile—p 416
Prognosis of Pulmonary Tuberculosis R A Brown Montgomery—p 419
Surgical Treatment of Pulmonary Tuberculosis J O Lisenby Atmore—p 422

American J Digestive Diseases and Nutrition, Chicago

2: 139-208 (May) 1935

- Vaccine Therapy in Ulcerative Colitis Second Part S Lups Groningen Holland translated and edited by A J Baker Grand Rapids Mich—p 139
*Hepatoptosis C W McClure H A Osgood and J P Bill Boston—p 161
Liver Function in Hepatic and Extrahepatic Diseases II Clinicopathologic Correlation and Evaluation of Usefulness of Liver Function Tests G R Biskind T L Althausen G K Wever and W J Kerr San Francisco—p 167
Decompression of Obstructed Biliary System in the Cat II Serum Bilirubin Concentration and Bromsulphalein Retention A Cantarow H L Stewart and S G McCool Philadelphia—p 174
Clinical Evidence of Fifty So Called Gastro-Intestinal Diseases Which Really Are Caused by Food Allergy with Discussion of Their Treatment J S Smul New York—p 178
Diverticular Sarcoma of Stomach J T Case Chicago—p 185
*Use of Duodenal Extract as an Adjuvant in Treatment of Benign Peptic Lesions Report of Eight Cases A B Rivers Rochester Minn—p 189
The Modern Proctologic Clinic M J Synnott New York—p 196

Hepatoptosis—McClure and his associates report a case of hepatoptosis in which the positions and anatomic characters of the various intra-abdominal organs were definitely established by roentgenograms of the untreated abdomen, pyelography, barium gastro intestinal studies and pneumoperitoneum. The exact positions of the spleen and liver were established by contrast roentgenograms after intravenous administration of a colloidal suspension of thorium dioxide. This medium permitted roentgen demonstration of the diminution in the size of the liver and the contained gummatous area resulting from antisyphilitic treatment. Fifty-three uncomplicated cases of hepatoptosis, or total displacement of the liver have been collected from the literature and the described symptomatology has been correlated. The reported results of hepatopevy indicate that the operation is an efficient measure for relieving the symptomatology.

Duodenal Extract as an Adjuvant in Treatment of Peptic Ulcer—The general plan of diet that Rivers used in the treatment of eight cases of benign peptic ulcer was that used by Sippy and his colleagues. Instead of gradually increasing the amount of food taken, however this was increased rapidly so that after four or five days the patients were taking a rather liberal diet such as that usually given patients on ambulatory regimens. Large amounts of alkali were not used. The use of sedatives and belladonna has been continued in the belief that the treatment of ulcer is facilitated. Whenever possible the scrupulous removal of foci of infection is advised. It is not expected that the extract of duodenal mucosa and submucosa will prove to be a specific for peptic ulcer. If some of the protecting mechanisms inherent in duodenal mucosa and submucosa could be assimilated and maintained in an extract made from these tissues such a substance would be invaluable in the treatment of ulcer. It has not been proved whether these desirable qualities are preserved in the extract obtained from

the mucosa and submucosa of the duodenum of hogs used by the author. Furthermore, such substance, when given orally, may be inert, although experimental work now being carried out gives evidence to the contrary.

American Journal of Hygiene, Baltimore

21: 249-482 (March) 1935

- Effect of Atabrine and Plasmochin on Haemoproteus Infection of Pigeon G R Coatney Peru Neh—p 249
Bactericidal and Antiseptic Action of Preservatives Frequently Used in Biologic Products and Effect of These Preservatives on Potencies of Products Carolyn Rosenstein and Ida Levin assisted by Hattie Levin New York—p 260
Bacterial Purification Rates in Polluted Water J K Hoskins Cincinnati—p 280
Further Studies on Effect of Generally Deficient Diet on Resistance of Dogs to Hookworm Infestation A O Foster and W W Cort Baltimore—p 302
Preparation of Antismallpox Vaccine by Culture of Virus in Chorio-Allantoic Membrane of Chick Embryos and Its Use in Human Immunization E W Goodpasture and G J Budding assisted by Lurline Richardson and Katherine Anderson Nashville Tenn—p 319
Studies on Benign Tertian Malaria VIII Observations on Splenomegaly W K Stratman Thomas Tallahassee Fla—p 361
Id IX Instance of Natural Refractoriness in Caucasian to Inoculation with Plasmodium Vivax M F Boyd W K Stratman Thomas and S F Kitchen Tallahassee Fla—p 364
Epizootic Fox Encephalitis VII Nature of Immunity R G Green N R Ziegler B B Green J E Shillinger E T Dewey and W E Carlson Minneapolis—p 366
Mechanism of Immunity in Murine Coccidiosis E R Becker with assistance of Phoebe R Hall and Ruth Madden Ames Iowa—p 389
*Allergic Reactions of Actinomycetes D R Mathieson Ruth Harrison Carolyn Hammond and A T Henrici Minneapolis—p 405
Studies of Endamoeba Histolytica and Other Intestinal Protozoa in Tennessee IX Further Observations on Pathogenicity of Certain Strains of Endamoeba Histolytica for Kittens H E Meleney and W W Frye Nashville Tenn—p 422
Effect of Malnutrition on Pathogenesis of Rat Leprosy A R Lamb Honolulu Hawaiian Islands—p 438
Transmission to Offspring of Immunity Against Infection with Metazoan (Cestode) Parasite H M Miller Jr St Louis—p 456
Filtrability of Bacterium Lepsepticum Jeannette Chapman and Clara M McKee Baltimore—p 462
Interpretation of Filtrable Viruses R R Hyde Baltimore—p 472

Allergic Reactions of Actinomycetes—Mathieson and his collaborators state that infection and immunization with acid-fast actinomycetes tend to produce an allergic sensitization in experimental animals. No cross sensitization to tuberculin could be demonstrated. Continued immunization leads to desensitization. Normal persons give more frequent and more marked skin tests to Actinomyces bovis than do actinomycotic patients. Whereas single injections of Actinomyces bovis rarely produce infection repeated inoculations usually do. This is in agreement with the observations of Nakayama, who first suggested that allergic sensitization is a factor in the etiology of actinomycosis. No sensitization demonstrable by skin tests could be induced in rabbits inoculated with saprophytic aerobic actinomycetes. Representative actinomycetes do not elicit reactions similar to those described by Schwartzman for meningococci and other bacteria.

American Journal of Orthopsychiatry, Menasha, Wis

5: 87-216 (April) 1935

- Orthopsychiatry Expression of Philosophy of Function G S Stevenson New York—p 87
Problems of Further Research in the Rorschach Test S J Beck Boston—p 100
The Rorschach Test Applied to a Group of College Students P L Harriman Lewisburg Pa—p 116
Outline of Cooperative Project for Validating the Rorschach Test S Rosenzweig Worcester Mass—p 121
Introductory Remarks Section Meeting The Integration of Psychiatry with Education F L Patry New York—p 124
Libidinal Fixations as Pedagogic Determinants E Liss New York—p 126
Integrating Psychiatry with the Winnetka (Illinois) Public School System T Burling Winnetka Ill—p 132
Endocrinology and Behavior Disorders of Children Study of Possible Causal Relationships Between Endocrinopathic States and Behavior Disorders of Children L A Lurie Cincinnati—p 141
Qualitative Intelligence Testing as a Means of Diagnosis in Examination of Psychopathic Children Anni B Weiss Vienna Austria—p 154
Genetic Scale of Social Maturity E A Doll Vineland N J—p 180

Endocrinology and Behavior Disorders of Children—Lurie points out that in evaluating the power of an endocrine disorder to produce a behavior disorder, both direct and indi-

rect effects must be considered. The direct effects may be obvious and easily recognizable, as, for example, the mental retardation associated with cretinism or the mental deterioration that occurs in adult myxedema. On the other hand, the direct effects may be subtle and affect only the personality make up of the individual. This is often seen in cases of Froehle's dystrophy. The indirect effects are due to the emotional conflicts produced in the child as a result of his attitude to the abnormal physical condition produced by disturbance in the endocrine function. It is essential that these indirect effects be recognized, because they are often responsible for the child's inability to adjust normally to his situation in life. Approximately 20 per cent of the first 1,000 children studied at the Child Guidance Home showed various forms of glandular disturbances. In 93 per cent of these cases there appeared to be a direct causal relationship between the behavior disorder presented by the child and the endocrine disorder. The pituitary was most frequently involved. Mental retardation was most often associated with thyroid disturbances. No definite correlation could be established between the problem presented by the child and the endocrine involvement found to be present. Pituitary dysfunction was frequently present in all the cases of stealing. In a small group of cases, in which the problem was one of speech disturbance, there were extreme motor restlessness and destructiveness. The physical and mental development of these children was normal. All were found to be suffering from hypothyroidism. Seventy-one of the children in the series received glandular therapy. In 33 per cent the results were good, in 50 per cent fair and in 17 per cent poor. Endocrine disturbances cannot all be corrected by glandular therapy. This is especially true of glandular overactivity. Glandular therapy, like all other forms of therapy, to be successful, must be based on correct diagnosis.

American Journal of Pathology, Boston

11: 373-590 (May) 1935

- Cystic Disease of Kidneys. E. T. Bell. Minneapolis.—p. 373
Lipid Content of Livers of Nonimmunized and Immunized Horses. A. Wadsworth, L. W. Hyman and R. R. Nichols. Albany, N. Y.—p. 419
Ganglioneuroma in Neck of Child. J. McFarland and S. W. Sappington, Philadelphia.—p. 429
Primary Carcinoma of Lung. Pathologic Study. K. B. Olson, Boston.—p. 449
*Histologic Effects of Potassium Iodide and Thyroid Substance on Thyroid Gland of Guinea Pig in Experimental Scurvy. W. F. Abercrombie, New York.—p. 469
Glomerular Changes in Arteriosclerotic Contraction of Kidney. P. Kimmisiel. Boston.—p. 483
Reaction of Pulmonary Tissue to Lipiodol. R. D. Wright, Melbourne, Australia.—p. 497
Infarction of the Liver. I. J. Pass. Minneapolis.—p. 503
Primary Adenocarcinoma of Pancreas in Fifteen Year Old Boy. P. A. Mielcarek. Cleveland.—p. 527
*Basophilic Degeneration of Heart Muscle. Maria E. Haumeder. Rochester, Minn.—p. 535
Adeno-Acanthoma of Pylorus. J. G. Pasternack, Washington. D. C.—p. 541
Erythroblastosis. Report of Case Presenting Erythroblastic Tumor in Thoracic Cavity. G. W. Covey. Lincoln, Neb.—p. 551
Alteration in Serum Bilirubin and Bromsulphalein Retention in Relation to Morphologic Changes in Liver and Bile Passages in Cats with Total Biliary Stasis. A. Cantarow and H. L. Stewart, Philadelphia.—p. 561
Siderotic Nodules (Gandy Gamna Bodies) in Primary Renal Carcinoma. D. R. Morgan, M. M. Lieber and H. L. Stewart, Philadelphia.—p. 583

Experimental Scurvy—Abercrombie observed that the thyroids of guinea-pigs in scurvy present irregular follicles with higher epithelium, a reduced amount of nonuniformly stained but extensively vacuolated colloid and an increase in the inter-follicular cells. These changes are more marked in chronic scurvy of long duration than in acute scurvy. Potassium iodide, when administered to animals with scurvy, causes a decrease in the number of vacuoles and an increase in the amount of the colloid, accompanied by a flattening of the epithelium and a decrease of the interfollicular cells. Thyroid substance produces similar results, except that the epithelium is not flattened but is returned to the normal medium height. Potassium iodide and thyroid substance, in the doses administered, do not tend to prolong the life of the animal in experimental scurvy. Thus, it appears that vitamin C is not concerned with iodine metabolism.

Basophilic Degeneration of Heart Muscle.—In a study of 320 consecutive postmortem examinations of sections of the heart obtained by routine procedure, Haumeder found the lesion (basophilic degeneration) described by Hewitt in 1907. The areas of degeneration were of microscopic size. It is her impression that the degeneration passes through several phases. With the hematoxylin and eosin stain, the degenerated portions were seen as basophilic patches that generally occupied the centers of the muscle bundles and frequently included the well preserved, often hypertrophied, nucleus. They always were of well defined limits and at the periphery of each was a zone of normal muscle tissue. No tissue reaction could be seen in the degenerated areas. The normal structure was preserved in the immediate neighborhood and even in the continuation of the involved muscle bundle. No gross change in the heart muscle could be observed. In the early stage of the process these degenerated areas stained a rather dark blue and were fairly dense, finely granular and occasionally clumped, and sometimes included fragments of muscle fibers. As the process advanced these areas stained a lighter blue, and what was apparently vacuolization appeared. In advanced stages there was left only a fine network of basophilic, intertwining fibers, which included small tissue spaces, the lesion being rather indistinct. The most frequent single site of the lesion was the septum. Closely following this in frequency was the left ventricle, the right ventricle showed fewer lesions. Of the cases in which the lesion was found in more than one site, those in which the septum and left ventricle were involved were the most numerous. The lesion was found only five times in the right ventricle alone and was found in combination in the right ventricle and septum only twice. In order to ascertain the nature of the lesion, several differentiating stains were used. The lesion was found most frequently in cases of malignancy and heart disease. It was also found in many cases of infection and inflammation, as well as in single cases of electrocution, drowning and toxemia from burns. Staining reactions showed that the areas contained mucin as well as a component related to glycogen.

American Journal of Surgery, New York

28: 531-854 (June) 1935

- *Technic of Operation on Common Bile Duct with Especial Reference to Instrumental Dilatation of Papilla of Vater. A. W. Allen and R. H. Wallace. Boston.—p. 533
Stricture of Common Bile Duct. Report of Case. K. H. Ayresworth, Waco, Texas.—p. 562
Unusual Tumor (Malignant Adenoma) of Liver in Baby. F. W. McRae. Atlanta, Ga.—p. 575
Surgical Emergencies During Pregnancy. W. F. Shallenberger, Atlanta, Ga.—p. 582
Total versus Subtotal Abdominal Hysterectomy in Benign Uterine Disease. E. H. Richardson. Baltimore.—p. 588
Injuries Peculiar to Modern Football. L. H. Landry. New Orleans.—p. 601
*Suppurative Pericarditis. G. H. Bunch, Columbia, S. C.—p. 613
Coronary Occlusion Simulating an Acute Abdominal Emergency. J. M. T. Finney Jr. and C. F. Mohr. Baltimore.—p. 629
Postoperative Thrombosis and Embolism. F. W. Bancroft, Margaret Stanley Brown and A. J. Quirk. New York.—p. 648
*Scalenus Anticus (Naffziger) Syndrome. A. Ochsner. Mims Gage and M. DeBakey, New Orleans.—p. 669
Aneurysm of Temporal Artery. Analysis of Cases Reported in Literature to June 1, 1934, and Report of Case of Traumatic Origin. N. Winslow and M. Edwards, Baltimore.—p. 696
Right Paraduodenal Hernia. R. C. Bryan. Richmond, Va.—p. 703
Pseudomyxoma Peritonei. Report of Case Presenting Bronchial Fistula. J. D. Hancock and H. M. Weaver. Louisville, Ky.—p. 731
Some Observations on Treatment and After Care of Fractured Bones. E. D. Newell. Chattanooga, Tenn.—p. 742
Problems in Treatment of Fractures of Long Bones. E. L. Gilcreest, San Francisco.—p. 754
*Malignant Changes in So-Called Benign Giant Cell Tumor. W. B. Coley. New York.—p. 768
Added Problems Presented by Gas Gangrene and Tetanus in Compound Fractures. R. G. Carothers. Cincinnati.—p. 821
Ovarian Thyroid. R. L. Sanders. Memphis, Tenn.—p. 831
Other Laboratory Methods in the Handling of Thyroid Disease. G. D. Mahon Jr. Dallas, Texas.—p. 841

Operation on Common Bile Duct—Allen and Wallace incorporate some points of the technic of Cheever and Bakes and certain details advocated by others in the development of a more or less routine management of the operation on the common bile duct, which is given. The indications for exploration of the common bile duct are given. Routine dilation of the papilla of Vater in surgery of the common duct and

temporary external drainage of the duct by catheter are advocated. Some experimental and considerable clinical evidence is presented showing that dilatation of the papilla of Vater can be carried out with safety. It is probable that dilatation of the outlet of the pathologically distended common bile duct may last some time. It would appear that dilatation of the normal papilla in dogs is not permanent.

Suppurative Pericarditis—Bunch believes that the incidence of the disease is much greater than indicated by the less than 200 operative cases reported in the literature. This is borne out by Brooks, who in necropsies done in 200 consecutive cases of pneumonia found seventy-five with positive blood cultures or pathologic signs of septicemia and not one with purulent pericarditis. Nontraumatic suppurative pericarditis is essentially secondary and most frequently follows respiratory disease, particularly pneumonia, septicemia, rheumatic fever and osteomyelitis. The symptoms of pyopericardium are those of sepsis and impaired circulation from mechanical embarrassment of heart action due to increasing pressure made on the heart by the accumulating effusion. When infection of the pericardium occurs, there is apt to be precordial pain with exacerbation of septic symptoms already present. There is more often, however, continuation of symptoms in a patient who is obviously not doing well. There may be chills with high fever. The dyspnea may be extreme. The diagnosis of pyopericardium remains a challenge to the profession, for effective treatment depends on early recognition. Symptoms are only suggestive, but physical signs are characteristic. In spite of the nominal danger of puncturing the heart or of injuring the coronary vessels with the needle, careful paracentesis is indicated in effusion to determine the character of the fluid. Roentgen examination of the chest should always be made. Pericardial effusion is present when there is an enlarged area of precordial dullness shifting with change of position and when roentgen examination shows a water bottle shadow with the base below. The mortality of purulent pericarditis treated medically is practically 100 per cent. Although suppurative pericarditis most often follows pneumonia, there may be other complications of the disease, notably empyema. Winslow and Shipley state that in the 128 cases reviewed by them empyema was diagnosed and drained in sixteen patients, seven of whom recovered and nine died following thoracotomy. The treatment of suppurative pericarditis is adequate dependent drainage by open operation as soon as the diagnosis is made. After pericardiectomy, if septic symptoms continue or return after improvement has begun, an encapsulated pus pocket should be sought for in the posterior pericardium or in the pleura. Left undrained, such a pocket will result in death. After recovery, many patients have normal function of the heart. The author has confirmed this in his two cases by physical and roentgen examination and by electrocardiographic study.

Scalenus Anticus Syndrome—Ochsner and his associates point out that the scalenus anticus syndrome is a clinical entity the symptoms of which are identical with those of cervical rib. The symptoms are the result of compression of the brachial plexus and subclavian artery on the first thoracic rib. This compression may be due to an abnormally low position of the shoulder, high fixation of the sternum and ribs, low origin of the brachial plexus and elevation of the first thoracic rib due to spasm of the scalenus muscles, resulting from brachial plexus irritation. The first three conditions are predisposing, whereas the last is an exciting factor. Irritation and stimulation of the brachial plexus by pressure of the first rib causing spasm and shortening of the scalenus anticus muscle result in elevation of the first rib, thus establishing a vicious circle. Vascular changes are frequently present but are usually missed unless oscillometric studies are made. The scalenus anticus syndrome must be differentiated from the cervical rib syndrome, subacromial bursitis, supraspinatus tendon rupture, cervicodorsal sympathalgia, Raynaud's disease and brachial plexus neuritis. The treatment consists of resection of a portion of the scalenus anticus muscle. Six cases of scalenus anticus syndrome, with successful operation in four, are reported.

Malignant Changes in So-Called Benign Giant Cell Tumor—Coley is still of the opinion that giant cell sarcoma is always benign and never gives rise to metastases. While some

of the cases reported as benign giant cell tumors that later become malignant may be best explained as errors in diagnosis, there is a considerable number in which the evidence indicates that the primary tumor was a true benign giant cell tumor which later, because of some unknown cause, changed in character to a malignant metastasizing tumor. This distinction is really only academic. The proportion of cases in which tumors diagnosed as benign giant cell tumor by experienced pathologists have later become malignant, although small, is actually much larger than has been recognized by recent writers. It is probably in the neighborhood of 15 per cent. The acknowledgment of the fact that a considerable number of giant cell tumors do later become malignant should not lead one to abandon conservative methods of treatment for more radical measures (amputation). It should increase the efforts to arrive at a correct diagnosis at the earliest possible moment. The patient with an apparently cured giant cell tumor should be cautioned to avoid any local trauma. The fact that such a high percentage of the authors' series of malignant giant cell tumors were treated by irradiation (radium or x-rays) after curettage suggests that this mode of treatment should be abandoned. If irradiation is the method of choice, it should be used alone and not in conjunction with curettage. He concludes that surgery (curettage, chemical cauterization, without packing or drainage), with or without postoperative toxin treatment, offers the greatest proportion of permanent cures with the shortest period of disability and the least impairment of function. A brief period of postoperative toxin treatment (from four to six weeks) will lessen the number of recurrences. The fact that such a considerable number of cases diagnosed as benign giant cell tumor have later become malignant leads one to ask whether the use of the term benign giant cell tumor should be continued or whether a return should be made to the older classification of giant cell sarcoma.

American Review of Tuberculosis, New York

31: 601-714 (June) 1935

- *Dust and Its Relation to Tuberculosis J B Hawes 2d Boston—p 601
Further Studies on Pathologic Significance of Leukocytic Reaction in Tuberculosis I Presentation of Leukocytic Index with Calculator to Facilitate Its Computation A M Crawford Mount McGregor N Y—p 611
Id II Presentation of Pathologic Concept Through Use of Leukocytic Index in Selected Groups of Tuberculous Cases E M Medlar Mount McGregor N Y—p 621
Id III Comparison of Leukocytic Reactions as Found With and Without Artificial Pneumothorax Therapy E M Medlar, Mount McGregor N Y—p 628
Id IV Test of Validity of Pathologic Interpretation Placed on Leukocytic Reaction E M Medlar Mount McGregor N Y—p 642
Cavities in Pulmonary Tuberculosis Their Relation to Mortality Rate and Duration of Life S E Simpson Rochester N Y—p 658
Treatment of Pulmonary Tuberculosis by Hyperpyrexia III Temperatures That Inhibit Growth of Cultures of Mammalian and Avian Tubercle Bacilli and One Strain of Leprae Bacillus Method of Typing Suggested G R Duncan and E S Mariette Oak Terrace Minn—p 687
The Tuberculosis Problem L J Moorman Oklahoma City—p 698

Relation of Dust to Tuberculosis—Hawes believes that exposure to protein dusts, some of which may occasionally cause asthma, hay fever or other anaphylactic phenomena, to the carbohydrate dusts such as flour, which presumably have no effect, specific, irritating or otherwise, and to the inorganic non-silicon-containing dusts, including lime, marble, carbon and other elements, in normal amounts and under normal conditions will not reactivate an arrested or quiescent tuberculous process. He does believe, however, that dust in excessive amounts under abnormal conditions, such as street dust in winter and fall or germ laden dust from sleeping cars, which might well cause irritation and infection of throat, trachea and bronchi, is a potential source of harm. Dust that may cause allergic phenomena, such as asthma, asthmatic bronchitis or hay fever, will not reactivate or harm a tuberculous process. As to allowing an arrested or quiescent tuberculous patient to take up a trade in which he would be exposed to a harmless dust, the author would be quite willing to allow his patients to take up such dusty work unless the conditions as to dust were extremely bad.

Anatomical Record, Philadelphia

62 109 212 (May 25) 1935

- Study of Seasonal Changes in Thyroid Gland of Thirteen Lined Ground Squirrel (*Citellus tridecemlineatus*), with Particular Reference to Its Sexual Cycle M Zalesky, Chicago—p 109
- Variations in Arrangement of Branches Arising from Aortic Arch in American Whites and Negroes Second Study G D Williams and H W Edmonds St Louis—p 139
- *Nature of Pulmonary Alveolar Lining L E Josselyn, Chicago—p 147
- Congenital Absence of Tibia J Dankmeijer, Amsterdam the Netherlands—p 179
- Extra Ovarian Sex Cords on Armadillo Ovary G W D Hamlett, Boston—p 195
- Effects of Antuitrin S and Pituitary Extract on Armadillo Ovary G W D Hamlett Boston—p 201

Nature of Pulmonary Alveolar Lining—Josselyn states that the black lines seen on alveolar septums in silver nitrate impregnations of lungs are explainable otherwise than by the view that characterizes them as outlines of lining epithelial cells. The occasional nuclei seen in alveolar walls in addition to those of the capillary endothelium belong to histiocytes and possibly other connective tissue cells. The phagocytic cells that occur in such profusion in the alveoli in case of need are histiocytes and of largely extraneous origin. The alveolar walls, in addition to the capillary vessels and cells, consist of a membrane composed of reticular and elastic fibers and a homogeneous transparent ground substance. It is on the latter that the continuity of the membrane depends. Alveolar pores are seen sparsely in young adult lungs fixed while inflated with air. They are more frequent in older animals and in those whose lungs were fixed by the intratracheal introduction of fluid. They thus appear to owe their existence to the traumas of everyday life as well as to those of fixation.

Annals of Surgery, Philadelphia

101:1299 1468 (June) 1935

- Adenoma of Islet Cells with Hyperinsulinism Review A O Whipple and Virginia Kneeland Frantz New York—p 1299
- *Subtotal Pancreatectomy for Hyperinsulinism Operative Technique J M McCaughan St Louis—p 1336
- Surgical Treatment of Chronic Pancreatitis G De Tarnowsky and P J Sarma Chicago—p 1342
- Superior Laryngeal Nerve and Superior Pole in Thyroidectomies C H Frazier and W H Erb Philadelphia—p 1353
- Surgical Treatment of Toxic Goiter M K Smith New York—p 1358
- Traumatic Intrathoracic Rupture of Thoracic Duct with Chylothorax Report of Case with Recovery O R Lillie and G W Fox Milwaukee—p 1367
- *Surgical Aspects of Bleeding Gastric and Duodenal Ulcer J J Westermann New York—p 1377
- Spontaneous Rupture of Normal Spleen R H Young New York—p 1389
- Gas Gangrene Review of Seventeen Cases E Eliot Jr and E R Easton, New York—p 1393
- Carcinoma of Bladder C R O Crowley Newark N J—p 1407
- Surgery of Bladder Tumors E Beer, New York—p 1412
- Total Cystectomy for Cancer of Bladder W C Quinby Boston—p 1415
- *Diathermy for Carcinoma of Bladder V S Counseller and W F Braasch Rochester, Minn—p 1418
- Radical Treatment of Cancer of Bladder B S Barringer New York—p 1425
- Treatment of Bladder Cancer with External Irradiation A L Dean Jr, New York—p 1428
- Upper Urinary Tract in Carcinoma of Bladder J R Caulk St Louis—p 1432

Subtotal Pancreatectomy for Hyperinsulinism—In McCaughan's experience the following technic has simplified subtotal pancreatectomy. Shortly before operation the patient is given 500 cc of a 10 per cent solution of dextrose intravenously, and the stomach is thoroughly emptied of fluid and gas by aspiration. The preliminary medication consists of one-sixth grain (0.01 Gm) of morphine sulphate and $\frac{1}{150}$ grain (0.0004 Gm) of atropine sulphate given hypodermically. Ether anesthesia is used by preference because of its effect in sustaining and even elevating the normal level of the blood sugar. A long left midrectus incision is made. The gastrocolic omentum is divided transversely and a gauze pack is placed against the stomach, which is rotated slightly and drawn upward by an assistant. A second pack is placed over the transverse colon, which is then displaced downward. The small of the back is elevated by means of the operating table backrest. The resection is begun by dividing the peritoneal investment along the lower margin of the pancreas and grasping the tail with

a suitable forceps and drawing it slightly forward and downward. Temporary tape ligatures are passed about the splenic vein and splenic artery. The subsequent dissection is directed toward the freeing of the tail and the body of the pancreas from the splenic artery and vein, because it not only enables one by traction and countertraction to display the numerous tributary vessels supplying the tail and body of the pancreas by placing them on a stretch but it also gives immediate control of the vascular pedicle of the spleen should either vein or artery be inadvertently wounded. The tributary vessels may be divided between ligatures, either an aneurysm needle or an artery forceps being used to introduce the suture underneath the vessel. The large pancreatic artery should be secured early in the dissection. The dissection is continued until the region of the junction of the body with the head is reached. As much of the gland is removed as seems indicated by the severity of the case at hand. An assistant holds the body of the pancreas in the grasp of a rubber covered right angle forceps, just tightly enough to control bleeding. The pancreas may then be divided with a V type incision and the stump closed with either an interrupted mattress suture or running lock stitch, giving satisfactory hemostasis. A rubber tissue drain is introduced to the bed of the resected portion and the gastrocolic omentum is closed loosely about the drain. After operation the blood sugar should be maintained at normal levels by the administration of carbohydrates.

Surgical Aspects of Bleeding Gastric Ulcer—Westermann states that of the cases of gastroduodenal ulcer seen at the hospital during the past ten years about 12 per cent have been complicated by hemorrhage. In 75 per cent of these cases the hemorrhage has been massive and recurrent. In every case transfusion has been given at least once, and frequently more often, either during the course of a medical regimen or as a preoperative or postoperative measure. These records show that transfusion has been completely ineffectual as a means of stopping hemorrhage. The advisability of operation during the hemorrhage is debatable. However, hemorrhage of such proportions elsewhere in the body is always treated as a surgical emergency. Patients operated on under these circumstances have survived. One immediate death occurred in a case complicated by carcinoma of the pancreas. In each instance in which the operation performed was of the indirect type the hemorrhage continued. Westermann is of the opinion that immediate surgery of the direct type is justifiable in a large percentage of these cases and will prove permanently successful. The presence of the lesion can be determined only by careful inspection at operation with the duodenum open. Preoperative and postoperative transfusions are an absolute requirement of this procedure. Ten patients in this series died in the hospital from continued hemorrhage while receiving most rigid medical treatment and, in many instances, daily transfusions. The source of massive hemorrhage that complicates gastroduodenal ulcer is from the posterior surface of the duodenum in a large majority of cases. The blood supply of this area makes gross hemorrhage possible without deep penetration of the wall. Exploration of the open duodenum is necessary to determine this source in all cases except those in which there are large penetrating ulcers of the crater type. Preoperative diagnosis is usually definite in these cases, but diagnosis of the posterior surface ulcer is extremely difficult and cannot be accurate.

Diathermy for Carcinoma of Bladder—Counseller and Braasch point out that the use of diathermy in the surgical management of carcinoma of the bladder is gradually being extended, for it has brought within the field of successful treatment cases in which the condition formerly would have been regarded as inoperable or the growth as nonresectable. Seventeen patients whose condition was considered inoperable were treated extensively with diathermy alone, and fifteen of the seventeen lived more than five years. The two others have recently died from unrelated conditions. Tumors of the bladder that are comparatively small and are of a malignancy graded 1 or 2 are usually controlled by transurethral electrocoagulation. Some of the early circumscribed lesions that are graded 3 or 4 and that can be seen easily and give no clinical

evidence of infiltration may be treated similarly. The more extensive, highly malignant lesions and the widespread lesions with low degrees of malignancy are attacked preferably by the suprapubic route. Whenever the lesion can be completely removed surgically by either segmental resection or excision this is the operation of choice. For the inoperable lesions of both high and low grades, confined to the base, electrocoagulation is used. The small number of recurrences and the lack of deformity and infection of the bladder would recommend this method of treatment. In some instances these procedures may be combined with the application of radon seeds or of needles containing radium. The advantages of diathermy as a transvesical procedure for inoperable or nonresectable lesions of both high and low grades have not been sufficiently recognized.

Archives of Dermatology and Syphilology, Chicago

31 777 938 (June) 1935

- Reactions Due to Phenolphthalein Study of Their Pathogenesis E W Abramowitz New York—p 777
- Study of Crude Coal Tar and Allied Substances Preliminary Report M E Ohermayer and S W Becker Chicago—p 796
- *The Arsenic Problem Report of Case of Probable Arsenic Dermatitis from Wearing Apparel M J Renter Milwaukee—p 811
- Reactions to Trichophyton Compared with Reactions to Other Bacterial Products H Goodman and I Marks New York—p 819
- *Acne and Furunculosis Preliminary Report of Treatment with Physiologic Solution of Sodium Chloride Locally or by Intravenous Injection H Goodman New York—p 828
- Experimental Chronic Cutaneous Blastomycosis in Monkeys Study of Etiologic Agent W A DeMonbreun Nashville Tenn—p 831
- Congenital Defect of Skin of the New Born R L Sutton Jr Kansas City Mo—p 855
- Nonulcerative Tuberculosis of Mouth Following Dental Procedure Report of Case C R Rein and M H Feldman New York—p 858
- New Syphilitic Dental Dystrophy (Similar to the Bud Molar of Pfäfer) E W Karcher Boston—p 861

The Arsenic Problem.—Reuter cites a probable case of arsenical dermatitis caused by wearing a black woolen suit. Arsenic was found in the urine and hair of the patient and in the suit. Recovery occurred when the patient discontinued wearing the suit and when local treatment of the skin was instituted. The presence of arsenic in excretions is discussed. There are no definite criteria by which to identify arsenic as a cause of disease in a given case. At present the diagnosis in obscure cases of arsenical poisoning rests on presumptive evidence. A general rule regarding the behavior of arsenic within the body is of little value, because in many persons the biochemical reactions are exceptional. Patients who suffer from symptoms of arsenic poisoning are exceptions in that they manifest a hypersensitivity to arsenic. Legally, it is difficult to state whether or not arsenical poisoning has been the cause of death, even though the amounts of arsenic found in the tissues and excretions are the same or less than those cited as normal values. The use of arsenic as a contaminating factor in foods or drugs should not be permitted, since no limit of tolerance for arsenic can be established for all persons.

Treatment of Acne and Furunculosis.—Goodman studied the effect of intravenous and local injection of physiologic solution of sodium chloride for the relief of pustular acne and furunculosis, treating several hundred patients. The pustular elements have always receded under this type of treatment. The large pus pockets of the condition sometimes called cystic acne have cleared and remained clear. Furuncles likewise are amenable to this form of therapy. It seems to make no difference whether the furuncle is in the frank pustular phase or in the stage before ripening. The first injection was 100 cc, which was increased by 50 cc until a maximum of 250 cc. was reached. A few patients were given 300 cc. There were no ill effects. The injections were carried out by the gravity method. If the patient had only one or two pus pockets the solution was injected locally directly into the mass of pus. Injections were made around the inflammatory base as well. The amount varied with the quantity that could be injected. If there was an aperture in the pustule the solution acted as a means of irrigation. Recently Bloom reported excellent results in the treatment of certain skin conditions including acne from the use of calcium chloride intravenously. Patients with pustular acne were relieved of the pus pimples when

given intravenous injections of physiologic solution for such unrelated conditions as vascular diseases of the lower extremities. The relation of a high sugar content to a low salt content may be found to be constant for infections. Persons with frank diabetes are prone to have pustular infections of the skin. Intravenous injections of physiologic solution of sodium chloride may be indicated in such cases.

Archives of Surgery, Chicago

30 911 1084 (June) 1935

- *Tumor of Neuromyo-Arterial Glomus Report of Cases V Raisman and L Mayer New York—p 911
- Outogenous Abscess of Parietal Lobe Review of Literature and Report of Six Cases C B Courville and J M Nielsen Los Angeles—p 930
- Diagnosis of Neurogenic Lesions of Urinary Bladder by Cystometry Appraisal of Method Based on Experimentation with Animals J M McCaughan and J H Hershey St Louis—p 956
- *Vaso-Orchidostomy with Interposed Spermatocoele Procedure for Treatment of Sterility S F Wilhelm New York—p 967
- Melanosis Coli Its Clinical Significance A J Zobel and D A Susnow San Francisco—p 974
- *Gangrene of Buttock Perineum and Scrotum Due to Endamoeba Histolytica Report of Case F L Meleney, New York and H E Meleney Nashville Tenn—p 980
- Lumbar Vertebral Epiphysitis S Kleinberg New York—p 991
- Surgical Treatment of Ependymal Gloma of Spinal Cord L J Adelstein and G H Patterson Los Angeles—p 997
- Use of Low Temperatures in Culture and Transportation of Surgical Maggots S W Simmons Washington D C—p 1015
- Adequacy of Nutritional Retardation in Culture of Sterile Maggots for Surgical Use S W Simmons Washington D C—p 1024
- Peritoneal Drainage Resistance of Sinus Tract to Infection P Shambaugh and R Boggs Boston—p 1032
- Penetration of Moist Heat Applied to Abdomen and Its Effect on Intestinal Movements H E Carlson and T G Orr Kansas City Kan—p 1036
- *Suction with Nasal Catheter Its Effect on Blood Chemistry Report of Case R F Northrop Philadelphia—p 1040
- Acute Pancreatitis F F Henderson and E S A King Boston—p 1049
- Review of Urologic Surgery A J Scholl Los Angeles E S Judd Rochester Minn J Verbrugge Antwerp Belgium A B Hepler Seattle R Gutierrez, New York and V J O'Connor Chicago—p 1058

Glomal Tumor.—Raisman and Mayer add three cases of glomal tumor to the twenty-six cases previously reported. This benign tumor develops from a structure normally present in the skin and known as the glomus. It is probably identical with the "painful subcutaneous nodule" reported by Wood in 1812, referred to by others. The authors collected thirty-three instances of "probable but unproved cases of glomal tumor." The glomal tumor is small, usually not more than half an inch (1.27 cm.) in diameter, of slow growth and long duration. It may be situated in any part of the body, but the favorite site is beneath the nail. There it gives rise to pain of varying intensity and radiation. In the severe cases the pain is agonizing almost paroxysmal, and radiates upward to the shoulder, even to the heart. When the tumor is not subungual, the pain is usually much less severe. Changes of temperature, particularly cold, increase the severity of the pain. Invariably the tumor is sensitive to pressure. In some cases it is associated with neurologic or vascular changes, such as hyperesthesia and increase in the temperature of the skin. In two cases there was slight atrophy of the entire arm. Examination reveals a pea-sized tender tumor, which when subungual, has almost always a peculiar bluish tinge showing through the translucent nail. A roentgenogram may show a minute crater-like depression of the dorsal cortex of the terminal phalanx. The only effective treatment is excision by knife or by endothermy. If the tumor is subungual, exposure is secured by removal of a portion of the nail, which in many cases regenerates normally. The tumor may be encapsulated as in the majority of cases, or diffuse as in one of the present cases. No metastases or recurrences after excision have been reported. Invariably pain has disappeared after removal of the tumor. Glomal tumor is easily differentiated from most of the cutaneous neoplasms. Only the unusual single small neuroma, superficially located and the subungual melanoblastoma may cause difficulty. This extremely malignant tumor at one phase of its development is characterized by a bluish black spot beneath the nail which might be mistaken for a glomus. Operation and microscopic section will at once make the differential diagnosis possible.

Vaso-Orchidostomy with Interposed Spermatocoele—Wilhelm has devised a procedure for vaso-orchidostomy that entails the creation of an artificial spermatocoele, which he believes will increase the percentage of success of operations to reestablish the seminiferous channels and more nearly reproduces the normal anatomic conditions. The entire spermatogenic tissue should be used. The testicle should not be damaged. The site of the anastomosis should be completely epithelial, so that a minimum of scar is formed. A funnel-shaped sac lined with epithelium, analogous to a spermatocoele, should be established to unite the larger cut open surface of the tubules of the epididymis or of the rete to the smaller divided end of the vas deferens. Following experiments on animals, the operation for the reestablishment of the seminiferous channels was carried out in two stages. The first stage consisted of permanent vasostomy. After complete healing had taken place, the second stage, vasosac orchidostomy, was performed.

Gangrene of Buttock and Perineum Due to Endamoeba Histolytica—The Melneys discuss a case of gangrene of the buttocks, perineum and scrotum from the clinical, bacteriologic and pathologic standpoints, and reach the conclusion that it was due primarily to the lytic action of *Endamoeba histolytica*. This case has been studied carefully with anaerobic bacteriologic technic, thus ruling out the presence of the micro-aerophilic nonhemolytic streptococcus, which is the essential organism in the progressive postoperative synergistic gangrene with which this disease might be confused. The patient made a rapid recovery following the complete excision of the lesion, the administration of a course of chiniofon and emetine hydrochloride, the local application of zinc peroxide and the application of skin grafts. In this case there was relatively little gangrene of the skin and the line of demarcation was relatively smooth and sharply outlined, the margin of skin outside the gangrene was not raised, there was no red zone and the wound was not extremely tender. The margin of the skin elsewhere was extensively undermined and the granulating base of the ulcer was rough and shaggy with necrotic tissue adherent to it. Although the clinical appearance of the lesion was quite different from that seen in cases of postoperative synergistic gangrene, other cases of amebic ulceration of the skin may not be so distinctive in their clinical appearance. In some cases of bacterial gangrene, amebas may be present as contaminating organisms without taking part in the gangrenous process. In other cases both factors may operate and change the characteristic clinical picture accordingly. The bacteriologic study confirmed this differentiation, for in the synergistic type of gangrene the essential organism, a micro aerophilic nonhemolytic streptococcus, may always be found in pure culture of material from the area just outside the margin of the gangrene and is associated with *Staphylococcus aureus* in the gangrene. The nonhemolytic streptococcus was cultivated only from material in the zone outside the gangrene. The amebas were found in the advanced zone of infection, while the bacteria were in the rear.

Effect on Blood Chemistry of Continuous Suction with Nasal Catheter—Northrop studied the effect of continuous drainage of the stomach and duodenum through a nasal catheter in twenty-five patients, twenty-four of whom were operated on. Continuous suction applied through a nasal catheter causes a drop in the blood chlorides, an elevation of the carbon dioxide-combining power toward or into alkalosis, an elevation of the hemoglobin content of the blood and an increase in the red blood cell count. The marked changes in the chlorides, hemoglobin and red cell content of the blood and the changed carbon dioxide-combining power accompanying continuous lavage of the upper intestinal tract produce few, if any, untoward symptoms. Of the various methods of administering para-oral fluids, continuous venoclysis appears to be most effective in controlling the changes in the blood incident to continuous duodenal suction. Administration of the aspirated intestinal contents in the form of retention enemas does not cause rectal irritation and deserves further study as a means of combating postoperative dehydration and the loss in chlorides and the alkalosis incident to obstruction of the intestine and continuous lavage of the stomach. The use of a properly functioning nasal catheter

with applied suction is an efficient way of controlling postoperative nausea, vomiting and distention and should be used prophylactically in cases in which this triad is anticipated. A case of obstruction of the intestine with recovery under duodenal suction is reported.

California and Western Medicine, San Francisco

42: 409-496 (June) 1935

- Organized Medicine in California Some of Its Problems. C. G. Toland, Los Angeles—p 409
- Research in Medicine Practical Applications E. S. Judd and M. T. Hoerner Rochester Minn—p 412
- Differential Diagnosis of Intracranial Damage. E. J. Morrissey San Francisco—p 416
- Urethral Strictures Résumé of Treatment. W. B. Parker and C. H. Mackay Los Angeles—p 421
- Muscul Poisoning H. Sommer and K. F. Meyer San Francisco—p 423
- Sight Saving Classes F. H. Rodin San Francisco—p 426.
- Encephalography in Children F. G. Lindemulder San Diego—p 429
- Reconstructive Plastic and Oral Surgery A. E. Smith, Los Angeles—p 432
- Surgical Relaxation J. R. Burrows, San Francisco—p 438
- Common Dermatoses Some Unusual Manifestations N. P. Anderson and S. Ayres Jr Los Angeles—p 442
- Health Insurance Pro and Con Being Speeches Made at the Special Session of the House of Delegates of the California Medical Association at Los Angeles March 23 1935 Remarks by R. A. Yoell, San Francisco, J. H. Shephard, San Jose, A. R. Kilgore, San Francisco, D. R. Powell, Stockton, D. Crosby, Oakland, N. G. Hale, Sacramento, H. Wilson, Los Angeles, C. A. Broadbush, Stockton, L. A. Packard, Bakersfield, J. C. Riddock, Los Angeles, T. C. Lawson, Oakland and C. M. Anderson, Hermosa Beach—p 445

Canadian Medical Association Journal, Montreal

32: 609-724 (June) 1935

- Observations on Treatment of Dysmenorrhea with Placental Extract Emmenin M. C. Watson Toronto—p 609
- *Treatment of Menorrhagia and Metrorrhagia by Anterior Pituitary-Like Hormone D. N. Henderson Toronto—p 615
- Diagnosis and Treatment of Malignant Hypertension. C. P. Howard, Montreal—p 621
- *New Method of Treating Fractures in Distal Third of Femur E. Anderson, Seattle—p 625
- Contribution to Study of Renal Anomalies P. Bourgeois, Montreal—p 630
- Carcinoma of Small Intestine. F. D. Ackman Montreal—p 634
- Infection of Mouth in Relation to Dysentery Report of Case of Intestinal Amebiasis P. Bergeff Montreal—p 639
- The deRivas Thermal Method of Treatment in Intestinal Amebiasis. Pauline Bergeff Montreal—p 641
- Nature of Postsplenectomy Anemia R. Gottlieb Montreal—p 642
- The Use of Hypnotics V. E. Henderson, Toronto—p 645
- Radiation Therapy in Cancer of the Cervix. W. P. Healy, New York—p 647
- Bone Tumors and Irradiation. L. C. Kress and B. T. Simpson Buffalo—p 651
- Latent Syphilis S. C. Peterson Winnipeg, Manito.—p 655
- Clinical Survey of Twenty-One Cases of Intussusception. G. G. Miller and E. W. Workman Montreal—p 660
- Hysterectomy E. W. Mitchell Toronto—p 665
- Tuberculosis in Childhood D. A. Carmichael Ottawa, Ont.—p 670

Treatment of Menorrhagia and Metrorrhagia by Anterior Pituitary-like Hormone—Henderson treated thirty-nine cases of menorrhagia and metrorrhagia, presumably due to endocrine unbalance, with the anterior pituitary-like gonadotropic hormone from the urine of pregnancy, thirty-one patients were relieved of the menorrhagia and twenty-five had a complete return to normal menstruation. Of eight patients who failed to respond to treatment, four were proved to have local pelvic lesions sufficient to cause the complaint. Successful results from this form of therapy can be obtained only in the absence of pathologic lesions of the genital tract. Moderate diffuse enlargement of the uterus is frequently encountered in functional bleeding and is not a contraindication to hormone therapy. Harmful effects from the administration of anterior pituitary-like hormone are considered unlikely and are outweighed by the excellent therapeutic results. Improvement in the patient's general sense of well being after treatment is noted, and frequent relief of dizziness, when associated with menorrhagia, is observed. More exacting methods of diagnosis of pituitary and ovarian dysfunction are necessary before the full value of anterior pituitary-like hormone therapy will be realized.

Fractures in Distal Third of Femur—Fractures of the distal third of the femur, under which category Anderson classifies the intercondylar and supracondylar forms, no longer prove

difficult to manage when one is employing a method of fracture treatment the chief principles of which are (1) a new and simple means of overcoming the deformity caused by the gastrocnemius and allied muscles and (2) the utilization of the well leg for countertraction. A working analysis of this mode of reducing supracondylar fractures includes correcting the posterior displacement of the distal fragment by wire or pin transfixion, which also acts as a traction agent, incorporating this transfixion in a plaster-of-paris cast to prevent recurrence of posterior deformity and to supply a means of immobilizing the fracture, and using an original splint, whereby only the well leg is required for countertraction. The author's technic differs in many respects from the prevailing manner of treating these fractures. Traction is not applied with the knee joint in flexion, as it is not necessary here to relax the gastrocnemius on the contrary, by immediate anterior replacement and fixation of the distal third the lower extremity is held with the knee in full extension, thereby eliminating delay in completing reduction. Under the current mode these fractures call for the maximum of after-care, while this incorporated pin method requires minimal attention. For this type of fracture it is obligatory to do more than to correct the shortening and to overcome the lateral displacement, it is necessary to overcome the posterior displacement of the distal fragment, besides correcting the plantar contraction of the foot. The steps of the procedure and the after-care are outlined.

Colorado Medicine, Denver

32 433 512 (June) 1935

- Endocrine Seminar General Introduction C F Kemper Denver—p 444
Structure of Endocrine Organs H M Kingery Denver—p 446
More Important Pathologic Lesions Associated with Endocrinopathies G Z Williams Denver—p 448
Brief Survey of Physiologic Function of Some of the Endocrine Glands B B Longwell Denver—p 454
Clinical Syndromes T P Sears Denver—p 457
Surgery of the Ductless Glands G E Cheley Denver—p 460
Comments on Some Clinical Uses of Hormones C F Kemper Denver—p 463
Changing Concepts in Treatment of Nephritis H Gauss Denver—p 466
Classification of Nephritis W C Johnson Denver—p 469

Florida Medical Association Journal, Jacksonville

21 537 580 (June) 1935

- Peptic Ulcer from Medical Standpoint W C Pumpelly Fort Pierce—p 547
Diabetes Treated by Radiation of Hypophysis M Dobrin and J H Lucinlan Miami—p 550
Lung Abscess F G Slaughter Jacksonville—p 551
Acute and Chronic Diseases An Appreciation of Thomas Sydenham's Book T F Hahn DeLand—p 554
The Black Widow Spider F T Barker Tampa—p 557

Indiana State Medical Assn. Journal, Indianapolis

28: 267 312 (June 1) 1935

- Ophthalmologic Aspect of Allergy B J Larkan Indianapolis—p 267
*Malignancy Engrafted on Actinomycosis F M Rnhy Union City—p 271
Study of Modern Classification of Kidney Disease S W Schneck Mount Carmel Ill—p 274
Infant Diarrhea with Especial Reference to Apple Therapy C A Tompkins Indianapolis—p 278
Sources of Error in Radiography of Acute Mastoiditis L A Smith Indianapolis—p 280
Report on Scarlet Fever Immunization A W Cavins Terre Haute—p 283
The Management of Patients Exposed to Rabies V K Harvey and C G Culbertson Indianapolis—p 284
The Prostate A J Sparks Fort Wayne—p 286

Carcinoma Engrafted on Actinomycosis—Ruby believes that carcinoma of the cheek, mouth and jaw is usually engrafted on a previous irritant condition. Syphilis is usually present, but its etiologic importance is not fully understood. Tobacco was used in just about the percentage of cases of cancer of the mouth as in all men regardless of a malignant condition. Roentgen treatment to be successful must be massive—that is, a single lethal dose seems to be best in a case in which the involvement also includes an irritant like the actinomycosis. The efficiency of radical surgery is doubtful to add to the patient's comfort, even though it might somewhat prolong his life. A case is reported in which all the predisposing causes

were present, but it was only after an attack of actinomycosis that the malignant condition was manifested. Leukoplakia was present, but so were the characteristic sulphur granules and the ray fungus. Also, as typical sinuses appeared below the mandible, the watery yellowish discharge contained the granules in amazing numbers. When after eight or nine months the case was reviewed, the actinomycosis had disappeared but the leukoplakia and the carcinoma were still present.

Journal of Experimental Medicine, New York

61 735 874 (June 1) 1935

- Studies on Bacterial Localization Effects of Specific Immunization and of Gum Acacia Medinm on Localization of Type I Pneumococci in Mice. L Catron Chicago—p 735
Studies on Meningococcus Infection VIII Type I Specific Substance H W Scherp and G Rake New York—p 753
Cellular Reactions to Acetone-Soluble Fat from Mycobacteria and Streptococci Effect of Neutralization on Biologic Activity of Tuberculo-lipoid and of Phthioic Acid Derived from It K. C. Smithburn and Florence R. Sahin New York—p 771
Formation of Agglutinins Within Lymph Nodes P D McMaster and S S Hudack New York—p 783
Rabbit Pox III Report of Epidemic with Especial Reference to Epidemiologic Factors. H S N Green New York—p 807
Multiplication in Vitro of Pseudorabies Virus in Testicle Tissue of Immunized Guinea Pigs E Traub Princeton N J—p 833
Studies on Suprarenal Cortex IV Effect of Sodium Salts in Sustaining Suprarenalectomized Dog G A Harrop L J Soffer, W M Nicholson and Margaret Strauss Baltimore—p 839

Journal of Pharmacology & Exper Therap, Baltimore

54: 1 136 (May) 1935

- Mode of Action of Certain Drugs Which Stimulate Respiration S Wright London England—p 1
Investigation of Toxicity and Hypoglycemic Effect of Several Guanine Compounds G S Samuelsen Brooklyn—p 17
Respiratory Effects of Morphine Codeine and Related Substances IV Effect of α -Mono-Acetylmorphine Mono-Acetyldihydromorphine Diacetylmorphine (Heroin) and Diacetyldihydromorphine on Respiratory Activity of the Rabbit. C I Wright and F A Barbour Ann Arbor Mich—p 25
*Use of Sodium Formaldehyde Sulphoxylate in Acute Mercury Poisoning S M Rosenthal Washington D C—p 34
Ventricular Response in Caffeine Nicotine Antagonism R H Cheney Brooklyn—p 42
Comparison of Motor Effects of Morphine Codeine and Dihydromorphine Hydrochloride (Dilaudid) on Thiry Fistulas R P Walton and C F Lacey New Orleans—p 53
Absorption of Drugs Through the Oral Mucosa R P Walton and C F Lacey New Orleans—p 61
Sodium N Methyl Cyclohexenyl Methyl Barbituric Acid (Evipal) Hypnosis Anesthesia and Toxicity A H Maloney and R Hertz Washington D C—p 77
Remarks on Distribution of Barbiturates in the Brain T Koppanyi and J M Dille, Washington D C—p 84
Studies of Phenanthrene Derivatives IV Veratrine-like Action on Skeletal Muscle of Certain 9 Substitution Products of Phenanthrene R G Smith Ann Arbor Mich—p 87
Identity of Reducing Substance in the Urine of Normal Persons Following the Ingestion of Amidopyrine M Enklewitz New York—p 100
True Methyl Choline A Simonart Louvain Belgium—p 105
Beta Methylcholine Chloride and Its Acetyl Ester R T Major and J K Cline Rahway N J—p 131

Use of Sodium Formaldehyde Sulphoxylate in Acute Mercury Poisoning—Rosenthal outlines the use of formaldehyde sulphoxylate in acute mercury poisoning on a basis of its pharmacologic behavior. In its toxic action mercury produces cellular damage which, once sustained, will not be greatly benefited by this therapy. If sufficiently large doses of sulphoxylate are given by mouth it will pass throughout the alimentary canal and reduce any mercuric chloride to mercurous compounds, which are relatively harmless in the digestive tract. The oral administration of the antidote as early as possible is therefore of the greatest value because of the action on mercury and because of the local protection afforded the alimentary canal. Following intravenous injections of the drug, the blood serum will promptly reduce mercuric chloride to brownish black mercurous compounds. Intravenous therapy will prevent renal injury from mercuric chloride given subcutaneously. It will antagonize intravenous injections of mercuric chloride if injected before the mercury, treatment subsequent to intravenous injections of mercury is much less effective because of the promptness with which cellular injury is produced by this method of intoxication. The purpose of intravenous therapy is to protect the kidneys from any mercury in the tissues or alimentary tract.

that is not promptly reached by the oral therapy. It is on this basis that the administration of sulphoxylate has been arranged so that effective amounts will be present in the body for from ten to twelve hours. No toxic effects from the treatment have been encountered in fifty human cases. A limitation of the dose and time of administration of the second injection of sulphoxylate has been suggested, however, in order to lessen such possibilities. The technic suggested for treatment of mercuric chloride poisoning in adults is: 1 Gastric lavage is done with a 5 per cent solution of sulphoxylate, about 200 cc being left in the stomach. 2 Immediately following this, 10 Gm of the drug is dissolved in from 100 to 200 cc. of distilled water, to be slowly injected intravenously, from twenty to thirty minutes being permitted for the injection. 3 In severe cases the intravenous injection is repeated from four to six hours following the completion of the first injection, from 5 to 10 Gm being injected. 4 If colitis develops later, high colonic irrigations with a 1, 1,000 solution of sulphoxylate is indicated.

Journal of Thoracic Surgery, St. Louis

4 445 546 (June) 1935

- Primary Malignant Tumors of Thyms Gland Report of Two Cases H R Decker Pittsburgh—p 445
Bronchiectasis Study of One Hundred Proved Cases E Fletcher, London England—p 460
Multiple Interosteal Neurectomy for Pulmonary Tuberculosis Indications and Results J W Strieder and J Alexander Ann Arbor Mich—p 473
Chest Immobilization in Pulmonary Tuberculosis Experimental Study F M Foote and J W Spies New Haven Conn—p 492
Thoracoplasty and Contralateral Artificial Pneumothorax W C Pollock Denver—p 502
*Phrenic Exeresis in Conjunction with Artificial Pneumothorax Therapy W C Pollock and J H Forsee Denver—p 509
Effect of Diaphragmatic Paralysis on Efficiency of Cough J Fine and A Starr Boston—p 525
Secondary Aspergillosis (*Aspergillus Niger*) Superimposed on Bronchiectasis Report of Case G D Cannon Waverly Hills Ky—p 533
Methods of Producing Experimental Pleural Conglutination H Landt O R Hyndman and H M Korns Iowa City—p 536
Involvement of Sympathetic Nerves as a Complication of Acute Empyema F C Hill Omaha—p 539

Phrenic Exeresis in Conjunction with Pneumothorax Therapy—Pollock and Forsee believe that hemidiaphragmatic paralysis is of value as a supplement to artificial pneumothorax therapy when additional pulmonary compression and relaxation are required for cavity obliteration because of pleuropulmonary adhesions. Artificial pneumothorax complicated by acute pleuritis with or without serous effusion frequently ends in obliterative pneumothorax. Untimely obliteration of the pneumothorax space with pulmonary reexpansion will end in disease progression, and some procedure of compression therapy should be substituted for the pneumothorax lost through obliteration. The authors advocate that the next procedure instituted should be diaphragmatic paralysis. After successful pneumothorax, diaphragmatic paralysis is indicated as a pre-expansion procedure. The elevation of the diaphragm decreases the size of the hemithorax and thus reduces the degree of pulmonary reexpansion required, prevents mediastinal retraction and causes a permanent continuation of some compression and relaxation. There is also the safety factor of decreased pulmonary function. Hemidiaphragmatic paralysis aids in compression and relaxation when pneumothorax is of an unsatisfactory character because of pleural symphysis over the involved lobe or lobes. This procedure may prevent recourse to radical surgical collapse. Hemidiaphragmatic paralysis is indicated when artificial pneumothorax, after a sufficient period, fails to obliterate midlung cavities, though no offending pleural adhesions are evident by roentgen examination. Diaphragmatic paralysis is of value when factors are present that tend to make artificial pneumothorax unsatisfactory and when though the pneumothorax therapy has been successful, reexpansion of the compressed lung is contemplated. When factors are present that interfere with compression and relaxation of the treated lung, diaphragmatic paralysis has proved of value. If it is of value under unfavorable conditions, its value increases when favorable factors exist, and, since it is of value as a preexpansion procedure, the authors see no reason why practically all cases of artificial pneumothorax should not be supplemented by diaphragmatic paralysis.

Kentucky Medical Journal, Bowling Green

33: 253 298 (June) 1935

- Practical Application of Our Present Knowledge of Tuberculosis Particularly as It Applies to Children L. C. Coleman, Richmond—p 255
Whooping Cough T J Marshall Paducah—p 259
Present Status of Whooping Cough A A Shapiro Louisville—p 261
Female Endocrinology D M Cox, Louisville—p 265
Unusual Foreign Body in Abdomen D P Hall Louisville—p 271
Adenomatous Goiter F W Rankin and A. E. Grimes, Lexington—p 273
Treatment of Secondary Anemia with Liver Extract W. Block, Louisville—p 276
Giant Urticaria Due to Functional Dysmenorrhea H S Frazer Louisville—p 278
Sihosis O O Miller Louisville—p 280
Etiology and Surgical Treatment of Anal Fistula W J Martin Jr. Louisville—p 287
Subacute Bacterial Endocarditis Case Report J P Glenn Russellville—p 295

Medical Annals of District of Columbia, Washington

4 119 152 (May) 1935

- The Cause of Death W M Yater and H H Hussey Washington—p 119
Treatment of Ocular Injuries O Wilkinson Washington—p 124
Fundamentals of Internal Medicine Applied Pharmacodynamics Rational Therapeutics T Koppanyi, Washington—p 127
The Doctor and His Business Relations F A Fenning—p 133
Medical Economics Coordination of Resources for Medical Care in the District of Columbia W M Yater and R Garrett Washington—p 138

New England Journal of Medicine, Boston

212 1017 1068 (May 30) 1935

- *Abnormal Bleeding in Women After the Age of Fifty F A Pemberton Boston and J S Lockwood Brookline Mass—p 1017
Development in Treatment of Pulmonary Tuberculosis from 1696 to the Present Time G M Balboni Boston—p 1020
*Arthritis and Tonsillar Infection H A Nissen Boston—p 1027
Obstetric Complications J M Berglund Baltimore—p 1033
Recent Changes in German Health Insurance Under the Hitler Government M M Davis and Gertrud Kroeger Chicago—p 1037
Study of Heart Disease Among Veterans IV Analysis of More Frequent Types of Anatomic Heart Disease P B Matz, Washington, D C—p 1042

Abnormal Bleeding in Women After the Age of Fifty—Pemberton and Lockwood investigated a consecutive series of 596 patients treated at the Free Hospital for Women with abnormal uterine bleeding as one of their complaints, 293 of whom were found to have benign lesions at the first operation. They conclude that, when the clinical evidence points toward the presence of carcinoma of the endometrium, a hysterectomy should be performed in spite of negative results by curettage, particularly when the patient is a nullipara who has passed the menopause. The treatment of elderly patients with uterine bleeding of any type is not complete without biopsy or thorough examination of the cervix to rule out carcinoma, even though there may be an obvious lesion elsewhere in the genital tract. About 50 per cent of women who report abnormal bleeding after the age of 50 will prove to have cancer as a cause. Some authorities have advocated doing a complete hysterectomy without curettage in any patient who bleeds after the menopause, on the ground that she almost certainly has cancer of the endometrium. In the present study there were twenty seven patients with polyps who would have been operated on unnecessarily if an intra-uterine examination had not been done.

Arthritis and Tonsillar Infection—To learn more about the association between tonsillar infection and joint disorders, Nissen studied nearly 500 arthritic patients. Even without recognized association between infections of the upper part of the respiratory tract and joint infection, such association may be present. Proof of this depends on intensive study of the individual to determine three factors: 1 Recognition of obvious and concealed chronic infection in the nasopharyngeal tissue. The two most common are unmistakable, the acutely infected tonsil and the red hypertrophied chronic tonsil. The third is possibly of greater importance and is often missed unless the patient is seen frequently, and the appearance, subsidence and reappearance of signs of infected lymphoid tissue are noted. On examination of this type of throat a purplish red discoloration is seen on the anterior tonsillar pillar, along the edges of the soft palate and at times in the uvula. These local changes are

constant to a certain degree (the dusky discoloration being present at all times) but show varying reactions to exogenous and endogenous infection. During such reactions the tonsillar poles become prominent and more inflamed, but this is noted only if the upper part of the tonsil is exposed. The duration of the reaction is short if the excitor is endogenous, long if of exogenous origin. 2 Recognition of joint and other systemic infection. This depends on thorough physical, laboratory and roentgen examinations. 3 Determination of association between local and joint and systemic infection by extensive and prolonged study of each individual patient.

Public Health Reports, Washington, D C

50: 725-764 (May 31) 1935

- *Prevention of Intranasally Inoculated Poliomyelitis of Monkeys by Instillation of Alum into Nostrils C Armstrong and W T Harrison —p 725
- Tularemia Susceptibility of the White-Tailed Prairie Dog *Cynomys ludovicianus* Merriam G E Davis —p 731
- *Use of Below Freezing Temperatures for Maintenance of Meningococcus Cultures (*Neisseria intracellulalis* Weichselbaum) Anna M Pabst —p 732

Prevention of Intranasally Inoculated Poliomyelitis of Monkeys—Armstrong and Harrison observed that the instillation of 4 per cent sodium aluminum sulphate into the nostrils of monkeys resulted in the survival of seventeen of a group of twenty three animals, while only three of a group of nineteen nonprepared controls survived similar intranasal inoculation with poliomyelitis virus. Poliomyelitis tended to develop later and to run a slower course in the alum prepared group than in the nonprepared controls. The protective action of the alum solution is believed to be due to an alteration that decreases the permeability of the mucous membrane of the nose rather than to an antiseptic action.

Use of Below Freezing Temperatures for Maintenance of Meningococcus Cultures—Pabst preserved ten chosen strains of meningococci in neutral glycerin at -15°C for two years with no apparent change in viability, morphology or serologic or biochemical characteristics. Two hundred and twenty-three strains have been stored at this temperature on dextrose agar slants, both with and without glycerin, with no appreciable loss of viability in the eight months during which they have been under observation.

Surgery, Gynecology and Obstetrics, Chicago

60: 1033-1162 (June) 1935

- *Hyperparathyroidism Clinical Diagnosis and Operative Technic of Parathyroidectomy F H Lahey and G E Haggart Boston —p 1033
- Mechanism Symptoms and Treatment of Hernia into Descending Mesocolon (Left Duodenal Hernia) Plea for Change in Nomenclature C L Callander G Y Rusk and Alma Nemir San Francisco —p 1052
- Use of Vital Staining and Wet Films in Diagnosis of Lesions of Cervix R K Bowes and N R Barrett London England —p 1072
- Studies on Peripheral Vascular Phenomena IV Finger Volume Changes in Patient Showing Raynaud's Phenomena C A Johnson and R N Hedges Chicago —p 1077
- *Electrosurgical Aseptic Intestinal Anastomosis R P Wadhams and V Carabba New York —p 1082
- Activity of Hair Follicles with Reference to Pregnancy Mildred Trotter St Louis —p 1092
- Operation for Tuberculous Empyema L Eloesser San Francisco —p 1096
- Birth Fractures of Femur Å Rydén Lund Sweden —p 1098
- Peripheral Nerve Block in Obliterative Vascular Disease of Lower Extremity Further Experience with Alcohol Injection or Crushing of Sensory Nerves of Lower Leg R H Smithwick and J C White, Boston —p 1106
- Uretero-Intestinal Implantation with Drainage by Extraperitoneal Catheter F Hinman San Francisco —p 1115
- Anterior Gastro-Enterostomy by Short Loop Method C E Rees San Diego Calif —p 1125
- Mesenteric Cysts Brief Discussion and Report of Three Cases C S Rolter Colma Calif —p 1128
- Teratoma of Spinal Cord P C Bucy and D N Buchanan Chicago —p 1137

Hyperparathyroidism—The diagnosis of hyperparathyroidism Lahey and Haggart state, depends primarily on (1) an analysis of the chemical observations and (2) a survey of the roentgenograms of the bones of the skeleton and also of the kidneys. With the diagnosis of hyperparathyroidism estab-

lished, the parathyroid adenoma should be found and removed. Failure to find parathyroid adenomas in many cases will be due to failure to realize the frequent atypical location of the parathyroids and failure to investigate the possible atypical locations for a possible parathyroid adenoma. With the prethyroid muscles severed, the middle thyroid veins are ligated between clamps so that the lateral vascular attachments of the thyroid to the internal jugular vein are severed. The outer border of the thyroid is then grasped with forceps and rotated inward. The internal jugular vein and common carotid artery are completely separated from the back of the thyroid and the inferior thyroid artery completely demonstrated as a trunk where it passes behind the common carotid artery. The back of the gland is inspected, and if a tumor cannot be seen the gland is palpated for such a tumor within the gland. An adenoma of a parathyroid usually converts that structure into a globular mass and changes its color to a pale white rather than the brownish color characterizing the typical normal parathyroid. Should no parathyroid adenoma be demonstrable on this exposure, the inferior thyroid artery must be completely dissected up to its entrance into the thyroid gland. The recurrent laryngeal nerve must be found and dissected up to its passage behind or in front of the inferior thyroid artery. If still no parathyroid adenoma is found, one must expose the groove between the trachea and the esophagus in the region of the inferior thyroid artery. If still the adenoma is undemonstrated, the superior thyroid artery should be ligated and the upper pole of the thyroid turned downward, so that the region where it rests against the thyroid cartilage may be inspected. At this point caution must be exercised, as the recurrent laryngeal nerve enters the larynx here, at the point where the lowest fibers of the inferior construction are inserted into the horn of the thyroid cartilage. If the tumor is still not found, the thyroid should be palpated through and through between the thumb and the forefinger and any discrete globular nodule within the gland exposed by an incision into the gland removed and submitted to the pathologist for immediate frozen section report. If failure to demonstrate the parathyroid tumor persists the search is continued in the bundles of the superior thyroid vessels, out along the main trunk of the inferior thyroid artery, behind the esophagus and along the inner aspect of the upper pole. The isthmus is palpated against the trachea. If a pyramidal lobe is present it is exposed and palpated throughout its extent. If the evidence of the existence of hyperthyroidism is certain and still no parathyroid tumor has been found, and if digital palpation of the superior mediastinum demonstrates no palpable parathyroid tumor, the manubrium of the sternum may be removed to facilitate a visual search for a mediastinal parathyroid adenoma. Should exposure of all these regions fail to demonstrate an adenoma of a parathyroid, it then becomes justifiable to remove and submit a normal appearing parathyroid to the pathologist for decision as to the possible presence of hyperplasia of the parathyroids.

Electrosurgical Aseptic Intestinal Anastomosis—Wadhams and Carabba do not agree with Ward that the electrocoagulation procedure for intestinal anastomosis cannot be relied on for the stomach with its redundant mucosa. The failure is one of lack of properly performing the electrosurgical technic, especially as to the depth and strength of the current and the degree of coagulation. In the authors' experience the technic of Briggs and Whitaker, calling for only one row of sutures, is adequate. In retrospect there are only extremely rare instances in which immediate anastomoses are necessary. In cases in which immediate intestinal drainage is necessary, temporary ileostomy, colostomy or appendicostomy may be performed. In cases of intestinal resection, the anastomosis can be performed below the lumen of the resected intestine and the lumen allowed to drain externally while the anastomosis forms and begins to function. The authors have not had a case of secondary hemorrhage in fifteen consecutive operations by their method, which they describe. All the animals were carefully watched after operation and at necropsy for this complication. They believe that the possible applications of the technic to the human being are: 1 Gastro-enterostomy—by electrocoagulation when such a procedure is necessary in repairing a per-

forated duodenal ulcer complicated by stricture 2 Lateral anastomosis after resection of segments of the intestine secondary to partial gangrene of a portion of the intestine, as in strangulated Richter's hernia, gangrene due to bands, or femoral hernia The two open ends of the loop are left externally for drainage until the obstruction is relieved. The fistula can be then allowed to close spontaneously or repaired secondarily This procedure can be applied in performing an enterocolostomy 3 Ileosigmoidostomy as a preliminary procedure to resection of the cecum and ileosigmoidostomy of choice with a temporary colostomy or appendicostomy 4 Completion of the Mikulicz operation in the first stage of the operation, with elimination of the secondary clamping 5 Cholecystogastrostomy or enterostomy 6 Anastomosis of the ureters to the large intestine. 7 Without obstruction, primary resection of the large intestine with side-to-side anastomosis, instead of the Mikulicz operation. The authors performed fifteen consecutive and diversified anastomoses on the dog and one on man successfully by the electrocoagulation technic without mortality, leakage, infection or hemorrhage.

Operation for Tuberculous Empyema—Cloesser's desire to obviate a drainage tube led to an operation that has proved of use in a number of secondarily infected tuberculous empyemas. It has been used in a few obstinately toxic tuberculous empyemas in which no pus forming organisms could be found. The operation causes the underlying lung to expand, it is therefore not applicable to empyemas in which the lung is so badly affected that expansion to any degree seems inadvisable. The question of applicability must be decided by clinical pulmonary symptoms and especially by roentgenograms taken prior to the appearance of the complicating empyema. Under local anesthesia a U-shaped flap of skin and subcutis is outlined about half way between the posterior axillary line and the line of the inferior scapular angle. The flap has a base about 2 inches wide, which lies about one rib higher than the bottom of the empyema cavity, so that the rising diaphragm may not stop drainage, it is about $2\frac{1}{4}$ inches long, the length of two ribs and their intercostal spaces, long enough to reach into the pleural cavity without the least tension. The rib underlying the top of the flap is resected, the amount resected equaling the width of the flap. If the flap is too narrow and the resection too scant, drainage will be insufficient. The rib should be stripped with a cautery instead of a raspatory and the bared intercostal nerve injected with 1 cc. of absolute alcohol. The tip of this flap is turned into the chest and tacked to the pleura with one or two chromic catgut stitches, the edges of the defect in the skin are approximated with a few stitches of silk-worm. This thoracotomy needs no tube for the skin flap which lies against the soft parts of the chest keeps the wound open. It remains open until the lung reaches the chest wall, after which it spontaneously and automatically closes. It has a valve action, each cough or rise in intrapulmonary air pressure expels a little air from the thorax and causes a gradually increasing negative pressure in the empyema cavity. It is more difficult for air to enter through this valvelike wound than to escape from it. Dressings should be left in place as long as possible—for many days.

Peripheral Nerve Block in Obliterative Vascular Disease—Smithwick and White point out that peripheral nerve block is an effective method of controlling rest pain in patients with advanced obliterative vascular disease. Besides controlling pain, the circulation to the part may be increased because the anesthetic area is also deprived of its vasoconstrictor nerves. Local infection in open lesions is more easily controlled because frequent antiseptic dressings can be done painlessly. The general condition of the patient improves with the relief of pain, and other conservative measures become more effective. The operation requires careful technic and asepsis and should be done in multiple stages. The nerves may be either injected with alcohol or crushed. The latter method is more simple and equally effective, although the nerves regenerate more rapidly. The authors believe that this procedure has more than halved the number of necessary major amputations and more than doubled the number of successful minor amputations. It also has increased the number of cases in which no amputa-

tion is necessary. They emphasize the striking reduction in bilateral major amputations in their forty five cases. The results are better in the patients with thrombo-angitis obliterans than in the arteriosclerotic group. Patients with pulsation of the popliteal vessels do better than those in whom the vessel is obliterated at this level. Amputation of uninvolved toes is an effective prophylactic procedure in selected cases. If the vasomotor index is high, lumbar ganglionectomy should be done after the peripheral nerves have regenerated in certain cases. Unless hopeless gangrene or infection sufficient to endanger the life of the patient is present, this operation should be tried before a major amputation is resorted to. It is not indicated in the early treatment of obliterative vascular disease but should be used in advanced stages after other conservative methods have proved inadequate.

Virginia Medical Monthly, Richmond

62: 123 184 (June) 1915

- Parathyroid Glands in Health and Disease. W. Bauer Boston—p. 121.
Vomiting in the New Born with Especial Reference to Duodenal Atresia. Report of Two Cases. T. D. Walker Jr., W. W. Falkner. Newport News, and J. S. Horsley. Richmond—p. 141.
The Irritable Colon. Common Condition, Commonly Misunderstood. T. D. Davis. Richmond—p. 144.
Strips of Fascia Lata as Suture Material in Repair of More Difficult Abdominal Hernias. J. C. Mason. Rochester, Minn.—p. 148.
*Leiomyoma of Gastro-Intestinal Tract. Report of Two Cases. R. D. Jones Jr. Norfolk—p. 150.
Prosthetic Obturator and Plumper. J. B. Williams. Richmond—p. 155.
Siamese Twins at Full Term. Report of Case. E. L. Johnson, Bedford—p. 157.
Review of Papers Read at Meeting of the American Society of Clinical Pathologists. Regena Cook Beck, Richmond—p. 158.
Some Observations on Care and Treatment of Diseased Tonsils. B. Lee, Pulaski—p. 162.
Chemical Injury of Cornea in the New Born. Report of Experiments. S. Trattner, Richmond—p. 163.

Leiomyoma of Gastro-Intestinal Tract.—Jones presents two cases of leiomyoma of the gastro-intestinal tract observed during the last two years. He states that gastro-intestinal leiomyomas may be intraluminary or extraluminary, depending chiefly on the layer of muscle from which they are derived. For example, a tumor arising from the muscularis mucosa would more than likely be intraluminary and pedunculated, whereas one springing from the external layer would develop between the layers of the mesentery or, if opposite the mesenteric attachment, would by stretching the peritoneum become subserous. Many leiomyomas of the gastro-intestinal tract remain dormant and never produce symptoms worthy of note. On the other hand, they are capable of a wide variety of complications, depending on the location and size of the growth as well as the degree of malignancy. Submucous growths, for instance, are particularly prone to ulceration and hemorrhage. Such tumors may be the cause of gastro-intestinal bleeding of obscure origin. Ulceration may result in perforation and peritonitis. In the stomach, a submucous pedunculated growth may produce an intermittent pyloric obstruction, and in the small and large intestine it is not uncommonly the cause of intussusception. Subserous growths are rarely pedunculated, and Wolfer states that they may vary in size from that of a cherry to that of a mass filling the entire abdomen. Adhesions often develop, as the result of which the tumor may become fixed to the viscera or to the abdominal wall, thereby increasing the possibility of intestinal obstruction. In the case of the small intestine, angulation may be produced by the weight of the tumor, even in the absence of adhesions. When the growth is of the mixed type and encroaches on the mucosa, ulceration and hemorrhage may result, as it does in the intraluminary type. Leiomyoma should be considered in any case presenting vague abdominal symptoms, when a history of intermittent attacks of intestinal obstruction is obtained or when the case is complicated by gastro-intestinal hemorrhage of obscure origin. More often than not the tumor is not palpable, in which case the roentgenogram is of great value in the diagnosis. The treatment is surgical, the technical procedure depending on the immediate complications to be dealt with, the location of the growth, whether or not it is malignant, and in benign cases the risk of the operation versus the risk of carrying the tumor.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London
47: 181-222 (May) 1935

*Fractional Gastric Analysis in Diseases of the Skin. Further Observation in Three Hundred and Sixteen Cases with Especial Reference to Rosacea. W. H. Brown, Mary S. Smith and A. D. McLachlan.—p. 181

Case of Riehl's Melanosis. Notes on Classification of Poikilodermias. J. Kinnear.—p. 191

Recurrent Menstrual Purpura and Vicarious Menstruation. P. Ellman and F. P. Weber.—p. 197

Effect of Angle of Incidence on Dose of X Rays Absorbed by Skin. Note. J. Kinnear.—p. 202

Fractional Gastric Analysis in Diseases of the Skin.—Brown and his associates performed gastric analyses in 150 cases of rosacea, and compared the results with those of a previous investigation of fifty cases. For comparison, gastric analyses have been performed also in 166 cases of dermatoses other than rosacea. The percentage of cases showing achlorhydria and extreme hypochlorhydria is lower in the rosacea group, viz., 28 per cent, as compared with 35 per cent in other dermatoses. Symptoms of gastric disturbance were present in 61 per cent of a group of seventy-five patients with rosacea. The severity of the symptoms varied considerably in degree. In some they were negligible and in others they amounted to actual pain. The most common complaint was a sensation of fullness after food, with flushing of the face. The degree of flushing also varied greatly. A much more extensive study of the gastric analysis has led to the conclusion that marked subacidity is not a feature peculiar to rosacea as was originally thought. A degree of subacidity seems to be a feature of chronic dermatoses in general. The observations do not detract from the well established fact that strict dietetic treatment in combination with large doses of dilute hydrochloric acid brings about marked improvement in rosacea. A subacidity is frequent in rosacea and in other chronic dermatoses. It frequently follows the infectious fevers. In pernicious anemia and subacute combined sclerosis, achlorhydria is the rule. It is a feature also of the type of anemia described variously as microcytic, nonmegalocytic or simple achlorhydric anemia, and of the condition known as gastrogenic diarrhea and of certain glossitic and ulcerative disorders of the mouth. According to Ryle, the gastric habitus of the individual is closely related to the physiologic habitus. The one possible explanation of the subacidity found in chronic dermatoses is that the pain, discomfort or itching of a chronic dermatosis in time would tend to produce a depressed, debilitated, hypotonic individual. In the allergic complaints of the authors' series (Besnier's prurigo), in which one would expect the hypotonicity and the hypoadrenalism to be most marked owing to the long duration and distressing nature of the complaint, the subacidity was least marked of all the dermatoses. The rosacea patient, according to Rulison, is typically a person with poor muscle tone and a low blood pressure. It is likely that some degree of gastritis is always present in view of the dietary indiscretions indulged in by the patient. Although the duration and the severity of the disease in rosacea appear to bear but little relation to the gastric hydrochloric acid content, this may be explained by the constitutional factor. In a hyperthemic individual with hyperchlorhydria the presence of chronic gastritis may lead to reduction of the gastric acidity without bringing it below the level of hyperchlorhydria.

British Medical Journal, London

1: 1061-1108 (May 25) 1935

Acute Tonsillitis. Account of Some Recent Streptococcal Infections. F. E. Camps.—p. 1061

*Tonsillitis and Albuminuria. O. L. V. S. de Wesselow, H. K. Goadby and D. C. L. Derry.—p. 1065

Spirochetal Jaundice in a London Sewer Worker Confirmed by Laboratory Examinations. E. A. M. Halsted.—p. 1067

Septicemia Due to *Brucella Abortus* Following Operation. L. S. Potter and N. Hasbun.—p. 1068

Weight Bearing Instruments for Walking. H. C. Trumble.—p. 1070

Tonsillitis and Albuminuria.—In 354 cases of tonsillitis de Wesselow and his associates found 14.4 per cent that showed definite early albuminuria and 6.2 per cent late albuminuria.

From the urinary and clinical observations it would seem probable that focal nephritis occurred in thirty-five (10 per cent) and diffuse glomerulonephritis in at least three (0.8 per cent). No correlation was found between the predominance of hemolytic streptococci in the throat at the time of the acute infection and the incidence of focal nephritis. Seasonal variations of external temperature did not appreciably affect the incidence of early or late albuminuria. The incidence of predominant hemolytic streptococcus infection in the throat was not greater in those patients who afterward complained of rheumatic pains than in the general series.

East African Medical Journal, Nairobi

12: 35-66 (May) 1935

Quinine as Prophylactic in Malaria. H. L. Duke.—p. 38

Some Notes on Treatment of Fractures. C. V. Brainbridge.—p. 42

Control of Bedbugs (*Cimex Rotundatus*). Notes. J. I. Roberts and D. A. Dick.—p. 46

Poisoning by *Jatropha Multifida*, L. Note on Cases. W. D. Raymond.—p. 57

Glasgow Medical Journal

5: 249-328 (May) 1935

The Parathyroid Glands. Review of Anatomy, Physiology and Pathology of Parathyroid Glands with Observations on Three New Cases of Generalized Osteitis Fibrosa Cystica. D. P. Cuthbertson and W. A. Mackay.—p. 249

Carbohydrates in Treatment of Diabetes Mellitus. J. N. Cruickshank.—p. 293

Journal of Pathology and Bacteriology, Edinburgh

40: 425-644 (May) 1935

Combined Treatment of Experimental Trypanosome Infections by Chemotherapeutic Agents. C. H. Browning and R. Gnlbransen.—p. 425

Tuberculous Arteritis. W. G. Barnard.—p. 433

Mechanizing the Viable Count. J. A. Reyniers.—p. 437

Staphylococcal Bacteriophages. F. M. Burnet and Dora Lush.—p. 455

Psittacosis in the Developing Egg. F. M. Burnet and Phyllis M. Rountree.—p. 471

Histologic Changes in Kidneys of Adrenalectomized Rats. S. L. Simpson and V. Korenchevsky.—p. 483

*Tuberculous Meningitis in Children. J. W. S. Blacklock and Mary A. Griffin.—p. 489

Hematologic Standards of Healthy Persons. C. Price Jones, Janet M. Vaughan and Helen M. Goddard.—p. 503

Immature Rabbit as an Experimental Urinary and Fecal Typhoid Carrier. Effect of Hexamine Treatment. M. Coplans.—p. 521

Relationship of Eosinophil Leukocyte to Allergy and Anaphylaxis. A. C. P. Campbell, A. M. Drennan and T. Rettle.—p. 537

Experimental Inhibition of Tumor Induction by Mustard Gas and Other Compounds. I. Berenblum.—p. 549

Simple Superficial Esophageal Cast. T. C. Patterson.—p. 559

*Role Played by Natural Antisheep Hemolysin and Effect of Heat on Reactivity of Serum in Wassermann Reaction. R. W. Fairbrother and A. L. P. Peeney.—p. 571

New Culture Mediums Based on Sodium Desoxycholate for Isolation of Intestinal Pathogens and for Enumeration of Colon Bacilli in Milk and Water. E. Leifson.—p. 581

Adenolymphoma of Salivary Glands. R. Carmichael, T. B. Davie and M. J. Stewart.—p. 601

Tuberculous Meningitis in Children.—Blacklock and Griffin say that tuberculous meningitis is the most frequent form of meningitis in childhood. The primary site of infection in a series of 241 cases of tuberculous meningitis under 13 years was most frequently thoracic (73.9 per cent), then abdominal (22.8 per cent), of the cervical glands (2.1 per cent) and unknown (1.2 per cent). There was little difference in the sex distribution. Of the patients, 85.5 per cent were less than 6 years of age. The seasonal incidence was highest in the late spring and early summer months. The frequent association of tuberculous meningitis and generalized miliary tuberculosis is discussed, either lesion alone is uncommon. Human strains were easier to isolate directly by culture than bovine. In one case, in which infection with a human strain had occurred, the inoculated guinea-pig gave a negative result whereas the cultures were positive. From a clinical series of cases of cerebral tuberculosis seventy-two strains were isolated, of which 18.1 per cent were bovine, and from the primary lesions in a necropsy series 11.4 strains were obtained, of which 24.6 per cent were bovine. The highest percentage of bovine strains occurred in the third year of life in both series. The total bovine percentage obtained for meningitis from both series was 22.5 per cent and for all forms of cerebral tuberculosis 22 per cent. A higher percentage of bovine infections was noted in

country than in city children. Meningitis following primary thoracic lesions was nearly always due to the human type of bacillus, and that following primary abdominal lesions was usually due to the bovine type. Bovine strains were isolated in three cases of meningitis in which primary lung lesions were verified at necropsy. A case is described in which tubercle bacilli were isolated during life from the cerebrospinal fluid and in which tuberculomas were found at necropsy, but no meningitis.

Effect of Heat on Reactivity of Serum in Wassermann Reaction—Irregular results appear not infrequently in the Wassermann reaction when a 1:2 dilution of serum is employed. Fairbrother and Peeney suggest the correction of the defect by inactivation at 58°C. An explanation of this phenomenon does not readily present itself. There appears to be no doubt that with the serum dilution of 1:2 complement is not completely fixed by the combination of the antigen and the reacting substance in the serum. It has been suggested that the natural antishrimp hemolysin is the main responsible factor. If this were so it would indicate fixation of the complement during the initial incubation by the hemolysin alone rather than by the antigen serum combination. The results show in an unequivocal manner that, when a satisfactory antigen is employed, any part played by the natural hemolysin is relatively insignificant. Correction of the irregularity was frequently obtained, irrespective of the presence of natural hemolysin, by means of further inactivation of the serum at 58°C. A second heating at 56°C did not have this effect, therefore some important change had resulted from inactivation at the higher temperature. A further demonstration of this change was that the serums alone usually absorbed less complement. These results suggest that by inactivation at 58°C some alteration, probably of a physico-chemical nature occurs in the serum and that the subsequent fixation of complement by the antigen serum combination becomes greatly facilitated. In the routine test owing to some peculiarity of individual serums, complete fixation of complement by the greatest concentration of the serum in the presence of antigen is prevented. The actual nature of this peculiarity, however, except that it is corrected by inactivation at 58°C, is unknown.

Journal of State Medicine, London

43: 311-372 (June) 1935

- Rheumatism: Its Causes and Prevention. F. D. Howitt—p. 313.
The Modern Science and Practice of Nutrition. A. P. Cawadiaz—p. 323.
The Mantoux Tuberculosis Test in Children. A. M. Critchley—p. 335.
Medical Services in a Village Settlement. L. B. Stott—p. 339.
Early Diagnosis of Tuberculosis in Infancy and Childhood. B. Morgan—p. 343.
Dental Lesions as First Sign of Disturbance of Physiologic Function. F. W. Broderick—p. 352.
Great Epidemics of Middle Ages with Especial Reference to Norwich and Norfolk. M. R. Taylor—p. 361.
Spectrum Analysis as Aid in Medicine. H. Ramage—p. 370.

Lancet, London

i: 1139-1198 (May 18) 1935

- Vision and Its Disturbances in Relation to Cerebral Lesions. W. Harris—p. 1139.
*Etiology of Acute Rheumatism: Experimental Evidence of Virus as Causal Agent. B. Schlesinger, A. G. Signy and C. R. Amies, note on photomicrographs by J. E. Barnard—p. 1145.
*Relationship Between Adenomas and Cancer of Large Bowel. J. P. Lockhart-Mummery—p. 1149.
Measuring Red Blood Cells with Especial Reference to New Diffraction Apparatus. A. Pijper—p. 1152.

Etiology of Acute Rheumatism—According to Signy and his co-workers, the deposits obtained by high speed centrifugation of pericardial fluid in cases of acute rheumatic pericarditis contain particles that morphologically resemble virus elementary bodies. Similar bodies have been found in the deposit obtained from one pleural exudate in association with rheumatic pneumonia. Relatively pure suspensions of these bodies in formal saline solution have been prepared. These suspensions are specifically agglutinated by the serums of patients who are suffering from, and successfully resisting an acute rheumatic infection. The serums of patients in whom the infection is quiescent fail, as a rule, to agglutinate these suspensions. Completely negative reactions were also obtained

with the serum of normal persons and of patients suffering from various nonrheumatic infections. It is believed that the bodies found in pericardial exudates represent the actual infective agent of acute rheumatism. The importance of streptococcal infection as a factor in the etiology of the disease is recognized. It is suggested that the lowered resistance produced by such infections enables the virus to enter the body or, if the virus is already lying latent in the tissues, allows it to assume active characters. The characteristic properties of the infective agent of rheumatism cannot be closely paralleled with those of any known virus. Some of its characters, however, are shared by a number of virus agents.

Relation Between Adenomas and Cancer of Intestine.

—In his follow up study of fifty operative cases of what was believed to be simple adenoma, Lockhart-Mummery observed that adenomas of the rectum or colon are not innocent growths and that they are merely a stage in the development of malignant tumors and should be so treated. At a certain age, some cells of the intestinal epithelium exhibit a tendency to undergo hyperplasia. This tendency is not confined to one cell or group of cells but appears to be fairly widespread, with the result that the removal of one adenoma does not prevent the development of others. The author believes that what happens when a tumor forms, is that a change or gene mutation occurs to start with in the nucleus of a single cell, resulting in an excessive rate of reproduction of that cell as compared with the reproduction of normal cells of the same tissue. The adenoma results from the excessive reproduction of this single cell. The tumor is composed of normal cells differing, as far as can be observed, from other cells only in the fact that its cells are reproducing themselves too fast. This tendency for a mutation or change of their character to take place is often, however, present in a number of different cells in a fairly wide area. The exciting cause of the change may be due to genetic instability or to some factor in the environment, and the fact that it has occurred in one cell does not prevent the same change from taking place later on in other cells. From a practical point of view, local removal of the tumor would appear to be sufficient if the patient is observed at intervals of every four months during the next five to ten years, so that fresh tumors can be removed at once before they have had an opportunity of becoming malignant. But, unless the patient is kept under observation in this way, the development of other tumors is very likely to occur unobserved. The frequency of such a happening appears to be about 50 per cent, and a considerable danger exists of a malignant condition supervening.

Medical Journal of Australia, Sydney

i: 573-606 (May 11) 1935

- Syme and Medical Education. B. T. Zwar—p. 573.
Comments on Postoperative Pneumonia. K. W. Starr—p. 579.
Hodgkin's Disease: Some Clinical Aspects with Especial Reference to Effects on Hematopoietic Tissues and Nervous System. E. L. Cooper—p. 585.

Quarterly Journal of Medicine, Oxford

4: 1-92 (Jan) 1935

- Some Observations on Etiology and Effect of Alkalosis on Nephrotic Syndrome. R. B. Hawes and E. C. Vardy—p. 1.
*Comparison of Pituitary Basophilic Syndrome and Adrenal Corticogenital Syndrome. F. G. Lescher with report on pathology by A. H. T. Robb-Smith—p. 23.
*Schuller-Christian Syndrome: Lipoid Granulomatosis with Defects in Bones, Exophthalmos and Diabetes Insipidus. F. L. Horsfall Jr. and W. R. Smith—p. 37.
*Secretion of Urine in Diabetic Coma. R. A. McCance and R. D. Lawrence—p. 53.
Primary Lymphogranuloma of Stomach: Report of Four New Cases. T. Thompson and L. H. Howells—p. 81.

Pituitary Basophilic Syndrome and Adrenal Corticogenital Syndrome—Lescher reports a case of carcinoma of the adrenal cortex, which shows all the cardinal and most of the occasional symptoms recently ascribed by Cushing to an adenoma of the basophil cells of the anterior lobe of the pituitary. Examination of serial sections of the pituitary gland showed some general increase in the basophil and acidophil cells, and at one point there was a small collection of the basophil cells 0.3 mm. in diameter. In view of the case reported and

others of a somewhat similar kind from the literature, the author concludes that Cushing's syndrome, complete in its entirety, may be caused by such diseases as tumors of the adrenal cortex, and so a clinical distinction cannot always be made between these two syndromes. Every case of Cushing's syndrome should be critically examined, including a roentgen examination of the abdomen for a shadow in the renal areas and for the position of the kidneys. While it is generally accepted that the anterior lobe of the pituitary elaborates one or more gonadotropic secretions, there is no reliable evidence to show that the basophil cells are responsible for this. What evidence there is is rather against this theory. From the study of the basophilic syndrome and from observations that an excess of basophilic cells occurs in such diseases as hypertension, vascular sclerosis and chronic nephritis, as well as in old age, it may be that the basophil cells are a source of some depressive inhibitory substance that can produce such conditions as a low metabolic rate, altered carbohydrate metabolism, obesity, lethargy and lack of sex functions.

Schüller-Christian Syndrome — Horsfall and Smith observed a case of the Schüller-Christian syndrome during two admissions to the hospital, and finally they performed a complete necropsy. Pathologic studies of the tissues indicate that the lesions are granulomatous in nature and contain large quantities of lipoids. Fractional chemical analyses of the lipoids in the lesions demonstrate the predominance of cholesterol. This confirms the work of other investigators. Fifty-nine other cases of Schüller-Christian syndrome have been collected from the literature. Thirty-six completely reported cases have been analyzed, and the disease is discussed on this basis. Although lipid granulomatosis, as used by Chester, is more accurate than the term xanthomatosis, it is suggested that the former could with more exactness be modified to cholesterol granulomatosis.

Secretion of Urine in Diabetic Coma — McCance and Lawrence state that diabetic coma may be accompanied or followed by a disorganization of renal function characterized by (1) an oliguria, which is not invariable and often transitory, (2) a retention of urea, creatinine (and probably uric acid), which may outlast the oliguria by some days (3) a retention of ketone bodies (if present), (4) a retention of sugar (if present above threshold limits), (5) a very acid urine (*pH* usually about 5), (6) a normal excretion of ammonia, (7) no loss of the acid base regulating mechanisms associated with salt excretion, (8) no constant anatomic lesion and (9) a tendency to recovery with absence of sequels. A similar and possibly identical syndrome has been encountered in two noncomatose diabetic patients and may be relatively common and be closely allied to the renal dysfunctions of intestinal intoxication and Addison's disease. The real cause is unknown. There is no specific treatment. If the patient lives, insulin and fluids (especially perhaps salines) will in time restore the function of the kidney.

Journal of Oriental Medicine, Dairen, South Manchuria

22: 65-80 (May) 1935

- Early Tissue Reactions in Lungs of Rabbits After Intravenous Injections of Acid Fast Bacilli. Part I. Examinations with Human Tubercle Bacilli. Y. Hisamochi — p. 65
Id. Part II. Experiments with Bovine Tubercle Bacilli. Y. Hisamochi — p. 66
Id. Part III. Experiments with Avian Tubercle Bacilli. Y. Hisamochi — p. 67
Id. Part IV. Experiments with BCG Bacilli. Y. Hisamochi — p. 68
Id. Part V. Experiments with Dr. Ota's So-Called Acid Fast Bacilli of Human Leprosy. Y. Hisamochi — p. 69
Id. Part VI. Experiments with Timothee Bacilli. Y. Hisamochi — p. 70
Id. Part VII. Experiments with Indian Ink. Y. Hisamochi — p. 71
Statistics on Opium Addicts in Mukden. Wang Shih Kong — p. 73
Special Kidney Bleeding. K. Yajima — p. 74
Determination of Comfort Zone for Japanese and Manchurians. Part I. Comfort Zone for Train Passengers in Manchuria in Winter. H. Takabuchi — p. 75
Anencephalus Delivery. Three Cases. K. Saito — p. 76
Statistical Observation on Labor in the Dairen Hospital. S. Hara and M. Sasaki — p. 77
Cholera and Cholera-like Vibrio. Part IV and V. Variability of Cholera Vibrio. K. Manako — p. 79

Presse Médicale, Paris

43: 857-872 (May 29) 1935

- *Polycoric Hepatomegaly. R. Debré and G. Sémelaigne. — p. 857
Extension Plaster Casts. G. Ricunau — p. 861
Meaning of Allergy. M. Jaquerod — p. 862

Polycoric Hepatomegaly — In a previous article (*Presse méd.* 43 801 [May 18] 1935) Debré coined the word polycoria. It is derived from the Greek and means pathologic accumulation of reserve substances in an organ resulting in its hypertrophy. In the present article Debré and Sémelaigne discuss various aspects of polycoric hepatomegaly. The clinical onset is gradual, usually occurring in the first months of life. The first sign observed is increased volume of the abdomen due to enlargement of the liver. In the majority there is no other sign. The enlargement is considerable, the liver occupying at least a third of the abdominal cavity and pressing the intestine down and to the left. There is never a collateral circulation or signs of portal hypertension or ascites. Disorders of growth are present, but their intensity is variable. Biochemical studies show metabolic disturbances affecting the carbohydrates and fats. There is usually a hypoglycemia in the morning. After ingestion of dextrose, the increased glycemia is slight and slow and the return to normal is equally slow and follows a prolonged phase of hypoglycemia. In three of their four patients the lipemia was markedly high. The evolution of the disease is distinctly chronic and spreads over several years. It must be differentiated from the familial hepatosplenomegalies and the disorders of lipid metabolism. The pathologic anatomy is not yet completely known, but it may be stated that the characteristics are an enormous, smooth, pale liver of homogeneous appearance. The consistency and color on section are those of a liver affected with fatty degeneration. Microscopically, a massive accumulation of glycogen in the form of droplets in the cellular protoplasm is seen. The pathogenesis is uncertain, but the authors feel that the condition is a result of a neuroendocrine disorder affecting the glands which control carbohydrate metabolism, especially the system antagonistic to the pancreas-adrenals.

Schweizerische medizinische Wochenschrift, Basel

65 509-548 (June 8) 1935 Partial Index

- Transmission to Monkeys by Cutaneous Vaccination of Poliomyelitis and of Postvaccinal Encephalitis Occurring in the Netherlands. H. Aldershoff — p. 510
Bilateral Primary Cancer of Uterine Tubes. H. Beitzke — p. 513
Increase in Sheep's Blood Agglutinins in Glandular Fever and Diagnostic Value of Hetero-Agglutination. E. Glanzmann and F. Ottensooser — p. 520
*Dangers from Modern Industrial Poisons. Polyneuritis with Retrobulbar Neuritis After Working with Trichlorethylene. R. Isenschmid and E. Kunz — p. 530
*Cause of Jaundice in Spirochaetosis Icterohaemorrhagica Inada (Weil's Disease). R. Kaneko — p. 531

Industrial Poisons as Cause of Neuritis — Isenschmid and Kunz report the history of a man, aged 56 whose occupation caused him to inhale trichlorethylene. He developed a severe retrobulbar neuritis with pupillary disturbances, paralysis of the hypoglossal nerve of the left side and polyneuritis of the nerves of all the extremities, with abolishment of the reflexes and reduction of the cutaneous sensitivity in the region of several peripheral nerves. The symptoms proved to be rather persistent and the vision seems to be permanently impaired. The authors call attention to the wide use of neurotoxic trichlorethylene, pointing out that it is employed as a fat solvent in industry as well as in cleaning fluids and other preparations that are marketed for home use.

Cause of Jaundice in Weil's Disease — Kaneko states that studies carried out by his students disclosed that the direct diazo reaction in the serum develops promptly in Weil's disease. This and clinical observations led him to assume that the jaundice in this disease is connected with the passage into the blood of the bile which is in the bile duct system. The author's student Oka made the diazo test on fifteen patients with Weil's disease and on infected animals. The reaction was always diphasic that is, the serum contained two types of bilirubin the functional and the congestive types. Oka was able to show that the bile is discharged as the result of cell dissociation. The bile passage that results from cell dissociation

tion shows the following aspects. Between the liver cells or the epithelia of the bile ducts there is a bile-colored mass, which exudes from the bile capillaries and from the lumens of the bile ducts, follows between the two cellular walls and is discharged into the yellowish perivascular edema. The author thinks that the bile-colored mass is bile. Oka observed that the only other condition in which this discharge of bile takes place is a jaundice that develops in dogs after poisoning with toluyene diamine. The author deduces from this that the jaundice in Weil's disease is likewise due to toxic action. He assumes that the toxin of the spirochetes first impairs and then dissolves the cellular cement substance. The result is cell dissociation and passage of the bile from the bile ducts into the lymph spaces and into the blood. Formerly the author assumed that the connection between the bile ducts and the blood was produced within the hepatic acini by the stasis of the pathologic bile in the impaired bile capillaries. However, Oka's studies disclosed that stasis is unnecessary and that the destruction of the cellular cement substance by the toxin of the spirochetes is the chief factor.

Policlínico, Rome

42: 1075 1122 (June 3) 1935 Practical Section

- *Intolerance to Insulin. Case D. Beggi—p. 1075
- Intolerance to Intravenous Vaccine Treatment in Atypical Form of Undulant Fever. Case E. Liverani—p. 1082
- Gastric Resection Under Nupercaine Spinal Anesthesia. One Hundred Operations. R. Broglio—p. 1088

Intolerance to Insulin.—Beggi reports a case of diabetes in which the hypodermic injection of insulin (after the injections of insulin had been suspended for some time) was followed by the appearance of an urticarial reaction associated with edema of the face and neck. The intradermal reactions performed in the individual with various brands of insulin (Roche, Leo, Zanoni and Erba) all gave positive results. The reaction of insulin of the Serono brand produced the most marked positive reaction, manifested by the appearance of an area of erythema with a raised wheal at the site of the injection. The parenteral administration of deinsulinated pancreatic extracts (angioxil and astenil) did not produce any effects of intolerance in the patient. Experiments for the transfer of the patient's antibodies to rabbits gave the following results. The injection of a few drops of insulin of different brands in one of the ears of various rabbits, twenty-four hours after the injection of blood serum of the patient in the same ear, gave positive results with all brands of insulin, especially with that of the Serono brand. The injection of deinsulinated extracts in the other ear of each of the animals twenty-four hours after the injection of the blood serum of the patient in the same ear gave negative results in all cases. The intradermal injections of highly diluted insulin, but in increasing concentration, produced a temporary desensibilization in the patient, permitting him to continue his insulin treatment by the hypodermic route.

Prensa Médica Argentina, Buenos Aires

22 1035 1082 (May 29) 1935 Partial Index

- Choleraform Paratyphoid and Food Poisoning. Case G. Elkeles and E. Barros—p. 1044
- Intestinal Parasitism in Children. J. M. Pardina—p. 1050
- *Cardiac Area in Rheumatic Fever in Children. J. C. Bertrand and J. R. Abdala—p. 1063

Enlargement of Cardiac Area in Rheumatic Fever.—Bertrand and Abdala say that the enlargement of the cardiac area, as determined by percussion, is a sign of value for the diagnosis of rheumatic fever in children, especially in cases of atypical forms of the disease in which the cardiac complications appear late in the disease or do not appear at all. The cardiac area enlarges more or less rapidly in all cases of rheumatic fever. In atypical cases the sign exists in the absence of the cardiac auscultatory symptoms and earlier than the appearance of changes in the electrocardiogram. The authors believe that the lack of tonus of the myocardium that results in the enlargement of the heart is due to the myocardial congestion and diapedesis originating from the impregnation of the myocardium by rheumatic toxins. Four atypical cases are reported. Two roentgenograms of the thorax of one of the patients, in whom murmurs did not exist, taken at a month's

interval revealed the extraordinary change in size of the heart in so short an interval, showing the rapid modifications that the cardiac area may undergo in exceptional cases without murmurs.

Archiv für Kinderheilkunde, Stuttgart

105: 65 128 (May 31) 1935

- Behavior of Allergy in Diphtheria. O. Chiari and J. Siegl—p. 65.
- *Reticulocytes in Lymphatism. Charlotte Hülse—p. 73
- Pathology of Bed Wetting. Z. von Guliksy—p. 81
- *Galactose Test in Children. B. Chomet—p. 86
- Atypical Diabetic Coma in Small Children. K. Hassmann—p. 91

Reticulocytes in Lymphatism.—Hülse observed a relative increase in monocytes and lymphocytes in twenty-nine children with lymphatism, although the total number of leukocytes was normal in some of these children. In some cases a considerable increase in the reticulocytes was noted and interpreted as a symptom of an anemia that accompanies the lymphatism. This mild anemia in children with lymphatism is characterized by a comparatively slight decrease in hemoglobin and in the erythrocytes and by manifestations of brisk regeneration. On the other hand, reticulocytosis was absent in some children with severe lymphatism. Consequently the author considers it doubtful whether an increase in the reticulocytes can be considered as a criterion of the existence of lymphatism.

Galactose Test in Children.—Chomet reports the results of galactose tests on sixty children. He observed that the galactosuria was influenced by the body weight. In fifteen children the galactose test was made with the same quantity of galactose (40 Gm.) that is used in adults. However, since the values showed differences that corresponded to the various weight groups and since, moreover, the results obtained in the children with icterus were not entirely clear, the author made the galactose test with 30 Gm. on thirty-eight children without hepatic disorders. He found that the children who weighed more than 30 Kg. eliminated less than 2 Gm. of galactose, while the children who weighed less than 30 Kg. eliminated less than 3 Gm. Consequently the author assumed for children with a weight up to 16 Kg., in whom 30 Gm. of galactose had been administered, an approximate threshold value of galactosuria of 3 Gm. In adults, 3 Gm. is taken as the maximal normal value with an intake of 40 Gm. The author tested the galactose reaction also in a number of children with icterus. Nearly all these children showed values that noticeably exceeded the normal values and thereby indicated hepatic impairment. This became especially plain when, in children with icterus, the test was repeated every week. As the icterus subsided, a steplike reduction in the galactosuria could be observed.

Beiträge zur Klinik der Tuberkulose, Berlin

86 211 288 (May 21) 1935

- Studies on Two Strains of Acid Fast Bacilli with Atypical Behavior from Cultures of Sputum of Tuberculous Patients. A. Mayer—p. 213
- *Articular Rheumatism and Pulmonary Disorders. T. Rehberg—p. 224
- Atelectasis or Infiltration? H. Starcke—p. 236
- Pathogenesis of Solitary and Round Shadows in Roentgenogram of Lungs. J. Schemmel—p. 248
- Indications for Collapse Therapy in Pulmonary Tuberculosis. B. M. Chmelnitzky—p. 262
- *Quantitative Determination of Flocculation Capacity of Serum (Colloid Lability) in Tuberculosis. W. Molnár—p. 284

Articular Rheumatism and Pulmonary Disorders.—Rehberg thinks that infectious polyarthritis may be caused by tubercle bacilli as well as by numerous other pathogenic organisms. However, the incidence and the mechanism of the tuberculous origin have not been completely clarified as yet. Löwenstein's bacteriologic blood tests for the detection of tubercle bacilli have led some investigators to ascribe nearly all cases of polyarthritis to the tubercle bacillus, while others consider the tuberculous etiology of rheumatism extremely rare. The author describes several cases of pulmonary tuberculosis that concurred with polyarthritis. In one case the polyarthritis took a subacute course, the symptoms lasting about three months. The arthritic symptoms were refractory to salicylates, but they gradually disappeared following the subsidence of the glandular swellings. In another case the tuberculous articular rheumatism took a chronic course. The author calls attention to diagnostic difficulties, stressing that it is necessary to differ

entiate between caseous degenerative articular tuberculosis, tuberculous polyarthritis and ordinary infectious polyarthritis in a tuberculous organism. In discussing the factors on which the diagnosis of a tuberculous polyarthritis can be based, he expresses the opinion that the bacteriologic demonstration of tubercle bacilli in the blood (according to Löwenstein's method) is not yet suited to decide the diagnosis. The detection of tubercle bacilli in the articular punctate is of greater importance. The diagnostician must give his attention chiefly to the type of the primary tuberculous disorder and to the relation between the rheumatic symptoms and the beginning and further course of primary tuberculous disease. In the two aforementioned cases the parallelism was so noticeable that it was decisive for the diagnosis. However, when this parallelism is absent the diagnosis becomes doubtful. The author illustrates this in a case report. The absence of signs of new inflammatory or hematogenic processes made it doubtful that the articular disorder was of tuberculous origin, in spite of the fact that extensive tuberculous processes existed in the lungs. The assumption of an ordinary infectious polyarthritis was corroborated by the prompt action of salicylate. The author describes the history of a patient with bronchiectasis and with subchronic impairment of several joints in whom an acute articular rheumatism developed following an injection of histamine. He considers this articular rheumatism an allergic inflammation in an organism that had been sensitized by proteinic decomposition products developing in the bronchiectatic cavities.

Flocculation Capacity of Serum in Tuberculosis—Molnár gives a review of the tests that have been suggested for the determination of the colloid lability in tuberculosis. These tests require large quantities of blood serum and they do not give entirely reliable results. The greatest disadvantage is that they are adapted to a certain point of the protein curve, so that only a single protein fraction can be determined with them. This disadvantage was eliminated by a quantitative micro-analytic method, which was developed by Darányi in 1931. The author found this method reliable but too complicated. He developed a simpler method and used Nissl's centrifugation tubes of 7 cc. capacity, which have a narrow lower portion of 0.5 cc. capacity with scale division. For the precipitation of the globulin fractions of the serum he found aluminum sulphate, in the 0.05 per cent solution as suggested by Matéfy, most suitable. Like Matéfy, he adjusted the test in such a manner that there develops no precipitate in healthy persons, whereas large amounts of precipitate appear in patients in whom tissue decomposition takes place. The author made this test approximately 2,000 times, chiefly on the serums of tuberculous patients. The reaction showed high values in thoracic empyema and in extensive cavernous tuberculosis of the exudative type. The highest values were obtained in carcinoma and in pleural and peritoneal exudates. In a number of cases the author observed that, if the reaction continued to show high values after pneumothorax treatment, exudates often developed later, whereas no exudate developed in cases in which the reaction disclosed improvement. High values were observed also in syphilis and in some instances in which clinical observation indicated only emphysema or diffuse bronchitis. In tuberculosis of the bones, higher values were obtained than were disclosed with other colloid reactions. Contrary to expectation, the values were low in catarrhal icterus, probably as the result of the presence of salts of the bile acids. If care is taken that centrifugation is continued for exactly two minutes at 1,500 revolutions, the reaction is well suited for comparative tests.

Deutsche medizinische Wochenschrift, Leipzig

61 901 940 (June 7) 1935 Partial Index

- *Specific Allergens in Detection of Cause and in Treatment of Rheumatism and Gout. F. Gudzent—p. 901
- Cavern Formation and Pulmonary Infarct. W. Hollmann—p. 906
- Experiences with Meisnick's Serum Reaction for Tuberculosis in Children. J. Jochims—p. 909
- Extensive Deposits of Lipoid Protein Crystals in Interstitial Substance of Kidney in Nephrosis with General Amyloidosis. E. Randerath—p. 911

Allergens in Rheumatism and Gout.—After Gudzent had observed a patient with gout, who had severe attacks every time he took milk treatment but who tolerated meat well, he

studied a larger material and reached the conclusion that the acute attack of gout has no connection with acute deposits of uric acid but is rather an allergic reaction to a gout toxin. He observed also a number of patients with rheumatism, who stated spontaneously that they always felt worse after taking fish, eggs or milk. Skin tests with these substances resulted in wheal formation, and abstinence from these foods produced considerable improvement. Further studies on this problem led him to the following conclusion. Rheumatic processes in the joints, muscles, nerves, tendons and blood vessels are the manifestation of a hyperergic reaction resulting from a hereditary or acquired hypersensitivity to a foreign protein. This protein may come from food, fermented drinks, pathogenic or non-pathogenic micro-organisms, mold fungi, yeast fungi or other substances. He made tests with various types of protein on 300 patients with rheumatic disorders and obtained positive reactions in 279 cases, 34 per cent showing a positive reaction to cereal proteins, 29.7 per cent to meat or fish proteins, 16.7 per cent to vegetable proteins, 9 per cent to bacterial proteins, 7.6 per cent to proteins from milk or eggs and 2 per cent to mold or yeast fungi. In patients in whom the test disclosed a sensitivity for a food protein, the author tried to eliminate the offensive substance from the diet, and a change of residence was prescribed for patients with a hypersensitivity to mold fungi. He admits that rheumatism and gout, after they have once developed, may be prolonged by secondary factors, such as cold, dampness, trauma, change in the weather and psychic factors, even if the primary cause has been eliminated. For this reason he attempted desensitization by means of intra-gluteal injection of the offensive allergen. At first the injections were given two or three times each week, then twice and finally only once a week. The entire treatment required from six to twelve weeks and more. He observed that the size of the dose does not determine the curative effect, and he commenced with small doses gradually increased to 1 and 2 cc. in order to avoid severe reactions. Because the condition was rather severe in the patients in whom this treatment was employed, he did not expect complete recovery but hoped to counteract the pains and swellings and to reestablish at least partly the working capacity. He was able to realize these aims in a satisfactory manner.

Klinische Wochenschrift, Berlin

14:769-808 (June 1) 1935 Partial Index

- Studies on Vitamin B₂. W. V. Drigalski—p. 773
- *Iodometric Studies on Normal and Pathologic Human Urine. W. Ruziczka—p. 775
- Menstruation Produced by Artificial Corpus Luteum Hormone. C. Kaufmann—p. 778
- *Cholesterol Content and Cholesterololytic Capacity of Serum in Vitro in Skin Diseases. H. Hruszek—p. 779
- Coincidence of Acute Mikary Tuberculosis and Panmyelophthisis? H. Kreich and F. Heni—p. 781
- Blood Fat Reactions in Endogenic Emaciation. G. Borruso—p. 783

Iodometric Studies on Human Urine.—Ruziczka shows that, in analyzing human urine with the rapid method of determination of the iodine number according to Margosches, Hinner and Friedmann, the values obtained are higher (iodine number I) than in case of direct titration with solution of iodine in potassium iodide, as prescribed by Lieb and Lanyar for the determination of homogentisic acid (iodine number II). Uric acid shows, in a 0.1 per cent solution, under conditions that obtain in the rapid method, even a higher iodine number than that which corresponds to the adding on of a molecule of hypouric acid. Accordingly, the carbonyl groups of the uric acid molecule do not act sterically to inhibit the saturation of the double linking. Thus the iodine number expresses also the uric acid content of the urine. If the iodometric acid determination according to the modification of Kolthoff is used, the urine always shows lower values than is the case in acidimetric titration and there is in this case no uniform relationship to the hydrogen ion concentration. These lower values are chiefly the result of the fact that an iodine consumption takes place under these conditions. That this is so is proved by the fact that, by the addition of the iodometric acidity and the iodine number II, a value is obtained that approximately tallies with the acidimetrically determined acidity. There is no regular proportionality between the iodometric acid number and the

"saponification number" To be sure, in many cases, such as in the urine of patients with diabetes mellitus, the terminal point in titration with hydrochloric acid is hardly detectable

Cholesterol Content of Serum in Skin Diseases—Hruszek describes experiments conducted to determine whether the serum of healthy persons and of persons with skin diseases, particularly psoriasis, has the capacity to dissolve cholesterol in vitro The same tests were made also on the serums of persons who had been subjected to a cholesterol tolerance test The author observed that some serums dissolve a portion of the cholesterol that has been added in vitro, these serums show positive lysis values Other serums do not change their cholesterol content following the lysis experiment, their lysis value is zero A third group of serums shows, following the completion of the in vitro test, lower values than before, which makes the lysis value of these serums negative These three types of serums are found in normal persons as well as in those with skin diseases, so that the cholesterolytic capacity is no indicator of the one or the other skin disease Patients with psoriasis may have any of the three types of serum, whether they have been subjected to a cholesterol test or not The author concludes from this that the cholesterol values of the serum are no indicators of the existence of a lipoidosis in psoriasis as was suggested by Grutz and Bürger He thinks that the pathogenesis of psoriasis is still unsolved

Münchener medizinische Wochenschrift, Munich

82 857 898 (May 30) 1935

Ozone Therapy in Surgery E Payr—p 857

*Matti's Procedure of Spongiosa Implantation in Bone Fractures and Pseudarthrosis F König—p 860

Treatment of Bone Fractures That Heal Slowly or Not at All W König—p 862

*Hepatic Function and Suitability for Surgical Treatment W König—p 863

Clinical Aspects and Therapy of Chronic Digestive Weakness During Childhood (Heubner Herter's Disease) E Holzmänn—p 864

Spongiosa Implantation in Fractures and Pseudarthroses—König says that Matti in 1929 suggested that in a pseudarthrotic tibia the medullary cavity be opened at the site of fracture, after the periosteum has been pushed aside, then the connective tissue that has formed between the fractured ends is removed except at the posterior wall, where the fibrous connection is preserved Then the femur is opened, through a longitudinal incision, below the greater trochanter by a periosteum-bone flap down to the spongiosa Material from the spongiosa is withdrawn and is introduced like mortar into the tibial cavity and between the freshened ends of the pseudarthrosis The periosteum is closed and the skin sutured The bone cover is replaced on the femur and the skin is closed König employed this procedure in four cases In one of these cases a local infection set in and the method failed, but in the three others the procedure was successful The author describes these three cases and reaches the conclusion that Matti's transplantation of the spongiosa is a simple method that can be employed with good success in bone fractures of the diaphysis that do not heal, as well as in pseudarthrosis

Hepatic Function and Surgical Treatment—König believes that in surgical operations failures are often the result of impairments of the liver that were not recognized before the operation. The significance of this problem goes beyond the scope of the surgical interventions on the liver or the biliary tract, for the function of the liver becomes impaired as the result of the anesthesia, the operation and the fasting period that usually follows He deplors that most of the functional tests of the liver are too complicated for the surgeon and stresses the necessity of simple tests He concedes that the urobilin and urobilinogen tests are helpful but considers them insufficient He accepts Mancke's suggestion, according to which Millon's test of the urine is helpful in estimating the hepatic function. His own experiences with Millon's test convinced him that patients in whom the test is positive before the operation are in danger If such patients absolutely require an operation, attempts should be made to improve the hepatic function before the intervention by medication with insulin and dextrose.

Wiener klinische Wochenschrift, Vienna

48: 791 814 (June 7) 1935 Partial Index

*Compression Treatment of Phlebitis E Friedländer—p 791

*Part Played by Pleximeter and by Thoracic Wall in Mechanism of Percussion A Winkler—p 794

Shortening and Lengthening of Nose E Eitner—p 799

Sign of Lesion of Pyramidal Tract in Upper Extremity R Rosner—p 800

48: 815 838 (June 14) 1934 Partial Index

Addition to Narcotic Poisons and Breaking of Drug Habit, Particularly with Regard to Morphine C Amsler—p 815

*Compression Treatment of Phlebitis E Friedländer—p 818

Newer Method of Iontophoresis Martha Brunner Ornstein—p 822

Eocephalitis During Childhood J Zappert—p 824

Intracranial Lesions Sustained During Birth H Heidler—p 825

Compression Treatment of Phlebitis—According to Friedländer, thrombus formation in the venous circulation is one of the most difficult problems in medicine. He points out that it was Fischer who first advised that inflammations in thrombophlebitis be counteracted by compression and that the danger of embolism be averted by exercising the inflamed extremity Fischer's mode of treatment made it possible for the patients to get up and follow their occupation as soon as the compression bandage had been properly applied with a paste consisting of zinc oxide, gelatin, glycerin and water It is the aim of the compression bandage to reestablish the disordered circulation, to counterbalance the internal inflammatory pressure by pressure from the outside and to force the thrombus in its entire length against the venous wall. The author emphasizes that the pressure must be carefully adjusted to the individual needs, and he describes various ways of applying the compression bandage He calls attention to the difficulties encountered in the diagnosis of a thrombophlebitis He concedes that in the subcutaneous vessels the condition is usually readily recognized, but even in such cases erroneous diagnoses are possible Rheumatic pains in muscles and sciatika may lead to diagnostic mistakes in the deeper thromboses. A thorough internal examination is of vital importance. The condition of the heart must be known in order to regulate the circulation properly Urinalysis may disclose cystitis, cystopyelitis or diabetes mellitus The latter condition particularly may influence the course of thrombophlebitis A former syphilitic infection and the average alcohol consumption may be important as may also foci of infection. The condition of the lungs should be known, and the family anamnesis should give attention to such conditions as varicose veins, leg ulcers and phlebitis The author advises that the compression treatment be instituted as early as possible. The duration of the treatment differs As a rule it requires from four to eight weeks, but the patient may follow his occupation during this time. The patient should not use crutches or other supports. The author employed the compression bandage in 196 cases and observed only one fatal embolism, in a woman with pelvic thrombosis He did not observe a single fatality among the patients with thrombosis of the leg or thigh who were subjected to compression treatment

Pleximeter in Mechanism of Percussion—Winkler analyzes the factors involved in percussion and shows the shortcomings of the hitherto accepted theories about the part played by the pleximeter and by the thoracic wall The efficacy of percussion as a comparative and demarcating method of examination is determined by the diameter that goes through the entire depth of the normal lung The optimum of percussion is obtained when weak blows with light elastic hammers hit lightly applied, stationary, small-surface, readily flexible pleximeters or unilaterally movable, large-surface, elastic pleximeters The percussion sound of the lung is a sound mixture, in which the tissue sound of the axial penetration zone is the less masked by the other sound components, the more the axial mechanical blow effect approaches the optimal Every change in the percussion capacity of the pulmonary tissues within the axial penetration zone influences the character of the sound. The pleximeter makes possible a uniformity of factors by obviating differences in the time, surface and power of the blows and thus is a great aid in the practical utilization of percussion as a demarcating and comparative method of examination.

Zeitschrift für klinische Medizin, Berlin

128: 121 222 (May 24) 1935 Partial Index

- *Studies on Galactose Assimilation in Patients with Diabetes Mellitus C. A. A. Schrumph —p 121
- Myocardial Infarct Symptomatology and Diagnostic Survey of Twenty Eight Cases J. E. Holst —p 130
- *Biliary Pigment in Blood in Case of Cardiac Decompensation J. B. Milovanovic and L. Stanojevic —p 163
- Behavior of Basal Metabolism and of Iodine Content of Blood in Thyrotoxicoses W. Mobius and F. A. Nolte —p 174
- Relations Between Internal and External Secretion of Pancreas Herxheimer Mansfield Phenomenon in Pancreolithiasis E. Friedlander —p 184

Galactose Assimilation in Patients with Diabetes Mellitus—Schrumph observed, following galactose tolerance tests (40 Gm. of galactose) on eleven patients with diabetes mellitus, that the blood sugar content is higher. This increase is observable after one hour in the cutaneous as well as in the venous blood. The residual reduction in the blood shows after one hour a moderate increase, which is an indication of a rise in the galactose content. This gain is noticeable in the cutaneous as well as in venous blood, however, in respect to quantity it is less than the total increase in the blood sugar. It appears that the galactose, which is demonstrable in the blood of patients with diabetes mellitus, is not retained in the peripheral tissues. The urine contained galactose in only three out of eleven patients, and the quantities were so small that in view of the ordinary clinical evaluation of tolerance tests they cannot be considered pathologic. The galactose tolerance test was followed by noticeable glycosuria in only two patients, and in these the diet had not had the proper caloric composition. It appears that patients with diabetes mellitus can assimilate small amounts of galactose. The author thinks that the results he obtained in these studies indicate that galactose can be used more extensively in diabetes mellitus.

Biliary Pigment in Blood in Cardiac Decompensation.—Milovanovic and Stanojevic call attention to the fact that cardiac decompensation influences the hepatic function. In severe cardiac decompensation there often exists a slight jaundice, and many investigators agree that jaundice indicates an unfavorable prognosis in patients with cardiac decompensation. The publication of methods for the determination of biliary pigment in the blood has revived interest in the question of bilirubinemia in patients with heart disease, for these methods make it possible to detect a latent jaundice. The author reviews the literature on bilirubinemia in heart disease and then describes his own studies. He emphasizes that it is necessary to determine the bilirubin content of the serum and the function of the cardiovascular apparatus simultaneously. He determined the hydrodynamic condition of the cardiovascular system by means of the constant of Pachon and Fabre and the biliary pigments by the method of Hijmans van den Bergh. He reaches the conclusion that the prognosis is unfavorable in cases in which the constant is low, as well as in cases in which the constant decreases while the bilirubinemia rises.

Zentralblatt für Gynäkologie, Leipzig

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- *Elimination of Thyrotropic Substance in Urine of Menopausal Women P. Grumbrecht —p 1331
- Clinical Observations on Growth of Uterus Effected by Estrogenic Substance M. Ito and C. Nagai —p 1336
- Large Varix of Vein of Umbilical Cord H. Dworzak. —p 1340
- Delivery in Dorsal Anterior Frontal Presentation K. Nordmeier —p 1343
- Behavior During Operation in Unrecognizable Cause of Intra Abdominal Hemorrhage E. Redenz —p 1347
- Pubiotomy Case A. Niedermeyer —p 1352

Elimination of Thyrotropic Substance in Urine of Menopausal Women.—Grumbrecht points out that the anterior lobe of the hypophysis secretes in addition to the growth and sex hormones, a substance that stimulates the thyroid to greater activity. Whereas the mode of action of the thyrotropic hormone is well known, its mode of elimination is not so well understood as yet. Accordingly the author decided to test the urine of menopausal women for the presence of the substance, because the symptoms that appear in menopausal women (rushing of blood to the head sweating and palpitation of the heart) are all symptoms indicating increased thyroid activity. An extract was prepared from the urine of these

women and was injected into infantile rabbits, which promptly developed accelerated heart action and other symptoms. Some of the animals died, the others were killed on the third day. The thyroids of the animals were subjected to histologic examination, which revealed changes indicating increased functional activity. The urine of the women who were in the early or late stages of the menopause produced less severe changes. The urine eliminated during the menstrual period likewise seemed to contain thyrotropic substance, while the urine of sexually mature women outside the menstrual period did not produce changes in the thyroid of the animals. The author concludes from these observations that the menopausal disturbances are the result of overfunctioning of the anterior lobe of the hypophysis, which is induced by the abolishment of the gonadal function. The treatment should attempt to reduce the thyrotropic action. This can be accomplished by the administration of iodine or of estrogenic substance. The author recommends di-iodotyrosin (35 di-iodo-4-oxyphenylalanine) either alone or in combination with the estrogenic preparations for the treatment of menopausal disorders.

Ortopediya i Travmatologiya, Kharkov

6 1 126 1934 Partial Index

- Torsion Spasm and Orthopedic Corset. N. A. Zolotova —p 7
- *Histologic Study of Parathyroids in Chronic Rheumatic Polyarthritides and Spondylo-Arthritis B. I. Shkurov and K. F. Elenevskiy —p 17
- Ankylosing Polyarthritides E. Ya. Kalikman —p 28
- Tuberculous Spondylitis F. O. Berkhina M. A. Pogorelskiy and A. P. Kotov —p 33
- *Late Results of Tendon Transplantation for Flaccid Paralysis of Lower Extremities B. V. Rubinshtein —p 67

Parathyroids in Chronic Rheumatic Polyarthritides—Shkurov and Elenevskiy examined ninety-one histologic preparations of parathyroid tissue removed for therapeutic purposes from seventy-seven patients, thirty of whom were suffering from chronic rheumatic polyarthritides and forty-seven from spondylo-arthritis. The presence of parathyroid tissue in the removed material was established in each instance by histologic examination. The size of the glands removed did not exceed that given by most authors for the normal gland. On the basis of their observations the authors suggest that the secretory reaction is in all probability not limited to the chief cells and that the oxyphil cells likewise have a secretory function. They found oxyphil cells singly and in islets in fifty-three preparations, cells representing a transitional stage from the chief to the oxyphil type in thirty-four and a colloid-like substance in thirty-two. Clinically the cases presented increased blood calcium content, stiffness and ankylosis of the joints. The pre-operative blood calcium was above normal in twenty-two (up to 16 mg.), normal in eleven and below normal in only two. The twenty-two patients with hypercalcemia showed, after parathyroidectomy, an average diminution of 3 mg. per hundred cubic centimeters of blood serum. The clinical results were gratifying. Of the eighty-one patients submitted to partial parathyroidectomy, only three did not show any improvement, and in two the progress of the morbid condition was not arrested. The authors conclude that the oxyphil cells signify an increased function of the parathyroid and that chronic rheumatic polyarthritides and spondylo-arthritis are caused by hyperactivity of the parathyroid glands.

Results of Tendon Transplantation for Flaccid Paralysis—Rubinshtein reports the late results of tendon transplantation for flaccid paralysis of the lower extremities performed by Vreden in the Central Traumatologic Institute. The duration of observation was from one to twenty-one years. The patients were operated on from one and one-half to twenty-five years after the onset of paralysis. In their experience, good results could not be expected if patients were operated on earlier than three years after the onset of the paralysis. The controversial points among orthopedic surgeons with regard to operative indications center about the age of the patient and the duration of the paralytic state. The author feels that the most important element in the success of the operation is the correct evaluation of the strength and synergistic capacity of the muscle to be used as a substitute. He found Hübscher's table of relative strengths of the nine main muscles of the foot fairly reliable. While preservation of the sheath of the tendon is of great theoretical importance for the survival of the trans-

planted tendon, it was not done once in their work because of technical difficulties. Of the 238 operations performed on 215 patients, good results were noted after 220, satisfactory after twelve and poor after six. Advantages of tendon implantation under an osteoperiosteal bridge are emphasized.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

79 2887 3002 (June 15) 1935

- Hydronephrosis J. A. Weijtjand —p 2888
- *Positive Venous Pulse P. Formijne —p 2895
- Lung Collapse in Children M. De Bruin —p 2902
- House Physician and His Contribution to Medical Science E. D. Wiersma —p 2915
- Vitamin D Content of Cod Liver Oil L. W. Van Esveld —p 2924
- *Simple and Sensitive Test for Bilirubin in Urine A. W. J. H. Hoitink —p 2928

Positive Venous Pulse—Formijne studied the venous pulse of four patients in whom there was simultaneous contraction of the auricle and the ventricle. One patient showed a strongly positive venous pulse due to marked delay in the conduction time. Another had a 2:1 auriculoventricular block. The blocked P wave occurred simultaneously with the contraction of the ventricle. The venous pulse was weakly positive. A third patient showed nodal rhythm and a positive venous pulse. The last patient had a history of nodal rhythm with a negative venous pulse. One year later she developed an arrhythmia in which the P wave occurred at the same time as the ventricular contraction. A synchronism of the auricular and ventricular systole resulted. These cases indicate (1) that a positive venous pulse may appear if the auricular contraction through some mechanism accompanies the ventricular systole, but that (2) the intensity of the positive venous pulse may vary greatly or may be absent. In order to explain these differences the author investigated the expansion and contraction of the right auricle, of the junction of the vena cava superior and the right auricle, and of the large vessels. A varying degree of competence of the valvular mechanism at the junction of the vena cava superior and the right auricle is advanced as a possible explanation of the positive reaction. The contractile power of the auricle may play a part in the causation or failure of the venous pulse. To illustrate the importance of the condition of the large veins the author presents a patient in whom a unilateral left positive venous pulse was found, which he ascribed to a tricuspid incompetence associated with the presence of a left vena cava superior.

Test for Bilirubin in Urine—Hoitink experimented with a modification of Fouchet's test for bilirubin in the urine. The following technic was used. About 10 cc. of urine is put in a test tube. If the reaction is not weakly acid, it is made so by means of acetic or hydrochloric acid. Half the volume of the urine (5 cc.) of a 10 per cent solution of barium chloride is added. The contents of the tube are mixed well and filtered. The filter paper with the precipitate is spread on a ground glass slide or on another piece of white filter paper. One drop of Fouchet's reagent is applied to three different places on the border of the precipitate. After five minutes a blue or greenish color indicates bilirubin. The author detected 0.05 mg of bilirubin per liter of urine. He found the test more sensitive and simpler than the Gmelin, Huppert-Salkowski-Steensma and other tests.

Norsk Magasin for Lægevidenskapen, Oslo

96 449 560 (May) 1935

- *Tuberculosis of Heart and Tuberculous Changes in Great Arteries E. Dahl —p 449
- Investigations on Iron Metabolism in Pregnancy IV. Iron Store of the New Born Infant K. U. Toverud —p 468
- Three Rare Urologic Cases C. Johannessen —p 482
- Coxa Vara Infantum Case C. Johannessen —p 493
- Ruptured Mesenteric Chyle Cyst Two Cases L. E. Volodarsky —p 496

Tuberculosis of Heart and Great Arteries—Dahl reviews the subject, citing cases, and reports three instances. While the cases of chronic tuberculous changes found by him in the literature were localized particularly in the aorta, in his patient, a girl aged 10 years, presenting acute miliary tuberculosis, there was an infiltration 2 cm. long, 4 mm. wide at the widest point and extending 3 mm. into the lumen, in the left pulmonary artery. Microscopic examination disclosed a true conglomerate tubercle, entirely localized in the intima. From the size and

the marked cheesy necrosis of the infiltrate, in contrast to the apparently recent miliary tubercles in the various organs, and from the beginning invasion of the media, he regards this as an older process, originated by direct infection through the blood stream and as the starting point of the miliary tuberculosis. The primary focus was not discovered. In the second patient, a woman aged 29, the hematogenous metastases could be localized in the valves of the heart. A tubercle, larger than the head of a pin, was found in the anterior mitral valve. The infiltration, situated under the elastic membrane of the valve endocardium, presented a marked cheesy necrosis, surrounded by typical granulation tissue with giant cells, and had invaded the adjacent valve endocardium. Abundant tubercle bacilli were found. In the third patient, a man aged 70, with cancer of the stomach and no signs of heart disorder or circulatory disturbance, the apex of the left lung was the seat of two inveterate, partly calcified infiltrations the size of a pea. On the wall of the left ventricle was a round, well defined tumor the size of half a walnut, firm and smooth, and in the ventricle, corresponding to the tumor, was a layer of thrombus masses. Microscopically the tumor consisted of a homogeneous, structureless mass surrounded by granulation tissue without special characteristics, continuing directly into the thrombus stratum. Tubercle bacilli were present in great numbers. The process is assumed to have originated by hematogenous infection from the older lung disturbance in the left apex. The heart was of usual size, without hypertrophy of the musculature of the left ventricle.

96: 561-672 (June) 1935

- *Investigations on Blood Sugar and Liver Function in Various Skin Diseases G. Guldberg and L. Hannisdal —p 561
- *Acute Myocarditis in Nonseptic Gonorrhea G. Guldberg —p 576
- Erysipeloid R. Ström —p 581
- Frequency and Localization of Arthritis Deformans Among Lapps. A. E. Schreiner —p 592
- Tuberculosis Mortality and Tuberculosis Morbidity K. F. Andvord —p 599

Blood Sugar and Liver Function in Skin Diseases—Guldberg and Hannisdal's material comprises sixty-four cases in which five of the patients (two with exfoliative dermatitis, two with chronic eczema and one with mercury dermatitis), in addition to low fasting blood sugar, had marked posthyperglycemic hypoglycemia, the values falling as low as 29 mg per hundred cubic centimeters without certain signs of hypoglycemic reaction. In four of the patients, treatment with dextrose injected intravenously together with insulin was promptly effective.

Acute Myocarditis in Nonseptic Gonorrhea—Guldberg's case shows that, in a person with gonorrheal urethritis and prostatitis with afebrile and wholly favorable course and without clinical or bacteriologic signs of general infection, grave cardiac complications may occur in the form of acute myocarditis, which in this instance set in after three weeks. The electrocardiogram revealed a partial atrioventricular block and did not become normal until four months had passed.

Supplement 1 79 (June) 1935

- *Dyspeptics Contribution to Pathology of Some Chronic Gastro-Intestinal Disorders Especially on Basis of Clinical Observations on Functional Relations in Vegetative System in One Hundred Patients Having Digestive Disorders M. S. Kober —p 1

Pathology of Chronic Gastro-Intestinal Disorders—Kober's cases, all in adults, represent chronic unspecific disorders of the digestive tract without complicating disturbances. No definite physical type, he says, is characteristic of patients with dyspepsia, although 50 per cent of the patients were leptosomatic. Extensive indications of a vegetative neurosis were seen in all cases, apparently with a vagotonic predominance. He concludes that there is a close relationship in all digestive disorders and between these and the vegetative neurosis, which he assumes to be primary. Chronic dyspepsia is a forerunner of gastric ulcer. The vegetative neurosis is the expression of a toxic condition of the organs. The unknown toxin acts in two ways, producing a vegetative lability and a toxic gastritis, these together cause the erosions and thus the ulcer. Constipation, colitis, so called primary chronic appendicitis, different phases of chronic dyspepsia, gastritis and peptic ulcers are different stages and different anatomic localizations of one and the same pathologic condition.

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OBSERVATIONS ON THE TREATMENT OF ACNE VULGARIS

CHAIRMAN'S ADDRESS

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HOUSTON, TEXAS

Most of us are probably agreed that the therapeutic problem of acne is not yet satisfactorily solved. The early favorable results with roentgen therapy and especially the wider use of this modality following the more exact dosage obtainable with the Coolidge tube made it seem for some years that little more was needed, but a later appraisal of the results seems to have shown that there is still room for improvement. This realization together with the more recent knowledge of female hormone physiology and therapy has led to a renewed interest in the therapeutic problem of the disease. At present there is a state of flux concerning it. Formerly the treatment was practically routinized, the routine being so many doses of the roentgen ray. Now there is a greater tendency to recognize the limitations of the therapeutic weapons and to individualize and select treatment according to each case. To me this seems to be a step forward and one that should be encouraged. For that reason the present topic especially appealed to me, for it is only with a knowledge of what the present situation is that the weak points can be eliminated. With these thoughts in mind I feel that an analysis of the present therapy of the disease, the recent studies made in this field and those touching on it, together with some personal opinions about some of the more important phases of the subject will be of interest.

ETIOLOGY

A proper approach to the treatment of patients with acne demands a consideration of the etiology of the condition. This is necessary because the disorder is a syndrome rather than a disease *suu generis*. There are a few investigators who apparently regard acne vulgaris as essentially a local infectious disease of the skin based on a primary seborrhea (Sabouraud¹), but most dermatologists apparently agree with Kyrle,² Mumford³ and others that acne vulgaris is a syndrome in which the influence of one factor, or more likely a number of contributing factors, is of fundamental importance. The proponents of a primary local bacterial causation, despite a great deal of investigation, have still failed to

prove their case. Ketron's⁴ more recent investigations of *Bacillus acnes* as an etiologic agent led him to hesitate to ascribe any definite role to that organism in the etiology of the disease. Even in regard to the pustular element in acne, there is not at the present time absolute unanimity of opinion. Of course, most dermatologists attribute suppuration in the lesions to the staphylococcus, nevertheless there is not complete agreement about this feature of the disease, as is evidenced by the recently repeated assertion of Sabouraud¹ that the staphylococcus is not responsible for the pyogenic element in the lesions of acne. This naturally leads to the statement that the entire question should be reinvestigated, since it has a practical bearing on the therapy of the disease.

The second approach to an elucidation of the pathogenesis of the disease, namely, to regard it as a syndrome, is more in favor. Thus far it has led to nothing tangible, at the most to rather vague generalizations. Needless to say, clinical observation tends to indicate that certain internal factors, such as the physiologic and pathologic activities of the endocrine system and various minor disorders such as anemia, constipation and foci of infection, play a more or less important role in the production of the disease. Whitfield⁵ recently discussed these factors and especially emphasized the importance of gastro-intestinal disturbances.

While recognizing the tremendous influence of sexual ripening on the incidence of acne, the dermatologist is still at a loss to explain why acne affects certain adolescents and spares others. Even more elusive apparently is the causation of the acne of adult life in which the hormone factor is not so much in the foreground. In short, while clinical observation has taught a great deal about the disease and its behavior, an elucidation of the pathogenesis of the disorder is still lacking. A better insight into the etiology of the disease is, of course, highly desired since the condition is of enormous practical importance.

The primary lesion of acne is the comedo. This is the first appreciable clinical manifestation of the disease. Why does a comedo form? The generally held conception of its formation is that of a mechanical blocking of the follicle by a hyperplasia of the epidermis at its mouth leading to a retention of sebum with an intermixture of horny cells from the follicular wall. Whatever the cause of the follicular hyperkeratosis, there can be hardly any doubt as to the primary role of this hyperplasia since histopathologic examinations (Unna,⁶ Kyrle²) confirm it.

Read before the Section on Dermatology and Syphilology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

¹ Sabouraud, R. J. *Etiologie et pathogénie de l'acné sa therapeutique Arch. dermat.-syph. Hup. St. Louis* 2: 537, 1930.

² Kyrle, Josef. *Vorlesungen über Histo-Biologie der menschlichen Haut und ihrer Erkrankungen*. Berlin: Julius Springer, 1925. vol. 1, p. 198.

³ Mumford, P. B. *Acne Vulgaris a Symptom Not a Disease*. Brit. M. J. 1: 141 (Jan. 28) 1933.

⁴ Ketron, L. W. *The Relation of the Acne Bacillus to Acne Vulgaris. Experimental Observations*. South. M. J. 21: 368 (May) 1928. *The Acne Bacillus. Variations in the Cultural and Morphologic Characteristics*. Arch. Dermat. & Syph. 15: 568 (May) 1927.

⁵ Whitfield, A. *Some Notes on Acne Vulgaris*. Brit. J. Dermat. 46: 257 (June) 1934.

⁶ Unna, P. G. *The Histopathology of Diseases of the Skin*. Translated by Norman Walker. New York: Macmillan Company, 1896. p. 352.

This hyperplasia occurs as a physiologic process during puberty, being part of the activation of the pilosebaceous apparatus by the gonadal stimuli of that period. It may also appear as a pathologic response to exogenous irritation (oil, wax, tar or paraffin) producing the disorder known as oil acne. Accompanying this hyperkeratosis of the follicular ostium there may be and usually is an increased sebaceous secretion, especially in cases of acne vulgaris, but this does not always occur and it is not necessary in the production of comedones. As is well known, a patient with acne vulgaris is occasionally seen whose skin is dry rather than seborrheic. At any rate, once the comedo is formed, there is only required the element of follicular inflammation to produce the clinical picture of acne. The difficulty, of course, arises as to the explanation of the development of comedones (and acne) in one adolescent and not in another since all are presumably under the same gonadal influence and show fairly uniform responses of the pilosebaceous apparatus in other directions (pubic, axillary and male beard hairs). Kyrle² expressed the belief that two possible explanations were conceivable, namely, an abnormal response of the pilosebaceous system in some subjects to the same stimuli, or in some cases an abnormal supply of hormone or other stimulus. Sulzberger, Rostenberg Jr and Sher⁷ followed the same line of reasoning. In a preliminary way they endeavored to ascertain whether there is a follicular hypersusceptibility to one or more of the possible irritants. Their preliminary investigations showed negative results but of course do not invalidate or weaken the hypothesis. Stein⁸ advanced the hypothesis that acne vulgaris is caused by an irritation of the follicular wall by the elimination of metabolic products of the gonads and of substances absorbed from the intestinal tract. He quoted Blaschko as seeing the analogy in this process between true acne and acne artificialis caused by bromides.

In regard to the fundamental change, namely, the hyperkeratosis and epidermal hyperplasia that underly the formation of comedones, an interesting and perhaps significant chemical interplay comes to mind. In the experimental production of cancer use is made of tar or tar fractions (carcinogenic compounds) which when rubbed on the skin of a laboratory animal regularly produce cancer in a certain length of time. These substances operate by producing epidermal hyperplasia. Similarly, the acnes caused by greases, tar and oil that reach the skin from without (occupational oil acnes) are apparently produced by the primary irritation of the follicular ostium and wall. The carcinogenic compounds are known to have a phenanthrene nucleus and this substance is also present in coal tar and many greases. It is striking that the phenanthrene nucleus is found in both the male and the female sex hormones, which are closely related chemically (Dodds⁹). It seems more than a coincidence that the phenanthrene nucleus should be so closely connected with pilosebaceous hyperplasia and irritation. This thought may serve a useful purpose in further investigations on the pathogenesis of acne vulgaris.

The approach to the elucidation of the causation of acne by clinical studies has produced some interesting

observations, but unfortunately nothing that can be said to represent a fundamental advance.

Among these newer contributions the investigation of the late Bruno Bloch¹⁰ revealed the great frequency of acne. Bloch and his collaborators examined 4,191 school children between the ages of 6 and 19 (about equally divided as to sex) for the presence of acne vulgaris. Various degrees of the disorder, from a few comedones to true acne with papules and pustules, were tabulated. Their investigation showed that approximately 64 per cent of the children were affected with at least a few comedones. Of true cases (severe enough to be considered a disease) there were 8 per cent among females and 20 per cent among males. The preponderance of males in all the degrees of the disorder was definite and may have some pathogenic significance (Sulzberger, Rostenberg Jr and Sher).

Without going into further details in regard to Bloch's observations it may be said that the well known observation of the chronological relation of acne and puberty was substantiated. So frequent was some manifestation of acne found among these adolescents that Bloch concluded that the disorder must be based on a physiologic condition, and that it is unnecessary to invoke a pathologic substratum for the disease. In short, Bloch concluded that those elements that are almost taken for granted as important contributory factors in cases of acne, namely, constipation, anemia and menstrual disorders, are certainly not responsible for the disease among juveniles (his researches did not include acne of adult life). Apparently alone among earlier writers, Pollitzer¹¹ stated this same belief on the basis of his clinical observations.

In this country the study of Cunningham and Lunsford¹² deserves particular comment since it comprised an older group of subjects (women college students) than Bloch's. These investigators compared 2,974 young women with acne with 3,185 control students with regard to the incidence of constipation, colds and other infections, and the condition of the thyroid gland, nose and tonsils, as well as the menstrual history. There was practically no difference between the two groups in respect to the incidence of these systemic disorders to which a contributory influence on acne is so uniformly ascribed. The conclusion to be drawn from this study is that these disorders apparently have little or no influence on the incidence of the disease. But for the present, judgment on this conclusion must be reserved since the question of an inherited predisposition obtrudes itself and cannot be definitely evaluated, though it is probably of some moment (Siemens,¹³ Stokes and King¹⁴).

As has happened so often before, biochemical studies have given no further insight into the pathogenesis of the disease. Greenbaum's¹⁵ investigations of tolerance to dextrose led to nothing significant, and Strickler and Adams'¹⁶ somewhat different approach to the question

10 Bloch, Bruno. Metabolism, Endocrine Glands, and Skin Diseases with Special Reference to Acne Vulgaris and Xanthoma, Brit. J. Dermat. 43: 61 (Feb.) 1931.

11 Pollitzer, Sigmund, in Darier, Jean. Textbook of Dermatology, ed 2 Philadelphia Lea & Febiger 1920 p 389.

12 Cunningham, R. L. and Lunsford, C. J. Acne. A Statistical Study of Possibly Related Causes California & West. Med. 35:22 (July) 1931.

13 Siemens, H. W. Die Vererbungspathologie der Acne, Munchen. med. Wchnschr. 73: 1514 (Sept 10) 1926 abstr. Zentralbl. f. Haut u. Geschlechtskr. 22: 362 1927.

14 Stokes, J. H. and King, A. D. Acne Vulgaris. Heredity in the Etiologic Background Arch. Dermat. & Syph. 26: 456 (Sept.) 1932.

15 Greenbaum, S. S. Tolerance for Dextrose in Acne Vulgaris Arch. Dermat. & Syph. 23: 1064 (June) 1931.

16 Strickler, Albert, and Adams, P. D. The Blood Sugar Metabolism in Certain Dermatoses, with Special Reference to Acne Vulgaris, Arch. Dermat. & Syph. 26: 1 (July) 1932.

7 Sulzberger, Marion, Rostenberg, Adolph Jr. and Sher, J. J. Acneiform Eruptions New York State J. Med. 34: 899 (Nov. 1) 1934.

8 Stein, R. O., in Jadassohn, Josef. Handbuch der Haut- und Geschlechtskrankheiten Berlin Julius Springer 1932 vol. 13 pt 1 p 70.

9 Dodds, E. C. The Hormones and Their Chemical Relations Lancet 228: 931 (May 5) 987 (May 12) 1048 (May 19) 1934.

of sugar metabolism in cases of acne led them to deny any influence of sugar metabolism on the disease. The same authors¹⁷ found no etiologic indications in the cholesterol metabolism of patients with acne. Knowles and Decker¹⁸ and recently Immerman¹⁹ sought to throw light on the etiology of the disease by means of gastric analysis but found nothing of significance.

Ramel's²⁰ investigation of the deep nodular form of acne vulgaris led him to the conclusion that this type is of tuberculous origin. This will hardly be accepted without further corroborative evidence, which, at most, was only partly given by von Kerner's²¹ report of the therapeutic benefit derived from the removal of foci of infection and subsequent tuberculin treatment. Of fifty-two patients twenty-two recovered after the removal of pyogenic foci, and all but three eventually were cured after subsequent tuberculin therapy.

INFLUENCE OF ENDOCRINE DISTURBANCES

Of especial interest at present are the recent studies of female hormone disturbances associated with acne vulgaris in which the newer methods of detecting the presence and amount of these substances in the urine has been employed.

Deseau and Guillaumin²² used the interferometric method of Hirsch in a small series of patients selected because an endocrinopathy seemed to be a factor. The results confirmed this surmise as in each case an endocrine disturbance was indicated by the test. Measures taken to combat the disorders led to beneficial therapeutic results.

In this country Rosenthal and Kurzrok²³ appear to be the only investigators who have attempted a clarification of the problem of acne by hormone titration. They determined the presence of estrogenic substance in the urine of thirty-four patients with acne. Though estrogenic substance is normally found in the urine during the active sex life of all women, it was absent in twenty-seven of the patients, in normal quantity in six and in small quantity in one.

Along the same line is an interesting and optimistic report by von Leszczynski and Liebhart²⁴ on the therapeutic results obtained in cases of acne when based on hormone tests. These authors expressed the belief that acne may rest on a physiologic basis in early years (Bloch) but that acne in early adult life and later years is the result of a pathologic condition. Their patients were studied carefully for systemic disturbances, and tests for hormone function and presence were carried out as thoroughly as possible. For the determinations of estrogenic substance and the anterior pituitary-like principle from the urine of pregnancy, Zondek's methods were used. As a consequence of these studies they concluded that it is possible to divide patients with acne into three etiologic groups. This grouping is based partly on certain clinical characteristics of the

disease and partly on the results of endocrine and general studies. So-called pure types of cases are not common. The three types of acne are as follows:

1 *Acne Sexualis*—In pure cases it is limited to the face, especially the cheeks and chin. Seborrhea is slight or absent. Menstrual disturbances are usually present and exacerbation of the acne nearly always occurs during menstruation.

2 *Acne Intestinalis*—This type has a predilection for the trunk. A seborrheic condition usually in moderate degree is nearly always present. Constipation of the atonic type, visceroptosis and colitis are frequent. These cases are based on intestinal stasis.

3 *Acne Thyreogenes et Seborrheica*—This is a severe type in which large papulopustules as a rule affect all the usual regions. Kerosis is common. Enlargement and hyperactivity of the thyroid gland is frequently associated.

Identification of these types may require both clinical and detailed laboratory study. According to the authors recognition of these etiologic forms is absolutely requisite for the best therapeutic results. They did not use roentgen therapy but considered local applications to be important. The internalistic and endocrinologic outlook of these authors is stimulating. Their therapeutic results, contained in a report of fifteen patients, were apparently excellent.

Recently Van Studdiford²⁵ reported some interesting therapeutic results based on opotherapy.

For some time in selected patients I have made an attempt to utilize the newer knowledge of female hormonology in the therapy of acne vulgaris. In years past the crude extracts then available were occasionally employed but without any encouraging results. Since the availability of the newer endocrine products, I have worked in cooperation with gynecologists in an endeavor to employ these preparations in the most exact manner possible. The selection of suitable patients has been first made by me and the selection of hormone therapy by the gynecologist after a study of each patient from that special point of view. In this way twenty-six females have received what may be considered as reasonably good opotherapy. Up to the present the therapeutic results have been poor and discouraging so far as the influence of the hormone treatment on the acne is concerned. I have seen a number of instances of improvement or even complete relief of menstrual disturbances without corresponding benefit of the acne. It should be mentioned, however, that the studies of the individual case prior to the institution of glandular products in no way approached the thoroughness of von Leszczynski and Liebhart so that the type of therapy in some cases may have been ill chosen. My present opinion in regard to this phase of the therapy of acne is that theoretically it is enticing, but that practically, for the present, it is of slight value.

ULTRAVIOLET RAYS, VITAMINS AND BACTERIAL PRODUCTS

Butler²⁶ reported highly satisfactory results with ultraviolet rays. He did not give any figures but stated that relapses were frequent. Louste and Juster²⁷ likewise reported favorable effects with this method after

17 Strickler Albert, and Adams P. D. The Cholesterol Metabolism in Certain Dermatoses with Special Reference to Acne Vulgaris. Arch. Dermat. & Syph. 26: 11 (July) 1932.

18 Knowles, F. C. and Decker H. B. Gastric Acidity in Acne Vulgaris. Preliminary Report. Arch. Dermat. & Syph. 13: 215 (Feb) 1926.

19 Immerman S. L. Gastric Acidity in Acne Vulgaris with a Consideration of Normal Gastric Acidity. Report of Fractional Gastric Analysis in Ninety Three Cases. Arch. Dermat. & Syph. 31: 343 (March) 1935.

20 Ramel E. Le problème étiologique de l'acné vulgaire. Bull. Soc. franç. de dermat. et syph. 37: 1193 (Nov.) 1930.

21 von Kerner D. Aetiologie und allgemeine Behandlung der Acne Vulgaris. Dermat. Wechnschr. 93: 237 (Feb. 24) 1934.

22 Deseau A. and Guillaumin C. O. Bull. Soc. franç. de dermat. et syph. 39: 1703 1932.

23 Rosenthal, Theodore and Kurzrok, Raphael. Excretion of Estrin in Acne Vulgaris. Proc. Soc. Exper. Biol. & Med. 30: 1150 (May) 1933.

24 von Leszczynski R. and Liebhart, S. Hormonal Frauenendertosen II. Acne Sexualis. Dermat. Wechnschr. 94: 261 (Feb. 20) 1932.

25 Van Studdiford, M. T. Effect of Hormones of the Sex Glands on Acne. Arch. Dermat. & Syph. 31: 333 (March) 1935.

26 Butler John. Ultraviolet Ray Therapy in Dermatology. Arch. Dermat. & Syph. 9: 51 (Jan.) 1924.

27 Louste A. and Juster E. Traitement de l'acné par les rayons ultraviolets. Bull. Soc. franç. de dermat. et syph. 36: 1078 (Nov.) 1929.

a year's experience Andrews²⁸ spoke favorably of it. A few physicians have used it conjointly with the roentgen ray, but this combination is not considered desirable by most dermatologists. Ultraviolet therapy has the great disadvantage of requiring a dose of some degree of erythema (sufficient to cause at least moderate desquamation) to produce favorable effects. For this reason I have used it in only a few instances in which the acne has been resistant to other measures and in these cases unsuccessfully.

On the whole, ultraviolet radiation plays a subordinate role in the therapy of patients with acne.

In a brief note Doktorsky and Platt²⁹ recorded definite clinical improvement in patients with pustular acne following the administration of vitamin D. My own experience with this preparation in eleven patients ranging in age from 14 to 22 years was not encouraging. My patients were all undergoing other forms of treatment at the same time but did not seem to respond any faster to this therapy than if vitamin D had not been administered.

Years ago, Fox³⁰ reported on the use of vaccine therapy and concluded that it was practically useless. This appears to be the generally accepted opinion at present, though an occasional patient with the pustular type of acne seems to respond to vaccine treatment. Staphylococcus toxoid, which was valuable in Dolman's³¹ hands, was unfavorably reported on by Kindel and Costello³² and Cornbleet and Rattner³³. Bacteriophage, though found to be of value by Blum and Peyre³⁴ and Alderson,³⁵ was ineffective in Crutchfield and Stout's³⁶ experience.

ROENTGEN THERAPY

As is so well known, for many years the roentgen ray has been the dermatologist's chief weapon in the attack on acne. The action, technique and dangers of this physical agent are too well known to require description here.

In the earliest report in this country (Pusey) the results achieved were extolled and there followed a series of articles confirming this pioneer's enthusiasm. With the development of the technique of exact dosage (MacKee³⁷, Witherbee and Remer³⁸), the roentgen ray became the trained dermatologist's most commonly used method. So enthusiastic were the earlier reports that for years there was a general impression that little more than a proper knowledge of the use of the roentgen ray was required for the successful therapy of patients with acne. Earlier reports and impressions were that from 90 to 95 per cent of the patients were permanently curable in about four months. The treatment became almost stereotyped and aside from more or less casual

directions about diet, routine correction of constipation and standard tonic regimen when obviously indicated, roentgen therapy was wholly depended on to produce satisfactory results.

Misgivings about this apparently successful therapeutic method led me³⁹ to investigate the end results obtained in a series of about 200 cases. This series, while too small to warrant the drawing of definite conclusions, showed trends which were obviously at variance with the commonly accepted belief of the efficacy of the roentgen ray. Since my report, those of Lord and Kemp⁴⁰ and of MacKee and Ball⁴¹ have appeared and have confirmed what was indicated in my personal experience. In the main, these three reports agree. Lord and Kemp, however, did not, like myself, find that recurrences in the period of puberty and the immediately following years were so frequent. MacKee and Ball, however, confirmed my observations on that point. The figure for recurrences in patients up to 18 years of age found by me was 47 per cent after the first course of treatment, and after the second course (maximal permissible roentgen therapy) was 22 per cent. Thus, approximately half of the patients had a relapse and in one fifth there was ultimate failure. Of the patients up to 25 years of age, 35 per cent had a relapse after the first series of treatments and 12 per cent after an additional series. MacKee and Ball did not report their recurrences by age groups but stated that relapses were frequent among the younger patients.

Despite this frequency of relapse, it should be stated that the roentgen ray is a dependable agent and is curative in a vast majority of the cases of acne, the final successes approximating 80 per cent. It can be depended on to clear up the lesions in practically all cases in a period of from three to five months. In principle, therefore, if the necessity arises to eradicate the lesions, the roentgen ray may be depended on to do so with a remarkable degree of certainty. Unfortunately, as previously noted, this certainty of temporary cure is not followed sufficiently often by permanent freedom to be entirely satisfactory.

COMMENT

From the foregoing observations it is obvious that the treatment of patients with acne cannot be stereotyped if the best results are to be obtained. The choice of the therapeutic attack is a matter of analysis of the individual case. For the purpose of this analysis the important questions to be taken into consideration are (1) the information obtained by a history and systemic examination (foci of infection, anemia, diet, gastrointestinal function), (2) the age of the patient, (3) the mildness or severity of the case and (4) the endocrine factor, if determinable.

As to the first group of contributory causes (anemia, constipation and so on), it goes without saying that they should be taken care of according to general medical principles. The dietary regimen deserves special mention since there is no unanimity regarding the importance of diet in the disease. Apparently some physicians neglect it completely. Urbach⁴² stated that there was no scientific evidence which indicated the type of diet

28 Andrews G. C. *Diseases of the Skin*. Philadelphia W. B. Saunders Company 1930.

29 Doktorsky, Abraham and Platt S. S. Vitamin D in the Treatment of Acne Vulgaris. *J. A. M. A.* 101:275 (July 22) 1933.

30 Fox Howard. The Roentgen Ray versus Vaccines in the Treatment of Acne. *J. A. M. A.* 81:1417 (Oct. 27) 1923.

31 Dolman C. E. Treatment of Localized Infections with Staphylococcus Toxoid. *J. A. M. A.* 100:1007 (April 1) 1933.

32 Kindel, D. J., and Costello M. J. Staphylococcus Toxoid in the Treatment of Pustular Dermatoses. *J. A. M. A.* 102:1287 (April 21) 1934.

33 Cornbleet, Theodore and Rattner, Herbert. Staphylococcus Toxoid correspondence. *J. A. M. A.* 102:1780 (May 26) 1934.

34 Blum, P. and Peyre, E. Traitement de l'acné par le bactériophage. *Bull. Soc. franc. de dermat. et syph.* 36:127 (Feb.) 1929.

35 Alderson H. E. Bacteriophage in Pyogenic Infections of the Skin. *Arch. Dermat. & Syph.* 31:197 (Feb.) 1930.

36 Crutchfield E. D. and Stout B. F. Treatment of Staphylococcus Infections of the Skin by the Bacteriophage. *Arch. Dermat. & Syph.* 22:1010 (Dec.) 1930.

37 MacKee, G. M. X Rays and Radium in the Treatment of Diseases of the Skin ed. 2 Philadelphia Lea & Febiger 1927.

38 Witherbee W. D. and Remer, John. X Ray Dosage in Treatment and Radiography. New York, Macmillan Company 1922.

39 Michael J. C. Roentgen Ray Treatment of Acne Vulgaris. End Results in One Hundred and Ninety One Cases. *Arch. Dermat. & Syph.* 17:604 (May) 1928.

40 Lord L. W. and Kemp J. E. End Results in Roentgen-Ray Treatment of Acne Vulgaris. Study of 247 Cases. *South M. J.* 24:867 (Oct.) 1931.

41 MacKee G. M. and Ball F. I. Acne Vulgaris and the Roentgen Rays. *Radiology* 23:261 (Sept.) 1934.

42 Urbach Erich. *Skin Diseases and Nutrition* translated by F. R. Schmidt, Vienna Wilhelm Maudrich 1932.

that should be effective in the disease Stokes⁴³ thought it of great importance and of valuable therapeutic assistance when carried out in the detail comparable to that in cases of diabetes. The type of diet best suited to the patient with acne is generally agreed on and need not be detailed. Every textbook contains a practically similar list of interdicted and permissible substances. In a former study I could not find that diet played any apparent role in the results obtained, yet it is unquestionable that in individual cases diet seems to be provocative of outbreaks and in some instances the breaking of dietary instructions has been followed by relapses in seemingly cured patients. White⁴⁴ reported a series of cases in which specific sensitivity to foods produced outbreaks of acneiform lesions. These cases should not be confused with those of true acne, since he expressly stated that comedones were not present.

The same line of thought applies to a focus of infection, its presence may render therapy unavailing in some instances, while in others it seems to have no influence on the course or response of the disease.

In regard to the mildness or severity of the case, the important point is whether or not scarring is being produced. In some of the mild cases (judged by number of lesions) each lesion produces a small pit that in the aggregate becomes of considerable concern to the patient. If, on the other hand, the disease is mild and not causing scarring of any moment, a campaign of local therapy and general measures can be followed with more equanimity by the patient and physician than if the lesions are numerous, unsightly and producing large permanent scars. Under the latter circumstances the therapy that promises to control the disease in the shortest possible time is indicated.

The age of the patient is one of the most important considerations in a choice of therapy. This personal opinion is based on the conviction (supported earlier in this paper by reference to recorded experience) that age is the most important element in the prognosis, especially when roentgen therapy is used. When that method of treatment is depended on for cure, about half the patients under 18 years of age have a relapse. Since the treatment consumes time and is somewhat expensive, the number of failures leads to considerable dissatisfaction. It has therefore been my practice for some time to withhold roentgen therapy from all patients under 18 years unless there has been absolute failure of response to other measures and marked scarring is being produced. In short, in juvenile cases of acne roentgen therapy is hardly ever used. It seems to me best to treat these patients persistently with local applications of a stimulating and astringent type and by all known measures of influencing the disease through the general system to keep the disorder at a minimum. Under such a regimen the patient must be apprised at the beginning of treatment that cure is not anticipated, that a long period (probably of several years' duration) of therapy is required and that only in the event that the disease is causing pronounced cosmetic difficulties will roentgen treatment be administered. The recent article by Nichols⁴⁵ demonstrated that such a method is attended by satisfactory results, to which I can testify from an extended experience. The success of this program is dependent in no small degree on the psychological influence of the physician.

On the other hand, in patients from 18 to 22 years of age irradiation is probably the method of choice. Relapses are less frequent than in the earlier age group and in instituting roentgen therapy one is in many cases but aiding and anticipating the natural tendency of the disease to disappear about this time of life. For this reason, I use irradiation practically as a routine measure for patients who are in this age group if the severity of the disease justifies it.

Patients in the middle twenties and older, however, present a somewhat different therapeutic problem. In many cases the disease has continued since adolescence, in others it begins in this relatively late period. Among the former are many cases in which the endocrinal upset initiated by puberty has not been adjusted normally, while in others, systemic disturbances (pelvic disease, gastro-intestinal disorders) appear to be primary etiologic factors. Proper management in this group must comprise an industrious search and eradication, if possible, of all suspicious contributing factors. Among these patients, in my experience, are found a large number that fall into the intestinal type of von Leszczynski and Liebhart. Radiation therapy apparently is more helpful to these patients than to the younger ones. It is a poor policy, however, to depend on it rather than to make a diligent effort to ferret out and attack the many possible and important contributing causes.

CONCLUSIONS

1 Acne vulgaris is a syndrome the cause of which is a complex of various interacting factors. In juvenile patients the physiologic activity of the gonads appears to be the most important factor. In older patients minor functional and organic disorders apparently (but not indisputably) play a definite role in the causation.

2 The recent tendency to depend less on roentgen therapy and more on general and local measures should be encouraged. While the roentgen ray is the most certain means of eradication of the lesions, recurrences are too frequent to make this treatment entirely satisfactory.

3 In juvenile patients recurrences are especially frequent and for this reason it is believed that the roentgen ray should not be used except under unusual circumstances.

4 For older patients, especially those between 18 and 25, roentgen therapy is the method of choice. It should be supported by an industrious search for and attention to any probable etiologic factors.

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Incomplete Proteins—In order that food proteins may be transformed into the proteins of body tissue, they must first be resolved in the digestive tract into their component amino acids. It is in the form of their amino acids that the food proteins are absorbed from the digestive tract and distributed to the various active tissues of the body, where they may be used as needed in new combinations characteristic of the species and of the particular tissue. Some of the amino acids are convertible into each other and so need not individually be furnished by the food proteins. But several individual amino acids contain characteristic chemical structures or groupings which the body cannot obtain from other sources nor manufacture for itself and so a food protein lacking in one or more of these "nutritionally essential" amino acids is, when taken by itself an incomplete protein from the nutritional point of view. Gelatin and one of the proteins of maize belong in this group—Sherman H. C. Food and Health, New York, Macmillan Company, 1934.

⁴³ Stokes, J. H. in discussion on Michael.
⁴⁴ White, Cleveland. Acneiform Eruptions of the Face. Etiologic Importance of Specific Foods. *J. A. M. A.* 103: 1277 (Oct. 27) 1934.
⁴⁵ Nichols, I. Prevention of Acne Vulgaris in Adolescent Children. *J. M. Soc. New Jersey* 31: 566 (Oct.) 1934.

DINITROPHENOL IN THE TREATMENT
OF OBESITY

FINAL REPORT

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Since our first report on the metabolic stimulant action of 2-4 dinitrophenol (alpha)¹ in animals and men, and a preliminary paper indicating clinical possibilities for this compound² its use has been continued in the outpatient department of the Stanford Clinics and in private practice. Some of the early clinical results in obesity were summarized in a progress report.³ Various clinical reports have detailed the actions of the drug under different dietary conditions,⁴ its circulatory effects,⁵ changes in blood cholesterol,⁶ and effects on the icteric index and van den Bergh test.⁷ The evidences for changes in blood cholesterol, liver damage and certain red blood cell characteristics were negative. Our experimental work and clinical experience with the drug has now extended over a period of four years, during which time it has been given to hundreds of patients. Therefore it is felt that there may be offered now definite conclusions as to its effects in the treatment of obesity and its value in the therapeutic armamentarium. The experimental results have been summarized in several previous publications⁸ and all but the most recent clinical data in a recent review.⁷ In this report we will refer only to those clinical articles not discussed in previous publications and those which bear directly on the questions discussed. Time and space will not permit a discussion of the numerous articles that have already appeared in many journals and languages.

PATIENTS STUDIED

The total number of patients studied was 177. All complained of excess weight. Seven of them were seen only once and could not be included in the series.

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1. Cutting, W. C. and Tainter, M. L. *Proc. Soc. Exper. Biol. & Med.* **29**: 1268 (June) 1932.

2. Cutting, W. C., Mehriens, H. G. and Tainter, M. L. *Actions and Uses of Dinitrophenol*, J. A. M. A. **101**: 193 (July 15) 1933.

3. Tainter, M. L., Stockton, A. B. and Cutting, W. C. *Uses of Dinitrophenol in Obesity and Related Conditions*, J. A. M. A. **101**: 1472 (Nov. 4) 1933.

4. Cutting, W. C. and Tainter, M. L. *Metabolic Actions of Dinitrophenol*, J. A. M. A. **101**: 2099 (Dec. 30) 1933.

5. Stockton, A. B. and Cutting, W. C. *Clinical Circulatory Effects of Dinitrophenol*, J. A. M. A. **103**: 912 (Sept. 22) 1934.

6. Cutting, W. C., Ryland, D. A. and Tainter, M. L. *J. Clin. Investigation*, **13**: 547 (July) 1934.

7. Tainter, M. L., Cutting, W. C., and Stockton, A. B. *Am. J. Pub. Health*, **24**: 1045 (Oct.) 1934.

8. These include:

Tainter, M. L., Boyes, J. H. and DeEds, F. *Arch. internat. de pharmacodyn. et de therap.* **45**: 235 (May 15) 1933.

Tainter, M. L. and Cutting, W. C. *J. Pharmacol. & Exper. Therap.* **48**: 410 (Aug.) 1933.

Tainter, M. L. and Cutting, W. C., *ibid.* **49**: 187 (Oct.) 1933.

Cutting, W. C. and Tainter, M. L. *Proc. Soc. Exper. Biol. & Med.* **31**: 97 (Oct.) 1933.

Hall, V. E., Field, J., Sahyun, M., Cutting, W. C. and Tainter, M. L. *Am. J. Physiol.* **106**: 432 (Nov.) 1933.

Emge, L. A., Wniff, L. M. R. and Tainter, M. L. *Proc. Soc. Exper. Biol. & Med.* **31**: 152 (Nov.) 1933.

Tainter, M. L. *J. Pharmacol. & Exper. Therap.* **51**: 45 (May) 1934.

Schulte, T. L. and Tainter, M. L. *Proc. Soc. Exper. Biol. & Med.* **31**: 1163 (June) 1934.

Tainter, M. L., *ibid.* **31**: 1161 (June) 1934.

Tainter, M. L., Cutting, W. C., Wood, D. A. and Proeschner, F. *Arch. Path.* **18**: 881 (Dec.) 1934.

Tainter, M. L., Bergstrom, F. W. and Cutting, W. C. *J. Pharmacol. & Exper. Therap.* **53**: 58 (Jan.) 1935.

This left 170, of whom twenty were men and 150 were women. Ninety-nine of the patients received no previous treatment, twenty-six had tried only diet, seventeen had taken only thyroid, and twenty-eight had taken both diet and thyroid. In addition, six patients had taken whole pituitary and ovarian substance by mouth. Those patients who had received previous treatment either had failed to lose weight on it or were showing no further losses at the time dinitrophenol was given. All the patients have been included in the average figures regardless of whether they were cooperative or not, or of the duration of treatment with dinitrophenol. They were not a selected group, aside from their obesity, and hence represented a cross-section of cases as seen in ordinary practice. We have attempted to show not the very best statistical results that might be obtained with dinitrophenol in selected patients but rather average effects, such as any practitioner might be able to duplicate.

DIETARY CONTROL

In order that a regimen for weight reduction may be effective, there must be some control of the diet, so as to avoid an excessive intake of food. Because of the special approach to the present problem, no attempt was made to control rigidly the diet of the patients when on dinitrophenol. Those who were already on a fixed diet were instructed to stay on that diet. The remainder

TABLE 1—Effect of Dinitrophenol on the Basal Metabolic Rate

Dose Gm	Number of Determinations	Average Metabolic Rate per Cent	Range per Cent
Control	37	+ 0.2	-27 to + 19
0.1	1	+18	
0.2	10	+20	- 6 to + 88
0.3	10	+31	+ 7 to + 66
0.4	16	+50	+22 to + 83
0.5	8	+66	+ 7 to +107

were instructed about the role of food intake in the production of obesity and requested to take no more food than they had been previously taking. However, no patient was required to adopt a fixed weighed diet of low calorie value. If this had been required, the losses in body weight would have been greater.

ADMINISTRATION OF DINITROPHENOL

The sodium salt of dinitrophenol has been used exclusively, except for a few months in the beginning of the studies. The drug was of the highest purity obtainable from commercial sources, but before use its purity was verified, and it was further purified by recrystallization if necessary. No product was used that did not melt sharply between 296 and 298 C. (uncorrected) and was not colorless in acid solution. In determining the melting point it was necessary to dry it first in a desiccator and to heat as rapidly as possible to 285 C. and then very slowly from that point on. An occasional sample would explode at a few degrees below the melting point. Control of the purity is important, since commercial samples of the drug of supposed highest purity have been found by us grossly contaminated and unsafe for medicinal use. It is conceivable that some of the untoward effects reported by others may have been caused by an impure or contaminated drug.

The drug was administered in capsules containing 0.1 Gm. of sodium dinitrophenol, taken with meals. In general, the dosage was started with 0.1 Gm. daily during the first week and then increased to 0.2 Gm. daily

After a period of several weeks, during which the symptomatic response and rate of weight loss were ascertained, the dose was increased in 0.1 Gm steps until either the symptoms or the loss of body weight indicated no further change in medication. It was attempted to keep the weekly rate of weight loss between 2 and 3 pounds (900 and 1,300 Gm).

More than 50,000 capsules have been administered in this study, or an average of about 300 capsules per

TABLE 2—Ratio Between Dosage and Rate of Loss of Body Weight

Dose Gm	Number of Patients	Total Number of Days	Average Number of Days per Patient	Total Weight Loss Pounds	Average Weight Loss Pounds per Patient Weekly
0.1	37	516	14	69	0.84
0.2	145	3,503	24	637	1.28
0.3	154	4,718	31	894	1.33
0.35	10	739	74	166	1.59
0.4	95	3,765	40	697	1.30
0.5	34	1,417	42	237	1.17
0.6	10	472	47	149	2.21
0.7	1	16	16	7	3.08
0.8	1	7	7	3	3.00

patient. The average duration of treatment for the entire series was eighty-eight days per patient, with an average dose of 3.4 capsules or 0.34 Gm daily. The longest period of treatment for any one patient was one year, and the highest dose taken was 0.8 Gm. The latter dose was taken by a physician on his own responsibility. The highest dose prescribed by us was 0.6 Gm and this only for short periods in patients previously medicated at lower dosage levels.

METABOLIC LEVELS

Unfortunately, the cost of basal metabolism determinations prevented us from following the metabolic rates continuously in all patients. However, a total of eighty-eight determinations was made, distributed over the various dosages so as to give reasonably reliable information on the degrees of metabolic stimulation produced.⁹ It can be seen from table 1 that the average increase in metabolic rate was roughly proportional to the dosage of the drug. There was on the average about an 11 per cent increase in the basal metabolic rate for each 0.1 Gm of the daily dose, although the variations in individual patients were rather wide. This difference in susceptibility makes it highly desirable to individualize the dosage and treatment according to the regimen already described. A factor that modified the absolute rises obtained was the use of the smallest dose that would cause the desired therapeutic response. As a result, the more sensitive patients were given only the lower doses, while the higher ones were administered only to resistant patients. Hence the metabolic rates in table 1 do not indicate the average responses that might be expected from the same doses given to an unselected group of patients. They indicate rather an average response considerably below the unselected one.

WEIGHT LOSS

Five patients treated for only short periods lost no weight or actually gained 1 or 2 pounds (450 or 900 Gm). Weight reduction was obtained in the 165 remaining patients. The largest reduction of weight in any one patient was 82 pounds (37.2 Kg) in 193 days, or 2.9 pounds (1,315 Gm) weekly. The entire group

lost a total of about 1½ tons in weight. The average total loss per patient was 17.1 pounds (7.8 Kg), which, when calculated for the average duration of treatment, amounted to a loss of 1.4 pounds (635 Gm) weekly. Since this average value included the preliminary periods for each patient, when adequate dosage was not being given, it is seen that a satisfactory rate of weight loss was maintained.

In table 2 the weight losses are segregated according to doses. The same difficulty of correlation arose as with metabolic rates. That is, since only the resistant patients were given the higher doses, increases in loss of weight appeared not to result regularly from increased levels of dosage. This lack of correlation was obviously an artefact due to the procedure used for controlling dosage levels, since it was our constant experience that patients who lost at a given rate on a low dose could be made to lose faster when the dosage was increased.

Questions that often arise are whether more rapid losses of weight are produced in patients not previously treated, and whether those known to be resistant to other therapy can be effectively treated with dinitrophenol. In order to answer these questions the data have been arranged in table 3 according to whether the patients had been previously treated with diet or thyroid, or not at all. It can be seen that those not previously treated received about the same average dose as those who had been previously treated with thyroid or diet, or both. All the groups lost weight at about an equal rate, except those who had previously failed to respond to combined thyroid and dietary control. The latter were more resistant to the dinitrophenol than the others, but still they lost more than a pound weekly during an average of 111 days. This gave an average loss of over 16.2 pounds (7.3 Kg) for each patient, as compared to the 17.1 pounds for the whole series. In other words, each patient lost about the same total weight, but at a slower rate.

SYMPTOMS

It was an almost invariable experience that a therapeutically effective dose of dinitrophenol produced symptoms of increased heat production, which were

TABLE 3—Influence of Previous Type of Treatment on the Rate of Response to Dinitrophenol

Previous Treatment	Number of Cases	Average Daily Dose of Dinitrophenol Gm	Average Duration of Dinitrophenol Days	Average Loss Pounds per Week
No diet or thyroid	99	0.32	82	1.45
Only thyroid	17	0.33	89	1.47
Only diet	26	0.35	91	1.55
Diet and thyroid together	23	0.33	111	1.02

noticed by the patient. These consisted usually of a sensation of warmth with increased perspiration, sometimes sufficient for discomfort. In a few individuals there was some dyspnea on exertion, due presumably to an increased need for oxygen. A few patients had sensations of languor or muscular weakness, but an equal number felt more active and subjectively improved. Two or three, already mentioned, were made so much more hungry that they actually gained weight while under treatment. Others, however, were less hungry than before, so that there was no consistent change in appetite.

⁹ We are indebted to Miss Elizabeth Hines for assistance in these determinations.

The patients were urged to drink liberally of water, since otherwise the large volumes of fluid lost by sweating resulted in too highly concentrated urines. The high water intake also helped to maintain the volume of the perspiration and thus to dissipate the excess heat production without significant increase in body temperature. Distressing symptoms of excessive heat production were most pronounced in patients given larger doses without adequate preliminary building up of tolerance by means of slowly increasing doses. It appears reasonable to assume that physiologic adaptations can be made to the increased heat production just as in case of changes in external temperature. By allowing adequate time for such adaptation, the sensations of heat are minimized and the patient's comfort is increased.

BLOOD CHANGES

Several case reports have appeared recently,¹⁰ indicating that dinitrophenol may cause attacks of agranulocytosis. Animals⁸ have failed to reveal any evidences of alterations in the red or white blood cells even when extratherapeutic doses of dinitrophenol were given for periods of six months. None of these 170 patients developed agranulocytosis or any condition that could be ascribed to a reduction in leukocytic activity.

the blood count was made. If dinitrophenol interfered with leukocyte production, a mechanism of agranulocytosis, there should be some evidence of a progressive shift in the white cell counts as the total dosage increased. In table 5 the patients are divided into four groups according to the total dose of dinitrophenol each one had taken. For the sake of simplicity, the irrelevant counts have been omitted from the table.

It is obvious in table 5 that there is a lack of evidence of a progressive decrease in the white cell count or polymorphonuclear percentage as the total dose of dinitrophenol increased, even though very considerable amounts of the drug had been taken, especially in the last group.

Hence it is concluded from these observations of a rather large series of patients that dinitrophenol did not affect the blood cells, contrary to the assertions of others. At the same time we cannot deny the existence of the changes observed by others under their different conditions. It appears certain that agranulocytosis is not necessarily a constant or even a probable resultant of proper medication with dinitrophenol, at least, it is not due to a direct action of the drug. The occurrence of this rare disease is probably the manifestation of some preexisting idiosyncrasy or defective constitution.

TABLE 4—*Effect of Dinitrophenol on Red and White Blood Cells*

	Red Blood Cells Millions	Hemo- globin per Cent	White Blood Cells Thousands	Polymor- phonuclear Leukocytes per Cent	Small Lympho- cytes per Cent	Large Mono- nuclears per Cent	Transi- tionals, per Cent	Eosino- phils per Cent	Baso- phils, per Cent
Before medication									
Average	5.0	.01	7.3	54	35	5.0	0.0	2.1	0.3
Range	(4.3-5.7)	(.78-.93)	(4.7-10.5)	(43-59)	(23-43)	(2-11)	(0-3)	(0-4)	(0-1)
During medication									
Average	5.1	.85	8.5	58	33	4.3	0.0	1.9	0.5
Range	(3.5-6.1)	(.72-.97)	(4.1-15.0)	(36-90)	(7-61)	(0-11)	(0-3)	(0-5)	(0-3)
After medication									
Average	4.7	.93	7.3	62	31	2.0	0	1.3	0.3
Range	(3.7-5.4)	(.76-1.00)	(5.4-9.8)	(50-72)	(20-33)	(2-4)	(0-0)	(0-2)	(0-1)

Nevertheless, when this possibility was first suggested, blood counts were made on all the available patients under treatment with dinitrophenol, as well as on those who had already completed their therapy. A total of sixty-two cases were thus studied, including eight new patients in whom counts were also made before administration of the drug. The average results, together with maximum and minimum values, are shown in table 4. It can be seen that the values for red cells and hemoglobin have a normal distribution.

This is in agreement with our previous results. The leukocyte count during dinitrophenol administration averaged 8,500 cells per cubic millimeter, and the lowest count was only 4,100, all of which is well within normal limits. Differential counts also gave no indication of a decrease in production of polymorphonuclear leukocytes. Therefore, the influence of the drug on the blood picture as observed in this series may be regarded as entirely negative.

There still remained the possibility that there might be some small progressive change which might be masked by the method of averages used. Therefore the data were rearranged according to the total amount of dinitrophenol taken by each patient up to the time

in the individual patient, in whom dinitrophenol or any other drug or toxin may act merely as a precipitating agent.

BLOOD PRESSURE AND PULSE RATE

Blood pressure and pulse rate changes were carefully observed in seventy-six of these patients. Control readings (before medication) were obtained on three different days, the median of three or more readings obtained on each day being used. The patients were arbitrarily divided into a hypertensive group (those with a systolic blood pressure above 150 mm of mercury) and a normal group. There were thirty patients in the former series and forty-six in the latter. In the normal group the fall of systolic blood pressure averaged 9.4 per cent, with a range of from a 15 per cent increase to a 28 per cent decrease. In the hypertensive group the effect was greater both in absolute values and in percental changes, since the average fall was 12.6 per cent, with a range of from a 3 per cent increase to a 38 per cent decrease. Patients already hypotensive showed little or no further decrease in blood pressure. The fall in diastolic pressures of the normal group averaged 10.6 per cent, with a range of 28 per cent increase to 33 per cent decrease. In the hypertensive group, the average diastolic pressure fell 11.7 per cent, with a range of from 25 per cent increase to 43 per cent decrease. The pulse rate changed in both groups less than 5 per cent and hence was practically unaltered.

From these results it appears that dinitrophenol had little or no direct effect on the systemic blood pressure.

10 Hoffman, A. M., Batt, E. M., and Hickey, N. G. Neutropenia Following Amidopyrine. *J. A. M. A.* 102:1213 (April 14) 1934.
Davidson, E. N., and Shapiro, M. Neutropenia Following Dinitrophenol With Improvement After Pentateleotide and Leukocyte Cream. *J. A. M. A.* 103:480 (Aug. 18) 1934.
Silver, Solomon, A. New Danger in Dinitrophenol Therapy. *J. A. M. A.* 103:1058 (Oct. 6) 1934.
Dameshek, William, and Gargill, S. L. *New England J. Med.* 211:440 (Sept. 6) 1934.

and that such changes as occurred were probably due to loss of body weight. Many obese and hypertensive patients showed no fall in blood pressure, even after large losses of weight. This maintenance of elevated blood pressure, in spite of weight loss, was most frequent among those individuals whose original systolic pressures were 200 mm of mercury or more. While loss of weight is therapeutically indicated in obese patients with hypertension, it cannot be guaranteed that every individual receiving dinitrophenol will obtain a complete result, i. e., both fat and blood pressure reductions.

SIDE ACTIONS

No toxic symptoms occurred in patients taking a daily-dose of less than 300 mg of sodium dinitrophenol. Therefore the group in which reactions occurred was a smaller one, composed of 100 patients who took this dose or more for at least six weeks. Some kind of a side action occurred in twenty-eight patients in this high dosage group. The two most troublesome symptoms were skin rashes and peripheral neuritis. Either of these reactions demands immediate withdrawal of the drug, but neither form a permanent contraindication to dinitrophenol therapy. It was exceptional to find either complication recurring in the same patient.

Skin reactions occurred in twenty-three of these patients. One third of them consisted only of transient itching without a rash. In the remainder there were both pruritus and visible skin lesions, either urticarial or maculopapular in character. The urticarial lesion was about twice as frequent as the maculopapular. After the early days of this study, the patients were warned to discontinue the drug at the first indication of itching or skin rash, since which time none of the lesions have progressed beyond the maculopapular stage, and the incidence of severe skin manifestations has fallen to zero. In a number of instances the skin reaction disappeared spontaneously in spite of the continued administration of the drug. In two patients who continued taking dinitrophenol after the appearance of urticaria, alarming symptoms of systemic poisoning developed. One of these patients had a known allergy toward strawberries, and her skin reaction followed promptly on the eating of a bowl of this fruit at the beginning of the season. It is a question in her case whether the dinitrophenol had any causative role in this skin reaction or perhaps merely aggravated it. The symptoms in both patients seemed referable to increased capillary permeability, with escape of fluid into the tissues. Massive urticarial wheals covered the body and extensive localized edematous collections appeared in various regions. Complete anuria persisted over a period of twenty-four hours, although the first specimen of urine voided showed no albumin, sugar or abnormal microscopic elements. The temperatures were elevated in the allergic case up to 103 F and in the other case to 101 F. The subjective complaints were itching and burning of the skin, great weakness and prostration, and faintness on exertion. The acute discomfort abated after seventy-two hours although neither patient was able to leave bed for a week. Treatment of these severe skin reactions was limited to bed rest, forced fluids and cooling local applications. Hypodermic administration of epinephrine afforded temporary relief from the pruritus and urticaria. Neosynephrin in oral doses of 0.1 Gm every two hours gave no relief. This type of skin reaction has been dis-

cussed previously by us⁷ and in a number of publications by others¹¹ and need not be considered further here.

Exacerbation of a preexisting epidermophytosis was observed in four patients. The rapid spread was doubtless due to the increased sweating, which tended to keep the skin moist and macerated. A similar observation has been reported by Faddersbøll.¹²

Some manifestation of peripheral neuritis occurred in eighteen patients. Most commonly affected were the legs and feet (thirteen patients), but the arms and fingers were involved in ten patients and the tongue in five. Effects on the tongue were manifested by loss of taste, especially for sweet and salt, and numbness and tingling. A similar result has been reported by Hunt.¹³ In the extremities, the symptoms consisted of various paresthesias, such as numbness, "pins-and-needles," and heat and cold. Perception of painful stimuli was increased, but there was a definite delay in the conduction time. In only one case was motor weakness present, as shown by decreased tendon reflexes and partial foot drop. This weakness disappeared entirely one week after dinitrophenol had been discontinued. The sensory changes, as a rule, cleared up more slowly after an average period of three weeks. In one case, symptoms persisted for two months. The changes in peripheral nerves came on so slowly that no difficulties were encountered in diagnosing them,

TABLE 5—Relation of Total Dinitrophenol Dosage to White Blood Cell Counts

Total Amount Taken Gm	White Blood Cells Thou sands	Poly morpho nuclear Leukocytes per Cent	Small Lympho cytes per Cent	Large Mono-nuclears per Cent
Controls before dinitrophenol	7.3	54	38	5.6
0.1 30	7.9	58	34	4.9
0.1 60	8.9	58	37	3.4
0.1 90	8.2	56	30	4.1
0.1 198	8.0	56	37	3.2

or in stopping the drug before significant damage had occurred. After a recovery period, the patients usually resumed treatment of a lower dosage level without further symptoms.

COMMENT

The results obtained by us leave no doubt that dinitrophenol can be administered to almost all obese patients with the object of producing a loss of weight. This is in agreement with previous reports by us and with the experiences of many others.¹⁴ Grant and Schube¹⁵ however, failed to observe a consistent loss of weight in a group of fourteen patients in whom they were studying the effect of dinitrophenol on the blood cholesterol, and Andersen¹⁶ did not find a greater rate of loss of weight in his patients already losing on a 1,000 calorie diet, when they were given dinitrophenol in addition. Other than these two ostensibly negative reports there has been no serious denial of the fact that increasing the basal metabolic rate by dinitrophenol must result in a loss of body weight unless this is compensated for in some way.

11. Quick, A. J. Dangerous Drug Reactions correspondence J. A. M. A. 102:1419 (April 28) 1934. Bortz, E. L. Ann. Int. Med. 8:599 (Nov.) 1934. Beishauer, L. G. West Virginia M. J. 30:466 (Oct.) 1934. Gimsing, T. Ugesk. f. læger 96:527 (May 17) 1934.
12. Faddersbøll, H. Nord. med. tidskr. 8:1088 (Aug. 25) 1934.
13. Hunt, W. D. Northwest Med. 33:209 (June) 1934.
14. Tainter, Cutting and Stockton. Faddersbøll. Hunt. Secher, K. Ugesk. f. læger 96:192 (Feb. 15) 1934. Bayer, Leona M. and Gray, Horace. Am. J. M. Sc. 189:86 (Jan.) 1935. Also references given in footnote 11.
15. Grant, L. F. and Schube, P. G. J. Lab. & Clin. Med. 20:56 (Oct.) 1934.
16. Andersen, W. T. Ugesk. f. læger 96:521 (May 17) 1934.

Our experience has established the further fact that dinitrophenol will promptly and certainly raise the rate of metabolism in a way and to an extent not approached by any drug previously tried. Therefore, dinitrophenol represents a new and powerful metabolic reagent available for therapeutic experiments and for clinical use. It has, however, the disadvantage of producing in some patients undesirable side actions, which are unpredictable and occasionally alarming. These reactions have occurred mainly in patients receiving large doses of the drug over long periods of time. Attention to the following details should reduce the incidence of undesirable reactions and toxicity to negligible proportions: purity of the drug, slow increase in dosage, maintenance of adequate fluid intake, and prompt discontinuance of the drug on the first hint of an undesirable reaction.

Dinitrophenol should not be used as a routine reducing agent for all cases. Each patient should be handled as an individual problem, those measures being used first which are potentially least harmful. Therefore no patient should be given a drug for the purpose of reducing weight until it is clearly established that dietary measures alone cannot be used successfully, whether by reason of economic or psychic inability to diet properly or because of need for more hurried reduction. In case the patient suffers from hypothyroidism, that fundamental defect should be treated with thyroid as well. Only when these measures fail or cannot be applied should treatment with dinitrophenol be instituted. Treatment with dinitrophenol should therefore constitute the "court of last appeal," where it will be found almost always effective.

CONCLUSIONS

1 One hundred and seventy unselected obese patients were given sodium dinitrophenol (2-4) by mouth for an average of eighty-eight days each, in an average daily dose of 0.34 Gm.

2 The average increase in metabolic rate was about 11 per cent for each 0.1 Gm daily dose.

3 The average loss of body weight was 17.1 pounds for each patient, with an average rate of loss of 1.4 pounds weekly. Patients resistant to dietary or thyroid measures lost weight as well as those previously untreated, but patients who had resisted combined dietary and thyroid therapy lost less rapidly on dinitrophenol than the other groups.

4 The main symptoms of therapeutically effective doses of dinitrophenol were those of extra heat production, namely, sweating, flushed skin, concentrated urine, and sensations of warmth. These symptoms could be controlled to some extent by building up the dosage gradually to the therapeutic level and by ensuring adequate fluid intake.

5 No evidence was obtained in these patients that dinitrophenol affected the blood cells, as shown by blood counts and clinical observations.

6 Side actions, consisting of skin rashes or peripheral nerve changes, were observed in about one fourth of the patients receiving high doses, or in about one seventh of the entire series. These side actions may be largely avoided by stopping medication promptly on the first appearance of any of these changes.

7 Dinitrophenol is a highly effective drug for increasing the metabolic rate and reducing excessive body weight. Medication with this drug is probably indicated in the present state of our knowledge mainly

in those cases in which other potentially less toxic means of treatment cannot be successfully applied. For those obese patients who are resistant or unsuited to other therapy, dinitrophenol is a potent and valuable therapeutic agent.

Sacramento and Webster streets

ABSTRACT OF DISCUSSION

DR. MAURICE BRUGER, New York. Dr. Tainter and his associates have shown that the increased production of heat following the ingestion of dinitrophenol is derived from the combustion of fat rather than carbohydrate. Their studies on the excretion of nitrogen in the urine following the administration of dinitrophenol indicate that protein catabolism is not accelerated. It should be pointed out, however, that determinations of the respiratory quotient after the use of dinitrophenol have not given uniform results: some workers have reported a definite increase in the respiratory quotient, indicating an increased oxidation of carbohydrate, while others have corroborated the results of Dr. Tainter and his co-workers. Drs. Camron V. Bailey, George C. Thosteson and I determined the production of heat in five obese women before and after the administration of dinitrophenol. The respiratory exchange was determined by a modified Tissot method, and the urinary nitrogen content by the Kjeldahl procedure. Our work revealed that (1) the administration of dinitrophenol in doses of 3.5 mg per kilogram increased the total production of heat commensurate with that found by other workers—approximately 40 per cent in from three to four hours, (2) the increased production of heat was derived from the accelerated combustion of both fat and carbohydrate, (3) protein catabolism was definitely spared and (4) appreciable quantities of carbohydrate were burned after the administration of dinitrophenol even though under basal conditions carbohydrate was absent because of previous dietary restrictions. The oxidation of carbohydrate arising from stores partially depleted of this fuel is further evidence of the glycogenolytic action of dinitrophenol. In view of these observations the suggestion is offered that during dinitrophenol therapy an adequate intake of carbohydrate should be allowed, as a safeguard against depleting the store of glycogen in the liver and other tissues and in order to offset some of the toxic manifestations of the drug.

DR. FRANK A. EVANS, Pittsburgh. A study of dinitrophenol in obesity made recently in Pittsburgh confirmed Dr. Tainter's published statements. In other words, dinitrophenol is a drug that increases the basal metabolism and therefore is useful in any clinical condition in which that result is desirable. I question seriously whether obesity is one of those clinical conditions. The oxygen exchange in an obese person is already elevated. Indeed this elevation of metabolism is probably a large factor in the physiologic strain of obesity that makes it such a menace to continued good health. The indication in obesity is not for an increased oxygen exchange but for a diminished intake of energy. Possibly dinitrophenol has a specific effect in fat metabolism. In my opinion this has not been shown. The fact that in the reduction of weight by means of dinitrophenol fat predominantly is burned is not evidence of specificity. Reduction in weight by dietary limitation alone, but in which essential foodstuffs are given in adequate amounts, is at the expense of fat tissue. The caloric deficit to be obtained with safe doses of dinitrophenol is not more than could be obtained by removing from the diet two pats of butter at each meal. If an obese patient will not make such a minor reduction in dietary intake as that, I doubt whether it is worth while to obtain a reduction by any method as after discontinuation of the drug he will probably become as fat as ever. Of the authors' statements the one I can confirm most emphatically is the closing one that the use of dinitrophenol is not the method of choice in the treatment of obesity.

DR. MAURICE L. TAINTER, San Francisco. The amount of fuel burned by dinitrophenol fluctuates since the respiratory quotient can be shown to vary with the degree of muscular

activity Under resting conditions fat is the main source of extra energy, but carbohydrate and protein also may be burned if conditions are changed. Dr Evans is correct in saying that the use of dinitrophenol is not the method of first choice in the treatment of obesity, it is the method of last choice, the method to use when nothing else is effective and when the need for reduction is sufficiently great to justify the admittedly definite risks of the dinitrophenol medication After this paper was prepared for publication, cataracts developed in one of the patients in the series They came on acutely six months after she discontinued the use of the drug It is not possible to decide at present whether such an occurrence is related to the drug, to the restricted or unbalanced diet so commonly used by such patients or to other causes

CORONARY ARTERY THROMBOSIS

WITH TREATMENT BY PROLONGED REST
IN BED AND LOW CALORY DIET,
IMPROVED PROGNOSIS

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The prevalence and grave significance¹ of heart disease are being emphasized Nearly 2,000,000 people in this country are suffering from the disease, and deaths from this cause have taken first rank, 224 per hundred thousand of population having been reported for the year 1932 The mortality rate in heart disease is more than twice as high as that in cancer, its nearest rival These figures should not arouse undue apprehension, for it has been pointed² out very clearly that they are the result of "beneficent" causes, namely, the longer life span and the lowered incidence of infectious diseases, tuberculosis, and the like Nevertheless, even the more cheerful writers report that heart muscle disease is markedly on the increase, not only in old age but in the years between 25 and 44 Yet, I shall paint an optimistic picture, in spite of the fact that the most serious of the heart muscle diseases, namely, acute coronary artery occlusion, is my subject

Many clinicians³ have reported the mortality rate from coronary thrombosis as being between 35 and 65 per cent, averaging about 50 per cent These results are based on the attacks studied, no matter whether they happened to be the first, second or third Conner and Holt⁴ gave the first intimation that the death rate following the initial attacks of coronary artery occlusion was much lower than that occurring as a result of later attacks They found the death rate in the first attack to be 16 per cent

This paper contains a summary of an investigation of my private cases The patients were treated either by me alone or in conjunction with the family physician In this series have been included all the deaths that occurred, even though some of the patients died before they could be placed on a low (800) calory diet

1 Dublin L I The Problem of Heart Disease Harper's Magazine 154 196 1927 Cohn A E and Lingg Claire Heart Disease from the Point of View of Public Health Am Heart J 9 283 (Feb) 1934 Stone C T The Mortality from Heart Disease A Challenge, J A M A 103 151 (July 21) 1934

2 Bolduan C F and Bolduan N W Is the Appalling Increase in Heart Disease Real? J Prev Med. 6 321 (July) 1932 Cohn and Lingg

3 Parkinson John and Bedford D E. Cardiac Infarction and Coronary Thrombosis Lancet 1:4 (Jan 7) 1928 Conner L. A., and Holt, Evelyn The Subsequent Course and Prognosis in Coronary Thrombosis An Analysis of 287 Cases Am. Heart J. 5 705 (Aug) 1930 Levine S A Coronary Thrombosis Its Various Clinical Features Medicine 8 245 (Sept.) 1929 Coombs C F Prognosis in Coronary Thrombosis Bristol Med Chir J 40 277 1932

CRITERIA FOR DIAGNOSIS OF CORONARY THROMBOSIS

The diagnosis was certain in all the patients who survived Coronary thrombosis, when classic, is an easy diagnosis to make There were severe pain in the chest, particularly substernal, signs of shock, such as grayish pallor, perspiration, feeble pulse, clammy extremities and collapsed veins, a drop in blood pressure, changes in heart sounds, a pericardial rub (if present), a rise in temperature, leukocytosis and, above all, characteristic signs in the electrocardiogram⁴ (That is, characteristic elevations and depressions of RS-T transitions with T wave inversions and Q wave changes)

In a series of eighty-five attacks of coronary thrombosis, occurring in seventy-five patients, the mortality rate was between 9 and 11 per cent The death rate following first attacks was less than 2 per cent These figures are the lowest reported yet The observations and results have been placed in tabular form (table 1)

METHOD OF TREATMENT

Immediate rest in bed was instituted When, occasionally, a patient suffered an attack away from his home, he was very carefully transported there or to a hospital If he was in shock he was kept in bed at the place where he was first seen, if possible

For the first twenty-four, forty-eight or even seventy-two hours of an attack the patient was given very little food, particularly if he was in shock Food was never urged on a patient If nausea and vomiting were present, sips of cold White Rock or Seltzer or Vichy water or bits of cracked ice were offered Usually absolute rest for the stomach is advisable Tea, toast, fermented milks, buttermilk and strained vegetables are added gradually The patient himself will often suggest a food that will relieve his nausea, or at least not aggravate it Sodium bicarbonate alone or in combination with bismuth subnitrate, and minute doses of peppermint were occasionally dispensed for the nausea or vomiting

On the first, second, third or fourth day, depending on the condition of the stomach, the patient was placed on a 750-850 calory diet and remained on it until he was ready to leave his bed It was a well balanced diet⁵ (approximately 80 Gm of carbohydrate, 50 Gm of protein and 30 Gm of fat) containing vitamins and adequate calcium (table 2)

The patient remained on an 800 calory diet for at least four weeks, preferably six, but if he progressed very well or if he was hungry, the quantity of food was slowly increased

The fluid intake was limited to from 1,000 to 1,200 cc, but here again judgment was used On a hot day, if the patient perspired excessively, he was permitted to have more liquids if he so desired As a rule, on a low calory diet patients do not become thirsty, particularly since the food is not spicy Condiments were eschewed Salt was included only in the cooking and was not placed on the food tray

The extreme importance of absolute rest was again and again emphasized to the patient, nurse and family The patient was not permitted to sit up Likewise he

4 Pardee, H. E. B. An Electrocardiographic Sign of Coronary Artery Obstruction Arch. Int. Med. 20:244 (Aug) 1920 Rothschild M. A. Mann H., and Oppenheimer B. S. Successive Changes in the Electrocardiogram Following Acute Coronary Artery Occlusion Proc. Soc. Exper. Biol. & Med. 23:253 1926

5 This diet is used at the Mount Sinai Hospital in New York and was originated by Miss Adeline Wood head dietitian and Miss Ella Coleman assistant dietitian

was not allowed to feed himself, particularly during the first week or two. His position in bed was carefully changed from time to time to prevent hypostasis in the lungs.

Day and night nurses were retained even if the family finances were strained thereby. Adequate nursing is of indescribable value. The nurses were there to save the patient's energy, to keep away visitors, and to make all

quiet and tranquil. They were enjoined not to do too much—to leave the patient alone, unless they could be of genuine assistance.

Avoidance of infections of the upper respiratory tract is important, as this is a strain on the cardiovascular system, causing a drop in blood pressure and an increase in heart rate. No one who had such an infection was permitted near the patient.

TABLE 1—Coronary Artery Thrombosis

No	Name	Age	Sex	Thrombosis		Days		Loss of Weight	Economic Restitution	Blood Pressure				Number Electrocardiograms	Location of Infarct		First Attack
				No	Year	Bed	Home			Previous		Lowest			Anterior	Posterior	
										Sys tolc	Diast tolc	Sys tolc	Diast tolc				
1	L. A.	63	♂	1	1933	37	40	13		200+	100	134	80	2	T ₁₋₂		
2	G. B.	63	♂	1	1928	14	17		Complete	145	93	95	53	2	T ₁		
3	M. B.	42	♂	2	1933	180	210		Complete	2.0	150	150	90	3		T ₁₋₂	1933
4	M. B.	42	♂	1	1934	16	10	8	Complete	170	90	90	60	2		T ₁₋₂	
5	H. B.	47	♂	1	1932	33	53	18	Complete	160	100	83	60	2		Q ₁ T ₁	
6	W. B.	40	♂	1	1931	18	18	2½	Complete	140	90	98	60	2		T ₁₋₂ Q ₁	
7	M. C.	74	♂	1	1932	30	40	11	Partial	110	90	120	60	4		T ₁₋₂ Q ₁	
8	I. O.	50	♂	1	1932	17	24	4	Complete	150	90	80	60	1		T ₁₋₂	
9	S. O.	60	♂	1	1932	35	42	15	Complete	140	90	84	60	3		T ₁₋₂	
10	D. C.	40	♂	1	1934	26	31	10	Complete	130	80	102	66	1		T ₁₋₂	
11	C. C.	65	♂	1	1933	80	90	10	Complete	150	90	110	70	1		T ₁₋₂	
12	H. D.	33	♂	1	1933	40	45	23	Complete	150	100	110	80	3		T ₁₋₂ Q ₁	
13	H. D.	45	♂	1	1933	33	33	6	Complete	160	100			1	T ₁		
14	B. E.	12	♂	1	1934	41	43	13	Complete	120	94	90	60		T ₁₋₂		
15	B. E.	12	♂	1	1934	40	44	10	Complete	150	98	100	74	6	T ₁		
16	D. F.	04	♂	1	1934	51	53	12	Complete	130	90	100	60	2		T ₁₋₂	
17	A. F.	57	♂	1	1929	21	70	11	Complete	210	100	100	90	1	T ₁₋₂		
18	D. G.	45	♂	1	1933	63	77	23	Complete	130							
19	A. G.	50	♂	1	1933	50	98	22	Complete	200+	110	90	80	5		T ₁₋₂	
20	G. G.	64	♂	1	1933	50	98	22	Complete	180	110	90	70	4		T ₁₋₂	
21	H. G.	81	♂	1	1934	5	0	0	Complete	130	80	100	70	1		T ₁	
22	A. H.	41	♂	1	1933	44	50	12	Complete	130	85	90	60	1	T ₁₋₂		
23	G. H.	51	♂	2	1933	51	60		Disabled	120	80	90	50	1		T ₁₋₂	1927
24	I. H.	58	♂	1	1933	60	07	32	Complete	140	100	100	74			T ₁₋₂ Q ₁	1934
25	I. H.	48	♂	2	1934	24	43	15	Partial	130	80	90	50		T ₁		
26	J. H.	64	♂	1	1929	35	40	10	Complete	124	60	84	50			T ₁₋₂	1933
27	J. I.	53	♂	2	1933	81	50	13	Partial	140	84	86	60	5		T ₁₋₂	
28	A. J.	40	♂	1	1930	31	40	11	Complete	124	80	80	60	2		T ₁₋₂	1931
29	S. J.	52	♂	2	1933	18	40	23	Complete	200	120	100	70	3	T ₁₋₂		
30	K. K.	64	♂	1	1932	50	50	10	Complete	115	90	90	60	2	T ₁₋₂		
31	I. K.	37	♂	1	1934	42	63	12	Disabled	120	74	74	50	6	T ₁₋₂		
32	H. K.	40	♂	1	1934	54	63	10	Complete	180	90	72	60	2		T ₁	
33	S. I.	40	♂	2	1934	21	30	8	Complete	133	90	94	60	2		T ₁	
34	S. I.	55	♂	1	1932	42	40	12	Complete	100	110	122	80	2	T ₁		1930
35	P. L.	74	♂	2	1929	21	21	10	Complete	124	72	80	50	3	T ₁₋₂		
36	F. L.	77	♂	3	1932	0	14	6	Complete	130		80	50	3	T ₁₋₂		
37	F. L.	40	♂	1	1929	01	30	30	Disabled	160	110	80	65	4	T ₁		
38	F. L.	40	♂	2	1929	213	2.5	25	Disabled	100	60	80	50	4	T ₁₋₂		
39	R. L.	69	♂	1	1929	10	20	7	Complete	114	72	80	70	1	T ₁		
40	L. L.	52	♂	2	1932	6	16	3	Complete	140	120	100	70	1		T ₁₋₂ Q ₁	1931
41	L. M.	02	♂	1	1928	42	03	10	Complete	120	120	105	78	3		T ₁₋₂	
42	B. M.	52	♂	2	1931	01	08	30	Complete	170	110	90	70	6	T ₁₋₂		1931
43	L. M.	50	♂	1	1932	52	82	15	Partial	140	90	92	65	6		T ₁₋₂	
44	L. M.	60	♂	1	1932	01	01	7	Complete	124	76	80	64	1		T ₁₋₂	1931
45	I. M.	51	♂	2	1932	50	71	21	Partial	154	100	80	60	2		T ₁₋₂ Q ₁	1936
46	A. M.	40	♂	2	1928	33	61	16	Disabled	160	110	90	70	4	T ₁₋₂		
47	N. N.	40	♂	1	1931	01	01	13	Partial	140	90	70	50	4	T ₁₋₂		
48	N. N.	51	♂	1	1931	38	48	21	Complete	150	90	102	50	4		T ₁	
49	N. N.	54	♂	2	1934	42	50	12	Complete	150	90	90	60	2		T ₁	
50	N. N.	54	♂	3	1934	40	47	10	Complete	140	90	02	64	2		T ₁	
51	A. N.	50	♂	1	1933	41	64	15	Disabled	250	150	100	70	2	T ₁₋₂		
52	G. N.	40½	♂	1	1932	42	01	10	Complete	170	120	100	70	1	T ₁₋₂ Q ₁		
53	I. O.	52	♂	1	1934	42	46	15	Complete	140	110	110	80	8	T ₁₋₂		
54	R. P.	52	♂	2	1932	45	01	10	Complete	150	120	100	70	3	T ₁₋₂		1932
55	R. P.	53	♂	8	1933	42	57	3	Partial	160	100	120	70	3	Q ₁ T ₁		
56	S. P.	54	♂	4	1934	23	35	20	Partial	130	80	86	60	6	T ₁		
57	S. P.	51	♂	1	1934	52	55	3	Partial	174	110	110	70	6	T ₁₋₂ Q ₁		
58	F. P.	59	♂	1	1932	50	53	3	Complete			86	60	1		T ₁₋₂	
59	S. P.	60	♂	2	1933	21	35	11	Partial	130	90	104	64	1		T ₁₋₂ Q ₁	1928
60	M. P.	53	♂	1	1930				Complete	150	80	106	68	1		T ₁₋₂	
61	M. R.	57	♂	1	1931	110	122	15	Partial			90	48	4		Q ₁ T ₁	1931
62	G. R.	45	♂	1	1931	35	42	18	Complete			90					
63	G. R.	54	♂	2	1934	20	20	5	Complete	200	100	132	90	1	Q ₁ T ₁		
64	S. R.	54	♂	1	1930	33	42	20	Complete	170	100	120	70	1	T ₁		
65	R. S.	50	♂	1	1935	28	31	8		190	120	115	74	0		T ₁	
66	A. S.	60	♂	1	1934	45	45	0				102	68	1		T ₁₋₂	
67	S. S.	66	♂	3	1934	45	50	20		170	100	110	70	3		T ₁₋₂	
68	A. S.	78	♂	1	1933	56	57	10	Complete			78	50	1		T ₁₋₂	
69	L. S.	43	♂	1	1933	30	30	10	Complete			110	70	1	T ₁₋₂		
70	M. S.	50	♂	1	1933	10	15	15½	Complete	130	80	90	60	5			
71	F. T.	39	♂	1	1931	28	40	7½	Complete	140	90	80					
72	S. W.	48	♂	2	1933	58	80	22	Complete	150	100	84	60	4		T ₁₋₂ Q ₁	1923
73	S. W.	49	♂	1	1934	21	21	10	Complete	140	100	100	70	1	Q ₁ T ₁		
74	F. W.	63	♂	1	1934	13	17	7	Complete	170	100	100	80	1	T ₁		
75	A. Z.	50	♂	1	1933	28	30	6	Complete	154	100	100	70	2	T ₁		
76	S. Z.	42	♂	1	1928	35	42		Complete						T ₁		
77	L. O.	50	♂	2	1933	Died 6 7 hours				190	100				T ₁		1934
78	K. O.	64	♂	3	1935	Died 14 hours				200+				1		Q ₁ T ₁	No 41
79	L. M.	67	♂	2	1933	Died 17 days				150	120					Q ₁ T ₁	No 45
80	I. M.	53	♂	3	1934	Died 4 hours				164	100						No 51
81	A. N.	50	♂	2	1934	Died 2 hours				250	150				T ₁		1928
82	J. R.	62	♂	3	1934	Died 8 hours				230	120						
83	M. S.	67	♂	1	1932	Died 14 hours				200+	120+				T ₁		1931
84	L. S.	77½	♂	2	1932	Died 7 hours				190	110						

* Treated by method described in paper

† Previous electrocardiograms

I have had no hesitancy in explaining the situation to the patient in a common sense manner. He would be told that he had a wound of the heart and that he must give that organ as little work to do as possible, so that it might heal. It was further explained that physical and mental activity and the partaking and digestion of food entailed added work for the heart by changing blood pressure and pulse rate and stroke output of the heart. Not for a moment, however, was a despondent note struck. In fact, I always assured the patient that he would get well.

The importance of avoiding all irritation and annoyance was made clear. The patient was warned that he was to be the loser in every argument, no matter who was right and no matter how insignificant the point at issue.

The patient was permitted to sit up in from four to six weeks, he was usually in bed for six weeks. Gradually he sat up in a chair, then walked a few steps and made further progress, a little at a time. He was ready to climb steps in from eight to twelve weeks. Patients often required longer periods. Each case was considered on its own data. Rarely, a patient had a return of pain when he first was out of bed, and when this occurred he was promptly put back. On the other hand, many patients felt so well that they insisted on shortening the time in bed.

Only rarely does the sensation of hunger annoy the patient or make him unhappy. Occasionally, particularly in a diabetic patient, the hunger sensation is a problem, but the patient usually becomes adjusted to his diet in a week or two. There are many devices to which one may resort to overcome the pangs of hunger. Clear broth, jellied consommé, tomato juice, and the like have very little caloric value and yet may satisfy the hunger sensation. Furthermore, the patient is advised to eat very slowly and to chew his food well. However, if it appeared that adding 100 or 200 more calories after the first week or two was essential to the patient's comfort, this was done without hesitation.

Digitalis, glyceryl trinitrate, amyl nitrite, epinephrine, and ephedrine⁶ were never prescribed. Morphine and codeine were given liberally. For the severe pain of the attack, in a few instances, morphine was given in doses amounting to from three-fourths to 1 grain (0.05 to 0.06 Gm.) hypodermically, within the first twelve hours, or even within the first two hours. During the initial stage of shock, if the condition of the patient was precarious and if the patient required a cardiovascular stimulant, caffeine was injected subcutaneously or intramuscularly. Heat was applied to the extremities if it made the patient more comfortable. An icebag over the precordium occasionally was welcomed.

No laxatives, cathartics or enemas were ordered for the first three to five days, very rarely did abdominal distention become severe enough to indicate their use any sooner. If a patient required codeine over a period of days, sufficient laxatives were given to keep the bowels open without requiring the patient to strain. It

is well known that patients may die suddenly from excessive straining at stool.

By means of a portable apparatus, electrocardiograms were taken during all attacks but seven. The average number of records was three per patient.

RESULTS

In all, seventy-five patients were treated in the manner described, beginning in 1928, when the first case was so studied at the private pavilion of the New York Hospital. There were sixty-three male and twelve female patients. The average age of patients who survived the attacks was 53 years and of those who died, 63 years. The average age of the male patients was 54, that of the female, 51 years.

These seventy-five patients had, altogether, eighty-five attacks of coronary thrombosis in which the routine procedures just outlined were followed. The mortality was eight deaths in eighty-five attacks, that is, a rate of 9.5 per cent. Considering only first attacks, the mortality was confined to one patient, or less than 2 per cent, whether on the basis of the number of patients or of the total number of attacks (table 1).

In the seventy-five patients studied, eighteen had two occlusions, six had three, and two had four attacks,

TABLE 2—Well Balanced Diet of Low Calory Content

Breakfast	1 small serving fruit without sugar 2 tablespoonfuls of cooked cereal 1 glass of milk buttermilk or skim milk ½ slice of bread or toast coffee or tea without sugar or cream
Dinner	1 cup of broth if desired 2 ounces of lean meat or fish or chicken ½ cup of vegetables 1 small serving of fruit without sugar ½ slice of bread coffee or tea without sugar or cream
Supper	1 ounce of pot cheese or 1 egg ½ cup of vegetables ½ slice of bread 1 glass of milk buttermilk or skim milk

making 108 attacks in all. It is obvious that multiple infarctions are common. The length of time of survival of those who experienced more than one attack ranged from one to fifteen years, and of these twenty-six patients only seven have died.

It is important to know how many patients were able to resume their usual work or routine, following a coronary occlusion. Six of the subjects studied sustained coronary occlusions within the last six months, and it is therefore too early to give the final picture of their physical activity. It is to be recalled that there were eight deaths. Fifty-three patients who suffered attacks were able to resume their usual work or routine. (These people were of the middle and the upper class and hence none had to return to hard labor.) Twelve patients were able to resume light or moderate work. Only six of the seventy-five subjects have remained disabled over periods of from one to seven years, and not one of these is bedridden. That so many were able to resume their routine work shows that the heart, if given a chance, will "come back." These results are their own justification for the mode of treatment employed.

The average stay in bed was forty-three days. The length of time indoors averaged fifty-nine days.

On an 800 calory diet it is inevitable that the patient loses weight.⁷ In many cases this is desirable, particu-

6 Grollman Arthur. The Cardiac Output of Man in Health and Disease, Baltimore. Charles C. Thomas 1932 pp. 178, 183 and 189.
Fenn G. K. and Gilbert N. C. Anginal Pain as a Result of Digitalis Administration. J. A. M. A. 98:99 (Jan. 9) 1932.
Riesman David and Harris S. E. Disease of the Coronary Arteries with a Consideration of Data on the Increasing Mortality of Heart Disease. Am. J. M. Sc. 187:1 (Jan.) 1934.
Hadfield G. Cardiac Infarction. Lancet 1:189 (Jan. 28) 1928.
Parkinson and Bedford. Hubble Douglas. Angina Pectoris and Coronary Disease. Lancet 1:908 (April 26) 1930.
Proger, S. H. and Ayman David. Harmful Effects of Nitroglycerine with Special Reference to Coronary Thrombosis. Am. J. M. Sc. 184:480 (Oct.) 1932.
Cottrell J. E. and Wood F. C. The Effect of Epinephrine in Angina Pectoris. With Report of a Case. Am. J. M. Sc. 181:36 (Jan.) 1931.

7 Master A. M. and Oppenheimer Enid T. A Study of Obesity. Circulatory Roentgen Ray and Electrocardiographic Investigations. J. A. M. A. 82:1652 (May 18) 1929.

larly if he is overweight. The average loss of weight was 14 pounds (6.4 Kg). Our patients ranged in weight from 103 pounds to 233 pounds (46.7 to 105.7 Kg).

Preceding fifty-nine attacks (69 per cent), hypertension was present, that is, if one considers that a systolic of 150 or more and a diastolic of 90 mm of mercury or more indicates abnormally high blood pressure. Of even more significance is the fact that, of the twenty-six individuals who had more than one attack, at least nineteen had a return of hypertension or showed its presence previous to a subsequent attack. In the treatment, then, following a coronary thrombosis, one object must be to prevent the return of the hypertension either by the administration of drugs or by preventive measures, such as adequate sleep, rest, care of the diet, and loss of weight.

A review of the data (table 1) will disclose that six of the seven who died within twenty-four hours were persons who had had more than one attack of coronary thrombosis. It may therefore be repeated that usually patients do not die in their first attack of coronary thrombosis. Moreover, if the patient survives the first twenty-four hours in any attack, he will probably get over that particular attack.

Emphasis must be placed on the role that hypertension plays. All patients who succumbed within twenty-four hours had previously been subject to this disorder. It is therefore apparent that the prognosis is worse in patients who have hypertension.

Of the twelve women in this series, at least ten (83 per cent) suffered from previous hypertension.^{7a}

Three patients in four attacks (51, 53, 78, 82) had pulmonary edema, two of whom (51 and 53) survived. Congestive failure, in the ordinary sense, with swollen ankles, ascites, congested lungs and huge liver was rarely seen in these patients. This condition may come on gradually subsequent to the attack. During the initial stage of shock signs of slight liver enlargement or adventitious signs at the lung bases, or both, were seen in at least twelve attacks.

Oxygen tents were used on six patients (37, 38, 51, 79, 81, 82), three of whom lived (37, 38, 51). Many of the patients who were gravely ill, however, improved without the aid of oxygen.

There has been much discussion concerning the prognostic importance of the location of the infarct, whether on the posterior or on the anterior aspect of the left ventricle. Characteristic electrocardiographic⁸ Q and T wave changes in lead 1 are indicative of anterior wall injuries and changes in lead 3, of posterior wall injuries of the left ventricle. Twenty-six patients showed the former type and thirty-nine the latter. The prognosis was practically the same in the two locations (table 1).

COMMENT

It is believed that near starvation for the first day or two of an attack is of great value to a patient who has sustained a coronary thrombosis. A similar view is held regarding the subsequent treatment with the 800 calory diet. The physician who comes in contact with an individual who has a coronary artery thrombosis, or even an anginal syndrome, knows that a full meal fre-

quently brings on pain. Heberden⁹ knew this as far back as 1768. Roemheld¹⁰ has thoroughly investigated the "gastrocardiac" syndrome and believes that it is caused by distention of the stomach, by elevation of the left leaf of the diaphragm and also by reflex and toxic products of digestion. Babkin¹¹ recently reviewed the work of the Russian Rosenkov, who stated that after a meal toxic substances are elaborated, causing coronary artery constriction. These substances were not found in the fasting blood of the dog. Wayne and Graybiel¹² emphasize the point made known by Grollman¹³ that the work of the heart is increased after a meal. A heavy meal is too much for a heart in which the coronary circulation is already affected.

That a lowered basal metabolic rate decreases the velocity of the blood flow and diminishes the work of the heart has been demonstrated by Grollman¹⁴ and by Blumgart¹⁵. Jaffe, Dack and I¹⁶ have shown that the basal metabolic rate of a patient placed on an 800 calory diet will fall to —20 and —30 per cent. Hence the further advantages of treatment with a low calory intake.

Blumgart, Levine and Berlin¹⁷ have advocated subtotal thyroidectomy for cases of congestive failure and angina pectoris when they are intractable to the more common forms of treatment. Following the operation, they give their patients small doses of thyroid to maintain a basal metabolic rate between —20 and —30 per cent, such as was obtained by the 800 calory diet. It is therefore possible that this low diet over a period of from three to four months or more may produce results comparable to the more or less permanent effects of subtotal thyroidectomy, obtained by the Boston group.

The low calory diet is not merely a scientific theory, for it has been observed clinically that patients lose their pain more quickly and are less apt to have gastrointestinal complaints. Their vital capacity, blood velocity, venous pressure and blood pressure¹⁸ return more quickly to normal.

Rest in bed lowers the basal metabolic rate, diminishes the work of the heart and gives an opportunity for collateral circulation to form around the infarcted region. I advise keeping the average patient in bed for a minimum of six weeks, but there are many who require months in bed. Each case must be treated according to its signs and symptoms. That sufficient rest in bed is of extreme importance seems beyond dispute.¹⁹

⁹ Heberden William. Some Account of a Disorder of the Breast, M. Tr. (College of Physicians) London 2:59 1786.

¹⁰ Roemheld L. Treatment of the Gastrocardiac Syndrome (Gastric Cardiopathy). Am. J. M. Sc. 182:13 (July) 1931.

¹¹ Babkin, B. P. The Chemical Phase of Gastric Secretion and Its Regulation. Am. J. Digest Dis. & Nutrition 1:715 (Dec.) 1934.

¹² Wayne E. J., and Graybiel Ashton. Observations on the Effect of Food Gastric Distention External Temperature and Repeated Exercise on Angina of Effort with a Note on Angina Sine Dolora. Clin. Sc. 1:287 (Nov.) 1934.

¹³ Grollman. The Cardiac Output of Man in Health and Disease, pp. 95 and 99.

¹⁴ Grollman. The Cardiac Output of Man in Health and Disease, p. 264.

¹⁵ Blumgart H. L. The Velocity of Blood Flow in Health and Disease. The Velocity of Blood Flow in Man and Its Relation to Other Measurements of the Circulation. Medicine 10:1 (Feb.) 1931.

¹⁶ Master A. M., Jaffe H. L., and Dack Simon. Low Basal Metabolic Rates Obtained by Low Calory Diets in Coronary Artery Disease. Proc. Soc. Exper. Biol. & Med. 33:779 (Feb.) 1935. The Basal Metabolic Rate in a Patient with Coronary Artery Thrombosis When Placed on an 800 Calory Diet. J. Mount Sinai Hosp. 1:263 (March-April) 1935.

¹⁷ Blumgart H. L., Levine S. A., and Berlin D. D. Congestive Heart Failure and Angina Pectoris. Arch. Int. Med. 51:866 (June) 1933.

¹⁸ These features have been studied at the Mount Sinai Hospital for the last two years and will be published in due course.

¹⁹ Halsey, Coombs²⁰, White, S. M. Nonpainful Features of Coronary Occlusion. Ann. Int. Med. 8:690 (Dec.) 1934. Levine²¹, Parkinson and Bedford²², Riesman and Harris²³.

^{7a} Dr. Ernst Boas of New York has maintained for years that hypertension is invariably present in women who sustain coronary thromboses.

⁸ Wilson F. N., Barker P. S., Macleod A. G., and Klostermeyer L. L. The Electrocardiogram in Coronary Thrombosis. Proc. Soc. Exper. Biol. & Med. 29:1006 (May) 1932.

The results submitted here are so much better than those previously reported that an explanation of this difference should be offered. Except for an occasional report, previous investigators have not differentiated between the first and subsequent episodes of coronary artery closure. They too would have found decided differences in the mortality rates of the two types. In addition, diagnostic acumen has undoubtedly been sharpened and the patient is now ordered to bed the moment the diagnosis is suspected. Furthermore, there is evidence that the outlook for a patient with coronary artery thrombosis is somewhat better than published mortality rates would lead one to think. This evidence is in accord with the results of this study. White²⁰ described the case of a man who suffered a coronary thrombosis at 63 and died at the age of 80. In the interim the man performed strenuous feats of physical endurance and died of an apoplectic seizure, with no evidence of heart failure.

SUMMARY

Seventy-five patients in eighty-five attacks of coronary thrombosis were treated by immediate complete rest in bed for six weeks and by a regimen of low calory diet. Eight patients died—only one in a first attack.

Meticulous attention to detail is essential to the management of a patient in an attack of acute coronary thrombosis.

During the initial stage of shock the patient was given very little food.

Low calory diets and small meals prevent dangerous gastro-intestinal-cardiac reflexes or mechanical disturbances, they also lower the basal metabolic rate and diminish the work of the heart. The heart is given an opportunity to heal and to form collateral circulation.

Morphine and codeine were used liberally for severe pain. Glyceryl trinitrate, amyl nitrite, digitalis and epinephrine were considered dangerous.

The prognosis for the first attack of coronary artery thrombosis is considered very good, usually a patient does not die in his first attack.

About 70 per cent of the attacks occurred in hypertensive patients. A hypertension is generally present preceding a subsequent attack.

It is probable that in women a coronary thrombosis takes place only when hypertension is present.

The prognosis is better in cases in which the blood pressure is not high.

The prognosis of patients with infarcts on the anterior or posterior surface of the left ventricle is equally good.

Multiple attacks of coronary thrombosis are common.

A patient who dies within twenty-four hours presumably has had previous attacks of coronary thrombosis and has probably suffered from marked hypertension. If the patient lives through the first twenty-four hours, the chances are he will survive that particular attack.

Congestive failure is usually absent during the first attack of acute coronary thrombosis.

Patients returned to their usual routine life or work following at least 62.5 per cent of the attacks and resumed light to moderate activity in at least 14 per cent.

125 East Seventy-Second Street

²⁰ White P. D. Longevity After Coronary Thrombosis. *J. A. M. A.* 100: 233 (Jan. 28) 1933.

PASSIVE IMMUNITY IN INFANTS AND THEIR RESPONSE TO DIPHTHERIA TOXOID

PRELIMINARY REPORT

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The most favorable age at which vaccination against diphtheria should be carried out is a matter of considerable disagreement. It is desirable to obtain immunity at as early an age as possible. In private practice, pediatricians have been recommending such active immunization at the end of the first year. Recently, vigorous public health programs have been advancing the age to 6 months. There are two factors that enter into the question of the advisability of vaccination at this age: (1) the fact that young individuals are poor formers of antitoxin and (2) the fact that a considerable proportion of infants still retain their passive immunity at this age. In a recent publication, one of us¹ has shown that infants under 6 months of age respond to vaccination less favorably than those over this age, in that the percentage immunized is smaller, and, even when immunity is obtained, it is less likely to endure than in the older group. After 6 months, however, the proportion immunized is high, around 95 per cent, and the immunity is persistent. From the standpoint of the age of the individual, therefore, 6 months may be selected as a favorable period for antidiphtheria vaccination.

In both private work and public health programs, however, it is impracticable to do preliminary Schick tests before vaccination with toxoid is carried out. At 6 months of age about half of all babies still retain their passive immunity. In the group at St. Vincent's Hospital, where this problem has been under investigation, 68 per cent of the babies still show a negative Schick test at 6 months, while at from 9 months to 1 year 70 per cent are positive.² This is in agreement with the mass of statistics that has been gathered.

Our purpose in this investigation was to determine whether or not passive immunity, as evidenced by a negative Schick test, would interfere with the active production of antitoxin. Preliminary Schick tests were done on all infants and vaccination was carried out in the usual manner employed at this institution.³ This consists in the administration of two 1 cc doses of diphtheria toxoid at a one week interval and is the technic followed in the public health program of the Chicago Board of Health. Both negative and positive reactors were vaccinated and follow-up Schick tests then done one month, three months, six months, nine months, one year and eighteen months after the second injection, when possible. In this manner the results of vaccination could be followed in both the infants who had lost their passive immunity (positive reactors) and in those who still retained it (negative reactors).

The results are given in table 1. There are seventy-four cases in this series, forty-four of which were

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¹ Greengard Joseph. Immunity Produced by Diphtheria Toxoid. *Am. J. Dis. Child.* 47: 799 (April) 1934.

² Greengard Joseph. The Schick Test in Infancy. *Arch. Pediat.* 49: 526 (Aug.) 1932.

³ Greengard Joseph. Diphtheria Toxoid (Diphtheria Anatoxin Ramon) in Infancy. *J. A. M. A.* 97: 228 (July 25) 1931. footnote 1.

Schick positive before vaccination and thirty Schick negative. In the Schick positive group thirty-nine, or 88 per cent, became negative after vaccination and remained so, while in the Schick negative group twenty, or 66⅔ per cent, turned positive at varying times after the second dose of toxoid. This last figure, it will be noted, is very similar to that obtained in infants who have not been vaccinated, i. e., about 70 per cent Schick positive at from 9 to 12 months. Since the age of the infant is also a factor in the production of immunity, the control group (Schick positives) must be compared with the test cases from this standpoint also (table 2). It will be noted that there are naturally more older infants in the Schick positive group, so that the two are not precisely parallel, though the infants under 6 months are almost identical in distribution. The difference in immunity response is so striking, however, that the factor of age alone cannot be held accountable. This study is continuing with a view to accumulating a larger series over 6 months of age.

TABLE 1—Results of Vaccination in Thirty Cases with Negative Preliminary Schick Tests

Age Vaccinated	Repeat Schick						Total Pos. live	Total Neg. live
	1 Mo	3 Mo	6 Mo	9 Mo	12 Mo	18 Mo		
1-3 months	0	+	+				6	3
	0	+	0	+				
	0	0	0					
	0	+	+	+	+	+		
	0	0	0	0				
	+	+	+	+				
	+	+	+	+	+			
	0	0	+	+	+			
	+	+	+	+	0			
	0	0	0	0	0			
3-6 months	0	+	+				12	5
	0	+	+	+				
	0	+	+	+	+	+		
	+	+	+	+				
	+	+	0	+				
	+	+	+					
	0	+	+	+				
	0	0	+	+				
6-9 months	0	+	0	0			2	1
	0	0	+	+				
9-12 months	0	0	0				20	10

COMMENT

Park⁴ has stated that immunization with toxin-antitoxin mixtures was inadvisable in the presence of passive immunity and ascribed the failure of the production of antitoxin in such individuals to overneutralization of the mixture. So far as we know there are no clinical reports relating to the effect of passive immunity on vaccination with toxoid. Several reports of animal experiments are significant in this connection. Moloney and Fraser⁵ have shown that under certain conditions passive immunity will retard or prevent the establishment of active immunity produced by diphtheria anatoxin in the guinea-pig. They have also shown that there is a difference in the effect of homologous and heterologous serums in this respect, the latter being excreted much more rapidly than the former.

4 Park W. H. cited by Blum Julius. Age Factor in the Active Immunization of Infants Against Diphtheria. J. A. M. A. 98:1627 (May 7) 1932.
5 Moloney P. J. and Fraser C. J. Effet de l'immunité passive sur l'immunisation active par l'anatoxine diphtérique. Ann. Inst. Pasteur 43:129 (Jan.) 1929.

Surraco⁶ has shown that injection of heterologous anti diphtheria serum rendered vaccination with diphtheria anatoxin ineffective in the guinea-pig. Ramon and Lafaille⁷ similarly have shown that mixture of tetanus anatoxin and antitoxin failed to immunize guinea pigs and rabbits and their injection also interferes with subsequent attempts at specific immunization. These experiments confirm the results in our babies. Here we are dealing with passive immunity with a homologous

TABLE 2—Age Distribution Before Vaccination

	Schick Negative	Schick Positive
From 1-3 months	0	5
From 3-6 months*	17	18
From 6-9 months*	3	10
From 9-12 months*	1	3
Over 1 year	2	5

serum, which consequently is long lasting. When vaccination is carried out at 6 months of age in the ordinary routine manner, without preliminary Schick testing, about half of the infants inoculated will still retain their passive immunity. According to our results, few if any of these will be immunized. Such a situation is of great importance, since it invalidates an immunization program to a great extent. If immunization is to be carried out at 6 months, preliminary Schick tests should be done and only the positive reactors inoculated; the negative reactors being retested and vaccinated as positives appear. If this cannot be done, routine immunization might well be withheld until from 9 to 12 months, when practically all babies will have lost their passive immunity.

SUMMARY AND CONCLUSION

Preliminary Schick tests were done on all infants and vaccination with diphtheria toxoid was carried out in both the positive and the negative reactors. The negative reactors, i. e., those who still retained their passive immunity, demonstrated a positive Schick test in two thirds of the cases, the course of their passive immunity corresponding closely to that of infants who have not been vaccinated. The positive reactors, control series, turned negative and remained so in 88 per cent of the cases. We may therefore conclude that passive immunity in infants interferes with the development of antitoxin in response to vaccination with diphtheria toxoid. Such vaccination, therefore, should not be done in young age groups without preliminary Schick testing.

185 North Wabash Avenue.

6 Surraco N. Inefficacite de l'anatoxine diphtérique chez les cobayes immunisés passivement. Compt. rend. Soc. de biol. 111:538, 1932.
7 Ramon G. and Lafaille. Sur l'immunisation antitétanique. Compt. rend. Soc. de biol. 93:582 1925.

The Girl Approaching Puberty—The cardinal facts to impress on the girls are these: (1) the importance of building up and caring for her body during this formative period of her life, (2) the normality of menstruation and the fact that in itself it should not cause any interference with the girl's life activities. If, in addition, the girl is fortunate in having some one explain to her in simple fashion the significance of such body phenomena as menstruation, or enlighten her as to a few simple facts as to the reproductive phenomena in general, it is all the better for the girl. No one can quite take the place of the mother in instructing her daughter in the simple and beautiful truths of the reproductive life and its various manifestations.—Novak Emil. The Woman Asks the Doctor, Baltimore: Williams and Wilkins Company, 1935.

ROENTGEN DIAGNOSIS OF TUMORS
OF THE BREAST

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AND
E EVERETT O'NEIL, MD
BOSTON

Roentgen examination affords a reliable and comparatively easy method of studying the structure, physiology and pathology of the female breast. Neoplasms and other pathologic processes in the mammary glands can be visualized on the roentgenogram, also the changes incidental to menstruation, pregnancy and the menopause. By clinical examination it is often impossible to determine whether or not a mass is present in the breast. Transillumination has thus far not proved dependable as a means of diagnosis. Formerly it was necessary to resort to biopsy or operative removal in cases of suspected or questionable new growth of the mammary gland in order to make a definite diagnosis. The necessity of repeated palpation and diagnostic operation is greatly lessened by roentgen studies.

We have made roentgen examinations of the breast in 320 cases during the past three years and are of the opinion that it is possible to determine the presence of a pathologic process with a high degree of accuracy by this method. Many clinicians do not appreciate the value of the x-rays in studying the mammary glands, and the majority of roentgenologists are not carrying out this examination at present. Any means of increasing the accuracy of diagnosis or facilitating early diagnosis is of value. We are therefore presenting the technical and diagnostic aspects of the subject in considerable detail with the hope that others will be stimulated to carry out similar studies.

HISTORICAL NOTES

Warren¹ in 1930 reported a series of 100 cases of lesions of the breast studied roentgenologically and demonstrated the value of this method for the first time. Seabold² discussed the roentgen diagnosis of diseases of the breast² and also the technic of the examination³. Fray and Warren⁴ in 1931 considered the differential points in the study of carcinoma and mastitis. Lockwood⁵ in 1932 and subsequently⁶ in collaboration with others called attention to the importance of the x-rays in the diagnosis of breast tumors and correlated the symptomatology with the roentgen observations. Vogel⁷ discussed the diagnostic and prognostic significance of the x-rays in the study of mammary gland tumors. Remann and Seabold⁸ compared the roentgen obser-

vations with the pathology. Ries⁹ showed that it is unsafe to inject foreign material such as iodized poppy-seed oil 40 per cent, into the milk ducts for diagnostic purposes because of the danger of resultant infection. Several other contributions emphasizing the value of the x-rays in the examination of the breast have appeared in the European literature¹⁰.

ANATOMY

The adult female breast is composed of a number of lobes subdivided into lobules and separated from one another by connective tissue and elastic septums. Histologically the breast is made up of three prime elements: (1) glandular structures, (2) fibrous tissue and (3) fat. The glandular lobules are composed of rounded alveoli. The lactiferous ducts number from fifteen to twenty, converge centrally toward the alveoli and unite to form the canals that conduct the milk to the nipple. The ducts and acini are lined with epithelium which rests on a layer of smooth muscle and is continuous with the epithelium of the body. During pregnancy the gland tissue undergoes hyperplasia and the ducts elongate. At the same time the connective-



Fig. 1.—Normal breast (multipara, aged 40). The ducts are seen as linear striations in the lower and middle portions of the breast shadow. The acini are indicated by the arrows in the proximal and the middle portion of the breast. The nipple stands out clearly as a rounded area of density.

tissue diminishes markedly, so that the lactating breast is made up almost entirely of ducts, acini and blood vessels, with little or no fibrous elements. After the cessation of lactation the acini atrophy but the ducts do not and as the breast shrinks there is marked convolution and apparent increase in the number of ducts. During each menstrual period similar but less marked changes occur. The fibrous tissue forms septums between the lobes and lies outside the smooth muscle on which the glandular epithelium rests. As previously stated, the breast during pregnancy is made up almost entirely of glandular tissue, after lactation there is a marked hyperplasia of the fibrous elements. The fat lies in the lobes in a loosely constructed fibrous tissue containing elastica. The amount of fatty tissue varies with the size and conformation of the breast.

X-RAY TECHNIC

The x-ray studies require no previous preparation of the patient and cause no pain or discomfort. No special apparatus is required and the examination may be carried out by any competent radiologist. Because of the necessity of obtaining sharp films with the

Read before the Section on Radiology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1. Warren S. L. A Roentgenologic Study of the Breast. *Am J Roentgenol* 24:113-124 (Aug.) 1930.

2. Seabold P. S. Roentgenographic Diagnosis of Diseases of the Breast. *Surg Gynec & Obst* 53:461-468 (Oct.) 1931.

3. Seabold P. S. Procedure in the Roentgen Study of the Breast. *Am J Roentgenol* 20:850-851 (June) 1933.

4. Fray W. W. and Warren S. L. Stereoscopic Roentgenography of the Breasts. An Aid in Establishing the Diagnosis of Mastitis and Carcinoma. *Ann Surg* 95:425-432 (March) 1932.

5. Lockwood I. H. Roentgen Ray Study of the Mammary Gland. *South M J* 25:903-907 (Sept.) 1932.

6. Lockwood I. H. and Stewart W. A. Roentgen Study of the Physiologic and Pathologic Changes in the Mammary Gland. *J A M A* 99:1461-1466 (Oct. 29) 1932. Roentgen Ray Examination of the Breast. *J Missouri M A* 29:557-563 (Dec.) 1932.

7. Vogel W. The Aid of the X-Ray in the Diagnosis of Breast Tumors. *Illinois M J* 66:375 (Oct.) 1934. The Value of Breast Radiography. *Radiology* 23:202-207 (Aug.) 1934.

8. Remann S. P. and Seabold P. S. Correlation of X-Ray Picture with Histology in Certain Breast Lesions. *Am J Cancer* 17:34 (Jan.) 1933.

9. Ries Emil. Diagnostic Lipiodol Injection into Milk Ducts Followed by Abscess Formation. *Am J Obst & Gynec* 20:414 (Sept.) 1930.

10. Goyanes J. Gentil D. F. and Guedes B. Sobre la radiografía de la glándula mamaria y su valor diagnóstico. Publicado en *Archivos Españoles de Oncología* II cuaderno 1, pp 111-142. Español G. Alexandre. Contribution a l'étude radiographique de sein normal et pathologique. *The e de Paris*. Paris Louis Arnette 1933. Jachetta

Etude radiologique de la glande mammaire. *Bull et mem Soc de radiol med de France* 19:346-348 (July) 1931. Ledoux Lehard R.

Carcinoma-Calderon J. and Espallat A. La radiographie et le diagnostic des affections du sein le cancer en particulier. *Bull med Paris* 47:9-63 (Nov. 25) 1933.

TUMORS OF BREAST

The patient bares the chest and breasts, lies face up on the x-ray table and is turned slowly to the side until she is in such a position that the central x-ray beam may pass through the breast to the film without striking the ribs. The upper arm of the side being examined is placed at right angles to the body with the forearm alongside the head, palm upward.

AL

However, the breast must always be as near under it as possible. The central beam is focused over the film as possible. The central beam is focused over the middle of the breast and slightly outside the lateral chest wall. The film should include the entire axilla, the ribs for a distance of several centimeters and a portion of the adjacent lung. The examination is best carried out at the middle of the intermenstrual period. Serial examinations are of great value.

THE ROENTGEN PICTURE OF

THE MAMMARY GLANDS

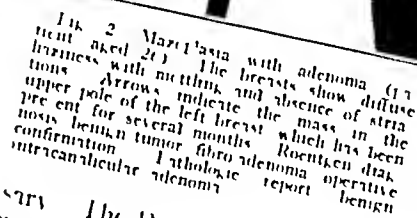
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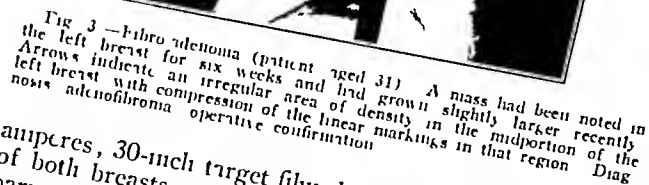
THE ROENTGEN PICTURE OF THE NORMAL BREAST

ROENTGEN PICTURE OF THE NORMAL BREAST

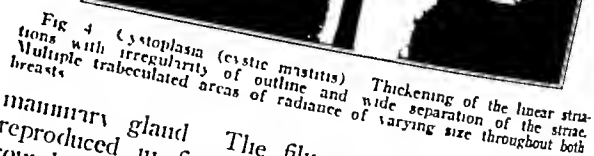
The mammary gland lends itself readily to roentgenography by virtue of its anatomic position. With the exposures commonly used for the study of the bones or internal organs however, the entire breast casts a shadow of almost uniform density. By means of the soft tissue technic, previously described, it is possible to bring out the slight differences in the densities cast by the glandular structures fibrous elements and the fatty tissues, which comprise the normal breast and to obtain x-ray films of diagnostic value. The changes incidental to menstruation pregnancy and the menopause cause alterations in the breast tissues which though very slight, are demonstrable on the roentgenogram. Pathologic processes are visualized because they cause distortion of the structures or are either more or less dense than the normal tissues of the



The Bucks diaphragm is used and the films are made stereoscopically. Speed is essential in making the roentgenogram to eliminate motion due to movement breathing or transmission of the cardiac impulse. A soft tissue technique is used as follows: double intensifying screens, from 30 to 60 peak kilovolts in exposure of from one half to two seconds. 30 milli-



amperes, 30-inch target film distance. Roentgenograms of both breasts are always made for purposes of comparison. It may be necessary to make films of the affected breast at different angles and with varying exposures to bring the suspected area into view. If the breast is large and pendulous, it may be helpful to place a support, such as a small inflated rubber bladder,



mammary gland The film of a normal patient is reproduced in figure 1. The breast appears as a rounded or roughly triangular shadow with the ribs and upper arm faintly shown. The ducts are seen as multiple sharply defined irregular linear striations varying in width from 1 to several millimeters. These striae are somewhat feathery and traverse the breast shadow obliquely to converge toward the surface in the region of the nipple. The axilla lie near the chest wall in the middle and lower portions of the breast shadow. They consist of numerous fine irregular, mottled areas of a density continuous with the shadows of the ducts. The axilla and ducts are usually arranged in a roughly triangular form with the base of the triangle near the chest wall and the apex directed toward the anterior and inferior portion of the mammary gland. The main mass of the breast appears as a homogeneous or slightly mottled area of density, varying with the amount of fatty tissue. Mammary glands with large amounts of fat, while difficult to examine properly by palpation, lend themselves readily to roentgen study and produce sharp roentgenograms with good contrast. The flat, poorly developed breast may produce a more homogeneous shadow on the roentgenogram and is therefore more difficult to roentgenograph satisfactorily. Lesions

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in the outer and middle portions of the breast are usually visualized with ease. Small masses in the inner and upper portion of the breast may be seen only with difficulty.

The skin and subcutaneous structures are shown in profile along the outer edge of the breast and are less dense than the main mass of the mammary gland. The nipple may be visualized as a rounded or oval area of

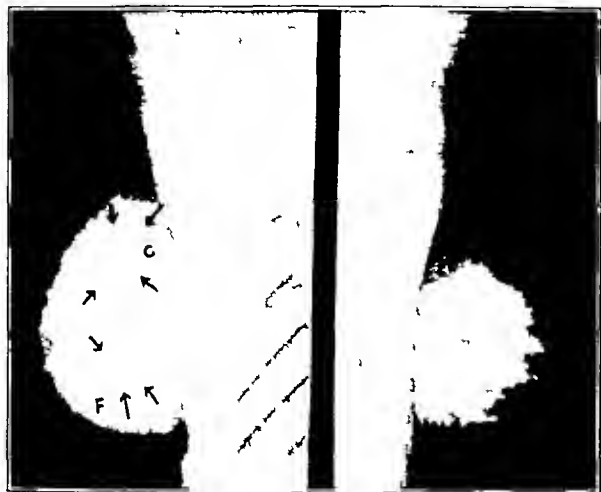


Fig 5—Cystoplasia (cystic mastitis) with cysts. The typical changes of cystoplasia (see text) are well shown. Multiple cysts are present; the arrows in the upper portion of the right breast indicating a characteristic cyst. In the lower pole of the breast (F) there is an area of fibrosis the result of a breast abscess that was operated on ten years ago.

density, especially if pigmented (fig 1). Extending along the base of the breast is a thin, linear area of radiance and beneath this appear the pectoral muscle, ribs and lung. The normal axillary lymphatic structures are not demonstrable. Enlarged lymph nodes may cast a shadow. Calcified glands are seen clearly. The axillary hair may be seen as thin, thready shadows.

The breast is not a static organ but is constantly undergoing changes that are associated with menstruation, pregnancy, involution and so on. These physiologic alterations cause constant variations in the roentgen picture of the breast. Beginning about a week or ten days before the onset of the menses, the linear striae become denser and thicker and the entire breast increases in density. When the menstrual flow has begun, the striations become less dense, during the subsequent ten days the breast slowly returns to its previous condition and the normal resting stage reestablishes itself. It is therefore advisable to inquire into the menstrual history, the roentgen examination is best made at about the middle of the intermenstrual period.

In the later months of pregnancy, the breast becomes increasingly dense and the linear striations diminish progressively and finally completely disappear. During lactation the breast is markedly enlarged and presents a uniformly dense shadow. After the menopause the breast may decrease in size. The linear markings show a diminution in number and size but lie more closely together and are usually slightly increased in density.

PATHOLOGIC CONDITIONS OF THE BREAST

Mazoplasia (chronic mastitis)—Formerly breasts were classified as normal or as showing chronic or cystic mastitis. In the light of recent studies this classification has been found to be unsatisfactory. The state commonly known as chronic mastitis is in reality

a physiologic process and not in any sense inflammatory. For this condition Cheatle and Cutler¹¹ have suggested the name mazoplasia. The cases previously grouped as chronic cystic mastitis are by these authors now classified as "cystiphorous desquamative epithelial hyperplasia." We feel that the classification of Cheatle and Cutler is much more nearly in accord with the physiology and pathology of the breast than the previous terminology and strongly urge its universal adoption.

In cases of mazoplasia there is desquamation of the epithelial cells in the ducts and acini, formation of new ducts and acini, and hyperplasia of the fibrous tissue. The cells that have been shed die and accumulate in the ducts and acini causing distention, pain and a nodular irregular feeling when the breast is palpated. These changes may occur in patients of any age but are most frequent in those between 30 and 40, especially in multiparas. Mazoplasia appears to be associated with a disturbance of the hormones, as these patients frequently have a history of short, scanty menses. Cysts are not seen in this type of breast, nor do papillomas or malignant growths develop in these patients. Fibroadenomas do occur, however, and appear to be the only pathologic process that can be traced to mazoplasia. Mazoplasia is not a surgical condition and usually disappears at the menopause, bearing out the opinion of Cheatle and Cutler that it is a physiologic rather than a truly pathologic process.

The roentgen picture of mazoplasia is characteristic. The breasts cast a diffuse hazy shadow with areas of slightly mottled and increased radiance distributed at irregular intervals. The linear striations of the ducts and acini normally present are entirely absent or nearly so over the main mass of the breast shadow. A few of the linear markings may be visible in the region just below the nipple. There is usually a narrow band of increased radiability along the outer margin of the breast due to fatty tissue deposited in this region. There is no retraction of the nipple and the skin of the mammary gland is smooth and regular in outline. No glands are present in the axillae.

Cystoplasia (cystic mastitis, cystiphorous desquamative epithelial hyperplasia)—The condition formerly classified as chronic cystic mastitis is according to the terminology of Cheatle and Cutler, now termed cystiphorous desquamative epithelial hyperplasia. As a short name for this we suggest the term "cystoplasia"

and shall use this term in order to avoid repeating the long and cumbersome name suggested by Cheatle and Cutler. Cystoplasia begins with a desquamation of the epithelial cells of the ducts and acini as in mazoplasia. However the condition goes on to the formation of



Fig 6—Breast abscess (patient aged 32). Her child had been nursing for fourteen months. Five days before the left breast became hot, tender and markedly swollen. Operation revealed an extensive abscess of the left breast. Incision and drainage resulted in a cure. Glands in the axilla are indicated by arrows.

¹¹ Cheatle, C. L. and Cutler, Max. Tumors of the Breast. Philadelphia: J. B. Lippincott Company, 1931.

cysts and thus differs from the physiologic processes of mastoplasia. Cystoplasia is not inflammatory in nature, hence cystic mastitis is not a proper term.

This condition usually begins at about the age of 30. In many patients the process appears to cease in the stage of cyst formation and the end result is the formation of multiple cysts of varying size scattered throughout the breast. In some instances the changes are progressive and benign lesions such as papillomas, form. After about 50 carcinoma may develop in this type of breast. It is as yet uncertain what percentage of cases undergo malignant degeneration but it is known that cystoplasia is potentially dangerous.

The roentgen picture of cystoplasia is a very typical one. The linear striations formed by the ducts and acini show increased width and density. These striae are more irregular in outline and are separated from one another by a wider space so that they may appear distributed over practically the entire breast shadow. The striations converge at the apex of the gland and form a broad band extending to the nipple. Scattered irregularly throughout the entire shadow of the mammary gland are multiple trabeculated areas of radiance varying in width from a few millimeters to several centimeters. These areas are sharply defined, have thin linear borders, are more radiant than the normal breast shadow and represent the cystic formations. The entire breast appears denser and thicker than usual. Contraction and scarring occur frequently and result in distortion of the breast structures on the roentgenogram. The area of radiance at the posterior aspect of the breast is preserved. These changes are usually bilateral and are similar in character on the two sides.

Large cysts result from the obstruction of a duct or acinus with consequent dilatation proximal to the point of obstruction. Cysts may be single or multiple and appear as smooth sharply defined oval or rounded shadows in the region of acini and ducts. If they do not contain fluid they are more radiant than the

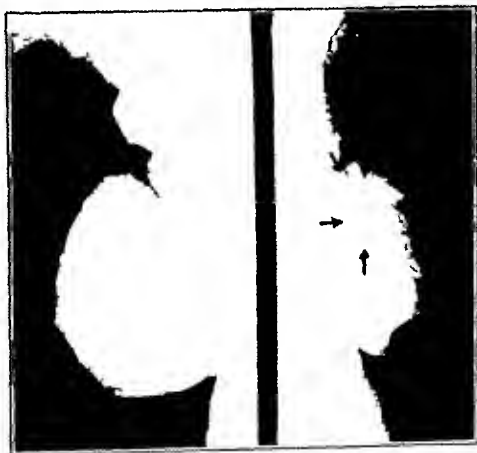


Fig 7—Hematoma (unmarried woman aged 37). Severe trauma to left breast three weeks before. Painless swelling since that time. The mass was hard, movable, nontender and not adherent to the skin. Arrows indicate the hematoma which was most dense in its central portion and had irregular borders.

remainder of the breast, if filled with fluid their density is greater. The linear striae may be compressed, but they are not invaded or destroyed by the presence of cysts.

Benign Tumors (fibro-adenomas, adenomas, and fibromas).—These tumors occur in breasts which show mastoplasia or are otherwise normal. The neoplasm occurs as a rounded or oval area of density with smooth or slightly irregular borders. The linear markings are

absent or diminished over the region of the mass, else where they are compressed and appear crowded together. The lesion is usually single. Masses in the middle and outer portions of the breast are visualized easily, those in the inner and upper portions, especially if the breast is small, may be demonstrated with difficulty, if at all. Calcification may rarely be present within the mass.

Breast Abscess.—This condition usually occurs in the lactating breast. There is diffuse thickening with irregular density at the site of the lesion. The margins of the abscess are not sharply defined as in the case of a neoplasm but fade off gradually into the breast structures. If a very large abscess is present the breast may be markedly enlarged with a diffuse irregular mottled shadow over its entire extent.

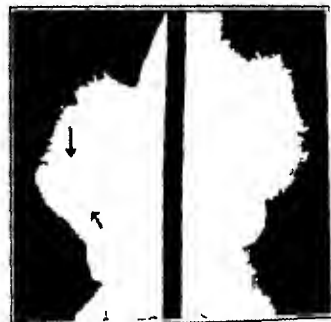


Fig 8—Carcinoma (patient aged 58). A lump in the right breast had been noted for four months. The tumor was dense, sharply outlined and slightly irregular in outline. There was invasion and compression of the linear striae over the lower pole of the right breast. Both breasts showed cystoplasia.

The clinical picture of pain, tenderness, heat and swelling of the breast is well known and usually makes the diagnosis clear. The roentgenogram is of value in demonstrating the size and extent of the lesion and may also be important in the study of the progress of the case. The scars of an old healed abscess may cause irregularities and thickening of the breast structures and may be confused with the earliest stage of a neoplasm. However, serial roentgenograms taken at intervals of a few weeks show no change in the size or character of this type of lesion, and a careful review of the past history elicits the story of an old abscess.

Hematoma and Fibrosis.—A very important, although not a common type of lesion, is the hematoma that forms subsequent to an injury to the breast. This occurs most frequently as the result of an automobile accident in which the driver of the car is thrown against the steering wheel although it may follow any severe trauma. The history is important in arriving at a definite diagnosis, as the clinical and roentgen pictures may closely simulate those of other lesions. On the roentgenogram an area of density is demonstrable in the breast. This shadow varies in size according to the extent of the lesion, is very irregular in outline and is most dense in its central portion with less density toward the periphery. The breast markings in the affected area are obscured or distorted. If the lesion is near the surface, there may be bulging of the outer aspect of the breast shadow. Serial roentgen studies at intervals of a few weeks show the area of density becoming progressively denser and diminishing in size. If there is an increase of the size of the shadow and more irregularity of outline with the passage of time an early malignant condition must be considered. After an interval of several months the mass may become fibrosed, leaving a scar of variable size in the breast. Calcification of the mass may occur with formation of shadows of the density of bone within the area.

Carcinoma of the Breast.—Carcinoma of the breast may be diagnosed with a high degree of accuracy by

roentgen examination We do not feel that the earliest stages of malignancy or early malignant changes in a formerly benign tumor of the breast are demonstrable on the x-ray film However, the method will frequently demonstrate the existence of a neoplasm before it can be diagnosed by other clinical means In moderately or far advanced stages, roentgen examination shows the character and extent of the lesion and may be of great aid in demonstrating axillary gland or rib involvement

The malignant growth is seen as a dense, sharply defined shadow on the roentgenogram The margins of the mass are usually irregular and infiltrating but may in some instances be quite smooth If small the tumor causes little if any distortion of breast structures As the tumor enlarges, the structures are invaded or compressed The neoplasm may be multiple, with two or more areas of varying size in the breast Inversion of the nipple or dimpling of the surface of the breast if present, is demonstrable on the x-ray film Irregular feathery extension into the surrounding breast tissue from the mass of the tumor is very typical of carcinoma Lesions near the nipple often show a dense band extending from the neoplasm toward the nipple the so called bridge of tumor tissue In the presence of cystoplasia a carcinoma appears as a dense shadow of much greater density than the remainder of the breast tissue In cases of extensive, advanced malignancy, multiple rounded irregular masses may replace the greater portion of the breast structure or even occupy the entire mass of the breast

The tumor may extend posteriorly and invade the clear radiant area normally present between the breast and the chest wall Extensions to the ribs or metastases to the ribs of the same or the opposite side are demonstrable roentgenologically and are of great importance in diagnosis and prognosis and in deciding on the course of treatment The study of the remaining breast in patients who have had a breast removed for carcinoma



Fig 9—Carcinoma (patient aged 61) The greater portion of the left breast was involved by the malignant growth A large gland in the left axilla is indicated by the upper arrow Operative confirmation The right breast showed involutional changes

is important Serial roentgenograms of neoplasms of the breast are of great value in determining the rate of growth and the effect of radiation treatment

Glands in the axilla are frequently demonstrable and the breast films should always include the axilla The glands are seen as oval or rounded areas of density varying from several millimeters to 3 or 4 cm in diameter They are smooth and sharply defined and

may be more dense at the periphery than in the central portion Inflammatory glands are usually denser and more sharply circumscribed than malignant glands

SUMMARY

Roentgen examination affords an easy and reliable method of studying the female breast Neoplasms of the breast and other pathologic processes may be visual-



Fig 10—Carcinoma with metastases to the axillary glands (patient, aged 56) A mass in the right breast with palpable glands in the axilla The lower arrows indicate the malignant growth There is absence of the linear striae in this region with compression of the striations in the middle and lower portions of the breast The axillary glands are indicated by the upper arrows Operation revealed scirrhous carcinoma of the breast with axillary metastases

ized The changes incidental to menstruation, pregnancy and the menopause are also demonstrable

The roentgen examination requires no special preparation of the patient and causes no pain or discomfort

Cheattle and Cutler's classification of mastoplasia and cystiphorous desquamative epithelial hyperplasia is used to replace "chronic mastitis" and "cystic mastitis," these terms being unsatisfactory in the light of recent studies We suggest the name cystoplasia to denote the condition of cystiphorous desquamative epithelial hyperplasia

We do not believe at present that the early stages of malignancy or beginning malignant degeneration in formerly benign tumors are demonstrable on the roentgenogram

Tumor masses can be outlined and the character and extent of the lesion determined The existence of a neoplasm may be shown by roentgen examination before it can be definitely diagnosed by clinical means

Glands in the axilla and extension of malignant growth to the ribs are demonstrable on the roentgenogram

Roentgen studies greatly lessen the need of diagnostic operation and repeated palpation of the breast and give information of value in the diagnosis, prognosis and treatment of lesions of the breast

485 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. L. A. POMEROY, Cleveland I wish to discuss this paper not as a roentgenologist but as an observer of a series of patients with tumor of the breast Of thirty-five patients a few were operated on by me, but most of them were patients of my colleagues and were observed through their courtesy In every instance, in addition to the regular physical examination transillumination and roentgen examination of the breasts were performed and the results checked by microscopic examination of tissue removed at operation Neither transillumination nor roentgen examination provides a definite method of distinguish-

ing benign from malignant tumors, but each method may add additional diagnostic data, sometimes obtainable in no other manner. The greatest usefulness of transillumination is in distinguishing an area of hemorrhage (either into a tumor or into breast tissue) in which the shadow is absolutely black. A cyst containing clear fluid usually does not cast a shadow, but the light may be transmitted through it very brightly. In performing transillumination the Cameron and Cutler lights are excellent, but care should be taken that the eyes are always accustomed to the darkness. Roentgen examination does not make it possible to distinguish benign from malignant tumors, but it may show the presence or absence of encapsulation of the tumor, which is an important factor in making a diagnosis.

DR JOHN J. GIBBIE, Philadelphia. This subject represents a marked advance in the diagnosis and treatment of disease of the breast. Roentgen examination of the breast by a skilled roentgenologist is of undoubted value in some cases in helping to establish a definite diagnosis. Patients with disease of the breast are visiting their physicians earlier than they did formerly because they have been educated to do so. Now that they are taking that advice, the physician must be able to make an earlier diagnosis. The advanced case is diagnosed readily enough. It is in the doubtful case that one needs all available information. If a young woman complains of pain in the breast and it is not possible to make a clinical diagnosis, the roentgenologist may be able to show shadows on the roentgenogram that suggest the presence of cystic mastitis or other benign disease. This information may enable the physician to assure the patient that the disease is not serious. Patients should be informed to that effect and relieved of their anxiety. Roentgen examination may enable the physician to make a diagnosis of the presence of malignant disease in some cases; in other cases it may suggest that the disease is benign and in still others it may establish the fact that there is no demonstrable disease of the breast.

PROGRESSIVE ATLANTO-AXIAL DISLOCATION

EDGAR A. KAHN, MD

AND

LUIS YGLESIAS, MD

ANN ARBOR, MICH.

Forward displacement of the atlas on the axis is a comparatively rare condition, ordinarily treated by conservative methods. Operative intervention has been recorded in but few cases and only when pressure myelitis has developed. The more common unilateral or rotary dislocation will not be considered here, since it is a less serious lesion, with a far better prognosis and ordinarily responds to the manipulative method of Walton.¹

The condition we are considering is frequently immediately fatal. In cases in which death does not occur the diagnosis at first may be easily overlooked, since there is usually no evidence of spinal cord injury. The dislocation is ordinarily a progressive one; the seriousness of which is attested only by increasing pressure myelitis or sudden death.

At the time of the original trauma, the common lesion is a fracture of the odontoid process at its base and loosening of the atlanto-axial ligaments with the exception of the strong transverse ligament. The forward displacement at first may be so slight that it is not recognized by x-rays, and the fractured odontoid process may not be apparent without a special technic. It is just at this time that immobilization is so essential to prevent subsequent disaster. After the condition has advanced and is easily recognized, conservative

treatment by traction or immobilization may be tried, but in cases in which forward slipping progresses or recurs, operative surgery must be considered whether pressure myelitis has developed or not. Badgley² of this clinic has stressed this point.

The first operative attempt to reduce an atlanto-axial dislocation that we have found recorded was by Lewis Stephen Pilcher in 1900.³

A man, aged 33, was injured by striking on his head after falling from a ladder. He was able to stand but suffered pain referred to the back of the head and upper part of the neck. The patient had been up and around the house for more than two months when a marked weakness rapidly developed in the right arm and leg. The paralysis increased and the sphincters became involved. In view of the possibility that the cord symptoms might in part be due to pressure from a depressed fragment of a lamina it was decided to expose the axis and atlas. A midline incision was made from the external occipital protuberance to the seventh cervical spine. "No fracture of any lamina was uncovered but a forward dislocation of the atlas on the axis was demonstrated to be present. Careful efforts to correct the displacement were futile. Seven months after operation the patient was still hemiplegic, though normal bladder function had returned. He was examined nine years later. Roentgenograms revealed marked forward displacement of the atlas on the axis. There was a dense mass of callus surrounding and obscuring the outline of the atlas and filling the space between the axis and the base of the skull. The patient was able to walk normally for fairly long distances without much fatigue. Abnormal neurologic changes were present, however, in the upper extremities, the right hand presenting to a moderate degree the condition of 'main en griffe'."



Fig. 1 (case 1).—Appearance on admission July 15, 1933, three days after injury. The depressed skull fracture is seen in the parietal region. The atlas is tilted slightly forward and there is a fracture of the odontoid process.

The progression of the lesion is well shown in this case and it is surprising that it did not terminate fatally. The operative procedure undoubtedly resulted in the ultimate occipitocervical bony fusion, but whether this prevented further progression is questionable. Had the arch of the atlas been removed at the time of operation, there is no doubt that the neurologic signs would have cleared faster and probably have entirely disappeared.

Mixter and Osgood⁴ in 1912 reported two cases of considerable interest.

A boy aged 15 years, had fallen from a tree five weeks previously. Immediate pain and stiffness of the neck had followed. Roentgenograms revealed no lesion that could be accurately interpreted, but a rotary dislocation of the 'atlas or possibly axis' was suspected. Under anesthesia gentle manipulation was carried out, with apparent return to normal. Six months later the patient was again seen because of severe occipital neuralgia. Again roentgenograms failed to reveal the real lesion and a

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¹ Walton, G. L. Reduction of Cervical Dislocation. A Successful Case. *Boston M. & S. J.* 12: 553-557, 1893.

² Badgley, C. E. Personal communication to the author.
³ Pilcher, L. S. Atlanto-Axial Fracture Dislocation. *Ann. Surg.* 51: 208-211 (Feb.) 1910.
⁴ Mixter, S. J. and Osgood, R. B. Traumatic Lesions of the Atlas and Axis. *Ann. Surg.* 51: 193-207 (Feb.) 1910.

second manipulation was carried out. The symptoms were relieved for a month following application of a complete plaster helmet, but following its removal they again recurred. Roentgen studies through the mouth and laterally showed a fracture of the odontoid process with forward slipping of the atlas. At operation, the forward displaced atlas was exposed with the spinous process of the axis. "While forward pressure on the anterior arch was exerted through the pharynx" traction was exerted by a silk band passed around the posterior arch of the atlas. "There was firm resistance to replacement and only a slight amount of reposition was accomplished. This was maintained, however, and the atlas firmly anchored by tying the silk band around the hooked spinous process of the axis." The patient was symptom free two years later.

The second patient had been injured five months before in a railroad accident. Roentgenograms showed forward displacement of the atlas on the axis. No cord symptoms were present. Following manipulation, the patient was well for several months at which time symptoms of spinal cord pressure came on gradually and developed into a tetraplegia. At operation the third and fourth cervical laminae were removed. Arches of the atlas and axis were found depressed pressing into the cord apparently from callus formation. These pressing protuberances were removed. Improvement in pressure symptoms continued for four weeks at which time the patient on sneezing, suddenly became paralyzed and died.

Again the progressive nature of the lesion is seen. It is difficult from the description of the second case to determine whether or not the arch of the atlas and lamina of the axis were completely removed.

Elliott and Sachs⁵ report a case in which a man lived for thirty years with an atlanto-axial dislocation. During this time intermittent attacks of paralysis occurred, usually from minor trauma. He was able to be about between attacks. The last attack was fatal. These authors state "If any operation is to be considered in cases similar to the one under consideration, we suggest a laminectomy—removal of a portion of the posterior arch of the atlas."



Fig. 2 (case 1)—Condition August 19. No support was worn during this interval.

A case is cited by Craig⁶ of a youth, aged 20 who had suffered a football injury eight months previously. He experienced pain below the occiput and limitation of motion of the neck but no paralysis. Roentgenograms revealed anterior displacement of the first cervical vertebra on the second with fracture of the odontoid process. Because there were no symptoms of cord compression at this time a plaster cast was applied and the patient returned home. Following this there slowly developed increasing weakness of the left arm. Neurologic examination previously negative now showed atrophy of both arms with increased reflexes. Roentgenograms revealed no change over the previous examination. Since the symptoms were progressive operative intervention was deemed advisable. Under local anesthesia the posterior margin of the foramen magnum and the arch of the atlas were removed. A cast was worn for six months. A report two years following operation revealed that the patient was perfectly well except for slight stiffness of the neck.

⁵ Elliott C R and Sachs E. Observations on Fracture of the Odontoid Process of the Axis with Intermittent Pressure Paralysis. *Ann Surg* 76: 876-882 (Dec.) 1912.
⁶ Craig W M. Fracture Dislocation of Cervical Vertebrae with Injury to the Spinal Cord. *S Clin North America* 11: 841-852 (Aug.) 1911.

The slow onset of cord symptoms is again seen. Roentgenograms were not taken until some months after the injury, so that the exact position at the time of the original trauma is not known. Decompressive laminectomy alone has been very effective here, but there is still a chance that trouble may develop at a later date.

In an article on fracture of the odontoid process Fritzsche⁷ suggests the possibility of bone graft, quoting de Quervain as having had good results in two cases in which a transplant from the spine of the scapula was utilized. This has found its way into the literature under the subject atlanto-axial dislocation. De Quervain's⁸ cases, however, were fracture dislocations of the fifth or the sixth cervical vertebra.

Foerster⁹ has reported a case of progressive atlanto-axial dislocation in which three months after the initial trauma a tetraplegia developed with severe respiratory symptoms. The arch of the atlas, lamina of the axis and posterior lip of the foramen magnum were removed. A single fibular transplant 13 cm in length was placed between the occiput and the spinous process of the seventh cervical vertebra. The symptoms cleared up entirely.

It is possible that this excellent result was obtained from the laminectomy alone, since it is difficult to conceive of much immobilization as coming from the long narrow transplant itself. The latter was in contact with the cervical spine only at one point, the spinous process of the seventh cervical vertebra.

Juvara and Dimitriu¹⁰ report a case in which a man, aged 29 fell on his head from a tree, and a tetraplegia developed four months later. At operation the arch of the atlas and posterior rim of the foramen magnum were removed. The spinous process of the axis was split. A tibial graft was placed between the occiput and the split spinous process of the axis and was attached to the spinous process of the third cervical vertebra. Death occurred less than twenty-four hours after the operation. Autopsy revealed an old compression of the upper cervical cord with recent hemorrhage in the gray substance.

In the first case we are reporting a somewhat similar procedure was carried out.

CASE 1—E F a Polish youth aged 18 entered the University Hospital July 15 1933 three days after having been injured in an automobile accident. A diagnosis confirmed by x rays was made of compound fracture of the left parietal region and multiple fractures of the mandible. Debridement



Fig. 3 (case 1)—October 10. A Forrester collar has been worn intermittently. Mild symptoms suggesting cord compression are present.

⁷ Fritzsche E. Ueber die Fracturen des Zahnfortsatzes des Epistropheus. Neue roentgenographische Darstellung des Processus odontoidaeus. *Deutsche Ztschr f Chir* 120: 734 (Dec.) 1912.
⁸ de Quervain F. Zur Behandlung veralteter Wirbelfraktionen mittelst Osteoplastik. *Beitr z klin Chir* 70: 155-162 (June) 1912.
⁹ Foerster O. Die Leitungsbahnen des Schmerzgefuehls. Berlin and Vienna Urban und Schwarzenburg 1927 p 266.
¹⁰ Juvara E and Dimitriu V. Luxation atlanto-axoïdienne avec phenomènes compressifs. Operation secondaire. *Lyon chir* 25: 668-670 (Nov-Dec) 1924.

of the skull fracture was immediately performed. Five days later the mandible¹¹ was wired. The patient was discharged August 1, after an uneventful convalescence and was advised to return in a week.

The patient was seen in the outpatient department August 3 complaining only of pain and stiffness in the neck. These symptoms had been present since the injury but were not seriously considered because of the severity of the other injuries.

Examination revealed muscle spasm and limitation of motion of the cervical spine in all directions. The scalp wound was healed. The patient was discharged for another week and returned August 19.

He was now suffering severe pain in the neck and was supporting the chin and occiput in his hands. The head was displaced forward in the typical position of high cervical dislocation. Lateral roentgenograms of the cervical spine showed a forward displacement of the atlas and skull on the axis and a fracture at the base of the odontoid process,

the latter having been carried forward with the atlas. In reviewing the original head films, it was seen that there had been overlooked a fracture of the odontoid process with slight forward displacement of the atlas on the axis. The patient was sent home in a Forrester collar.

October 10 the patient returned to the hospital stating that he had worn the brace only intermittently. The pain had persisted and radiating pain had developed in the right arm. Examination showed marked prominence of the spinous process of the axis. The forward displacement of the head had apparently increased. There was marked weakness of the abductors of the right shoulder. A subjective complaint of numbness in the right upper extremity was not borne out by sensory examination. The deep reflexes of the upper extremities were hyperactive. It was realized and proved by roentgenograms that the dislocation was progressing and that there was undoubtedly pressure on the cord. The patient was placed on a Bradford frame and head traction was applied. The



Fig 5 (case 1) — April 3 1934. Tetra plegia present.

symptoms disappeared almost immediately. A portable x-ray machine, November 30, revealed slight but definite improvement. It was felt that complete reduction by traction was impossible and that closed manipulation would be dangerous. A Forrester collar was again applied and the patient discharged ambulatory December 15.

¹¹ Because of this and subsequent partial ankylosis, roentgenograms were never taken through the mouth and the posterior pharynx was never palpated.

The patient was perfectly well for one and a half months when paralysis of the right side of the body slowly developed, along with incontinence of urine and feces.

He reentered the hospital April 3, 1934, almost completely paralyzed. Neurologic examination revealed no cranial nerve palsies. There was spasticity of all four extremities. The right arm was almost completely paralyzed, the left arm was markedly weakened. The jerks of the biceps and triceps were hyperactive, more so on the right. The abdominal and cremasteric reflexes were absent. The knee and achilles jerks were overactive but equal. There was a bilateral Babinski sign. Analgesia was present from the second dorsal vertebra down but was not demonstrated on the arms. There was diminished vibratory sensation of the right ankle, but sense of motion and position of the toes was normal.

The patient was placed on a Bradford frame with the head in traction but after five days there was only slight improvement in motion of the arms and legs. Accordingly, operation was performed.

Under tribrom ethanol-nitrous oxide anesthesia, a midline incision was made from the external occipital protuberance to the spinous process of the sixth cervical vertebra. The muscles were stripped from the occipital bone laterally starting from the superior nuchal line on both sides, down to the foramen magnum. The spinous processes and laminae of the second,



Fig 6 (case 1) — Oct 20 1934 showing bony fusion.

Bony shelves were turned down from the occipital bone on both sides of the median nuchal crest. A Hibbs fusion was done from the second to the fifth lamina. A graft obtained from the iliac crest was placed on each side of the midline, starting from the superior nuchal line of the occipital line down to the lamina of the fifth cervical vertebra. Multiple bone chips were placed round the grafts. A small triangular piece of bone obtained from the ilium was placed between the occipital bone and the axis to protect the cord from pressure. Care was taken to see that no bone pressed directly on the exposed dura. The wound was closed in layers.

The patient was then immobilized in a plaster cast. The wound healed by primary intention. There was a rapid disappearance of the neurologic symptoms. The patient was allowed up four and a half months after operation. He was soon walking in a Forrester collar. Neurologic examination was now entirely negative except for a bilateral Babinski and Chaddock's sign. The brace was removed seven months after operation after roentgenograms showed evidence of solid bony fusion. Examination at this time showed complete loss of rotation of the head and only a few degrees of flexion and extension of the head on the neck, the motion taking place below the fusion.

The patient returned one year after the operation. He had been working for the past four months as an office messenger. He stated that he felt in no way handicapped by the fusion.

There was from 10 to 15 degrees lateral motion of the cervical spine. There was very slight rotation the motion taking place just below the fusion. The fusion felt solid clinically.

The only abnormal manifestation on neurologic examination was a suggestive left-sided Babinski reflex. The grip was powerful in both hands.

In atlanto-axial dislocation, one should ever bear in mind the possibility of further progression. The shallow broad articulating surfaces with the laxness of the ligamentous attachments between these vertebrae predispose to increased forward slipping when the odontoid process has been fractured.

When symptoms of spinal cord compression develop and are not rapidly relieved by traction, removal of the arch of the atlas is imperative. Foerster's patient with marked respiratory difficulty was undoubtedly saved by immediate operation. It is very possible that in the case of Elliott and Sachs the operation, considered at the time but abandoned because of the patient's respiratory disturbance, might have been successful.

Whether removal of the arch of the atlas alone is always sufficient, as in Craig's case, in which there was freedom from cord symptoms after two years, is debatable. In a case cited by Mixer and Osgood this pro-

cedure recovered completely and a massive bony fusion developed while the other case terminated fatally.

We feel that a graft taken from the ilium has several advantages over a tibial graft. The iliac graft is more cancellous, can be split in two, and is more easily molded to the area of fusion.

CASE 2—D. M., a man aged 20, admitted to the University Hospital Sept. 26, 1934, had been injured in an automobile



Fig. 8 (case 2)—Anteroposterior views. A, Sept. 24, 1934; B, December 20, 1934, showing progression of dislocation more marked over left lateral mass.

accident one month previously. The only symptoms present were pain and limitation of motion of the neck. The neurologic examination was negative.

Roentgen examination revealed a fracture dislocation of the atlas on the axis. A Forrester collar was applied, which relieved all pain.

The patient returned for examination, December 20, without complaints. Roentgenograms showed a definite progression of the dislocation but suggested bony fusion. After a week in head traction, improvement was demonstrated by roentgenograms showing that solid bony fusion was not present. The Forrester collar was readjusted and the patient was discharged.



Fig. 7 (case 2)—A, Sept. 24, 1934; and B, December 20, 1934, showing progression under conservative treatment.

cedure was apparently done, and death occurred suddenly a month later. There is no doubt that solid bony fusion guarantees greater safety.

In the very acute symptoms of pressure myelitis with respiratory difficulty, removal of the arch alone is indicated. The longer, more traumatizing procedure of bone grafting is out of the question at this time but could easily be done at a later date. With the patient in comparatively good condition, we feel that the more radical procedure should be carried out in one stage.

Several points might be mentioned on technique. As the procedure is an extensive one and dead spaces may be left beneath the grafts, there is some danger of postoperative hemorrhage. When only the arch of the atlas is removed preparatory to placing the graft, the danger is minimized by placing a small graft between the occiput and the axis. This minimizes the dead space beneath the large grafts and prevents direct pressure on the cord.

We have performed two other fusions of the cervical spine after extensive laminectomy. In both of these cases postoperative hemorrhage developed though it did not manifest itself in either case until the third day. In both cases the wound was reopened. One patient



Fig. 9 (case 2)—A, Dec. 27, 1934, showing improvement after one week in traction; B, April 23, 1935, again showing failure to maintain improvement in Forrester collar.

He was again seen April 23, 1935, still symptom free. Roentgenograms again revealed increased dislocation. Another trial in traction was suggested to see whether bony fusion in this position was present. This was refused because the patient felt so well and he was discharged in the collar.

Once more the progressive nature of this lesion is shown. A trial was given conservative treatment with the Forrester collar. In spite of the fact that there was symptomatic relief giving a false sense of security to

all concerned, the dislocation has slowly progressed, as shown by roentgenograms. The improvement obtained by traction showed that bony fusion had not taken place. Fusion was advised at this time and refused by the patient. The most recent roentgenograms show that conservative treatment has again failed to maintain the correction.

SUMMARY

Forward displacement of the atlas on the axis with fracture of the odontoid process is a progressive lesion. One should not be lulled into a false sense of security following a symptom-free interval on conservative treatment. During the course of conservative treatment, should evidence of progression be found occipito-cervical fusion is indicated before pressure myelitis develops. In retrospection, fusion was indicated in case 1 at a period shown in figure 4, and in case 2 (fig. 9A).

If pressure symptoms develop removal of the arch of the atlas ordinarily followed by bony fusion of the occiput to the cervical spine, is the treatment of choice.

DIAGNOSTIC GASTROSCOPY

WITH SPECIAL REFERENCE TO THE FLEXIBLE
GASTROSCOPE

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My purpose in this paper is to describe the flexible gastroscope, to discuss the technique of examination with this instrument, and to emphasize its simplicity and value.

The diagnosis of internal disease has always been hampered by the impossibility of seeing the involved organs. The advent of cystoscopy marked a great step forward in the diagnosis of pathologic conditions of the urinary tract. Proctoscopy made a similar contribution to the diagnosis of diseases of the rectum and bronchoscopy likewise to diseases of the bronchi. All attempts to devise a simple and practical method for direct inspection of the interior of the stomach, however, were relatively unsuccessful, owing to the difficult anatomic problems involved, until final success was attained with the perfection of the flexible gastroscope in 1932.

HISTORY

In 1868 Kussmaul,¹ the first to attempt gastroscopy, used a rigid open tube, which he introduced into the stomach of a sword swallower. His efforts were not successful, however, because there was no adequate way of lighting the interior of the stomach. This came only after the development of the Edison electric lamp in 1879. The real development of the method began when Mikulicz in 1881 devised a very ingenious gastroscope. He understood all the problems of gastroscopy as they are known today: the visualization through a long tube of the interior of a large cavity, one of difficult topography and requiring distention by air. Mikulicz² recognized the fact that a straight line usually cannot be made between the teeth and the lower parts of the stomach and, consequently, devised an instrument with an elbow or knee, which he thought would provide for the necessary angle at the cardia. The instrument was, on the whole, like a cystoscope, a closed tube with a

lamp at the end and the objective of the optical system just proximal to the light. There was also an air channel through which air could be blown into the stomach. The instrument was rather large and complicated, perhaps dangerous, and for these reasons Mikulicz apparently gave up his efforts to visualize the interior of the stomach.

Rosenheim³ in 1895 was the next to make an attempt. He found that a long, straight, rigid tube could be introduced into the stomach in many cases and consequently all gastroscopes from that time on were built as straight, rigid tubes. It is now known that this was unfortunate. It was found that in only about 50 per cent of cases was it really possible to reach the lower part of the stomach. As the years passed, better optical systems were perfected and other improvements were made. In 1908 and 1911 the rather effective instruments of Loening-Stieda and Elsner were developed. Chevalier Jackson⁴ tried to eliminate the optical system by working with open esophagoscopic tubes but was only partially successful. A very ingenious development was that of Sussmann⁵ in 1911, who constructed a flexible tube which was mechanically straightened into a rigid instrument after its introduction. It soon disappeared from use, however, because the straightening procedure was very dangerous and the optical system was easily dislocated.

Gastroscopy was practically forgotten from that time until the construction of my first rigid gastroscope in 1922.⁶ This instrument corrected some of the minor errors inherent in the former tubes, but its essential principles were the same. Nevertheless it was the standard instrument for ten years. With it I made over 1,300 gastroscopic examinations and viewed the interior of the stomach in a great variety of diseases. Other examiners reported observations in several thousand additional cases.⁷

There were numerous contraindications to the use of this instrument, such as the presence of a short, thick neck, arteriosclerosis, heart disease, slight kyphosis and scoliosis. Marked resistance to the introduction of the tube was frequently encountered at the cardia. Rupture of the esophagus in overcoming this resistance was quite possible. It was obvious even in the beginning that it would be impossible to employ this instrument in daily clinic use. Further experience verified this early impression and convinced me that this instrument could not be used as a routine procedure.⁸ It was, in my experience, however, superior to and safer than the open tube type of gastroscope but, nevertheless not satisfactory.

Consequently, it became necessary to perfect an instrument which would be flexible from a point about 3 cm. above the cardia to the distal end of the tube.⁹ Roentgenologic studies showed that the distal end should be one which could be bent in two different planes. The solution of this difficult optical and mechanical problem became possible only when it was discovered that a tube

1 Kussmaul A. Ueber der Magenspiegelung. Ber. d. Naturforsch. Gesellsch. Freiburg 6:112. 1868.
2 Mikulicz J. Ueber Gastroskopie. Wien med. Presse 1881 pp. 1410, 1439, 1473, 1505, 1537, 1573.

3 Rosenheim T. Ueber die Besichtigung der Kardie, nebst Bemerkungen über Gastroskopie. Deutsche med. Wchnschr. 21:740. 1895.

4 Jackson Chevalier. Gastroscopy. M. Rec. 1907 p. 549.

5 Sussmann M. Ein biegsames Gastroskop. Therap. d. Gegenw. 62: 433. 1911.

6 Schindler Rudolf. Die diagnostische Bedeutung der Gastroskopie. München med. Wchnschr. 69:535. 1922. Lehrbuch und Atlas der Gastroskopie. München J. F. Lehmanns Verlag. 1923.

7 Rachelet J. La gastroskopie. Paris. Gaston Douin & Cie 1926.
Cutzzeit K. Die Gastroskopie im Rahmen der klinischen Magendiagnostik. Ergebn. d. inn. Med. u. Kinderh. 35:1. 1929 (extensive bibliography).
Olleros R. La gastroskopie. Rev. esp. y ann. de laryng. Nov. 1931.

8 Schindler Rudolf. Ueber die zukünftige Entwicklung der Gastroskopie. München med. Wchnschr. 75:174 (Jan. 27) 1928.

9 Hoffmann M. Optische Instrumente mit beweglicher Achse. München med. Wchnschr. 58:2446. 1911.

are not discernible. At times a complete atrophy may be seen. The exact relationship between atrophic gastritis, carcinoma, benign tumor, pernicious anemia and achylia gastrica remains to be ascertained.

3 Hypertrophic gastritis. In this condition the mucous membrane is velvet-like and swollen and contains a number of nodules or wartlike excrescences with numerous creases between the elevations. Frequently, very small and superficial ulcers are present. The exact relationship of this condition to chronic gastric and duodenal ulcer remains to be ascertained.

SUMMARY

1 The flexible gastroscope has made it possible to visualize the interior of the stomach with safety and with relatively little discomfort to the patient.

2 The flexible gastroscope affords an additional method for the direct morphologic diagnosis of gastric disease.

3 Gastroscopy not only supplements the roentgen examination in the direct diagnosis of gastric ulcer and gastric neoplasm, but it aids greatly in their differential diagnosis. It also furnishes direct evidence of the progress of the benign lesions and of the degree of involvement in cases of neoplasm.

4 Gastroscopy reveals gastritis and other changes in the gastric mucous membrane not discernible by other procedures.

Clinical Notes, Suggestions and New Instruments

PRIMARY CARCINOMA OF LIVER WITH HEPATOSPLENOGRAPHY

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The case we are about to present should be of interest to the medical profession for four reasons: (1) the rarity of the condition, (2) the atypical clinical changes, (3) the interesting hepatography and (4) the necropsy.

Primary carcinoma of the liver is a rare entity both clinically and at autopsy. The lesion is present in approximately one out of 2,000 necropsies. Furthermore primary carcinoma is usually found to inhabit the right lobe of the liver. The following report deals with a primary carcinoma of the left lobe of the liver.

REPORT OF CASE

History—H. M., a white man, aged 70, a laborer, single, admitted to the hospital in April 1934, complained of generalized abdominal pain, anorexia, weakness, loss of weight and the presence of a lump in the left epigastric region. The onset began one year before observation with abdominal pain and fulness after the intake of food as well as intermittent pains in the flanks and epigastrium, loss of weight, general weakness and at the time of admission a feeling of weight in the abdomen. There was a loss of 60 pounds (27 Kg.) from the onset to the time of admission. The only past history of significance was that the patient had been a heavy indulger of alcoholic beverages.

On admission the patient was chronically ill but able to walk around and sit up in a chair. The salient observations in the examination were the pinched features, dullness at the left posterior base of the chest with diminished breath sounds and the abdominal changes to be described. The abdomen was full in the lower epigastric and upper umbilical zones. The overlying skin and umbilicus were freely movable. A mass was palpated between the epigastrium and the umbilicus, slightly movable and located more to the left of the median line. The right liver edge was just palpable and mobility with respiration was questionable at this time. There was dullness and tenderness directly over the mass.

Course—For four months the complaints remained about constant except that the patient suffered more from intermittent abdominal pains in the upper half, and a dragging sensation was felt. During this time he did not have constipation in any degree. At this time examination revealed a more distended abdomen centrally and laterally, a distention of the superficial abdominal veins and a tenseness over the mass. The mass felt more superficial and smooth and measured 8 by 15 cm. vertically and transversely respectively, two thirds being to the left of the median line. The tumor now shaped like an eggplant had definite upper, lower and lateral borders, the upper edge being 3 fingerbreadths below the inner right costal margin, with a tympanic note between the costal margin and the upper border of the tumor. The mass was ballotable mainly to the right and upward, not without considerable pain. Dullness and tenderness were still present over the mass. At this time there were crepitus and fluctuation but no hydatid thrill was present. The right lobe edge was 3 cm. below the



Fig. 1—Barium meal in colon, pressure effect on colon by large liver.

costal margin. The mass did not move with respiration and abdominal respiratory excursions became lessened in depth. A suggestive icteric tinge appeared over the face, conjunctivae and abdomen. In between pains the patient walked about, played a game of cards and conversed until a bilateral bronchitis developed nine days prior to his death. The patient was afebrile and clear of bronchitic signs three days prior to death. He died in September. Constitutional signs during the clinical course prior to the onset of bronchitis were periods of tachycardia, an occasional degree rise in temperature for one or two days and respirations averaging 22 per minute. The blood pressure on admission was 160 systolic, 80 diastolic and near death 122/64.

Laboratory examination revealed the following. The Wassermann test was negative. The blood chemistry was negative on several occasions. The icteric index was normal until near death at which time it was 15. Galactose cholesterol ester tests were of no aid.

A blood count April 2 showed red blood cells 4,200,000, white blood cells 12,600, polymorphonuclear leukocytes 93, hemoglobin 80 per cent. April 18, red blood cells 4,700,000, white blood cells 13,300, hemoglobin 50 per cent. September 2, red blood cells 3,640,000, white blood cells 5,200, polymorphonuclear leukocytes 66, large lymphocytes 34, hemoglobin 85 per cent.

The specific gravity of the urine ranged from 1.010 to 1.016 but otherwise the urine was normal. Examination of the feces was negative for color, ova, increased fat or undigested fiber, pus, blood and the like.

Roentgenograms of the chest showed thickened pleura over the left base. A flat plate of the abdomen showed a soft tissue shadow in the epigastrium, nature unknown and two right abdominal calcified lymph nodes. The gastro-intestinal tract revealed no intrinsic lesion. There was a narrowing of the distal part of the transverse colon suggesting a pressure deformity of an extrinsic nature (fig 1).

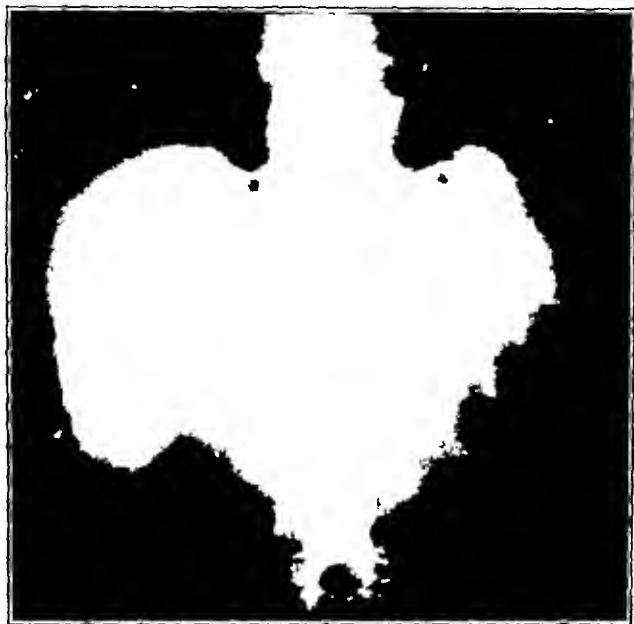


Fig 2—Postero anterior view after injection of thorium dioxide. Large liver and spleen with rarefaction in the area of the left lobe.

Hepatosplenography (75 cc of thorium dioxide sol in seven days, with no untoward reactions) revealed marked enlargement of the left lobe of the liver upward and downward the lower border extending to the first lumbar intervertebral disk and slight enlargement of the right lobe. In the upper third of the left lobe were areas of lessened density. In the lower



Fig 3—Lateral view after injection of thorium dioxide sol. Liver and spleen superimposed but distinguishable separately.

two thirds was a well delineated semicircular mass of lessened density. An area of lessened density was found in the right lobe. The spleen was moderately enlarged. There was an incidental visualization of gallstones of which there was no history and of which he never complained (figs 2 and 3).

The clinical diagnoses in order were metastatic cancer of the liver from a primary gastro-intestinal lesion, primary

cancer of the liver, cystic carcinomatous mass of the pancreas and carcinomatous cyst of the mesentery.

The pathologic diagnosis (by Dr Vera B Dalgopol) was primary carcinoma of the left lobe of the liver with a necrotic and hemorrhagic mass protruding over the plane of the liver and its intralobar branches, carcinomatous thrombosis of the portal vein, and cholelithiasis (fig 4).

COMMENT

The foregoing facts of this case may indicate why the tentative clinical diagnoses were made. Here is a case of proved primary carcinoma of the left lobe of the liver, a clinical impression of such being little grounded without the aid of hepatography by thorium dioxide sol. The facts that made a liver diagnosis not too strong were the presence of a well outlined mass with tympany between the upper border and the costal margin, the free mobility, the crepitus and fluctuation and the absence of respiratory mobility. However the unusual necropsy changes, especially of a necrotic and hemorrhagic carcinomatous mass pouchlike with well defined borders, fairly well explain the atypical clinical observations. Then again it is surprising that, with such marked thrombosis of the portal vein by carcinomatous liver tissue there was no ascites but marked compensatory superficial abdominal veins. One will have to be satisfied to assume that the thrombosis of the portal vein was so slow that the venous network was able to compensate gradually for this flow. Yet the age, weakness, loss



Fig 4—Postero anterior view after injection of thorium dioxide sol. Gross specimen liver density changes are more prominent.

of appetite, loss of weight and strength and presence of an abdominal mass were classic in pointing to a carcinomatous process.

Thorium dioxide sol was given as the last means of help in a confirmatory or negative way. The films presented reveal a primary lesion of the liver which together with the known clinical facts add up to a diagnosis of primary liver carcinoma. Without thorium impregnation, similar cases give a history of needless surgery for exploration. Of course, partial hepatectomy is occasionally attempted. However even though rarely there is a successful removal of the diseased part the practice is seldom done owing to the difficulty and dangers of hemorrhage and secondly to the well known sequence of recurrence.

CONCLUSIONS

1 We have presented a case of primary carcinoma of the left lobe of the liver with its atypical clinical observations correlated to and elucidated by the roentgen and necropsy studies.

2 Without the use of thorium dioxide sol there was not enough clinically to strengthen too strong a clinical impression.

3 Thorium dioxide sol, while still debated, has its use in selected cases as a last resort in the diagnosis of liver involvement in abdominal carcinoma. It will aid in determining the operability of the case.

4 This patient would probably not have survived as long as he did had surgical measures for exploratory laparotomy been performed.

5 It is also shown that a complete thrombosis of the portal vein does at times produce no ascites when the process is slow enough to allow gradual venous compensation.

3120 Buhre Avenue, Bronx—27 West Eighty-Sixth Street

MACULAR LEPROSY

REPORT OF A CASE OCCURRING WITHOUT ANESTHESIA

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LITTLE ROCK ARK

In view of its close resemblance to some of the commoner skin diseases treated by the general practitioner this case of leprosy is reported. It is of general interest because the severe symptoms and usual signs are absent. The confusion with other diseases, the failure of treatment based on this confusion and the method of arriving at a correct diagnosis add further to the general interest of the case. Although the symptoms had been present a year or longer the diagnosis was made relatively early. The absence of anesthesia nodules and alopecia and the presence of a symmetrical, generalized eruption caused various observers to confuse the condition with syphilis pityriasis rosea and dermatophytosis. A generalized lymphadenopathy constituted a final diverting element in the clinical picture.

McCarthy¹ classifies leprosy as follows: maculo-anesthetic, nodular and transitional types. The maculo-anesthetic type usually shows areas of hyperesthesia and signs of neuritis early in the disease. According to Sutton² the great auricular, the ulnar and the peroneal nerves are the first to be involved. The earliest objective cutaneous manifestations suggest a toxic erythema. Apart from a few scattered bullae, which may appear from time to time, the eruption consists of numerous reddish or purplish patches limited for the most part to the face and the extremities. The subsequent evolution of the lesions varies considerably. Some of the patches may fade leaving brownish pigmentations while others may become transformed into plaques and nodules.

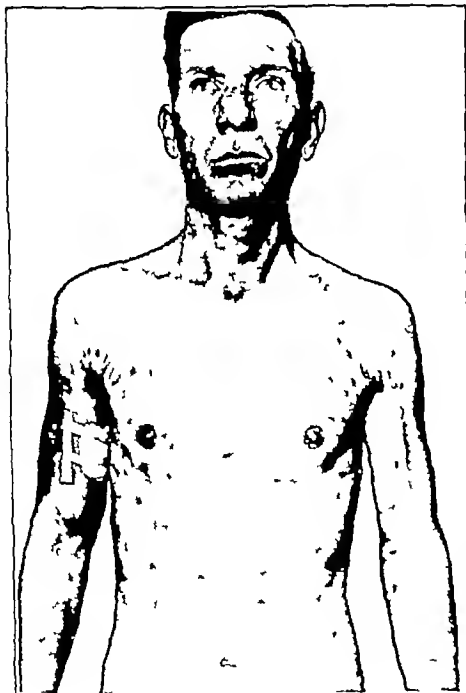


Fig 1—Macular leprosy

The lymph nodes are seldom involved primarily, some authors even alleging that the lymphadenopathy is the result of secondary (staphylococcal) infection.

Alopecia is caused by the general toxemia although the eyebrows may be damaged by the local granulomatous process. The general toxemia which marks the stage of invasion is

responsible for the symptoms of fever, headache, joint pains, sweating, weakness and general malaise. Occasionally there is epistaxis.

The mixed type is characterized by macules and nodules. Some of the nodules develop from macules, while others develop independently. The nodules usually contain enormous numbers of bacilli. It has been claimed however, that in the older lesions the bacilli become rare and correspondingly difficult to find. For this reason the differentiation from tuberculosis and syphilis may be complicated.



Fig 2—Lepra cells infiltrating a lymph node

The appearance of macules is usually preceded by anomalies of sensation, such as formication, burning, stinging or itching.³ The size of the lesions varies from that of a 50 cent piece (30 mm) to that of the palm of the hand or even larger. By peripheral extension and coalescence large irregular areas having curved contours are produced. The centers of the macules usually become depigmented and anesthetic. The borders on the contrary may be hyperpigmented and hyperesthetic.

REPORT OF CASE

A white man, aged 35, a native American, entered the clinic of the United States Public Health Service at Hot Springs, Ark., later being referred to one of us by Dr. O. C. Wenger for consultation. The patient presented a generalized itching eruption which had appeared one year previously. For three months there had been numbness in the hands, indigestion, loss of appetite and loss of about 15 pounds (6.8 Kg.) in weight. For this condition he had received antisyphilitic treatment. Questioned concerning his past history, he stated that while in an army camp at San Antonio, Texas, in 1918 he had had an eruption which he believed resembled the present one. The personal and family histories were otherwise essentially negative.

The physical examination revealed a generalized macular, varnish brown to reddish brown eruption most marked on the anterior surface of the trunk and on the flexor surfaces of the arms. No lesions were noted on the penis, the palms of the hands or the soles of the feet or in the mouth, nose or throat. The macules were round or oval and varied in size from 0.3 to 1.5 cm. They were moderately smooth and nonindurated.

J. Orm by O. S. A Practical Treatise on Diseases of the Skin for the Use of Students and Practitioners, 4th Philadelphia, Lea & Febiger, 1934.

From the Departments of Dermatology and Pathology, University of Arkansas School of Medicine.

¹ McCarthy, Lee, Histopathology of Skin Diseases, St. Louis, C. V. Mosby Company, 1931.

² Sutton, R. L., Diseases of the Skin, St. Louis, C. V. Mosby Company, 1928.

Although the lesions gave the impression of being elevated, this could not be confirmed by palpation. The symmetrical distribution and the tendency to follow the tension lines of the



Fig. 3—Lepra cells infiltrating the corium



Fig. 4—A nodule in the subcutaneous tissue

skin indicated a systemic origin. There was neither scarring nor pigmentation from past lesions. The lymph nodes, particularly those of the inguinal group, were enlarged, reaching

a maximum diameter of 3 cm. They were firm but neither tender nor painful. There was slight thinning of the skin on the dorsal surfaces of the hands, which the patient had first noticed several months previously. The physical examination was otherwise negative.

The laboratory reports were as follows: erythrocytes 4,000,000; hemoglobin 80 per cent; leukocytes 9,400; neutrophils 53 per cent; stab cells 4 per cent; juveniles 1 per cent; lymphocytes 38 per cent; eosinophils 4 per cent. The Wassermann, Kahn and Kolmer tests of the blood were negative. The urine was normal. Smears from the nose showed acid fast bacilli varying from curved rods about the size of a tubercle bacillus to short rods which were almost coccoid.

The report on a biopsy of specimens from the cutaneous lesion and a lymph node was as follows: The structure of the lymph node was profoundly altered by an extensive infiltration of large polyhedral cells having an abundant clear cytoplasm



Fig. 5—Intracellular and extracellular lepra bacilli in a lymph node

and small vesicular nuclei. The cytoplasm of most of the cells was finely vacuolated but in some a single large vacuole displaced the nucleus to one side. In places germinal follicles remained and these contained many cells which were undergoing mitotic division (fig. 2).

The skin (figs. 3 and 4) showed thinning of the malpighian layer with partial effacement of the papillae. Immediately beneath that layer were numerous compact collections of polyhedral and spindle cells which resembled in all respects the large vacuolated cells found in the lymph node. They occurred chiefly about the blood vessels where they often formed perivascular sleeves which could be followed for some distance. A few discrete collections were located deep in the corium.

Sections (both skin and lymph node) stained by the Ziehl-Neelsen technique revealed acid fast rods which varied greatly in size and thickness. Many of them were arranged in packets (fig. 5). Some were beaded, others solid. Most of these bacilli occurred in the large clear cells previously described.

SUMMARY AND CONCLUSIONS

1. An atypical case of macular leprosy was observed which closely resembled syphilis, pityriasis rosea and dermatophytosis.
2. Sporadic cases of leprosy may occur in native Americans without known exposure to the disease. Because of this fact

the variations in the early manifestations of leprosy should always receive consideration in the differential diagnosis of obscure cutaneous diseases

3 Macular leprosy may exist for at least one year without clearing in the center of the lesions, formation of nodules or much extension

4 In the early cases the diagnosis can be made with certainty only by means of a biopsy with demonstration of the organism

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THERAPEUTIC APPLICATIONS OF INSULIN

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed the series will be published in book form.—Ed

Every one requires insulin, and if a person cannot manufacture what he needs in his own pancreas he is fortunate if he can secure it by purchase or gift. No one, the normal person or the diabetic patient, knows the quantity required to maintain health and strength. Fortunate it is that nature regulates the supply with surprising accuracy, balancing its production with the carbohydrate consumed, whether this is for prompt utilization or for storage, and adjusting its output to the momentary demands of exercise or rest. This normal regulatory mechanism rarely may go awry and too much insulin may be produced, in fact, so much may be secreted that at times death results from hypoglycemia. Probably at other times every one experiences symptoms from an increased production of lesser degree, which he recognizes in himself by hunger and fatigue and which his friends suspect by his altered disposition. But it is difficult to decide whether these states are actually due to too much insulin or to deficient carbohydrate through lack of body glycogen.

Insulin is susceptible to many influences. If the supply of insulin is sufficiently curtailed or possibly if its efficiency is impaired by overaction of pituitary, thyroid or adrenals diabetes mellitus results. Lowering of the alkalinity of the blood, infections, starvation or an excessively high fat diet also affects its action adversely, but not strikingly enough to prove that any of these bring on diabetes. The development of diabetes in the obese focuses attention on the possible effect on insulin production of the constant stimulation of the insulin-producing function of the pancreas in order to assimilate the carbohydrate consumed, but it seems hardly likely that the pancreas would be injured in this way, because there is no analogy to this in the field of other ductless glands. Although it is true that a diet high in fat and low in carbohydrate decreases insulin pro-

duction, as shown repeatedly by many investigators, nevertheless such a diet, when carried out in the Du Bois laboratory for over a year on two human beings, temporarily lowered carbohydrate tolerance, but did not do so permanently. It is remarkable that, whatever agency injures the pancreas, it practically never wholly destroys the ability of the gland to make insulin. Clinical experience confirms physiologic experiments on this point, diabetes is not complete. Obviously this complicates enormously the problem of the therapeutics of insulin, because one never knows how much insulin the active pancreatic remnant yields and therefore how much must be supplied. Just as in health there is reasonable certainty that the production varies under different conditions, so too one can infer that it varies in diabetes. Therefore in the administration of insulin it must always be recognized that one is dealing with a variable, and results must be interpreted cautiously and with extreme deliberation.

The variable course of diabetes makes difficult the interpretation of the action of insulin. This variability in the course of diabetes was emphasized by Naunyn. Of course, he did not actually say that the secretion of insulin was increased or decreased, but he described most clearly the improvement in the condition of the patient who carefully followed dietetic treatment and the reverse in those who neglected it. Today still more clearly is one convinced that, if the diet is extreme in any direction, ultimately the pancreatic function deteriorates. Insulin increases greatly the chance of the diabetic patient to improve, and one sees in increasing numbers patients whose nutritional state has advanced so much with diet, exercise and insulin that diet and exercise alone suffice. Paradoxical as it sounds, the statement is true that the use of insulin enables many a diabetic patient to do without it. Probably no physician appreciates how high this percentage can rise. John in his manual has taken the pains to record a long list of patients who have given it up, and his experience can be duplicated by many others.

Miss P, who had had diabetes for twelve years, with onset at the age of 50, and was bedridden with rheumatoid arthritis, took daily for years a diet of 1,600 calories containing approximately 180 Gm of carbohydrate, with 80 units of insulin to maintain her weight and aglycosuria. She died of endocarditis and pericarditis. The pancreas, which weighed 15 Gm, was the smallest encountered by Shields Warren in 367 autopsies on diabetic adults. How many units of insulin Miss P's pancreas produced daily it is useless to conjecture, but presumably not many.

Miss M, on Aug 7, 1922, was the first patient to whom I gave insulin. Thus I considered to be my most severe case of diabetes. The patient's tolerance was estimated as about 7 Gm of carbohydrate. The patient, now 54, has had diabetes for 17 1/2 years, she has gained to 137 pounds (62 Kg) from her erstwhile 69 pounds (31 Kg) leads an active, useful life, takes 130 Gm of carbohydrate, 1,688 calories, and is nearly aglycosuric with 44 units of insulin a day. If Miss P, like Miss M, had been able to have the advantage of exercise, very likely her insulin need would have been halved. These two cases suggest that an adult requires between 80 and 45 units of insulin daily, von Holm's experiments would substantiate this opinion. When, therefore, patients say that they require more than 80 or even 50 units, I suspect a complication such as an infection, acidosis, glandular disease, hemochromatosis or just

plain ignorance or carelessness in the quantity and quality of the diet. This went to such extremes in the daily life of one patient that actually less or at least no more insulin than she was accustomed to take daily on her own account was sufficient to bring her out of diabetic coma while under hospital supervision.

EFFICIENCY IN THE USE OF INSULIN

To attain maximum efficiency in the use of insulin, its continuous administration would be necessary. Only thus would one imitate nature, which regulates the insulin supply according to the carbohydrate demand of the hour, nay, even of the minute. The Toronto workers early pointed out the advantages of the multiple over the single dose. The more frequently insulin is given, the less is required to produce the same result. Von Holm showed this beautifully with depancreatized dogs. With a constant intravenous injection of insulin, Bertram calculates from von Holm's experiments that a normal adult of 60 Kg requires 78 units per day when fasting and 48 units when living on a diet the caloric value of which is composed exclusively of carbohydrate.

One dose of insulin a day will suffice for many a diabetic patient perhaps for half of those who require

TABLE 1—*The Dietetic Treatment of Seven Groups of Thirty Cases Each of Diabetes**

Group	Date	Age at Onset Years	Carbohydrate Gm	Protein Gm	Fat Gm	Calories per kg	Insulin Units	Weight Kg
I	1915	40	26	54	76	18		57
II	1916	46	43	60	82	21		56
III	1917	42	43	60	90	23		54
IV	1923	37	71	58	123	34	13	53
V	1927	40	96	60	113	28	21	59
VI	1931	43	144	68	90	29	21	68
VII	1933	40	153	73	91	29	26	60

* Joslin E. P. A Diabetic Manual ed 5, Philadelphia Lea & Febiger 1934 p 60, table 6

it, but the severer the disease the more frequent should be its administration. Ordinarily a dose of insulin exerts an action for eight hours. In infections one resorts to injections of insulin every six, four, three or two hours, and in coma in which the need is extreme and the demand for efficiency in action the greatest, it is often injected every thirty minutes.

When one dose of insulin per day suffices, it is usually best to give that before breakfast, if two doses are necessary, doses are given before breakfast and supper. If these doses reach the level of from 20 to 40 units each and are still inadequate to control glycosuria, then three or four doses a day may be advisable. Often, particularly with young persons who have severe diabetes, it will be found helpful to give the third dose at bedtime, i. e., from 10 p. m. to midnight. By so doing one decreases the tendency for the blood sugar to rise in the early morning hours, and an adequate dose at bedtime may enable a patient with severe diabetes to awake with a sugar-free urine. The late evening dose is usually given without food and must be relatively small, 2, 4 or 6 units, in order not to provoke hypoglycemia. Some patients require a dose of insulin before each of the three meals plus the bedtime dose. We have not thought it advisable to give insulin "by the clock," i. e., every six, eight or twelve hours, regardless of meals, because of the danger of producing hypoglycemia. Some clinicians do advise and use such a method, however.

THE ACTION OF INSULIN

Insulin lowers the percentage of sugar in the blood and favors its storage and utilization in the liver, muscles and skin in the form of glycogen. As a result, calories are conserved, not lost, and acidosis is prevented, and thus the processes of metabolism function normally. Occasionally the action of insulin is so great that the blood sugar is lowered below the normal level and a whole train of phenomena arise, dependent in part on the low blood sugar per se, the lessened glycogen in the tissues or the excess of protective counter-regulatory processes set in motion to raise the blood sugar. The combination of all these processes is known as an insulin reaction, or insulin shock. The harmful effects of a low blood sugar are emphasized so often that I wish to point out first of all how such a condition may be advantageously utilized. When the blood sugar drops, the counter-regulatory mechanism of the body, through stimulation of the sympathetic system, tends to relieve the resultant hypoglycemia by favoring the discharge of glycogen from the liver. If this counter-regulation goes too far and the liver glycogen is depleted unduly, the liver acts less well in furthering carbohydrate metabolism. Under such conditions even acidosis is said to occur, just as it does as a result of uncontrolled diabetes when the liver is deprived of glycogen and is filled with fat. This state of an approaching depletion of glycogen in the liver can be forestalled by the administration of carbohydrate, and if this is done at such a time, i. e., when the blood sugar is already low and falling, apparently it is very well tolerated, so well in fact that the favorable phenomenon has been noted by patients. They frequently report that if at the first sign of an insulin reaction they take carbohydrate, it is tolerated so well that it counts as a pure addition to the carbohydrate allowance, and they need not deduct it from the subsequent meal. In treating coma, if the blood sugar is reduced to 0.05 to 0.08 per cent often for twenty-four hours, carbohydrate is utilized remarkably well, with little or no insulin.

AVERAGE DOSE

The average daily dose of insulin taken by the insulin-treated diabetic patient is probably about 30 units. This dosage is rising rather than falling, first, because the quantity of carbohydrate in the diabetic diet has been steadily going up throughout the country, and, secondly, because the proportion of patients with severe diabetes is much greater, particularly children and young adults, who owe their preservation to insulin. For one diabetic child who formerly survived ten years I suppose there are 100, and perhaps 1,000 today.

How Many Grams of Carbohydrate Will One Unit Metabolize?—This question no one can answer. There are always adjustments required for exercise and diet. Even if these two factors are constant the improvement of the condition of the patient overthrows one's calculations. Then too there are many complications in diabetes that affect the clinical potency of the unit. In diabetic coma several units may be necessary for the utilization of 1 Gm of carbohydrate, but, as acidotic symptoms subside, 1 unit of insulin becomes more efficacious. The crippling effect of infections on the power of insulin is well known. Other factors are discussed under the section entitled Insulin Resistance. In general, the value of a unit decreases with the number given and follows the law of a diminishing return for the power expended, as with a gasoline engine. The first

ten units is more effective than the second ten, and so on. There is another factor insulin cannot act with greatest efficiency unless given an opportunity to display its power. An orator needs an audience to show what he can do, and insulin needs carbohydrate. Thus it has been shown repeatedly by those inaugurating the higher carbohydrate diet that the carbohydrate can be doubled with little or no additional requirement for insulin, provided total calories are controlled. But I am still somewhat skeptical. In table 1 are recorded comparable groups of thirty diabetic patients with their diets and insulin dosage, representing as a matter of fact the insulin dosage used in my clinic over a series of years. The figures show no tendency to an increase in the carbohydrate equivalent of a unit, and no increase for the total dextrose. I confess that I do not understand why these groups of my patients do not show a greater carbohydrate equivalent for 1 unit of insulin. All will agree that the whole human machine works better when a substantial amount of carbohydrate is being burned and that carbohydrate and fat metabolism profit by avoidance of either extremely low or extremely high respiratory quotients. Exceptionally there may be no lack of carbohydrate to burn, but it may be in a form that is not combustible. Thus, plenty of carbohydrate may be administered in the diet to a patient with hemochromatosis, but because the glycogen storage facilities of the body are impaired, particularly in the liver and skin (perhaps also in the muscles) insulin may not find any glycogen on which it can act. This is only one of the many states in which insulin is not blamable. In general 1 unit of insulin will metabolize 1 or 2 Gm of carbohydrate, and perhaps even from 3 to 6 Gm, Newburg even says 7, but it is impossible to say definitely, because one never knows how many units the patient's pancreas is producing each day or at the moment. Therefore it is dangerous to prescribe insulin in arbitrary or schematic fashion, in general the method of trial and error should be adopted, always erring on the side of low and frequent rather than of high and single dosage. Whenever I read that for each gram of dextrose lost in the urine or given intravenously 1 unit of insulin should be injected, I shrug my shoulders and exclaim *Prenez garde!*

METHODS FOR ADMINISTRATION OF INSULIN

Many methods for the introduction of insulin into the body other than by the needle, subcutaneously or intravenously, have been tried and found wanting and do not merit discussion in this article. Theoretically, aside from the disadvantages of puncturing a vein, one would expect the intravenous route to be more effective than the subcutaneous, but it has been discarded, perhaps to an unjustifiable extent, because a portion of the insulin introduced is excreted in the urine. For this reason even in coma we always give insulin subcutaneously whenever we give it intravenously. To avoid the necessity of frequent injections of insulin attempts have been made to administer it in oil at infrequent intervals. These too have failed.

If insulin is given in the superficial layers of the skin, it is said to be more effective than when injected into the deeper layers. How true this is I do not know. At any rate one avoids the superficial layers because if insulin is so injected it is apt to give rise to insulin burns or blisters, owing to the mechanical effect of the solution injected.

Site of Injection—The site of an injection of insulin should be changed so frequently that not more than one dose is given in the same spot in a month. Children, partly from their desire for routine, prefer no alterations in location, and also partly because frequent injection in the same area destroys the sensibility of the skin and subcutaneous tissue. When so administered the insulin is poorly absorbed and its effect to a greater or less degree nullified. Furthermore, infections at the site of injection may result more easily. Recently an uncontrolled fat diabetic girl showed abscesses in the upper part of the thigh, where she asserted no insulin had been injected. Although she very likely spoke the truth, these probably did follow the introduction of insulin, the infection having spread along the lymphatics, an explanation that has been suggested for insulin atrophies occurring at a distance from the point of injection. For convenience it is well for patients to construct an insulin map of the body on which points of insertion for the needle for a month can be recorded, and thus surely one can avoid duplication of site. Another ruse to capture the attention of the patient is to say "Use the right leg in the morning, the left leg at night and follow a line down the anterior aspect of the leg for a week, moving outward to a new line each succeeding week of the month."

Other localities for insulin injection include the arms particularly the deltoid and triceps regions, the upper, not the lower portions of the buttocks, and the abdominal wall. In the last-named situation, needles shortened to three eighths of an inch can be employed. The needle best liked by my patients is half an inch long and 26 gauge.

Insulin Prescriptions—Orders for the giving of insulin can be expressed simply. Most patients and nurses understand that 10—0—0 signifies ten units before breakfast, 15—0—10 means 15 units before breakfast and 10 before the evening meal, and 20—10—15—2 indicates insulin before each meal and also on retiring. These are orders for definite doses, but such cannot be employed during infections and coma and usually after operations. Under such circumstances one can use the formula $\frac{R \ Y \ G \ B}{15-10-5-0}$ in which 15—10—5 or 0 units below the line are to be given according to the red, yellow, green or blue results of the Benedict test, expressed above as R, Y, G, B, the qualifying time period in hours can be added—thus, every 6—4—3—2—1— $\frac{1}{2}$ hours. Obviously the range in the number of units can be altered to meet the requirements of the individual case or of an emergency. In coma, particularly the time interval is frequently revised, during a half day this may be changed from every half hour to every one, two, three or four hours, according to the progress of the case.

Measuring Insulin—The danger of confusion in measuring the dose of insulin is real. Patients fail to comprehend that a unit is a unit and that whereas 1 cc of U-10 insulin contains 10 units, 1 cc of U-20 insulin contains 20 units, 1 cc of U-40 insulin contains 40 units and so on up to U-100 and more. In order to guard against errors it is well to verify the patient's dosage at each visit. Even a clergyman and a doctor make mistakes, and patients who have taken insulin over a period of years are just as likely to be wrong in their reports as those just beginning. Partly for this reason, the simplest type of syringe is desirable and this I have found to be one marked only with divisions into

tenths of one cubic centimeter. We now use almost entirely the 40 unit strength, thus reducing the volume of fluid (insulin) required at an injection.

Time for Injection of Insulin—The maximum effect of an injection of insulin occurs in an hour, in contradistinction to that of the peak effect of food on the blood sugar, which takes place in half that time. Neither statement is absolute, the latter particularly is subject to variation. Absorption from the digestive tract is so irregular that our surgeons do not countenance the administration even of such simple liquids as orange juice, water oatmeal gruel or ginger ale within three and even four hours before the time of an operation, for fear of the patient vomiting on the operating table. And, since the adoption of this plan, I am told by the nurses that patients tolerate food after operation more satisfactorily. The blood sugar is often higher before and rises higher after breakfast than before and after the other meals, hence insulin is given at a longer period before breakfast. This period is most commonly thirty minutes but may be increased to forty-five or even sixty minutes. Convenience is an indication that often lessens the interval to fifteen minutes or less at noon and night.

The Sabbath was made for man and not man for the Sabbath and this must not be forgotten when dealing with insulin. Patients are ingenious and intelligent and often devise the ways and means best adapted for the management of their own cases. It is a good thing to allow them considerable latitude. There should be no regimentation in diabetes, the physician should seek to develop the individual's initiative.

CONTRAINDICATIONS

Insulin Anaphylaxis—Localized anaphylactic phenomena develop frequently about the area of injection when treatment with insulin is begun. In a few days, rarely as long as a few weeks of repeated injections, it is the rule for these allergic manifestations gradually to disappear. They were far more common when insulin was first discovered, presumably owing to impurities with protein. Should these local areas of sensitization fail to disappear or plainly grow less within two weeks, it is well to change to insulin made from another animal, or it may suffice to use insulin prepared by another pharmaceutical firm. In no case have we been obliged to give up or even to consider giving up treatment of a diabetic patient with insulin on account of such phenomena.

Insulin Lumps—Under "site of injection," attention was called to the harmfulness of repeating injections of insulin in the same area. As a rule, tumefactions result and, if the injections are long continued, necrosis of the subcutaneous tissue occurs. Such tissue is more readily susceptible to infections and, in fact, about the only infections one sees as a result of the use of insulin take place in such regions. Obviously, insulin given in such an area is poorly absorbed, it was pathetic to hear a patient say that he always took his insulin in a given area, where, as a matter of fact, there was a tumefaction, because if he injected elsewhere he would bring on a reaction! Therefore, patients should be impressed that, if insulin is scattered, less insulin will be required.

Insulin Atrophies—Insulin atrophies are far more annoying, disfiguring and more permanent than insulin anaphylactic phenomena or insulin lumps. These occur

as a rule at the exact site or near the site at which insulin has been administered. In contrast to insulin lumps, which are tumefactions of the skin and subcutaneous tissues as a result of repeated injections in one place, areas of insulin atrophy are characterized by depressions of the surface of the skin with almost complete disappearance of the subcutaneous fat and some times of muscle tissue also. Usually these depressions on the surface of the body are replaced within a year if these regions are avoided in the course of treatment, but occasionally they persist for a much longer time. They are deforming and the physician should include in the routine visit of the diabetic patient to his office search for these and for insulin lumps, just as he checks the insulin dosage and inspects the patients' feet, lungs and tongue, and carries on his regular physical examination.

The cause of these atrophies is not known. It is evidently not due to the antiseptic tricresol, which at one time was used in the preservation of insulin. It does not appear to be due to injury of muscular tissue. Indeed, occasionally the atrophic areas are remote by several centimeters from the point at which the insulin was injected. We have seen what we considered to be such areas on the face when all possibility of a connection with local injections seemed out of the question. It is plausible to conclude that the areas may develop at a considerable distance from the site of actual injection by transference along the lymphatics, but it is difficult to explain by this theory these facial areas. These areas are not alone disfiguring, they may rarely be so extensive as to render the continuance of treatment a matter of difficulty. They occur in children and adults, in both sexes, and exceptionally in patients whose diabetes is controlled. Similar atrophies are reported sometimes to follow the use of other glandular extracts, such as posterior pituitary extract.

The treatment of insulin atrophies resolves itself into their prevention. There is no treatment for them when formed. Such patients must exercise scrupulous care in their selection of needles and in deft insertion of them. High strengths of insulin are preferable, such as 80 or 100 units per cubic centimeter, in order to reduce the volume of fluid injected. Patients have been advised to change from pig to beef insulin or vice versa and to try one preparation on one half of the body and the other on the other half, but thus far no satisfactory conclusions have been reached. Insulin atrophies make a pretty problem for research. Their solution might unlock the door to many other problems of fat metabolism.

INSULIN REACTIONS

Overdosage of Insulin—Symptoms of an overdosage of insulin, for practical purposes, are identical with those resulting from a fall in the percentage of sugar in the blood below normal. Often they are said to develop when the blood sugar is at a normal level or even above. Such instances have not come to the personal attention of the authors of this article, and we subscribe to this statement, realizing fully that a few excellent clinicians hold an opposite opinion. It is certainly true that sudden falls of the blood sugar from high levels to levels only slightly below 0.10 per cent (100 mg per hundred cubic centimeters of blood) give rise to symptoms of a reaction that would never be felt under ordinary conditions. Confusion occurs in the patients' minds regarding an insulin reaction when they

note the characteristic symptoms and yet find the urine loaded with sugar. They do not realize that the glycosuria they have demonstrated by their Benedict test represents sugar that passed through the kidneys hours or at least minutes previously and then was retained with the urine in the bladder. In a true reaction a second freshly passed specimen of urine will be found to be sugar free, provided the bladder was thoroughly emptied at the previous micturition.

When a diabetic child becomes quiet, lacks interest and is unnaturally good, when a diabetic adult acts ambitionless, depressed and morose, or an elderly man or woman weak and faint, I wonder if their blood sugar has fallen below normal. Very likely they are hungry but do not know it. If the occasion is some hours after meals, particularly if they have had an active period of exercise and I learn that they took their usual dose of insulin and in haste ate less than usual, I feel reasonably sure that my guess is correct. And the surmise changes to certainty if I find a tremor in the hands with moisture in the palms and a few beads of sweat on the forehead. Diabetic patients in such a condition respond to questions like an automaton and somehow give the impression that soon they may become unconscious or, quite the reverse, become emotionally unstable. Dilated pupils, firm rather than soft eyeballs, diplopia, pallor rather than a red face, normal respiration and blood pressure, and normal or sometimes rapid pulse nearly complete the picture, which, if unchecked by the taking of carbohydrate, may end in complete unconsciousness followed by convulsions. The latter state may last for hours and infrequently end in death—the result of an overdose of insulin leading to a severe insulin reaction with extreme hypoglycemia.

Hypoglycemia with signs such as these constitutes the picture of an insulin reaction to all in this clinic, and we expect its relief with the giving of 5, 10 or more grams of dextrose. No patient has died of an insulin reaction at the New England Deaconess Hospital, but three of our patients, living many miles away and not under our care, and two others seen in consultations have succumbed. One, a young girl, was found unconscious as the result of a reaction which the attending physician mistook for diabetic coma, she was given 200 units of insulin and failed to recover consciousness in the course of thirty-six hours. Another patient, a young man, similarly succumbed after 60 units. The third patient, a child, died after an exhausting illness when the apathy, extreme weakness and unconsciousness were ascribed to the illness and left untreated. The diagnosis in the last case was missed in an excellent clinic partly because sympathy for the child delayed a venous blood sugar test (at that time a method for a capillary blood test was not available). Recently a fourth patient, a school teacher, returned to her home at 6:30 p. m. and behaved queerly. When a physician arrived thirty minutes later she was unconscious and having convulsions. Unable to obtain a urine test, he diagnosed coma and gave 200 units of insulin during the night. The next day, the hypoglycemia was recognized and treated with intravenous dextrose until the blood sugar was well above normal, but she died. In a fifth case hypoglycemia developed every afternoon because the physician tested the blood sugar only before breakfast and increased the insulin dose each day because the fasting blood sugar was high. This patient recovered consciousness with 10 Gm of dextrose given intravenously, lapsed one hour later and again recovered with a second

such injection. One hour later she again lapsed into unconsciousness and died when dextrose injection was delayed. The prognosis of an insulin reaction is almost invariably good if it is diagnosed reasonably early. Recognition is vital, as the foregoing cases show. For this reason table 2 is inserted, because it contains the salient points of differential diagnosis between an insulin reaction and diabetic coma.

Treatment of Insulin Reactions—Treatment of an insulin reaction is simple, 5 or 10 Gm of dextrose orally usually relieves the patient in a few minutes. Occasionally three times as much is required, and sometimes it is necessary to inject the dextrose intravenously, in which case as a rule the response is so prompt that before 10 cc of a 50 per cent solution is introduced recovery has occurred. The longer the duration of an insulin reaction and the deeper the unconsciousness, the more carbohydrate is required, in one of the fatal cases seen in consultation, 200 Gm of dextrose was given.

TABLE 2—History, Symptoms and Signs Differential Diagnostic Points Between Diabetic Coma and Insulin Reactions*

	Diabetic Coma	Insulin Reactions
1 Onset	Slow days	Sudden minutes
2 Food	Too much	Too little
3 Insulin	Too little	Too much
4 Presence of an infection	Usual	None
5 Thirst	Extreme	Absent
6 Hunger	Absent	Frequent and extreme
7 Vomiting	Common	Seldom
8 Pain in abdomen	Frequent	Absent
9 Fever	Frequent	Absent
10 Skin	Dry	Moist
11 Tremor	Absent	Frequent
12 Vision	Dim	Double
13 Appearance	Florid extremely ill	Pale weak and faint
14 Respiration	Exaggerated (air hunger)	Normal
15 Mental state	Restless and distressed gradually approaching unconsciousness	Apathetic, irritable hysterical gradually approaching unconsciousness
16 Urine sugar	Present	Absent or always absent in the second of 2 specimens
17 Response to treatment	Gradual improvement in hours with insulin	Sudden improvement in minutes with carbohydrate by mouth and rectum intravenously or subcutaneously

* Joslin E. P. A Diabetic Manual ed 5 p 126 table 14

intravenously and subcutaneously before the blood sugar began to rise.

If the patient will not swallow, dextrose can be introduced into the esophagus by catheter through the nose. We have known no harm to result from this procedure, but we have been told of liquids having been forced on patients during a reaction and entering the lungs. Dextrose, syrup, molasses and honey have all been used. Syrup diluted with twice its volume of water can be given by rectum, but its efficacy is questionable.

Various substitutes for dextrose, such as levulose and cane sugar, have been tried, but none are quite as good. Of course, for the mild group of symptoms that accompany a slight lowering of the blood sugar, carbohydrate in any form, and I dare say even protein, might suffice.

Epinephrine will mobilize dextrose in the blood provided its precursor, glycogen, is available in the body. Consequently one can give to an adult, in a reaction that has occurred not too many hours after a meal, 1 cc of 1:1000 solution of epinephrine subcutaneously or half this dose for a child. But even if the injection of epinephrine is effective, it should be followed by the intake of carbohydrate, because otherwise the recovery might be only temporary.

EDUCATION OF THE PATIENT IN THE USE OF INSULIN

The education of the diabetic patient is a *sine qua non* to the successful use of insulin, but he will never receive the full benefit of it unless he is faithful to his other two therapeutic aids, diet and exercise, and lives an honest diabetic day. It is surprising how well insulin works, even when intelligence and common sense are feeble and ignorance profound, but it is certainly true that the faithful patient who knows the most about his disease lives the longest. After thirty-six years of interest in diabetic patients (for half of that time, perhaps one third to one half of my practice has been devoted to diabetes) I can say most emphatically that the diabetic patient whose course of treatment is guided by clinical symptoms in conjunction with and not independently of laboratory tests is the one who does the best, gets the most out of life, and suffers the fewest complications.

Education of a diabetic patient by books and pamphlets accomplishes much, but class instruction does more, because it drives home the salient features of treatment. The questions and answers that arise in the classroom leave more indelible impressions than the written word. One can explain to a diabetic class the danger of a diabetic patient using alcohol, and it carries far more weight than if said alone to that individual in the class who needs this advice the most. The simpler the questions of the members of the class and the more intimate the disclosures of their own experiences with insulin, the better for all. In diabetic camps education is easy, because it is promoted by contact and acquired involuntarily. Supplementing class instruction is the painstaking tutoring of patients by the teaching diabetic nurse in the hospital or the visiting diabetic nurse in the home. Our diabetic classes are now attended more than ever and our plans for daily individual instruction steadily increase. These statements apply I am sure everywhere in the United States and therefore I have no hesitation in making them. All this must be so, because the expense of diabetic treatment must be reduced.

DURATION OF LIFE OF THE MODERN DIABETIC PATIENT

The diabetic patient who acquires his diabetes today will survive four times as long as did the diabetic patient in the first fifteen years of this century, and perhaps longer. Therefore the plan of the campaign to control diabetes must be arranged for a long period and not for a short one. This becomes increasingly apparent, because many of the diabetic patients who are discovered today were overlooked formerly, the period between onset of the disease and diagnosis has been shortened and therefore, as a rule, the cases are of a milder character.

OCCASIONAL DANGER OF DIABETIC DIET

It is impossible to explain the therapeutics of insulin without reference to the diabetic patients' diet. The diet in and of itself can be dangerous to some diabetic patients. With the extremely low carbohydrate, high fat diets of a generation ago, we literally drove many diabetic patients into coma, and many of those who avoided immediate death later acquired arteriosclerosis. Careless dieting, on the other hand, also had its victims from ensuing loss of strength and weight and increased

susceptibility to infections. Incidentally, one judges only of the efficiency of a type of treatment, no matter what its character, by the course of its faithful and intelligent followers and not by that of the ignorant and careless. Dietetic treatment lays only if adjusted to the age, weight and occupation of the patient. Even the rapid reduction of weight of a fat diabetic patient may expose him to so high an endogenous fat diet as to produce acidosis, and with that a lowering of the efficiency of both endogenous and exogenous insulin.

Delayed Absorption of Food—A Menace to an Insulin-Treated Diabetic Patient—The absorption of food by a diabetic patient is not always according to Hoyle, even if the food is quantitatively and qualitatively correct. Too often the patient and the physician conclude that food given reaches the circulation at once, and insulin is administered on that supposition. Our experience with our surgical patients, as I have already said, taught us the contrary. Food, even soluble food, may remain unabsorbed in the digestive tract for long periods with disastrous results to the patient who has taken his dose of insulin. Emotion is the chief cause for the delay and therefore emotional states must be avoided at meal times by all diabetic patients. One of the severest reactions in the literature was that recorded by Millard Smith in a child who had just eaten a full meal but did not absorb it, and until she vomited it left her doctors in a quandary.

INSULIN IN RELATION TO EXERCISE

Exercise tends to lower the blood sugar in the diabetic patient in whose body there is an adequate supply of insulin, whether this is of endogenous or of exogenous origin. This effect is so striking and so beneficial that exercise along with diet and insulin is now accorded a definite and prominent place in the everyday treatment of diabetes. Patients themselves recognize and make use of the principle. Unless an accompanying condition contraindicates activity, diabetic patients should not be kept in bed but rather must be encouraged to take regular, daily exercise. Through muscular activity, food tolerance improves and higher diets with smaller dosages of insulin are possible. This is most strikingly shown in the much lower insulin requirement of diabetic children while in summer camps as compared with the larger need during the winter when they are in school and relatively inactive. The "insulin reaction" that may follow unusual or strenuous exercise in the well controlled diabetic patient is a matter of common knowledge.

Before insulin became available in 1922, clinicians had recognized that, whereas patients with milder grades of diabetes profited by exercise, those with severe or poorly controlled diabetes were made worse. This is undoubtedly correlated with the fact that when, at the time of the exercise, the diabetic patient is deficient in insulin, muscular activity causes a rise and not a fall in blood sugar. This can readily be demonstrated by allowing a patient with moderately severe or severe diabetes to exercise in the morning before insulin or breakfast has been given. Determinations made at frequent intervals during and following the exercise under such conditions will show that the immediate effect is a definite rise in blood sugar. If a small dose of insulin is then given, further exercise causes a greater fall in blood sugar than would be expected from the insulin itself. There is some evidence to indicate that

in certain patients the taking of food may so stimulate bodily insulin secretion that postcibal hyperglycemia may be lowered by exercise following the meal. Here also, however, the endogenous insulin supply must undoubtedly be of a certain adequacy for this effect to be secured.

The practical application of such studies is clear. Not only must patients with diabetes of higher grades of severity receive insulin but, if at all possible, they must exercise regularly. The insulin dosage must be large enough to maintain a well controlled diabetic condition and then this regular exercise will exert its maximum benefit.

The favoring effect of exercise on the utilization of carbohydrate and the lowering of the blood sugar must be borne in mind whenever insulin is prescribed. As a rule the dose of insulin outside the hospital should be less than that in the hospital, and it is usually wise to reduce the insulin allowance of a patient when he is discharged.

Improvement of the diabetes and along with it of the general condition of the patient will take place with almost any kind of intelligent diabetic treatment if faithfully followed. With insulin the possibilities for improvement have been greatly augmented, and such gains both doctor and patient must be alert to recognize. Tolerance for carbohydrate may advance so rapidly that insulin reactions occur needlessly, frequently the need for insulin disappears. The physicians who advocate and prescribe insulin most freely are naturally the ones most frequently to reduce and omit it. Insulin is insurance during an infection, patients should learn how they can take advantage of this insurance when the emergency of an infection arises. Undoubtedly many persons started on insulin are allowed to drop it, and the older the patient the higher the percentage. It is known that, when many old diabetic patients die, the symptoms of the diabetes have so far subsided that even the word "diabetes" does not appear on the death certificate. With children, reduction in the quantity of insulin often is accomplished safely but its omission is seldom permissible.

The danger of rapidly becoming sugar free was recognized before the discovery of insulin by changes resulting from an alteration of the water balance of the body. Disturbances of vision would follow and it would require an interval of one or two weeks before they would clear. With insulin the same symptoms may occur and it is common for the patients to complain of failing eyesight, which one must urge them not to attempt to rectify immediately with glasses. Generalized edema is a far more troublesome complication, it is due largely to retention of water accompanying the storage of carbohydrate. As a rule it disappears of itself, but this can be hastened by restriction of salt and by the use of diuretics.

INSULIN IN DIABETIC COMA

The introduction of insulin has lowered the incidence of the mortality from diabetic coma in the total diabetic mortality (authors' series) from 60 per cent in the years from 1898 to 1914 to less than 5 per cent in a recent compilation (1930-1933). Insulin has reduced the mortality of diabetic coma itself to 11.9 per cent. In children under 15 years the mortality of diabetic coma (authors' entire series) was 1.3 per cent (seventy-eight attacks), in adults above the age of 20 years it was 20.5 per cent (thirty-two deaths in 156 cases).

The mortality in the very old, surprisingly, was somewhat lower than in those of middle life. In the last forty-nine successive cases of diabetic coma treated there has been one death.

Coma is the crucial test of the efficacy of insulin or, indeed, of any diabetic remedy. But the use of insulin in coma can never be by rule of thumb. One patient will recover with 780 units, and another may recover, or at least has recovered, with 28 units. How, therefore, shall one proceed with the dosage of insulin when confronted with a case of diabetic coma?

The principles underlying the treatment of diabetic coma are four: (1) promotion of the utilization of carbohydrate by the use of insulin, because in this way the acidosis is most effectively corrected, (2) correction of the dehydration that is invariably present, (3) protection of the circulation (a) by maintenance of a glycogen reserve in the heart through the administration of insulin and carbohydrate and (b) by the correction of an abnormal mineral balance by supplying sodium chloride and water, subcutaneously and intravenously, in order to prevent renal block and anuria, (4) relief of a dilated stomach by lavage and of obstipation by enema.

How many units of insulin should one give at the first dose? To answer this question requires careful thought. The more recent the onset of the diabetes, the shorter the duration of the symptoms of the acidosis, the less severe their character as measured by the carbon dioxide of the blood, the greater the freedom of the patient from complications, notably infections, the better the condition of the circulation and especially the more nearly normal the blood pressure, and the less subnormal the temperature, the less is the amount of insulin required. Therefore, our rule is to give insulin at intervals of thirty minutes instead of in one large dose, because this allows time for the study of all the circumstances attending the development of the coma. Often the treatment of the complications plays an important factor indirectly by lessening the severity and shortening the duration of the coma.

Usually the first dose of insulin is between 20 and 40 units, but it may be as low as 5 units or as high as 100 units. If the circulation is obviously poor and sluggish and the temperature subnormal, a duplicate dose of insulin is injected intravenously, and the extremities are massaged and other measures are employed to raise the temperature of the body to normal. The initial dose is repeated almost invariably in half an hour, but after that at half-hour, hourly or less frequent intervals as indicated by the change in the patient's symptoms and signs, as indicated by mental clarity, respiration, and especially by the blood pressure, and by the changing volume of carbon dioxide in the blood, the percentage of blood sugar, the volume of urine and its content of diacetic acid and sugar. As soon as one detects a favorable response to treatment, the quantity and frequency of injections of insulin are decreased, one is alert to prevent a fall of blood sugar to a hypoglycemic level and avoids this by administration of carbohydrate. The second and third twelve-hour periods in the recovery of a case of coma demand close attention, because too easily will the patient revert into the coma state. To obviate this the urine or blood must be examined at least every two or three hours at first and later every four hours, diet and insulin dosage must be adjusted accordingly.

Various authors give one large dose of insulin at the inception of the treatment of coma, believing it to be more effective. Some authors give dextrose, 1 Gm per insulin unit, to prevent insulin reactions and to allow more carbohydrate to be burned and thus more rapidly to overcome acidosis. We have felt it more desirable to treat the disease diabetes rather than the condition acidosis and to give carbohydrate only when the disease is coming under control and tolerance for carbohydrate is being reestablished. We have felt that our 293 cases with 11.9 per cent total mortality, our single death among seventy-eight attacks in children and only one death in the last forty-nine coma cases justify adherence to our present methods. As for alkalis, they have not been administered by us since 1917 and we know of no evidence that would warrant our resuming their use. Others who have used alkalis in the past have reduced the dosage that they originally prescribed from a hundred or more grams first to 50 then to 30 and then to 20, below which, it is acknowledged even by a former advocate of alkalis they can have no material effect. Yet one finds lingering in the books recommendations that the stomach be washed out in coma with a 5 per cent solution of sodium bicarbonate and that a few hundred cubic centimeters be allowed to remain in it, or with still less a scientific basis that an enema be administered and 10 or 15 Gm of sodium bicarbonate be retained, of the latter we know that but little will be absorbed.

The liberal use of physiologic solution of sodium chloride, always slowly administered, subcutaneously, intravenously, seldom rectally, will offset the dehydration and help to protect the blood pressure. Occasionally, for the latter purpose, 50 mg of ephedrine sulphate may be introduced dissolved in the saline solution, or 1 cc of 1,000 epinephrine hydrochloride may be added to each 500 cc of the salt solution. Not once in the course of treatment of 293 cases of coma have we seen the heart embarrassed by the volume of saline solution, which at times has reached 4 or 5 liters in the course of twelve hours. When premonitory signs of anuria have appeared or even actual anuria, it has been possible in several instances to bring it to an end by the intravenous injection of 40 cc of 10 per cent solution of sodium chloride once or twice in eight hours. Perhaps transfusion will avail, but of that we have some doubt and little experience.

For the maintenance of glycogen in the heart muscle we depend on insulin, but when the blood sugar begins to fall, and at any rate within twelve hours of the commencement of treatment, we give carbohydrate orally (ginger ale, orange juice or water oatmeal gruel not over 100 cc an hour) or dextrose intravenously, planning to keep the carbohydrate at about 150 Gm in twenty-four hours.

It seems necessary to make these statements about the treatment of coma because they represent measures that must go on simultaneously with the use of insulin.

Always with a diabetic patient in coma the physician should watch for the coincidence of pulmonary tuberculosis or for its development within the subsequent three years, as Root found in 8 per cent of our cases.

The commonest causes of coma are breaking the diet, the omission of insulin and the development of infections. Breaking the diet is needless, but the development of infections often is unavoidable. As for the omission of insulin, it is true that nearly one fourth

of those who begin insulin later can omit it, but insulin should never be omitted without watching the effect on the urine. It is more essential to teach a patient with diabetes to test the urine when he is not taking insulin than when he is taking it.

Nausea, vomiting and diarrhea are serious in diabetes and can lead both to diabetic coma and to an insulin reaction. If a diabetic patient goes long without food, acidosis develops as in a normal individual, hence diabetic patients should never go long without eating. Temporary fasting for twelve hours more or less may be advantageous, but today no one, I believe, would wish to prescribe a fast for a longer period. In severe diabetes with nausea, vomiting or diarrhea, the lack of food leads to acidosis, the lack of water to dehydration, and if to these two factors is added the omission of the insulin on which the patient's life has depended for years, the onset of coma can be prompt. Conversely, if as a result of nausea and vomiting the meal that has been preceded by insulin is lost, it is easy to understand that the blood sugar may fall too low and an insulin reaction ensue. Consequently, no matter what the status of a diabetic patient, he should not go long without food and I therefore say to my patients "Never stop eating and as long as sugar shows in the urine never stop insulin, and whenever in doubt about the interpretation of symptoms, err on the side of taking soluble carbohydrate such as the coma diet of ginger ale, water oatmeal gruel and orange juice." These rules hold for sea sickness for periods both before and after surgical operations, for infections of all kinds, and for confinements.

INSULIN IN THE OLD AND YOUNG

In the very young and in the very old, insulin should be begun with small but frequent doses. To the old this is particularly reassuring, and later gratifying, when they see that the doses have been reduced from three to two, often to one and frequently omitted altogether. They soon learn that insulin means insurance for them in time of need and become thankful that they have learned about it. The young, at the onset of their diabetes, and the old respond quickly to insulin, and by the use of frequent small doses one escapes reactions which at the beginning of treatment one desires to avoid in these two age groups especially. Not uncommonly diabetic children respond so well to treatment with diet and insulin that one is puzzled to know whether they really do have diabetes after all. In such cases, months are necessary to clarify the diagnosis. And in elderly persons persistence in a suitable dietetic regimen with insulin yields such excellent results that it is easy to overdose the patient.

INSULIN IN HEART DISEASE

An unfounded prejudice exists against the use of insulin in heart disease. It is true that it is of serious concern to lower unduly the sugar in the blood supplying the heart muscle. In diabetes the glycogen content of the heart muscle is high in contradistinction to that of other muscles in which it is low. Presumably in the heart of a diabetic person the glycogen is high to protect it and to make it as easy as possible for this organ to function properly under varying conditions. Be that as it may, it is an incontrovertible fact in our experience that patients with incompetent hearts have been benefited rather than harmed by the use of insulin. Never have

we seen any reason to withhold it in reasonable doses. Knowing the necessity for avoidance of hypoglycemia, we always include sufficient carbohydrate in the diet, change diets slowly and begin insulin in small doses. Thus, in commencing the treatment of an old man with 5 per cent glycosuria, I began with 3 units of insulin before lunch and before dinner and advanced to 5 units before each meal the next day, if with slight increases in insulin it takes a week for such a patient to become sugar free, I do not begrudge the time spent, and I am confident that the damaged heart will be all the better for the insulin. As a matter of fact, this patient improved so much in a few days that I discharged him with 5 units once a day.

INSULIN RESISTANCE

The reporting of cases of insulin resistance or insulin refractory diabetes is now becoming about as uncommon as did that of acute fulminating diabetes after the introduction of undernutrition by F. M. Allen and the improvement in diabetic procedure which that method wrought. Soon after the introduction of insulin it developed that insulin resistance did not exist in children, and little by little it was found out that, after eliminating one complication after another, no adult with uncomplicated diabetes remained who belonged in this category. Before even harboring the thought of insulin resistance one should investigate and be absolutely sure that diet, blood sugar tests, collection and analysis of urine, as well as the quantity and quality of insulin, are as stated and that the insulin is injected in previously untraumatized sites, so that it will be absorbed. If all these requirements are fulfilled, the overwhelming majority of all insulin resistant cases will vanish. Next, one excludes inactivity or destruction of the glycogen reservoirs through lack of muscular exercise, as in passive bed rest or arthritis, through disease of the glycogen-holding cells of the liver, as in hemochromatosis, and again in various disorders of the skin, some of which are as simple as sunburn. Then renal glycosuria is ruled out, and this is not as easy as it seems, I confess to have overlooked this diagnosis in one case for nine years along with competent doctors in two other cities. Frequently in gangrene with an arteriosclerotic basis and in arteriosclerotic disease of the heart and kidney there occurs for a time what appears to be insulin resistance, just as high blood sugars persisted in such cases even before the discovery of insulin, but just as formerly, and now more rapidly, after the removal of the gangrene these cases respond when dietetic treatment is adequate and prolonged. Overfunction of pituitary, thyroid or adrenal may tend to counteract the effectiveness of insulin, but such states are very different from true insulin resistance. It is not always easy to detect hyperactivity of one or another of these ductless glands and should this not be detected when existent, the case seems most obscure. One patient required 32 units of insulin and lost weight until a substernal thyroid was found, but with its removal all need for insulin vanished so completely that it required a sugar tolerance test some months later to disclose that the diabetes was not actually cured. Infections of all sorts lead to insulin resistance and at present the evidence points to the destruction or neutralization of the exogenous or endogenous insulin rather than to lack of insulin formation. Last of all comes acidosis and in its presence resistance is manifest disappearing rapidly with its relief.

INSULIN IN NONDIABETIC STATES

Although little is known concerning the effect of insulin on the carbohydrate metabolism in nondiabetic persons, certain observations indicate that it has a field of usefulness, particularly when undernutrition is a problem. A temporary loss of carbohydrate tolerance during the administration of insulin has been noted in certain patients and also in experimental animals. However, in Blotner's studies the tolerance always returned to normal. Various explanations for this temporary glycosuria, on the ground of a change in the permeability of the glomerular membrane, an increased rate of absorption from the intestinal tract, or a temporary decrease in pancreatic function have been offered, but none seem to have been generally accepted.

Thin, undernourished individuals whose emaciation is due to poor appetite can be helped to take more food. The practice of using insulin in nondiabetic patients to increase weight began in 1923 and was soon adopted for nondiabetic tuberculous cases. The mode of its action is not entirely clear. Insulin is only one of many factors influencing appetite and nutrition, and not all patients with tuberculosis react to its use in the same way. F. M. Allen advised beginning with 5 units three times a day and increasing to 40 units three times a day. The protection against shock depends not so much on large quantities of carbohydrate as on the repeated administration of such small amounts as 10 Gm. Occasionally much larger doses of insulin were given. Individualization of the dosage should be emphasized, especially in cases in which tuberculosis of the adrenals or liver is present. In such cases dangerous hypoglycemia may occur. Gains in weight of 60 pounds (27 Kg.) or more in a few months together with improvement in strength and spirits frequently are reported and are said to be maintained after insulin is stopped. However, all writers agree that insulin is an adjunct and is not to be substituted for any of the regular forms of treatment for tuberculosis.

Renal glycosuria should not be treated with insulin. The fundamental characteristic of renal glycosuria is the constant occurrence of glycosuria even with a normal blood sugar, irrespective of the amounts of carbohydrate ingested. Therefore if insulin is given without study of the blood sugar under a misapprehension of the nature of the glycosuria, the dose may be increased to dangerous levels at which severe hypoglycemia will develop.

HYPERINSULINISM

Under the title hyperinsulinism have been grouped an increasing number of cases of "hunger" disease (Seale Harris) or spontaneous hypoglycemia. The symptoms of hunger, nervousness, sweating, fainting, epileptiform convulsions and unconsciousness, usually relieved by food or by dextrose given intravenously, are due to the hypoglycemia, whether its cause is truly oversecretion of insulin or, as in some instances, a disease of the liver or adrenals. The variety of nervous and mental symptoms as well as cardiac and abdominal symptoms, makes the condition an important one for internist and surgeon alike to bear in mind.

The pathology of the condition has been studied at operation and after death. Hyperplastic islet cells have been found at autopsy in two children (cited by Harris) and in a physician cited by Mosenthal. In some cases at operation normal appearing pancreases have been found. Adenomas and carcinomas of the islets of Langerhans have been shown to produce even in

their metastatic lesions large amounts of insulin (Wilder) It must be remembered that hypoglycemia may occur in certain types of hepatic diseases, in diseases of the pituitary, thyroid and adrenal glands (especially Addison's disease), and Harris urges the study of all other possible causes of hypoglycemia before the diagnosis is made of hyperinsulinism in epileptic patients

The diagnosis may be made tentatively from the clinical symptoms, and from the relief of mild symptoms by frequent carbohydrate feeding and a high fat diet Blood sugar values below 0.06 per cent following a dextrose tolerance test should be watched, especially since in some cases epileptiform seizures have occurred when the blood sugar fell to 0.05 per cent Such attacks may be produced by giving test doses of insulin, but this procedure is not advised

81 Bay State Road

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

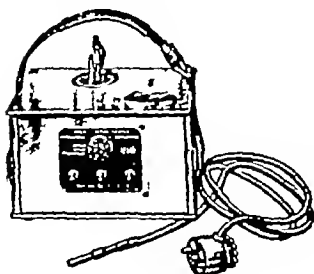
HOWARD A. CARTER Secretary

CENCO THERMELOMETER ACCEPTABLE (Electrical Thermometer)

Manufacturer Central Scientific Company, 1700 Irving Park Boulevard, Chicago

This temperature recording instrument is especially adaptable for taking the temperature of a patient receiving fever treatments

The Thermelometer makes use of two sets of thermo-elements or thermal junctions, one set of two in series being contained in the heat sensitive element, the other or reference junction being located in a sealed chamber, the temperature of which is held constant to within 0.01 degree F. A difference in temperature between the two sets of thermal junctions produces a potential difference, which is impressed across the terminals of a micro-ammeter calibrated to read from 95 to 110 F in one-fifth degree divisions thus corresponding to a clinical thermometer. A heat sensitive junction is confined in a tube connected to a long heavy insulated wire and it is suitable for taking rectal temperatures



Cenco Thermelometer

An electro-finished aluminum case contains all necessary parts except the heat sensitive element, which is removable. A removable metal cap protects the thermoregulator head and reference thermometer. Toggle switches on the front of the case control all electrical circuits, and a "bull's eye" with pilot light behind it affords a visible indication that the instrument is operating. A magnifier above the temperature scale facilitates quick readings. A substantial leather strap makes the Thermelometer readily portable. Its shipping weight is 75 pounds

This unit was tried out in a clinic acceptable to the Council, and the investigations substantiated the claims made by the manufacturers pertaining to its accuracy. The unit seemed rugged and well made and has been under observation for over one year. The unit is not accurate when the fever treatments are given by short wave diathermy units

In view of the favorable report, the Council on Physical Therapy voted to include the Thermelometer in its list of accepted devices

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

IMBAK PREPARATIONS NOT ACCEPTABLE FOR N N R

Imbak is the group title applied to a series of several non-descript preparations distributed by Ernst W. Abicht of New York and manufactured by Deutsche Imbak Gesellschaft of Frankfurt-on-Main, Germany. Apparently Imbak (numbers 1, 2, 3, 6 and 10) is some sort of bacterial preparation derived from the lactic acid-forming group. It enjoys the same type of absurdly uncritical promotion typical of many products of foreign origin that have been and are being marketed in this country (some of which have been the subject of Council reports in the past, e.g., Iodo-Mangan, Sulfuryl Monal, Colloidine, Quicamphol, Pinnecksin, Hermal, Atychol, Valamin, Tersul, Hiller, Promonta, Iodeol, Borosedine, Tryptoserm, Eubetin, Antiopin, Propeptans, Naodine, Edwenil). Of course, there are also worthy foreign preparations which have been presented by those who understand what constitutes evidence of an acceptable character to gain the confidence of the American physician.

Imbak was presented to the Council by Ernst W. Abicht of New York, whose main business seems to deal with paper converting machinery. All of the varieties are stated to consist of "only pure natural products, free from all artificial chemicals." The process of manufacture is described

By means of a special procedure, which is protected in all civilized countries, lactic acid bacteria according to Meitschnikoff's prescription are developed in best pure milk of the Alps, and all other superfluous or even damaging microbes exterminated [sic]

No other statement of composition is submitted, nor, in fact, is there any mention of dosage or mode of administration recommended. Deficient though the submission may be in these respects, the therapeutic claims are far from modest. One or the other of the numerical modifications (and here the correlation between a given disease group and the corresponding "number" of the Imbak line indicated therein is frequently not apparent) are recommended in the treatment of the following conditions: intestinal and pulmonary tuberculosis, typhoid, dysentery (amebic as well as other forms), psoriasis, arthritis deformans, arteriosclerosis, diabetes, cholera, malaria, trypanosomiasis, syphilis, "and some more."

The value of Imbak in these various disease states allegedly has been attested to by Prof. Dr. Kessler of the Tung Chu University, Shanghai, and Dr. med. A. Stein, doctor of the State Penitentiary Hospital, Frankfurt-on-Main. Prof. Dr. Kessler has not applied the product to as widely diverse fields of medicine (and surgery) as Dr. med. A. Stein, but he claims to have obtained beneficial results in rickets, intestinal catarrh, constipation and "dyspepsy." Dr. Stein, however, seems most enthusiastic (although apparently proportionately less critical than Prof. Dr. Kessler) in his statements

CANCER

"With regard to cancer it has been possible during the last two weeks [italics ours] to treat two cases notwithstanding it is very difficult to persuade patients to undergo a new cure which has not yet come into publicity also in this case it has been shown in a most evident fashion that justly these diseases which hitherto have caused the greatest difficulties to doctors were extinguished [sic] in a few weeks. The results up to now obtained with the different patients who partly are still under treatment is highly promising, so that already this day we can affirm that at last we have in our hand this means which act directly on the different causes of diseases destroying them. This invention is to be put in the same line which the salvarsan occupies as the Therapia Magna Sterilisans

It would, indeed, promise a glorious era in medicine were such an omnipotent preparation produced, but in this case clinical, pharmacologic and therapeutic evidence to support even a small fraction of the claims is totally lacking, and in consideration of the rather extensive knowledge already established concerning the lactic acid-forming organisms it appears questionable that such properties, even in a small part, may ever

be properly attributed to Imbak or to any similar product, irrespective of the regrettably premature predictions of Prof Dr Kessler and Dr med A Stein

The Council declared Imbak and the submitted dosage forms not acceptable for New and Nonofficial Remedies because Imbak is a semisecret preparation marketed under a noninforming name (rules 1 and 8), promoted with unwarranted and absurd therapeutic claims (rule 6)

This proposed report was submitted to the manufacturer. The firm applied for reconsideration and submitted additional information on the products. The Council considered this information to be wholly inadequate as evidence for acceptability. The firm states that Imbak has many forms in addition to numbers 1 to 10. Number 37 and numbers 40 to 75 are claimed to be useful in the treatment of typhoid fever, tuberculosis, diabetes, obesity, asthma, bronchitis, arteriosclerosis and other diseases. The Council held that this additional material serves only to confirm its declaration of the unacceptability of Imbak.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

RAYMOND HERTWIG Secretary

MINNESOTA BRAND AMBEROLLS— ELBOW MACARONI

MINNESOTA BRAND ELBOW MACARONI— AMBEROLLS

MINNESOTA BRAND LONG MACARONI

MINNESOTA BRAND LONG SPAGHETTI

MINNESOTA BRAND MACARONI ALPHABETS

MINNESOTA BRAND MACARONI RINGS

MINNESOTA BRAND MACARONI SHELLS

MINNESOTA BRAND SPAGETS—ELBOW SPAGHETTI

MINNESOTA BRAND VERMICELLI

Manufacturer—Minnesota Macaroni Company, St. Paul

Description—Macaroni of various shapes prepared from durum semolina.

Manufacture—Durum semolina is kneaded with water under corrugated steel rolls, forced through dies containing holes of appropriate diameter and shape to form the various types of macaroni, partially dried and packaged

Analysis (submitted by manufacturer) —	per cent
Moisture	10.0
Ash	0.7
Fat (ether extraction method)	0.9
Protein (N × 5.7)	13.6
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	74.3

Calories—3.5 per gram, 99 per ounce.

Claims of Manufacturer—Complies with the United States Department of Agriculture definition and standard.

PETER PAN SLICED SANDWICH BREAD

Manufacturer—Cottons, Inc. Baton Rouge, La.

Description—Sliced white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p 817), prepared from flour, water cane sugar powdered skim milk, lard, yeast, salt, condensed milk and a yeast food containing wheat flour, sodium chloride, calcium sulphate, ammonium chloride and potassium bromate, malt extract syrup, and corn and soya bean flours

BOB WHITE BRAND FANCY TABLE SYRUP GOLDEN

Manufacturer—The Torbitt & Castleman Company, Inc., Louisville, Ky

Description—Table syrup a blend of corn syrup (90 per cent) and refiners' syrup (10 per cent)

Manufacture—Corn syrup, prepared as described in THE JOURNAL, March 5, 1932, page 817, and refiners' syrup, which complies with the United States Department of Agriculture standard for that product, are mixed in the stated proportions, heated to 70 C and automatically packed in air tight cans

Analysis (submitted by manufacturer) —	per cent
Moisture	24.0
Ash	0.9
Fat (ether extract)	0.0
Protein (N × 6.25)	0.2
Reducing sugars as dextrose	32.6
Reducing sugars as dextrose after inversion	38.7
Sucrose	5.8
Dextrins (by difference)	36.2
Titrateable acidity as HCl	0.03
Sulphur dioxide as SO ₂	0.001
pH	5.6

No methods are available for accurately determining the composition of syrups of this nature, therefore the foregoing analysis is roughly approximate

Calories—30 per gram, 85 per ounce.

Claims of Manufacturer—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table

WILSON PURE TOMATO JUICE

Distributor—Ira Wilson & Sons Dairy Company, Detroit

Packer—The Loudon Packing Company, Terre Haute, Ind

Description—Tomato juice in bottles, retains in large measure the vitamin content of the raw juice used, contains a small amount of added salt. The same as Loudon Brand Tomato Juice (THE JOURNAL, June 25, 1932, p 2289)

1 BOHACK'S GRAPEFRUIT

2 HALE'S PRIDE FANCY GRAPEFRUIT

Distributors—1 H C Bohack Company, Inc., Brooklyn and Long Island, N Y 2 Hale-Halsell Company, McAlester, Okla

Packer—Dr P Phillips Company, Orlando, Fla

Description—Canned sliced Florida grapefruit sweetened with added sucrose and retaining in large measure the original natural vitamin content, the same as Dr P Phillips Florida Fancy-Cut Grapefruit Slices (THE JOURNAL, Nov 19, 1932, p 1781)

DURKEE'S VEGETABLE OLEOMARGARINE

Manufacturer—Durkee Famous Foods, Inc., Chicago, Norwalk, Ohio, and Berkeley, Calif

Description—Margarine prepared from hydrogenated refined cottonseed oil, pasteurized cultured milk, salt, derivative of glycerin, and sodium benzoate (0.1 per cent)

Manufacture—Hydrogenated refined cottonseed oil is heated to 41-43 C and churned with pasteurized cultured milk. The resulting emulsion is solidified by spraying into a vat of ice water, worked to remove excess moisture, blended with salt, cultured milk, derivative of glycerin (emulsifying agent), and sodium benzoate, cooled to 17 C, molded into prints, and automatically wrapped and packed in cartons

Analysis (submitted by manufacturer) —	per cent
Moisture	14.8
Ash (other than sodium chloride)	0.1
Sodium chloride	3.4
Fat (ether extract)	80.1
Protein (N × 6.25)	0.4
Lactose	0.5
Sodium benzoate	0.1
Glycerin derivative	0.5

Calories—7.2 per gram, 204 per ounce.

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SATURDAY, AUGUST 3, 1935

EFFECT OF CHOLECYSTECTOMY ON HEPATIC AND RENAL FUNCTION

Although much information is available regarding the functions of the gallbladder, there are still certain phenomena apparently related to the activity of this structure that remain unsolved. Particularly is this true in the case of certain metabolic disturbances that may follow the removal of the gallbladder, most notable among which are alterations in hepatic and renal function. At first thought it seems improbable that the mere removal of the gallbladder, a structure known to be nonessential to mammalian life and presumably functioning chiefly in the concentration and storage of bile, should exert any deleterious effects on other organs. However, instances of serious postoperative morbidity and even death following simple cholecystectomy have been described in patients who were apparently in good condition before operation. The most careful preoperative examination may fail to reveal any significant hepatic or renal functional impairment, cholecystectomy may be performed without undue trauma, the anesthesia may not produce noticeable untoward effects and still the patient may show evidence of profound functional disturbances, particularly of the liver and kidneys, and may die within a few days after operation.

Questions naturally arise concerning the nature of the hepatic and renal changes following cholecystectomy. The majority of the experimental studies dealing with hepatic alterations have been concerned with the morphologic aspects of the problem. Recently, however, variations in the functional efficiency of the liver have been followed.¹ Simple cholecystectomies were performed on a group of sixty patients with cholecystitis, there were no obstructions of the common duct and the subjects were not clinically jaundiced. Nitrous oxide and ether infiltration or spinal anesthesia was employed, in no case was the common duct manipulated, nor were other operative procedures performed. All the patients were in good clinical condition before

and during the operation, and there were no fatalities. As indexes of liver function, the bilirubin content of the serum and the degree of retention of bromsulphalein were determined.

The data obtained indicated that in the majority of cases there is a slight transitory increase in serum bilirubin and in the retention of the dye, suggesting a temporary impairment of the excretory function of the liver. The increase in serum bilirubin was more constant in cases that did not show preoperative hyperbilirubinemia, the degree of dye retention, however, appeared to bear no constant relation to the extent of the preoperative or the postoperative bilirubinemia. Patency or occlusion of the cystic duct appeared to be of importance in determining the incidence of these postoperative functional abnormalities. Hyperbilirubinemia and increased retention of bromsulphalein were observed in a large majority of the cases in which there were patent cystic ducts, whereas these changes occurred in relatively few of the group showing obstruction of the duct. The probable explanation for this difference is that physiologic compensation, as described by an earlier investigator,² to the lack of functional activity of the gallbladder had already occurred in the latter group. The postoperative increases of serum bilirubin and retention of dye eventually disappeared in every case, although in some instances one or the other persisted for as long as four days. An explanation of these results is difficult. Apparently the effects of the anesthetic were of relatively little importance, as no correlation existed between the duration and type of anesthesia and either the incidence or the severity of the postoperative changes. It is possible that the effects observed may be related to an alleged decrease in the rate of flow of bile following cholecystectomy. Such a change would undoubtedly favor the retention of bilirubin and of bromsulphalein.

Impairment of renal function following cholecystectomy has also been repeatedly observed. Patients with chronic cholecystitis and apparently normal renal function have been known to develop profound uremia following operation. Careful examination of the kidneys of these patients at necropsy frequently reveals a marked necrosis of the tubular epithelium, with focal hemorrhages and patchy areas of leukocytic infiltration. The appearance of the kidneys is distinctly different from the appearance of these organs in biliary nephrosis. Recent histologic studies³ on the kidneys of patients with calculous cholecystitis who died following operation have yielded further confirmatory information, distinct regressive cellular changes in the renal tubular epithelium were observed. Several hypotheses have been advanced to explain these phenomena. One postulates that the renal damage may be due to the toxic

1 Cantarow Abraham, Gartman Edward and Richiuti A. G. Hepatic Function. III. The Effect of Cholecystectomy on Hepatic Function. Arch. Surg. 30: 865 (May) 1935.

2 Puestow C. B. The Discharge of Bile into the Duodenum. An Experimental Study. Arch. Surg. 23: 1013 (Dec.) 1931.
3 Lieber M. M. and Stewart H. L. Renal Changes Following Biliary Obstruction. Decompression and Operation on the Biliary Tract. Arch. Path. 19: 636 (May) 1935.

effect of split protein products from damaged, autolyzing hepatic tissue, these toxic products are then supposed to exhibit an elective affinity for parenchymatous and vascular tissues, producing angiospasm and progressive degeneration and necrosis of the tubular epithelium. Neither this nor other theories, however, satisfactorily explain the pathogenesis of all the renal changes following cholecystectomy.

The foregoing unsolved problems regarding functional impairment of the liver and kidney following simple cholecystectomy emphasize again the complexity of interrelations of organs and also the fact that alterations in the activity of one body tissue are frequently reflected by compensatory changes in remote and often unexpected places.

A CRYSTALLINE PROTEIN HAVING THE PROPERTIES OF A VIRUS

The nature of viruses has been a matter for speculation since Iwanowski¹ demonstrated in 1892 that the infective agent causing the mosaic disease of tobacco plants could pass through a porcelain filter. This was the first known virus. Iwanowski's work was confirmed independently by Beijerinck². Loeffler and Frosch³ in 1898 showed that the causative agent of foot and mouth disease also is filtrable through a porcelain candle. Since then more than a hundred filtrable agents belonging to the class now known as viruses have been demonstrated to cause disease in plants and animals.

Many difficulties beset the efforts of investigators to determine the nature of viruses. Some have held that they are living organisms, in view of the fact that viruses do not propagate except in the presence of living tissue and because of their behavior in other respects, some have suggested that these infective agents are nonliving poisons.

The recent announcement made by Stanley⁴ of the Rockefeller Institute is therefore of great importance. Stanley has reported the separation from the juice of Turkish tobacco plants infected with the mosaic disease of a crystalline protein that has the properties of tobacco-mosaic virus. The material was obtained in the form of fine needles, which contain 20 per cent of nitrogen and 1 per cent of ash. The substance is precipitated by a variety of protein precipitants, it is practically insoluble in water but is soluble in dilute acid, alkali or salt solutions. In all respects it behaves like a typical protein.

The crystalline substance produced typical tobacco-mosaic disease on inoculation into tobacco plants, the activity of the crystals was more than 100 times that

of a suspension made by grinding up the leaves from diseased plants. The infectivity, chemical composition and optical rotation of the crystalline protein were unchanged after ten successive crystallizations. Collodion filters through which the protein did not pass also did not permit the infective agent to pass. The newly isolated compound was held back by collodion membranes through which proteins such as egg albumin passed readily, this and other experiments indicate that the molecule of the crystalline protein is very large, having a molecular weight probably of a few million. The protein was inactivated by heating to 94 C, a temperature at which the virus is also destroyed.

The serums of animals injected with tobacco-mosaic virus gave a precipitate with solutions of the crystals in dilutions up to 1:100,000, this did not occur with the serums of animals injected with the juice of healthy tobacco plants. Conversely, injection of solutions of the crystals into animals produced precipitins against the crystalline protein and against the juice of infected but not against that of normal plants.

Stanley regards the tobacco-mosaic virus "as an autocatalytic protein which, for the present, may be assumed to require the presence of living cells for multiplication."

It is too early to speculate on the eventual significance of this fundamental contribution, with regard to its relation to virus diseases in animals or to other virus infections of plants. The concept of nonliving poisons propagated by or in the living cells which are attacked by the poisons has received consideration since it was proposed by Sanfelice in 1914.⁵ Stanley's work provides experimental support for this theory.

SULPHUR THERAPY

The utilization of sulphur for medicinal purposes was described as early as the time of Pliny,¹ who attributed therapeutic value to this element in a wide variety of ailments. Medical interest in sulphur has been stimulated by the preparation of this material in forms² whereby it may be introduced intramuscularly and intravenously. Much has been written concerning the wide therapeutic value of sulphur, but its use in widely different fields suggests that the theoretical basis of sulphur medication is largely empirical. As a result, the many beneficial results attending the administration of sulphur have been accompanied by a certain proportion of unfavorable prognoses. For example, the failure to observe aseptic precautions during intramuscular administration of preparations of sulphur in oil has frequently led to periostitis, in some instances the dangers of an oil embolism have been encountered. Notwithstanding these difficulties, injections of sulphur in oil have been widely employed within recent years in the treatment of a variety of conditions.

¹ Iwanowski D. *Bull Acad Sc S Pétersbourg* 1892.
² Cited from *A System of Bacteriology in Relation to Medicine* Medical Research Council His Majesty's Stationery Office London 1930 volume VII pp 13 and 14.
³ Loeffler A J and Frosch. *Deutsche med Wchnschr* 24 80 1898.
⁴ Stanley W M. Isolation of a Crystalline Protein Possessing the Properties of Tobacco-Mosaic Virus. *Science* 81 644 (June 28) 1935.

¹ Pliny. *Natural History* book XXXV chapter 50 London George Bell Sons 1856.
² Debus H. *J Chem Soc London* 53 278 1888.

The Danish clinician Schroeder³ first suggested the use of a preparation of sulphur in oil in the treatment of dementia paralytica and certain other nervous and mental disorders. The primary object of the therapy is to produce a series of pyrexial bouts, any favorable results that ensue are usually attributed to the beneficial effects of the fever. The therapeutic value appears primarily to be a general reaction associated with the rise of temperature, although some claim a specific sulphur effect. The results of Schroeder have been extensively studied by English investigators. In contrast to the rapid and dramatic results which he described, subsequent experimentation has produced comparative failure.⁴ Recently, a study⁵ of a series of twenty-three cases of dementia praecox treated with a preparation of sulphur in oil gave slight indications of improvement, although it was difficult to distinguish between therapeutic improvement and spontaneous amelioration. One of the most characteristic effects of the sulphur injections appears to be a leukocytosis. This phenomenon has been studied in some detail both in man and in rabbits by Power⁶ and has been demonstrated to be due to an increase in polymorphonuclear cells. Furthermore, the leukocytes that appear in the circulation under these experimental conditions have been shown to exhibit, under *in vitro* conditions, a considerable degree of phagocytic activity.

Probably the most beneficial results of sulphur therapy have been claimed in dermatology. This is particularly true with the advent of new preparations. Miller⁷ has recently presented an interesting report of the uses that have been suggested for colloidal sulphur in dermatology, together with personal observations made in a wide variety of dermatologic conditions. Interesting comparisons have been made between the therapeutic value of colloidal sulphur and that of other forms of sulphur therapy. The application of this element in colloidal form was of no value for cutaneous conditions that in the past have not responded to other types of sulphur treatment. However, colloidal sulphur seemed to produce improvement in many instances in seborrhea, seborrheic dermatitis, acne rosacea, acne vulgaris and dermatomycosis. It also proved to be of value when applied as wet dressings in cases of subacute eczema and dermatomycosis. Certain types of fungous infections, for example ringworm of the feet, responded well to colloidal sulphur therapy. The latter treatment was, however, of little value in scabies, psoriasis or instances of pyogenic infections.

These results, together with cases reported by other investigators, may stimulate the use of sulphur as a therapeutic agent in dermatology. Sulphur in the colloidal form should be employed in much lower con-

centrations than those used for other forms of sulphur. It is generally advisable to use the material in less than a 5 per cent solution, and it requires considerable experience to determine the exact strength needed and the most suitable base or dispersion medium for the preparation. All preparations should be clear, free from an odor of hydrogen sulphide, of a p_H of approximately 5.0, and correctly standardized as to sulphur content.

Current Comment

SIGNIFICANCE OF CALCIUM ION CONCENTRATIONS IN THE BLOOD

At least part of the diffusible calcium in the blood serum is in the form of free ionic calcium. There is reason to believe that this form is of primary physiologic importance. Two schools of thought, both supported by experimental evidence, have developed with regard to the state of this diffusible calcium. One has held that all or nearly all the calcium not bound to protein is ionized. The other believes that, of each 5 mg of calcium not bound to protein, not more than 2 mg can be in the ionized state. In order to account for the remaining 3 mg a diffusible form of calcium, bound to some citrate-like substance, as yet unidentified, has been postulated. In view of the uncertainty as to the conditions present in the fluids of the normal body, it is not surprising that interpretation of abnormal observations has been a source of great difficulty. To the clinician this has meant (1) that a normal figure for the total calcium of the serum might possibly conceal an abnormal distribution between the various forms, and (2) that no sound basis has existed for clinical interpretation of abnormal fluctuations in the total calcium level. The key to these difficulties lies in the possibility of making direct observations of ionic calcium concentrations. McLean and Hastings¹ have reported a method designed to resolve this problem. They used the isolated heart of the frog, already known to be extremely sensitive to changes in the calcium content of its nutrient fluid. It had been previously² shown that this sensitivity could be reduced to quantitative terms. The ionic calcium concentration in normal human fluids was found to be in the neighborhood of 5 mg per hundred cubic centimeters of fluid, and this held true whether cerebrospinal fluid, containing a total of 5 mg of calcium per hundred cubic centimeters, or a serum containing twice this amount was examined. It thus appears that all or nearly all the calcium in protein-free fluids is present in ionized form and that in protein-containing fluids, such as serum, plasma, pleural fluid and ascitic fluid, ionic calcium and calcium bound to protein are together sufficient to account for all or nearly all the total calcium. There thus seems no further reason to propose quantitatively significant amounts of a third form of calcium in the fluids of the

3 Schroeder Knud Lancet 2:1081 (Nov 23) 1929
4 Patterson W G, and Switzer S R. C. Lancet 2:348 (Aug 16) 1930

5 McCartan William Lancet 1:340 (Feb 13) 1932
6 Power T D Lancet 2:1289 (Dec 13) 1930 1:338 (Feb 13) 1932

7 Miller H E. Colloidal Sulphur in Dermatology Arch Dermat & Syph 31:516 (April) 1935

1 McLean F C and Hastings A B Clinical Estimation and Significance of Calcium Ion Concentrations in the Blood Am. J. M. Sc. 189:601 (May) 1935

2 McLean F C and Hastings A B A Biologic Method for the Estimation of Calcium Ion Concentration, J. Biol. Chem. 107:337 (Oct) 1934

normal human body. It can scarcely be doubted, however, that a small but insignificant amount of bound but diffusible calcium, corresponding to the small amounts of citrate present in human fluids, does exist in these fluids. The calcium-protein relationship was next investigated, and this study led to the discovery that the ionization of calcium in protein-containing fluids is determined by a chemical equilibrium between calcium and protein. With the demonstration that the distribution of calcium between ionic calcium and calcium bound to protein depends on the total protein present, it becomes possible to calculate ionic calcium concentrations from values for total calcium and total protein. The first conclusion is that values for ionic calcium concentrations as calculated from total calcium and total protein are in substantial agreement with the values obtained from direct observation by the frog heart method. The usual and simple method for calculating ionic calcium concentrations from total calcium and total protein thus appears entirely adequate for ordinary clinical use.

Association News

NEW REGULATIONS CONCERNING INJURED EMPLOYEES OF WORKS PROGRESS ADMINISTRATION

The Emergency Relief Appropriation Act of 1935 provides that the provisions of the Federal Employees' Compensation Act are extended, as far as applicable, to employees of the Federal Civil Works Administration for disability or death resulting from traumatic injury sustained while in the performance of duty. Traumatic injury includes "only injury by accident causing damage or harm to the physical structure of the body and shall not include a disease in any form except as it shall naturally result from the injury."

The administration of the Federal Employees' Compensation Act is vested in the United States Employees Compensation Commission, Washington, D. C., the commission being authorized to make necessary rules and regulations for the carrying out of the purposes of the act. Pursuant to this authority, the commission, July 15, 1935, promulgated Rules and Regulations No. 1, Governing Compensation and Medical Expense for Works Progress Administration.

SUMMARY OF RULES AND REGULATIONS No 1

The term "employee" includes only persons receiving security payments or wages from funds made available by the Emergency Relief Appropriation Act of 1935 for services rendered as employees of the United States. The term "physician" includes only graduates of a recognized medical school with a degree of M.D. who are licensed to practice medicine in the state in which they reside. The term "state compensation officer" as used in the regulations refers to the person on the staff of each State Works Progress Administrator who is charged with the duty of supervising the handling of compensation claims.

MEDICAL TREATMENT

Employees of the Works Progress Administration who suffer a traumatic injury while in the performance of duty, whether or not disability arises are entitled to necessary medical and hospital care. Treatment will not be authorized for illness or disease in any form except as it may naturally arise from a traumatic injury by accident causing harm or damage to the physical structure of the body. No provision is made for medical examinations to determine employees' physical qualifications for work.

Where practical medical treatment is to be furnished by federal medical establishments but these facilities may not be

utilized to the exclusion or disadvantage of any other beneficiary for whom they have been specifically provided. Where federal medical facilities are not available, or where such facilities are inadequate to furnish the necessary services, the state compensation officer or his local representatives are authorized to make arrangements for medical care by reputable private physicians.

Medical fees are to be paid at rates not in excess of the minimum charges prevailing in the community for similar services. The regulations provide that the state compensation officer or his local representatives should contact the local medical societies to enlist their cooperation in selecting physicians in the locality who are especially well qualified to render services in industrial accident cases and who desire to render such service to employees of the Works Progress Administration, under the regulations of the commission. The fact that a physician, otherwise qualified, is not a member of a medical society is not to be considered in a way discriminatory to him. Compensation cases are to be distributed among physicians in as equitable a manner as possible.

A physician authorized to treat an injured employee may select the institution in which a patient is to be hospitalized, provided such institution agrees to the approved schedule of rates. The commission has agreed with representatives of the national hospital associations on basic rates with general hospitals for services to Works Progress Administration employees. The commission reserves the right to have its medical representatives examine patients and their records at the hospital and to cause a patient's removal for sufficient reason.

AUTHORITY FOR TREATMENT

Where there is no doubt concerning the right of an employee to receive medical care, special form CA-16, or a letter containing the information required by that form, must be issued by the person in charge of a project or the compensation representative, in sending an injured employee to a physician or hospital for treatment. The request is made in duplicate and the original is left with the physician or hospital.

If there is doubt whether or not an employee is entitled to medical and hospital care, the person in charge of the project, or the local compensation representative, should send the employee for an examination, using special form CA-17. If the examination discloses that the employee is not entitled to treatment, the local compensation representative or other person who issued form CA-17 should immediately notify the physician or hospital that no treatment should be rendered for the account of the commission. If the local compensation representative is in doubt concerning the matter, he is to refer all details and circumstances to the state officer for advice. If the state officer entertains doubt, he is to refer the facts to the commission, at Washington, D. C., for decision. Form CA-17 authorizes necessary emergency treatment.

Form CA-16, or form CA-17, is the physician's authority for rendering services for the account of the commission, and bills cannot be paid in the absence of such authority. The regulations provide that authorization for treatment of an injured employee should not be issued to more than one physician, if a second physician is necessary, the attending physician has full authority to procure such assistance as he may deem necessary. If, however, a change of physicians becomes advisable, authority for treatment is to be issued to the physician to whom the case is transferred.

Authorization for treatment, the regulations provide, should be issued on the date of the injury or on the date the employee applies for treatment and should be sent to the physician at the time the employee is referred for treatment. Emergency cases may be referred before the issuance of form CA-16, provided the form is issued within forty-eight hours thereafter. When it is not practical to observe this requirement the delay in issuing authorization must be explained—otherwise payment for medical services may be refused. All authority for treatment or hospitalization should be signed personally by the issuing officer. The name of the issuing officer typed on the form is not to be considered valid authority.

Attending physicians may engage special nursing service when such care is absolutely essential without written authorization by the compensation officer. The commission's allowance for

hospitalization covers all general nursing service. The necessity for special nursing must be shown in each case. Vouchers submitted by nurses must contain a certification that they are not employed on a salary basis in the hospital in which the service was rendered, and these vouchers must be approved by the attending physician.

HERNIAS

Special provisions are embodied in the regulations with respect to hernias. Form CA-17 should be used in all hernia cases. In general, no hernia operation is to be authorized by the state compensation officer, but such cases must be reported to the commission at Washington for authorization to proceed with the operation. In an emergency, however, "due to strangulation or incarceration," when it is clear that the complication is due to injury on a Works Progress Administration project, an emergency operation may be authorized locally. The provisions of the commission's general regulations promulgated under the Federal Employees' Compensation Act, relating specifically to hernias, are made applicable to cases of hernias developing in connection with the Works Progress Administration activities.

PREPARATION OF VOUCHERS FOR MEDICAL AND HOSPITAL SERVICE

Bills for medical and hospital services are to be submitted on form S-69 and supported by proper written authority authorizing such service, either special form CA-16 or CA-17 as the case may be, unless such authorization has previously been forwarded to the commission. A separate voucher must be submitted by each payee for services to each indigent employee.

Vouchers should be verified by the signature of the injured employee. Vouchers from physicians and hospitals on form S-69 should be submitted when the employee is discharged from treatment except when hospitalization or treatment extends more than thirty days, in which case the vouchers should be submitted at the end of each thirty-day period with a complete report from the attending physician showing the condition of the employee, the diagnosis and prognosis, and recommendations with reference to any future medical care.

VOUCHERS SUBMITTED BY PHYSICIANS

The following specific instructions should be followed by physicians, in submitting voucher form S-69: (a) All charges must be itemized to show specific dates on which treatments were rendered, the charge for each treatment and a concise description of the injury for which treatment was rendered. (b) X-ray charges should be itemized so as to show the dates on which made, number of views, parts of the body roentgenographed, and the charge for each service. (c) Joint accounts will not be authorized for payment. If the service of an assistant or consultant is required, the assistant or consultant must submit a separate voucher. (d) Physicians and hospitals must not submit a combined account. (e) Vouchers from physicians shall include a separate charge for drugs and must show whether such drugs were supplied from personal stock. If not, a receipted bill supporting the charge must accompany the voucher. All charges for drugs must be itemized.

VOUCHERS FOR HOSPITAL SERVICE

The following specific instructions must be followed in submitting voucher form S-69 for authorized hospital service: (a) Payment will be made for the day of admission but not for the day of discharge from the hospital, and vouchers should be submitted accordingly. (b) The per diem rate for hospitalization includes all drugs, dressings and laboratory work. (c) Payment for special drugs and supplies authorized by the attending physician will be approved. Whenever extra charges for special drugs or surgical supplies are made, the kind of drugs must be shown on the voucher and, if they are not supplied by the hospital, the amount claimed must be supported by a properly receipted bill. If not supplied from stock or supported by a receipted bill, the cost of the article should not be included in the hospital voucher and the druggist or firm supplying the articles should be instructed to submit a voucher. (c) All x-ray charges should be itemized as described

in the preceding paragraph. (d) Hospitals and physicians must not submit a voucher combining the services of the two. When the physician is owner or part owner of the hospital, and accounts are submitted in the physician's name or in the name of the hospital, a separate voucher must be prepared for each class of service.

IN GENERAL

The regulations further provide, in detail, for the payment of necessary expenses incurred in the transportation of injured employees for the purpose of obtaining medical treatment, for the filing of reports of injuries, and for the payment of compensation to injured employees or their surviving dependents.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Appointments to State Medical Board—Members of the Arizona State Board of Medical Examiners, recently appointed by the governor, and their terms of office are: Dr. John H. Patterson, Phoenix, secretary, six years; Dr. William G. Schultz, Tucson, five years; Dr. Ira E. Huffman, Tucson, four years; Dr. John E. Bacon, Miami, three years; and Charles C. Bradbury, D.O., Phoenix, two years. Dr. Bacon is a new appointee to the board.

CALIFORNIA

Society News—A recent meeting of the Humboldt County Medical Society was addressed, among others, by Dr. Emmet Rixford, San Francisco, on "Surgery of the Gallbladder and Stomach."—At a meeting of the Lassen-Plumas County Medical Society in Westwood, May 3, it was voted to petition the state society to change the name to Lassen Plumas Modoc County Medical Society.—Speakers before the Orange County Medical Society, June 4, included Drs. Vernon P. Thompson on "Treatment of Fractures of the Long Bones of the Lower Extremities", Donald G. Tollefson, "Toxemias of Pregnancy", Charles E. Phillips "Surgical Relief of Ulcer of the Stomach", Pierre P. Viole, "Treatment of Sinusitis," and Edward Richmond Ware, "Coronary Thrombosis—Management and Treatment." All are from Los Angeles.—At a meeting of the San Bernardino County Medical Society in the Patton State Hospital, June 11, Drs. James J. Cecil, Patton, discussed "Syphilitic Diseases of the Brain and Spinal Cord" and Harry S. Blossom, Patton, "Dementia Praecox."—Medical economies was discussed before a meeting of the San Joaquin County Medical Society in Stockton, June 6, by Drs. Guillaume D. Delprat and Glenn F. Cushman, San Francisco.—The Tulare County Medical Society was addressed, June 2, by Dr. Edward C. Bull, San Francisco, on "Fractures About the Ankle."

CONNECTICUT

Personal—Dr. Cornelius S. Conklin, Bridgeport, has been named president of the Bridgeport Medical Society, to fill the unexpired term of the late Dr. Daniel J. McCarthy.—Dr. Grover F. Powers, professor of pediatrics, Yale University School of Medicine, received the honorary degree of doctor of science from Purdue University, Lafayette, Ind., recently.—The University of Leeds, England, conferred the honorary degree of doctor of science on Dr. Harvey Cushing, New Haven, July 1.

DISTRICT OF COLUMBIA

Changes on the Faculty at Georgetown.—Announcement is made of the following promotions and appointments on the faculty of the Georgetown University School of Medicine for the next academic year:

Dr. Vincent J. Dardinski, professor of anatomy and director of the department, has been associate professor of pathology and parasitology.
Dr. Reginald A. Cutting, professor of physiology and director of the department.
Dr. John A. Simpson, assistant professor in the department of pathology and parasitology.
Dr. Philip L. Martinez, assistant professor in the department of anatomy.
Dr. George J. Brimley, professor of pathology and parasitology.
Dr. Harold V. Connerty, assistant professor of pathology and parasitology.

GEORGIA

Personal—Dr Josephus J P Bowdoin, Atlanta, has been given a life membership in the Seventh District of the Georgia Congress of Parents and Teachers "in appreciation of his service to the children of the state"—Dr Samuel P Hall Jr, formerly of Chickamauga, has been named health commissioner of Walker County to succeed Dr Rufus F Payne, who resigned to accept a position with the CCC Camp at Fort Oglethorpe—Dr Lysander P Holmes has been appointed superintendent of the University Hospital, Augusta, succeeding Dr John H Snoke, resigned

ILLINOIS

Society News—Dr Rolland L Green, Peoria, president-elect of the Illinois State Medical Society was guest of honor at the annual outing of the Peoria City Medical Society, June 27, at Luthy's Alps—Dr Frederick H Falls, Chicago discussed "Early Diagnosis of Cancer of the Uterus" before the Coles-Cumberland Counties Medical Society, July 12

Personal—Thomas C Grubb Ph D, has been appointed a member of the professional staff of the Illinois State Department of Health and will conduct research in the control and prevention of disease. Dr Grubb is a graduate of the University of Chicago and in 1934 shared the Ricketts prize at the university for meritorious work relating to the diphtheria bacillus—Dr Grover C Brown, Sainte Marie, has been appointed managing officer of the Jacksonville State Hospital

Chicago

Personal—Dr Margaret W Gerard, assistant clinical professor of psychiatry, Division of Biological Sciences, University of Chicago, has been promoted to be associate professor under the psychiatric program recently instituted at the university—The honorary degree of doctor of laws was conferred on Dr Arthur Hale Curtis, professor of obstetrics and gynecology, Northwestern University Medical School by the University of Wisconsin June 24

IOWA

Society News—A county tuberculosis association will be established in Cerro Gordo County, in accordance with a plan adopted by the county medical society at its meeting, June 21 in Mason City Dr Nathaniel G Alcock, Iowa City, discussed transurethral prostatectomy before the society at this meeting—Speakers before the Austin Flint-Cedar Valley Medical Society in Mason City, July 9, included Drs Louis A Buie, Rochester, on proctology Lawrence E Kelley Des Moines, analgesia in labor, and Henry D Holman Mason City therapeutic hints for the treatment of angina pectoris and coronary occlusion

Baker Charged with Practicing Medicine—It was reported July 24, that Justice J C Coster Muscatine, had ordered Norman G Baker held to the September grand jury The charge was that of conspiring to practice medicine without a license The judge overruled a motion by Baker's attorney to dismiss the charge against him. Baker was arrested one hour after his return to Muscatine from Nuevo Laredo, Mexico where he operates a 'cancer cure hospital and radio station He posted a bond of \$1,000 Baker's permit to operate a station in Muscatine was canceled in 1931 because of his pernicious broadcasting Feb 14, 1935 Baker applied for a permit to open a new broadcasting station in Muscatine his application was denied (THE JOURNAL, March 16, p 629)

KANSAS

Department of Medical Research.—The establishment of a department of medical research at Bell Memorial Hospital, Kansas City as a part of the work of the University of Kansas School of Medicine with Dr Ralph H Major professor of medicine, as director, has been announced Clarence J Weber Ph D instructor in medicine has been named associate in medical research

New County Societies—The Chautauqua County Medical Society was organized at a meeting in Sedan June 28 and the following officers were elected Dr Edward A Varrs Sedan president Dr Estella M Edwards Cedar Vale vice president and Dr Ralph S Casford Sedan secretary treasurer Dr Benjamin Brunner Wamego was chosen president of the Pottawatomie County Medical Society at its organization meeting recently in Westmoreland

State Medical Election—Dr Howard L Snyder Winfield, was chosen president of the Kansas Medical Society at the recent annual meeting to take office January 1 succeeding Dr John F Hassig Kansas City Other officers of the society are Drs Lewis D Johnson Chanute, vice president Harry L

Chambers Lawrence, secretary and George M Gray, Kansas City treasurer Mr Clarence G Munns, Topeka, is executive secretary The next annual session will be held in Topeka, May 6-8 1936 The society agreed to establish a permanent committee on maternal welfare to be composed of five members, three of whom shall be obstetricians, one a surgeon and one an internist

MARYLAND

Personal—Dr George O Sharrett, Cumberland was recently elected to fill the unexpired term of the late Dr Henry M Fitzhugh, Westminster, as a member of the Board of Medical Examiners of Maryland

New Milk Regulations—The state department of health has adopted new regulations governing the control of milk shipped, handled and consumed in Maryland Pasteurization apparatus must be approved by the state department, according to the new requirements and must have proper temperature control the milk must be heated to a temperature of not less than 143.5 F continuously for not less than thirty minutes and then properly cooled. Grades are defined as A, B and C raw milk and A and B pasteurized Grading is not compulsory, but milk offered for sale as graded must conform to the requirements The amended regulations do not apply to cities of more than 100,000 of population which have an organized department of health and which maintain milk supervision under state law or city ordinances, incorporated cities or towns are authorized to adopt and enforce milk regulations that are not inconsistent with those of the state board of health and to provide for the grading of milk, counties may use the same privilege.

MASSACHUSETTS

State Board Election—At the annual meeting of the Massachusetts Board of Registration in Medicine, July 11, Dr Charles P Sylvester, Boston, was reelected chairman and Dr Stephen Rushmore, Boston, reelected secretary

Personal—Dr Ernest E Tyzzer, George Fabyan professor of comparative pathology, Harvard University Medical School, Boston, received the honorary degree of doctor of science at the annual commencement of Brown University, Providence

Psychiatric Awards—Dr Calvert Stein of the Monson State Hospital received the first prize of the New England Society of Psychiatry at its recent annual meeting, for a paper on 'Studies in Endocrine Therapy in Epilepsy' Dr Minna E L Emch of the Worcester State Hospital was given second prize for her paper on 'A Reorientation for State Hospital Psychiatry' These awards are presented annually for the best papers embodying research in psychiatry completed during the year Dr Horace G Ripley, superintendent, Brattleboro Retreat, Brattleboro Vt, was chosen president Dr Eugene A Stanley, superintendent, Vermont State Hospital for Insane, Waterbury, vice president and Dr Harlan L Paine, superintendent, Grafton State Hospital, North Grafton, secretary-treasurer Dr William A Horsley Gantt, director of the conditioned reflex laboratory, Johns Hopkins University School of Medicine, Baltimore, spoke on the experimental approach to psychiatry

MINNESOTA

Personal—Northwestern University, Evanston, Ill conferred the honorary degree of doctor of science on Dr Henry S Plummer, Rochester, at its annual commencement—Dr Baldwin Borreson has been appointed to succeed Dr Bethune C Bernard as superintendent of Oakland Park Sanatorium, Thief River Falls

Northern Minnesota Medical Meeting—The annual meeting of the Northern Minnesota Medical Association will be held in Duluth, August 12, with the following physicians, among others, on the program

Melvin S Henderson Rochester Fractures of Neck of Femur
John H Moore Grand Forks N D Pelvic Inflammatory Disease
Edward N Peterson Eveleth Lung Abscess
Richard M Johnson Minneapolis New Concepts of Calcium Therapy
Arthur U Desjardins Rochester Radiotherapy for Inflammatory and Malignant Conditions
Owen W Parker Ely Fractures of the Ankle
Clarence Jacobson Chisholm Management of Diabetes Mellitus in General Surgery
James J Swendsen St Paul Sterility Its Etiology and Treatment
Edgar T Herrmann St Paul Treatment of Pneumonia by Artificial Pneumothorax
Herbert A Carlson Minneapolis Treatment of Acute Empyema
Gordon B New Rochester Management of Malignant Disease of the Mouth and Adjacent Structures
Rosco G Leland Chicago Medical Economics

A steamer trip along the north shore of Lake Superior is planned

Appointments of Drs Scammon and Diehl—Richard E. Scammon, Ph D, since 1931 dean of medical sciences, University of Minnesota School of Medicine, has been appointed Distinguished Service Professor of the graduate faculty of the University of Minnesota, a new position. He will be free to devote a portion of his time to research and to teach, if he wishes, in any school of the university that wants his services. Dr Scammon, who is 52 years of age, received his degree of doctor of philosophy from Harvard in 1909. He was assistant professor of anatomy at the University of Kansas from 1910 to 1911, then went to the University of Minnesota as assistant professor. He was professor from 1914 to 1930, when he resigned to become professor of anatomy and dean of the Division of Biological Sciences, University of Chicago. In 1931 he returned to Minnesota as dean of medical sciences. He was president of the Minnesota Board of Examiners in Basic Sciences from 1927 to 1930. Dr Harold S. Diehl, professor and head of the department of preventive medicine and public health since 1922, will succeed Dr Scammon as dean of medical sciences. Dr Diehl is 44 years of age and graduated in medicine at Minnesota in 1918. In addition to his professorship he has been director of the student health service.

MONTANA

State Medical Meeting and Election—Dr John A. Evert, Glendive, was chosen president-elect of the Medical Association of Montana at its fifty-seventh annual meeting, in Helena, July 2-3. Dr Louis H. Flugman, Helena, was installed as president. Dr Harry J. McGregor, Great Falls, was named vice president, and Dr Elmer G. Balsam, Billings, was reelected secretary. The next annual meeting will be held in Billings, July 8-9, 1936. Speakers on the scientific program included

Dr Jay Arthur Myers, Minneapolis, Modern Aspects of the Diagnosis and Treatment of Tuberculosis
Dr Rosco G. Leland, Chicago, Medical Economics
Dr Frank E. Burch, St. Paul, Ophthalmology
Dr Francis L. McPhail, Great Falls, Treatment of Eclampsia
Dr Lloyd T. Sussex, Havre, Chronic Infections of the Urinary Tract
Dr John R. Vasko, Great Falls, Low Back Pain
Dr Herbert H. James, Butte, Treatment of Uterine Myoma and Myopathic Hemorrhage with Radium

On Tuesday, July 2, the association held a joint meeting with the Western Branch of the American Public Health Association, which was holding its sixth annual session. Speakers at this meeting included

John F. Kassel, Ph D, Los Angeles, Epidemiologic and Laboratory Studies During the 1934-1935 Poliomyelitis Epidemic in Los Angeles
Dr Enoch M. Porter, Great Falls, After Care of Infantile Paralysis
Dr Roger A. Nolan, San Diego, Infectious Mononucleosis
Dr Henry E. Young, Victoria, B. C., Canada, Medical Economics in Canada

That evening both groups attended a banquet at the Consistory Temple with Dr Balsam as toastmaster. Drs Walter H. Brown, Palo Alto, Calif., and Charles E. K. Vidal, Deer Lodge, presidents of the Western Branch and the Montana association, respectively, were the speakers. A joint stag dinner was held, July 1, William Shea, Great Falls, spoke on "These Doctors," and Dr Thomas F. Walker, Great Falls, "These Inspectors."

NEW YORK

Personal—Dr Howard H. Volan, Syracuse, has been appointed epidemiologist in the Syracuse department of health to succeed Dr Gregory D. Mahar, who was recently made health commissioner.—Dr Arthur R. Bowles, Mount Kisco, has been appointed assistant director of Grasslands Hospitals, Valhalla, to succeed Dr William B. Talbot, who has been made superintendent of the New York Post-Graduate Hospital.

Annual Meeting at Chautauqua—The Chautauqua County Medical Society sponsored its annual interstate meeting at Chautauqua, July 24, with physicians from New York, Pennsylvania and Ohio as guests. Speakers were Drs Donald R. McKay and Raymond S. Rosedale, Buffalo, on "Primary Carcinoma of the Lung," Walter M. Simpson, Dayton, Ohio, "Undulant Fever," and M. Herbert Barker, Chicago, "Treatment of Pneumonia." Dr Joseph Colt Bloodgood, Baltimore, delivered a public address on cancer at an afternoon meeting, which was followed by the annual golf tournament.

Society News—The Binghamton Academy of Medicine, the Broome County Medical Society and the Endicott Johnson Medical Society were guests of the Binghamton Psychiatric Society, May 27, at a meeting at the Binghamton State Hospital, at which Dr Israel S. Wechsler, New York, discussed "Traumatic Neurosis."—The May meeting of the Seneca County Medical Society was held at Seneca Falls, with Drs John M. Swan, Rochester, and Jacob J. Levy, Syracuse, as speakers, on cancer. Dr John F. Crosby, Seneca Falls, was guest of honor at a dinner preceding the meeting, in compli-

ment to his fifty-two years as a physician.—Dr Chalmers J. Longstreet, Binghamton, was elected president of the New York State Sanitary Officers' Association at the annual meeting in Saratoga Springs, June 26, and Dr Guy H. Turrell, Smithtown Branch, L. I., secretary.—The Lake Keuka Medical Society canceled its annual meeting, which was to have been held July 11. Lake Keuka is in the flood area.

New York City

Personal—Dr Stephen H. Ackerman has been appointed medical superintendent of Coney Island Hospital to succeed Dr Marcus D. Kogel, who will be in charge of the new Queens General Hospital, the department of hospitals announced recently.—Dr Oswald T. Avery of the Rockefeller Institute for Medical Research received the honorary degree of doctor of laws at the annual convocation of McGill University, May 30.—Drs Maurice C. O'Shea, Lawrence M. Shapiro and Emeline P. Hayward have been provisionally appointed to the medical staff of the board of education. These positions have been vacant for several years.

Appointments at Rockefeller Institute—Dr Alphonse R. Dochez has been elected a member of the board of scientific directors of the Rockefeller Institute for Medical Research. Drs Lawrence Edgar Hummel and Robert J. Parsons have been appointed assistants on the staff of the institute, Dr William Halsey Barker and Mr Rollin D. Hotchkiss, fellows. Promotions include the following:

Assistant to associate: Drs Joseph W. Beard, Harry S. N. Green, Kenneth C. Smithburn and Wendell M. Stanley, Ph D.
Fellow to assistant: George L. Graham, Sc D, George I. Lavin, Ph D, Charles V. Seastone, Jr., William Trager, Ph D, and Arnold J. Ulstrup, Ph D. Jonathan Biscoe and Joseph S. Fruton.

Neurological Institute Reorganized—Dr Frederick Tilney, professor of neurology and neuro-anatomy at the College of Physicians and Surgeons of Columbia University, has been appointed to the new position of medical director of the Neurological Institute in a reorganization effected July 9. Dr Dudley D. Roberts was named vice president and chairman of the executive council, and twenty-five new trustees were added to the previous twenty-five. A new department is to be organized in association with the College of Physicians and Surgeons to develop research in physiology of the nervous system and it is also planned to enlarge the department of child neurology recently organized through the Friedsam Foundation under the direction of Dr Bernard Sachs. Laboratory facilities will be extended to several additional floors of the institute, it was announced. In addition, ten new committees have been designated to deal with scientific matters, finance, hospital management, professional staff, nurses, outpatient department, education, buildings and grounds, publicity and community relations and law. The Neurological Institute was founded in 1909 and became a part of the Columbia University-Presbyterian Hospital Medical Center in 1929.

NORTH CAROLINA

Society News—A symposium on acute poliomyelitis was presented before the Buncombe County Medical Society, Asheville, July 1, by Drs Lewis W. Ehasz, Henry H. Harrison and George W. Kutscher, Jr.—Dr Charles M. Byrnes, Baltimore, addressed the Guilford County Medical Society, High Point, June 6, on "Functional Neuroses and Their Treatment."—A symposium on accidental injuries made up the program of the Catawba Valley Medical Society, Lincolnton, July 9, presented by Drs Verne H. Blackwelder, Lenoir, Jefferson Byrns Helms and John S. McKee, Jr., Morganton.

PENNSYLVANIA

Personal—Dr Louis A. Wesner, Johnstown, has been appointed medical director of the State Sanatorium for Tuberculosis at Cresson, succeeding Dr Thomas H. A. Sutes.—Dr and Mrs Anson J. Singer, East Stroudsburg, recently celebrated their golden wedding anniversary.—Dr George A. Clark Wilkes-Barre, completed fifty years in the practice of medicine, May 18.—Dr Harry W. Howland, Gaines, has been appointed medical director of Tioga County, succeeding Dr Charles W. Sheldon, Wellsboro.

Philadelphia

Dr Long Appointed Director of Phipps Institute—Dr Esmond R. Long, director of the laboratory of the Henry Phipps Institute of the University of Pennsylvania, has been made director. Dr Charles J. Hatfield, former director, will be associate director and chairman of the board of directors in charge of the institute. Dr Henry R. M. Landis will have the title of associate director in charge of the clinical and sociological departments.

SOUTH CAROLINA

Lectures on Obstetrics—Dr James R. McCord, Atlanta gave a series of lectures on obstetrics for practicing physicians in Columbia, July 8-12. The lectures were sponsored by the Columbia Medical Society and the South Carolina Medical Association and were attended by physicians from nine counties.

Personal—Friends of Dr Joseph H. Saye, Sharon, held a community celebration in honor of his fiftieth anniversary of medical practice in the town, June 1.—Dr William A. Carrigan, Society Hill, has been appointed health officer of Darlington County.—Dr Sedgwick Simons, Georgetown, has been assigned as health officer of Beaufort County.

TENNESSEE

Society News—Dr Dean DeWitt Lewis, Baltimore, addressed the Chattanooga Surgeons' Club, July 9, on "Nerve Injuries." At a banquet given in his honor, July 10, at the Chattanooga Golf and Country Club, Dr Lewis spoke on medical economics and later addressed the Chattanooga and Hamilton County Medical Society on "Differential Diagnoses in Abdominal Conditions."—Four Memphis physicians addressed the July meeting of the Benton-Carroll-Henry-Weakley Counties Medical Society at Huntingdon, July 9, as follows: Drs Joseph A. Crisler "Recurrence of Carcinoma After Ten Years", Peter Whitman Rowland Jr., "Diagnosis of Angina Pectoris", John C. Ayres, "Common Errors in Obstetrics", and Frank T. Mitchell "Rheumatic Fever."—Drs Charles F. Webb, Jackson, and John L. McGehee, Memphis among others, addressed the medical society of Hardin, Lawrence, Lewis, Perry and Wayne counties at Shiloh National Park, June 25, on acute conditions in the abdomen and appendicitis in pregnancy, respectively.—Dr James G. Ehlen, Knoxville addressed the Knox County Medical Society, June 18, on "Treatment of Empyema in Children."

TEXAS

Hospital News—The University of Texas and the Sealy and Smith Foundation have appropriated \$200,000 for the erection of a hospital for Negroes as a unit of the John Sealy Hospital, Galveston, according to *Modern Hospital*.

University News—Richard E. Scammon, Ph.D., dean of medical sciences, University of Minnesota, Minneapolis, delivered the commencement addresses at Baylor University College of Medicine, College of Dentistry and College of Nursing, Dallas, May 27, and at the University of Texas School of Medicine, Galveston, May 31. There were eighty-three graduates at the state university and seventy-nine at Baylor.

Personal—Hubert S. Jackson, D.D.S., San Antonio, and Dr William P. Harrison, Teague, have been appointed to the state board of health.—Dr Arthur C. Scott Sr., Temple received the honorary degree of doctor of laws from Trinity University, Waxahatchie, June 3.—Dr Thomas N. Goodson, San Antonio, has been appointed health officer of Bexar County and Dr Lawton C. Biggers, Bonham, of Fannin County.—Dr William B. Carrell, Dallas, has been elected a member of the International Orthopedic Association; it is reported.

WASHINGTON

Personal—Dr Hinton D. Jonez, Tacoma, was recently appointed health officer of Pierce County to succeed Dr James H. Egan.—Dr Arthur M. Sonneland, Bellingham, has been appointed health officer of Whatcom County, succeeding Dr Johan C. Wuk.

Society News—Dr William A. Buice, director of laboratories at the Eastern State Hospital, Medical Lake, was elected president of the Washington State Public Health Association at its first annual meeting held recently in Wenatchee.—Drs Frank H. Wanamaker and Charles B. Ward, Seattle, addressed the Okanogan County Medical Society at Omak, June 12, on cancer of the lower jaw and cancer of the face and neck, respectively.

WEST VIRGINIA

Personal—Dr Guy Hinsdale White, Sulphur Springs, sailed June 1 to attend the meeting of the International Society of Medical Hydrology in Brussels, Belgium.—Dr Edward R. Davies, Kingwood, has resigned as health officer of Preston County to take a similar position in Baltimore, it is reported. Dr Davies' successor is Dr Charles Y. Moser, Terra Alta.

Society News—Drs. William S. Lovc Jr. and Charles Reid Edwards, Baltimore, addressed a joint meeting of the Monongalia, Marion and Harrison county medical societies, Morgantown, June 4, on "Differential Diagnosis and Signifi-

cance of Heart Murmurs" and "Thrombosis and Embolism," respectively. The guests conducted clinics during the day at the Monongalia County Hospital.—Drs Walter E. Vest and Fred A. Brown, Huntington, addressed the Logan County Medical Society, Logan, May 15, on "Methods of Gastro-Intestinal Diagnosis" and "Indications for Use of Digitalis," respectively.—Dr Joseph H. Barach, Pittsburgh, addressed the Tyler-Wetzel Counties Medical Society, in June, on "Changing Views on Hypertension."

HAWAII

Graduate Lectures—The Honolulu County Medical Society inaugurated a series of graduate lectures June 27, when Dr William Darrach, dean emeritus and professor of clinical surgery, Columbia University College of Physicians and Surgeons, New York, spoke on "Treatment of Fractures." Dr George Dock, Pasadena, Calif., also spoke on appendicitis. Dr Hugh H. Young, professor of urology, Johns Hopkins University School of Medicine, Baltimore, gave a lecture July 8, entitled "The Prostate Gland—Its Past and Present Treatment." He also conducted a urologic seminar, July 10, at the Queen's Hospital.

GENERAL

Dr Gardner Receives Trudeau Medal—Dr Leroy U. Gardner, director of the Saranac Laboratory for Study of Tuberculosis, Saranac Lake, N. Y., received the Trudeau Medal of the National Tuberculosis Association at the annual meeting in Saranac Lake, June 24. The award was made for his work on the pathology of tuberculosis, notably that dealing with the relation between tuberculosis and silicosis. Dr Gardner, a graduate of Yale University School of Medicine, went to Saranac Lake as pathologist for the Trudeau Foundation in 1919. He became director of the laboratory in 1927.

Epidemic of Typhoid—About 100 cases of typhoid were reported to the health department of Minneapolis between May 25 and July 15, according to Minneapolis newspapers. The department has made intensive investigation of all cases but has not determined the source of the infection. Samples of city water have been repeatedly analyzed without conclusive results. Incidental pollution was discovered in samples taken July 1 and 2 and chlorine sterilization was immediately increased.—A woman typhoid carrier in Muncy, Pa., was recently fined \$50 for having prepared food for a dinner following which twenty persons became ill of typhoid and five died, according to a newspaper report, July 5.

Institute for Hospital Administrators—The American Hospital Association will conduct its annual institute for hospital administrators on the campus of the University of Chicago, September 11-25. The program will be devoted to lectures, conferences and seminars, and students who attended the 1934 institute may select in advance one or more of the special subjects which they wish to study this year. Opportunities will be arranged for them individually to pursue these subjects intensively and they will be excused from clinics not related to their special fields. Information may be obtained from the executive secretary of the American Hospital Association, 18 East Division Street, Chicago.

Medical Bills in Congress—*Bills Introduced* H. R. 8941, introduced by Representative Jenckes, Indiana, proposes 'to prevent the adulteration, misbranding, and false advertising of food drugs, and cosmetics, in the commerce affected, for the following purposes, namely, to safeguard the public health and to protect the purchasing public from injurious deception.' H. R. 8953, introduced by Representative McSwain, South Carolina, proposes to provide for the care and treatment of members of the National Guard, Organized Reserves, Reserve Officers' Training Corps and citizens military training camps who are injured or contract disease while engaged in military training.

Society News—Dr Roy R. Kracke, Emory University, Ga., was chosen president elect of the American Society of Clinical Pathologists at the annual meeting in Atlantic City, June 6-8. Dr Robert A. Kilduffe, Atlantic City, was elected vice president and Dr Foster M. Jolins, New Orleans, was installed as president.—Dr Zoe Allison Johnston, Pittsburgh, was chosen president-elect of the American Radium Society at the annual meeting in Atlantic City and Dr George W. Grier, Pittsburgh, was installed as president. Next year's meeting will be held in Kansas City at the time of the annual session of the American Medical Association.—The National Medical Association will hold its annual session in New Orleans August 11-17.

Outbreaks of Poliomyelitis—The Virginia state department of health reports that ninety-nine cases of poliomyelitis were reported to the department from June 1 to July 12. The outbreak has been confined principally to the south central

section of the state, with sporadic cases occurring in July in other sections. Cases have been reported from twenty-five counties, among them one death. More than 300 cases had been reported in North Carolina from May 1 to July 8, with twenty-four deaths. It was announced July 13 that the epidemic appeared to be waning, fewer cases having been reported to the state health department during the preceding week than in the week ended July 6, forty-eight cases were reported in the week ended July 20, compared with fifty-two July 13. Newspapers report twenty-six cases of poliomyelitis in Kern County, Calif., with four deaths since July 1.

Milk-Borne Epidemics in 1934—Twenty-one health departments in the United States and Canada reported forty-four milk-borne epidemics during 1934, all but one caused by the use of raw milk. According to data collected by the Conference of State and Provincial Health Authorities of North America, there were 1,382 cases of illness, with forty-seven deaths. The diseases involved in the epidemics were diphtheria, gastro enteritis, scarlet fever, septic sore throat, typhoid and undulant fever. Typhoid was responsible for 53 per cent of the epidemics and septic sore throat accounted for 22 per cent. These two diseases were responsible for 75 per cent of the epidemics, 70 per cent of the cases and 91 per cent of the deaths. Eighteen state health departments reported forty epidemics, with 1,324 cases and forty-four deaths, and Canadian officers reported four, with fifty-eight cases and three deaths. In those in the United States, carriers and cases in dairies were reported to have been the sources of contamination in 70 per cent, cows in 27 per cent. Seventy-four per cent of the forty-two communities in which the epidemics occurred were rural communities and small towns of less than 5,000 population, only one city with more than 50,000 population had a milk-borne epidemic during 1934. Forty-one health departments reported no epidemics during the year.

Bequests and Donations—The following bequests and donations have recently been announced:

Montefiore Hospital New York \$31,631 and Mount Sinai Hospital New York \$25,000 under the will of the late Isabella Kritzman.
St. Vincent's Hospital Bridgeport Conn. a share in the \$125,000 estate of the late Dr. Daniel J. McCarthy Bridgeport.
Children's Hospital St. Paul \$25,000 by the will of the late Leo Vogel Mankato Minn.
Lankenau Hospital and Hospital of the Protestant Episcopal Church Philadelphia \$5,000 each by the will of the late Henry Dittman.
Chestnut Hill Hospital Philadelphia \$10,000 from the estate of Mrs. Elizabeth Cuthbert Roberts Wyatt.
Jefferson Medical College Philadelphia \$5,000 by the will of the late Dr. Thomas McCrae.
Presbyterian Hospital Philadelphia \$5,000 by the will of Mrs. Florence F. Craig to be paid after the death of her husband.
St. Vincent's Hospital New York \$10,000 and Presbyterian Hospital New York \$7,500 by the will of Walter J. M. Donovan.
Montefiore Hospital for Chronic Diseases and Beth Israel Hospital \$6,000 each Lebanon Hospital \$2,500 by the will of Leo Lesser. All are in New York.
Hahnemann Medical College and Hospital Philadelphia, stock in a theater ticket printing company, valued at \$22,000 by the will of the late Bertha Galland.
Methodist Hospital Philadelphia \$2,000 and Aid Association of the Philadelphia County Medical Society \$1,000 by the will of the late Dr. Delno E. Kercher.
St. Luke's Hospital New Bedford, Mass. \$50,000 by the will of Miss Amelia Hickling Jones.
University of Wisconsin \$10,000 for the study of cancer by the will of the late Michael W. McArdle Chicago.
Presbyterian Hospital Chicago \$10,000 by the will of the late Mrs. Roxana Atwater Wentworth Bowen New York.

CANADA

Dr. Banting Honored—Sir Frederick Banting, professor of medical research, University of Toronto Faculty of Medicine, received the gold medal of the Society of Apothecaries of London, June 4, "for valuable services rendered to the science of therapeutics." He was also made a Fellow of the Royal Society and, June 20, delivered an address on the history of insulin at the British Postgraduate Medical School, Hammersmith.

Medal Awarded for Work in Anesthesia—Dr. Wesley Bourne, lecturer in anesthesia, McGill University Faculty of Medicine, Montreal, has received the first Hickman Medal of the Royal Society of Medicine of England. This award was founded in 1931, to be given every three years for original work of outstanding merit in anesthesia or directly related subjects. Hickman was a pioneer in the use of nitrous oxide as an anesthetic. He died in 1829.

Personal—Dr. Jonathan C. Meakins, Montreal, president of the Canadian Medical Association and past president of the American College of Physicians, has been made a fellow of the Royal College of Physicians of London.—Dr. James B. Collip, professor and head of the department of biochemistry, McGill University Faculty of Medicine, Montreal, received the honorary degree of doctor of laws, honoris causa, from the University of Manitoba.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 6, 1935

Bill to Check the Advertisement of Nostrums

The misleading, not to say fraudulent, claims made for nostrums, otherwise termed "patent medicines," in the advertisements of newspapers have long been a scandal. Some years ago the British Medical Association tried to deal with the evil by publishing a book on Secret Remedies, disclosing their composition and showing how most vaunted preparations consisted of very ordinary ingredients quite incapable of fulfilling the claims made for them. But the many millions of dollars spent on these advertisements shows that the evil is unchecked. At the house of commons the minister of health, Sir Kingsley Wood, received a deputation from the parliamentary committee on food and health, which also represented a number of important bodies, commercial as well as professional. British Medical Association, Pharmaceutical Society, National Pharmaceutical Union, Society of Medical Officers of Health, National Association of Insurance Practitioners, Advertising Association, Newspaper Society, Surgical Instrument Manufacturers Association and others. Captain Elliston, M. P., who spoke for the deputation, said that the parliamentary committee on food and health had in preparation for some time the draft of a bill to control the advertisement of medicines and surgical appliances. In 1912-1914 a select committee of the house of commons, at the instigation of the parliamentary committee on food and health, investigated the question and reported in favor of legislation. Then came the war. Several endeavors have since been made to introduce legislation but it had not been possible to make progress with a bill. One difficulty was to secure the agreement of the many interests concerned. The present bill had been discussed with all the important interests affected and a measure of agreement had been reached. The principal objects of the bill were: 1 To prohibit the advertisement of medicines, surgical appliances or forms of treatment as effective for the cure or prevention of certain specified ailments, such as cancer and tuberculosis. 2 To prohibit the invitation to members of the public to obtain the diagnosis or treatment of these ailments by correspondence. The bill also contained clauses safeguarding the legitimate interests of those concerned, including newspapers and religious organizations. Speaking as president of the Advertising Association, Sir John Pybus said that the bill would not affect adversely any legitimate trade interest. The Newspaper Proprietors Association had not committed itself to support the bill, but its representatives had taken part in the drafting. In view of the safeguards for the newspapers there was no need to anticipate any opposition from their association.

In replying, the minister of health said that he greatly appreciated the valuable work done by the parliamentary committee on food and health. Although many newspapers already set a high standard in the matter, legislation was undoubtedly needed. He would have the bill examined and make inquiries as to the amount of support that might be anticipated for it. If this proved satisfactory, the introduction of legislation would be considered sympathetically, if the government's general program of legislation made this possible. It may be commented on this proposal and reply that, while it would be well that unfortunate sufferers from cancer and tuberculosis should be protected against the fraudulent promises of cure, the bill touches only a small part of fraudulent advertising. Evidently the condition requiring the support of the interests concerned does not allow more to be done.

Industrial Accidents The Greater Danger to Young Workers

In his annual report, the chief inspector of factories draws attention to a marked increase in industrial accidents, which numbered 136,858 in 1934 and 113,260 in 1933, and particularly to a high accident incidence among young workers. The number of fatal accidents in the two years were 785 and 688 respectively. The inspector points out that the adult worker has become accustomed to his environment and has—or ought to have—acquired habits of caution. The young entrant finds factory life an entirely new experience and has in addition certain qualities of youth, such as bravado and curiosity, which render him susceptible to accident. It seems that he should have an apprenticeship in safety, just as in productive work. The inspector proposes that during school life there should be instruction in industrial dangers just as there are now in road traffic dangers. Also every entrant into industry should be taken round the factory before he starts work and shown the principal risks. Such a demonstration would be more effective than a book of safety rules. Due selection of the process on which the young entrant is to be engaged is called for and careful supervision during the early period of the employment. The inspector has been long impressed with the number of accidents in which new workers have been allowed to operate machines capable of inflicting severe injury which should be entrusted only to experienced workers. A watch should be kept on young workers during their first year, and those who have incurred an undue number of accidents however trivial, should when possible be transferred to safer occupations.

The accident rate (as distinct from the number of accidents) tends to vary directly with the number employed. The main factor is probably lessened exposure to risk resulting from the shorter hours worked during times of industrial depression. But another influence may be a tendency at such times to discharge the less steady workers, who are more prone to accidents than the others.

HEALTH IN INDUSTRY

Dr J C Bridge contributes to the report a chapter on health. He says that, while undoubtedly industry does produce ill health it is outside the factory that most of the ill health arises. To work for a living in employment giving interest is a healthy occupation but the monotony and the tedium of so many forms of modern industry make one wonder how it is carried on so zealously. Boredom must increase the significance attached to minor sickness and consequently the length of absenteeism. Dr Bridge deprecates the tendency to employ workers under 18 the full limit of legal hours.

An innovation in safety work is the appointment in a factory which already possesses an active safety committee of carefully selected workmen in each department as 'safety associates'. Their duty is to bring to the notice of the safety committee any dangers or risk that otherwise might escape notice. In another factory the safety committee has organized a class of boys for instruction in safety principles and in first aid.

Indian Students in England

In Dr Thomas Quayle's Report on the Work of the Education Department of the Office of the High Commissioner for India for the year ended last September has been published. The number of Indian students at the universities of the United States and on the European continent is estimated at 2000 while the number in the British Isles is nearly ten times greater. There are about seventy Indian women students at British universities and colleges medicine and education being their main subjects of study. The present report confirms the opinion expressed by Dr Quayle in the last few years that there is a steady improvement in the standard of the Indian students who come to this country. The majority are on the whole well

qualified to embark on the courses for which they have come. There have been many academic successes, and the athletic and other distinctions won by Indian students shows that they are taking an ever increasing part in the corporate and social life of the colleges. The large number engaged on postgraduate work reflect the fact that after taking good degrees at home universities they have come here to do advanced or research work for which the necessary facilities are not always available in India. An important change is that most of the students are training in various scientific and technical professions instead of largely confining themselves, as they did too often, to cultural and legal training.

Maternity and Child Welfare

Sir Kingsley Wood, minister of health, addressing the National Council on Maternity and Child Welfare, referred to maternal mortality as one of the most pressing public health problems. On the other hand child welfare work showed steady and satisfactory progress. The high death rates of infants under 1 year which prevailed up to the early part of this century, was a powerful factor in the institution of the child welfare movement. The result had been the remarkable and consistent reduction in those rates from 128 deaths under one year per thousand births a year in the first decade of this century to rates which in the last four years never exceeded 66 and in 1934 fell to the record figure of 59. A striking example of the results that could be obtained by early recognition and treatment was shown in orthopedic work. It had become increasingly clear that cripples were largely made and not born and that many of those congenital defects which did occur were comparatively slight at birth and could be best rectified in the earliest years. The results of improved methods was shown in the marked decline of the more serious crippling defects and in particular of tuberculosis of the bones and joints.

The fact that maternal mortality showed no such decline was a matter of grave national concern. The problem was of great complexity. Maternal mortality occurred among the rich as well as the poor and in the high-class seaside town of Bournemouth was more than in industrial Sunderland depressed by gross unemployment. The number of antepartum clinics had steadily increased and also the number of maternity beds provided by the local authorities. There was much to be said for an improvement in the midwifery service. The remuneration of midwives was low and this reacted on the quality of entrants to the profession and their efficiency. He was examining this question and would receive the views of various important associations and local authorities and would see what could be done.

"The Radium Hen"

An instrument to assist hospitals that have lost or mislaid radium needles has been invented in the National Physical Laboratory. It has been called the 'radium hen' because it clucks like a hen when placed near radium and the nearer it is the more rapidly and excitedly it clucks. It has been used to find a radium needle suspected of having been washed down a hospital sink. Water poured down the sink had been tested for radioactivity without result. Every trap in the waste pipe had been taken out and still there was no trace of the needle. Then the 'radium hen' was tried and quickly led by its clucking to the point in the pipe at which the needle was lodged.

In appearance the instrument is not unlike a garden syringe but behind its brass cased head is a neon lamp and a trail of 'flex' leading to a box of high tension electric batteries. The neon glows when the electric pressure is sufficient to cause a discharge through it. Here the pressure is adjusted so that the lamp will just not light. The radium radiation, as it were, pulls the trigger. The lamp has to be kept covered as it is sensitive to daylight. It therefore cannot be used as an indicator. This is provided by the electric current, which flows

through the lamp when it is alight. This current is converted into sound either by the use of head phones or by a loud speaker, which clicks in correspondence to the flashing of the hidden lamp.

PARIS

(From Our Regular Correspondent)

June 21, 1935

Law to Check Abuse of Public Hospital Service

One of the members of the French chamber of deputies has introduced a bill to prevent further admissions to the public (free) hospitals of those who are able to pay. During the last few years the public hospitals have been overcrowded. Many persons whose means permitted them to enter private hospitals have been admitted because they wished to be under the care of medical men who are chosen on a competitive basis and who represent the leaders of the profession. The public hospital authorities have admitted many who should have been cared for elsewhere because the hospital budgets were greatly reduced. The medical profession has protested in vain thus far, hence this law will prevent abuse of the privilege to enter free hospitals. A committee will be appointed in each department of France. A representative of the administration and two physicians will constitute the personnel of the committee. Only emergency cases and persons who are proved to be indigent or temporarily without resources will be admitted if this bill becomes a law. After investigation of the individual applicant, a card, valid for six months, will be issued to those who are eligible to enter the free hospitals. The deputy in presenting the bill stated that "everything possible must be done to lighten the burden of a profession that has suffered so intensely and yet has remained faithful to its ideal of helping suffering mankind."

Intravenous Injection of Charcoal

At the March 11 meeting of the Academy of Sciences, a report was made of the results obtained following the intravenous administration of a 2 per cent solution (suspension) of charcoal of animal or vegetable origin. Physiologic solution of sodium chloride was employed as the medium. A hyperleukocytosis is produced, which represents about the double of the normal leukocyte content of the blood. It begins several hours after the injection and reaches its maximum in from six to eight hours, lasting about twenty-four hours. Small daily doses have the same effect as one large initial dose. The smaller the particles, the more lasting the hyperleukocytosis. The favorable action of such injections in infections is due to the resultant hyperleukocytosis.

Sporadic Scurvy in an Adult

At the March 8 meeting of the Société médicale des hôpitaux of Paris an interesting case of sporadic scurvy was reported by Sézary and Joseph. A woman, aged 37, had shown symptoms of scurvy for the eight months preceding admission to the hospital. At the onset the chief signs were bleeding from the gums, pain during mastication, marked weakness and emaciation. Two months later a severe metrorrhagia lasting three weeks and large ecchymoses on the lower extremities were noted. There was also pain and swelling of the joints. The dyspnea on exertion and emaciation were the symptoms especially complained of, when the patient was first seen by the authors. The condition of the gums, the arthritis in the ankle joints and the purpura led to the suspicion of scurvy. The blood examination revealed a secondary anemia, and although the coagulation time was normal the clot formation was abnormal. Eighteen months prior to the onset of the gingivitis and other initial symptoms, the patient had an attack of urticaria and was told not to eat any fruit, vegetables or milk, thus all vitamin C had been eliminated from her diet.

In the discussion, J. Hallé reported two sporadic cases of scurvy in adults. In one of these an elderly man had followed

a diet composed exclusively of macaroni and vegetable soup. Recovery rapidly followed a change of diet in which fresh fruits, vegetables and salads predominated. The second patient was also an elderly man, who had attempted to follow a diet composed of only soup made of bread.

Armand-Dehille recalled the large number of cases of scurvy observed during the World War among retreating Serbian soldiers, who were obliged to live on jam and biscuits. Justin-Besançon called attention to the recent work of American investigators and recommended the use of cevitic acid in the treatment of cases of scurvy.

The Schick Reaction in the French Army

In the January issue of the *Archives de médecine et de pharmacie militaires*, Fricker reports finding the reaction positive in 51 per cent of 7,800 soldiers. Among 212 noncommissioned men, whose average age was 28 years, the incidence of positives was 40.5 per cent and among seventy-six officers, whose average age was 37 years, it was 18.4 per cent. A preceding attack of diphtheria seems not to have any immunizing action. The proportion of positive Schick reactions in soldiers who had diphtheria in infancy was 47.3 per cent.

Indications for Periarterial Sympathectomy

Based on their experience of 546 operations, Leriche and Fontaine, at the March 25 meeting of the Academy of Sciences, reported the following as indications for periarterial sympathectomy. It is especially efficacious in the arteriosclerotic form of arteritis, when thrombosis is absent. In senile arteritis, it is a conservative procedure and may enable one to avoid an amputation.

In thrombo-angitis, ganglionectomy and adrenalectomy are preferable to periarterial sympathectomy. In vasomotor disturbances of the Raynaud type the latter procedure in younger individuals gives excellent immediate and prolonged results. In scleroderma, periarterial sympathectomy is especially indicated when the lesions are recent and localized. The operation is followed by astonishingly good results in posttraumatic sequelae, such as hard edema and painful osteoporosis. In ulcerations of amputation stumps of trophic origin, periarterial sympathectomy is especially indicated. The same is true of leg ulcers, delayed union of fractures and the Volkmann syndrome (when there is no arterial thrombosis).

Cancer of Cervix Following Subtotal Hysterectomy

At the April 1 meeting of the Obstetric and Gynecologic Congress of Paris, Sejournet reported a case of cancer developing in the cervical stump five years after a subtotal hysterectomy for fibroids. He found 302 similar cases, which had been reported since 1926. The majority of these were not seen by surgeons but were recognized when the patients applied for radium treatment.

First Congress of Human and Animal Brucellosis

Representatives of the medical and veterinary schools gathered for the first time in Avignon, June 11, to discuss the relations between the different forms of brucella infections in man and those of animals. The subjects discussed were prophylaxis and treatment of undulant fever, differentiation of the various types of brucella infection, epidemiology of brucella infections in relation to the dairy industry, and legislation on the subject of undulant fever.

Admiral Grayson Elected President of League of Red Cross Societies

At a meeting in Paris at the headquarters of the League of Red Cross Societies, Admiral Cary T. Grayson was elected president, to succeed the late John Barton Payne. Admiral Grayson is eminently qualified to fill this position. He was the personal physician of Presidents Woodrow Wilson and Theodore Roosevelt. He is a commander of the French Legion of Honor.

Cancer Pamphlet for the Public

The league for the control of cancer has recently issued a pamphlet for distribution in every city and village of France, which can well serve as a model for similar organizations in other countries. The different forms of neoplasm are discussed in a way to make the general public grasp the manner in which cancer and sarcoma develop and spread. The necessity of early recognition is emphasized. Next follows the frequency of malignant growth in the world, the causes of cancer, and a discussion of precancerous conditions and the role of personal hygiene in prevention. The remainder of the pamphlet is devoted to a series of excellent photographs of patients with malignant superficial cancers and another series showing the appearance of the individuals following treatment. An outline of the latter is given, also a list of anticancer centers all over France and its colonies where those who wish to have an early diagnosis made can apply. The slogan "Cancer is curable" is stressed. The public is urged to take a more optimistic view of cancer, by a summary of the percentages of cures in various types of malignant disease if the diagnosis can be made before the lymphatics are involved.

BERLIN

(From Our Regular Correspondent)

May 27, 1935

Inquiry into Garbage Removal in Berlin

Some time ago a number of workmen engaged in garbage removal complained to the consultation center of the university institute for research on occupational diseases of injuries to health that they thought they were suffering by reason of their employment. A medical inquiry into the conditions under which workmen engaged in garbage removal are obliged to work was instituted. A physician accompanied the garbage wagons on their rounds, in order to become acquainted at first hand with the nature of the work. All loading centers for garbage were inspected. It was found that these workmen are exposed to a health hazard, but no more than groups of workmen engaged in certain other lines of heavy outdoor work. To determine what injuries garbage workmen suffer, 700 were subjected to a medical examination. The workmen presented frequently skin disorders and skin changes, particularly papules and pustules. Comparatively few suffered from hernias, although many were subject to muscular rheumatism, owing to the fact that they were often exposed to inclement weather. Workmen who have been engaged for many years in this type of work show the harmful effects of the dust that rises from dry fine garbage, but no evidence of active tuberculosis could be discovered.

Anteflexion of the Uterus

Many anatomic inquiries have dealt with the question as to why the uterus lies anteflexed. Prof. M. Westenhöfer, anatomist of Berlin, has sought to solve the problem by the application of ontogenetic principles, as expounded before the Berliner Gesellschaft für Geburtshilfe und Gynäkologie. The position of the uterus in the pelvis is dependent on the relation of the pelvis to the spinal column. When man came to abandon the quadrupedal posture and assumed the erect position, only the lumbosacral portions of the spine were erected whereas the sacral portion, firmly united with the pelvis, diverged but slightly from its former horizontal position. Owing to that fact the uterus remained nearly horizontal that is anteflexed. The acetabulum lies vertically under the sacrum in other words, the axis of the ilium forms with the sacrum an angle of nearly 90 degrees, whereas in other mammals the pelvis is shifted more or less caudad. Only in man can one speak of a pelvic arch. If one causes a four-footed mammal to stand erect, the whole pelvis together with the axis of the sacrum and the contents of the pelvis is involved in the process all the parts lie then

vertical to the horizontal line, including the uterus, there is no trace of anteflexion. Hence anteflexion does not depend on the assumption of the erect posture but, on the contrary, in man on the preservation of features of his former quadrupedal posture. Likewise the configuration of the external soft parts particularly the buttocks, is associated with this fact, for it is evident that no animal has buttocks of a form similar to the human type.

Relation of Surgery and Orthopedics

The representatives of surgery and of orthopedics have held different opinions with regard to the recognition of orthopedics as a specialty, and these differences have led to many controversies at congresses. Now it has been agreed that orthopedics shall continue to be recognized in the medical curriculum and as a subject for examination, being considered as a branch subject of surgery, to which must be assigned the dominant position as one of the three principal branches of medicine. As the chairmen of the German Surgical Society and the German Orthopedic Society both admitted to be the case, no sharp differentiation of the fields of activity can be drawn. A rough division, however, may be based on the fact that to surgery belong chiefly those diseases in the treatment of which operative measures stand in the foreground. Hence restorative surgery and fresh injuries, including fractures and sprains, come mainly under the head of surgery, whereas orthopedics comprises principally those cases in the treatment of which bloodless interventions and the use of orthopedic apparatus are commonly preferred.

Defects in Color Vision

For years, Prof. William Trendelenburg, physiologist of Berlin, has been studying defects of color vision, to discover whether in a line of hereditary succession the type of the anomalies remains the same or whether they possibly may alternate with color blindness. In his research a distinction between the rested condition and the fatigued condition was strictly carried out. It was found that a changed reactivity (fatigue) was not an inherent part of the anomaly. Examinations of enzygotic twins revealed plainly that a congenital peculiarity lay at the basis of the changed reactivity also. The various forms of defects in color vision, it was found, do not merge together in a hereditary line, that is particularly true of anomalies in anopia of the same type. If there is a simultaneous occurrence of different forms in the same family, it is evident that there is not a uniform hereditary succession but that a second hereditary predisposition is making itself manifest. These results are in harmony with the theory of Waaler to the effect that a particular hereditary predisposition lies at the basis of each of the four types of defective color vision. For the changed reactivity, however, a special hereditary predisposition may probably be assumed. These results furnish support to the Helmholtz theories of color vision.

Congress on the Circulation of the Blood

The Gesellschaft für Kreislaufforschung held recently in Wiesbaden a joint session with the Deutsche Gesellschaft für Innere Medizin. The opening paper on the main topic, "Circulation and Respiration," was presented by W. R. Hess, physiologist of Zurich. Next in order, K. F. Wenckebach of Vienna discussed the clinical relations of respiration to the circulation. He emphasized particularly the importance of diaphragmatic respiration, on which the thoracic respiration is based. In addition to the costal muscles and the diaphragm the long back muscles (as costal spreaders) exert an essential influence on respiration. Hochrein of Leipzig called attention to the pulmonary circulation.

The second day was spent in joint session with the Deutsche Gesellschaft für Innere Medizin, and the papers presented on aeronautic problems have already been discussed in a previous letter (THE JOURNAL, June 22, page 2279).

MADRID

(From Our Regular Correspondent)

June 1, 1935

Synthesis of Cyclic Compounds

Dr Jose Giral y Pereira, professor of biologic chemistry at the Faculty of Medicine of Madrid, was recently appointed an academician at the Academia Nacional de Medicina. In his speech of entrance to the society, he discussed the ability of animals to synthesize cyclic compounds. He said that the opinion that animals are unable to synthesize cyclic compounds, because of their inability to build the benzene ring, can be maintained no longer. It has been proved that animals synthesize cholesterol, in spite of the fact that they are unable to synthesize tryptophan, lysine, arginine and cystine that is certain amino acids, either cyclic or acyclic. The stability of rings and nuclei depends on the number of atoms in their chains as well as on the presence of antagonistic functional groups of atoms at the ends of an open chain. Protozoa develop normally in a medium which contains only an ammonium salt and carbohydrates, from which compounds they build the cyclic compounds which form the amino acids. The speaker believes that there are specific diastases for the formation of cyclic compounds. The speaker discussed the mechanism of formation of biliary acids from cholesterol. Diseases caused by a retention of cholesterol are the sequels of faulty oxidation.

The speaker discussed also the molecular structure of certain compounds in relation to their activity as carcinogenic substances. He said that the nonhydrogenized benzene compounds of five nuclei are the only types frankly active as carcinogenic agents among the group of coal tar derivatives especially benzopyrene. Cook says that there is a close relation between sterols, biliary acids, sex hormones and carcinogenic substances and that the latter have their origin, in living organisms, in the transformation of hydro-aromatic semisaturated cycles of either sterols, biliary acids or sex hormones into aromatic nuclei with double bonds. The plicenanthrene nucleus in the compound is responsible for the transformation of a physiologic into a pathologic action. Other cyclic bodies built by animals are inositol, several aromatic substances, vitamin A, flavine bases, uric acid and pyridine bases. Birds have the property of synthesizing and eliminating uric acid. Their eggs are poor in purine, but the organism of the birds contains it in abundance. Kellmann of Vienna the first to report on the possibility of the synthesis of cyclic bodies by man, reported the case of a girl who, while receiving a diet without purines showed an increase of 4 Kg in weight in fifty days and eliminated during this time 15 Gm of uric acid probably synthesized by the organism.

Obdulio Fernandez, professor of chemical analysis in the Faculty of Pharmacy of Madrid, discussed the paper of Dr Giral y Pereira. He said that Dr Pictet spent eight years trying to find a reducing agent for hydrogenization of one of the nuclei of nicotine. He found that although both nuclei of nicotine are inert one is more inert than the other. That seems to indicate that the reduction of cyclic compounds is a mechanism of defense of living organisms. The closure of a molecule of dextrose into a molecule of inositol does not require as great an expenditure of energy as that required to burn the whole chain in the molecule of dextrose. In comparing the elimination of indole with that of other aliphatic substances it can be noted that the elimination of aromatic substances is easier and requires the expenditure of less energy than that of compounds of a closed chain. To state that animals transform only compounds synthesized by plants accuses man of a kind of parasitism that really does not exist. With present knowledge it would seem foolish to seek alkaloids in animals. And yet their presence in animals has been verified in the field of forensic chemistry.

History of Ferran's Vaccines

Dr Garcia del Real, professor of the history of medicine at the Faculty of Medicine of Madrid, recently lectured before the Academia Nacional de Medicina of Madrid on the history of Ferran's vaccines. During the cholera epidemic in Spain in 1885 Dr Ferran, who was the municipal physician of Tortosa, came to Madrid and called the attention of the medical profession to the harmlessness and immunizing properties of a vaccine that he had prepared with living *Vibrio cholerae* and the results of which he had already verified, first by experiments and then by immunizing himself, his family and many other persons. Several injections were necessary to develop immunity and Dr Ferran performed about 50,000 vaccinations during the epidemic. The vaccine did not control the development of cholera when given to persons who were in the prodromal stage, but it produced complete immunity in persons free of the disease. Some physicians, especially Drs. Gimeno and Pulido, believed in Ferran's theories but others attacked them to such an extent that the government ordered Ferran to stop his crusade for the prevention of cholera. The number of deaths (160,000) caused by the epidemic would have been greatly reduced if the vaccination campaign had been continued. Two years later, during an epidemic of typhoid, Ferran prepared a vaccine that produced immunity. He also prepared vaccines against plague and tuberculosis. The speaker said that Ferran like Gutierrez of Buenos Aires and Semmelweis, was misunderstood by his colleagues. Ferran, Servetus, Gimbernat and Cajal have been the four most prominent Spanish scientists.

Homage to Dr Gimeno

Pupils and friends of Dr Amalio Gimeno, president of the Academia Nacional de Medicina of Madrid collaborated in organizing a sumptuous celebration at the Academia Nacional de Medicina May 31 in honor of his eighty fifth birthday. The most prominent Spanish scientists and a select group of other notables attended. Dr Gimeno wearing the medal of the Spanish Legion of Honor, presided. Dr Goyanes, ex-president of the Liga española contra el cancer, made the speech of welcome. Dr Simonona read from the works of Dr Gimeno, who was presented during the ceremonies with a gold medal and with the first edition of a book containing his scientific and literary productions. Dr Gimeno was the minister of state during the World War and professor of medicine in the Faculties of Medicine of Santiago, Valladolid, Valencia and Madrid. He is a well known orator and writer on medical, political and socialist topics. His replies to speeches made in his honor were touching, as he is almost blind because of cataract. And yet he still is engaged in scientific work.

Marriages

- ROBERT E. SHOEMAKER, Haddonfield, N. J. to Miss Eleanor Fairlie of Norristown, Pa., April 15, 1933, announced, June 18.
ALBERT LOUIS GUSTETTER, Nogales, Ariz., to Mrs. Rose Sylvia of Hollywood, Calif., in Phoenix, Ariz., April 24.
EDWIN MONROE GRISWOLD, Granby, Conn., to Miss Eleanor Forbes Hodge of South Glastonbury, April 30.
ALLEN RICHARD MORRISON, Maywood, Ill., to Miss Evelyn Marie Herbst at Chicago Heights, July 6.
NAPIER S. ALDRICH, Coldwater, Mich., to Miss Virginia Hague of Columbus, Ohio, June 15.
WALTER M. PFEIFFER to Miss Gertrude F. Martin, both of Quebec, Que., Canada, June 3.
WILLIAM M. COLLINS to Miss Rosa J. Connolly, both of Lowell, Mass., recently.
RALPH F. ALLEN, Milton, Fla., to Miss Eugenia Dillon of Miami, Fla., June 17.

Deaths

Cornelius John Tyson * New York, University and Bellevue Hospital Medical College, New York, 1912, clinical professor of medicine at his alma mater served during the World War, aged 51, consulting physician to the French Hospital, New York, Southside Hospital Bayshore and the Brunswick General Hospital, Amityville, president of the medical board and director of the medical division of St Vincent's Hospital, where he died, June 28

William Dunn Gates * Indiana Pa, Hahnemann Medical College and Hospital of Philadelphia, 1898 past president of the Indiana County Medical Society fellow of the American College of Surgeons, served during the World War at one time county coroner, on the staff of the Indiana Hospital, aged 69, died, June 25, of internal traumatic hemorrhage.

Thomas P Keenan, Lake Geneva Wis, Chicago College of Medicine and Surgery, 1916 member of the State Medical Society of Wisconsin, president and formerly secretary of the Walworth County Medical Society, served during the World War, city health officer, aged 42 died June 15, in the Walworth County Hospital, Elkhorn, of pneumonia

Elliott Knight Dixon, St Louis, Washington University School of Medicine, St Louis, 1915, member of the Missouri State Medical Association and fellow of the American College of Surgeons, served during the World War, aged 44 on the staffs of the Jewish Hospital and St Luke's Hospital, where he died, June 25, of pneumonia

Carlton S L McCullough, Steubenville, Ohio, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore 1923, member of the Ohio State Medical Association and the West Virginia State Medical Association, served during the World War aged 41, died suddenly, June 18, of coronary thrombosis

Albert De Kalb Parrott, Kinston N C University College of Medicine Richmond, 1906 member of the Medical Society of the State of North Carolina fellow of the American College of Surgeons, on the staff of the Parrott Memorial Hospital, aged 52, died April 19, of chronic myocarditis

Wilford Alexander Norris, Columbia, Mo, University of Missouri School of Medicine, Columbia 1883 member of the Missouri State Medical Association for eighteen years city health officer on the staff of the Boone County Hospital, aged 77, died May 28, of coronary thrombosis

Martin Yates, Fulton, Mo, Bellevue Hospital Medical College, New York, 1876, member of the Missouri State Medical Association, past president and secretary of the Callaway County Medical Society member of the board of education, aged 83 died April 9, of arteriosclerosis

Vladimir Dmitrievich Sezenevsky, Honolulu Hawaii Military Medical Academy St Petersburg Russia 1893 member of the Hawaii Territorial Medical Association on the staff of the Leahi Home aged 66 died May 2, of a liver abscess, while on a train near Sparta, Wis

Dempsey L Travis, Lakewood Ohio University of Wooster Medical Department Cleveland 1878 member of the Ohio State Medical Association medical officer of the public safety department of Cleveland aged 80, died June 30 of chronic myocarditis and arteriosclerosis

Milton S Smith, La Porte Ind, Chicago Homeopathic Medical College, 1896, member of the Indiana State Medical Association on the staff of the Holy Family Hospital aged 73 died July 3 in the Presbyterian Hospital Chicago following an operation on the prostate

Franklin Sawyer Palmer Seattle Harvard University Medical School Boston 1890 member of the Washington State Medical Association formerly health officer and police surgeon, aged 69 died June 5 in the Providence Hospital of valvular heart disease.

Earle Raymond Van Cott, Salt Lake City Utah Rush Medical College, Chicago 1914 member of the Pacific Coast Oto Ophthalmological Society served during the World War aged 46, died May 14 of angina pectoris

Walter Cyril Steele, Niagara Falls N Y University of Buffalo School of Medicine 1912 member of the Medical Society of the State of New York aged 44 died May 12 of intestinal fistula and pulmonary embolism

James Baruch Hughey Kingstree S C University of Maryland School of Medicine Baltimore 1885 member of the South Carolina Medical Association aged 73 died suddenly June 13 of endocarditis

John Wallis Walker, Winona, W Va., University of Louisville (Ky) Medical Department 1893 member of the West Virginia State Medical Association, aged 78, died recently of cerebral hemorrhage.

William Harvey Dixon, Ayden, N C., Medical College of Virginia Richmond 1901, member of the Medical Society of the State of North Carolina, aged 62, died, May 29 of angina pectoris

Eugene Elmer Kendall, Waterford, Pa, Jefferson Medical College of Philadelphia, 1887 member of the Medical Society of the State of Pennsylvania, aged 74 died, June 11, of heart disease

James Tompkins Leftwich * Highland Springs, Va, Medical College of Virginia Richmond, 1915 president of the county board of health, aged 51, died suddenly, June 6, of angina pectoris

Elmer Gilman Fosgate, Ashburnham, Mass, Dartmouth Medical School, Hanover, N H, 1889 member of the Massachusetts Medical Society, aged 75, died, June 8, of valvular heart disease

John Isaac Miller, Gary, Ind, Illinois Medical College Chicago, 1908, formerly a member of the state legislature in Wyoming aged 57, died, June 13, of chronic myocarditis and endocarditis

Herbert Erwin Phelps * Carthage, N Y Long Island College Hospital, Brooklyn, 1896, aged 63 died, June 11, in the House of the Good Samaritan, Watertown, of cerebral embolism

Georgia Sizer Orvis, Guthrie, Okla, Bennett College of Eclectic Medicine and Surgery Chicago 1900 aged 86 died, May 13, in the Masonic Home for Aged, of chronic myocarditis

Charles L Dohm, Chicago City Minn University of Minnesota College of Medicine and Surgery, Minneapolis, 1896, aged 60 died, May 28 in St Paul, of rheumatic heart disease.

John A Rader * Caney, Kan Eclectic Medical Institute, Cincinnati, 1890, past president of the Washington County Medical Society aged 75 died June 6 of arteriosclerosis

William Henry Parrish, Vallejo Calif Willamette University Medical Department Salem, 1889 aged 87 died, May 18, of cerebral hemorrhage and bronchopneumonia

David F Haagen, York, Pa Jefferson Medical College of Philadelphia, 1908, aged 51 died May 11 in St Peter's Hospital, New Brunswick, of lobar pneumonia

William Kelley Sanborn, Oakland, Calif, University of California Medical Department, San Francisco 1893 aged 69 died, May 24, of chronic myocarditis

William J Waits, Gray, Ga Georgia College of Eclectic Medicine and Surgery, Atlanta, 1895, aged 66, died, April 18, of diabetes mellitus and hypertension.

Jacob De Witt Graham, Springville Iowa Rush Medical College, Chicago, 1891, aged 76, died, June 19, of cardiorenal sclerosis and cerebral hemorrhage

Clarence Williamson Orr, Cincinnati, Miami Medical College Cincinnati, 1883 aged 79, died, June 10, of chronic nephritis and auricular fibrillation

James Phillippe Tamesie, Portland, Ore, University of Oregon Medical School Portland, 1889, aged 73, died, April 29, of coronary thrombosis

Franklin Thomason Beatty, Boston, Jefferson Medical College of Philadelphia, 1885, aged 77, died, April 18, of chronic myocarditis

Benjamin F Owens, Louisville, Ky Jefferson Medical College of Philadelphia 1866 aged 92, died, May 17, of cerebral hemorrhage

John E Thomas, Baltimore Temple University School of Medicine Philadelphia 1912 aged 70 died April 18, of cerebral hemorrhage.

Jacob W Arbogast Bellefontaine, Ohio Eclectic Medical Institute, Cincinnati 1894, aged 78, was found dead June 17, of heart disease

Walter Pollano * Lawrence Mass Middlesex College of Medicine and Surgery Cambridge, 1922 aged 56 died, June 25

Thomas J Russell Perry, Iowa, Missouri Medical College, St Louis 1893 aged 73 died May 1 of cerebral hemorrhage

Arthur S Austin * Aberdeen Wash Detroit College of Medicine, 1886 aged 72 died, May 11, of angina pectoris

CORRECTION

Report of Death—Dr William A Anderson of Glencoe Ala was erroneously reported dead in THE JOURNAL, July 20, page 217 Dr Anderson is alive and in good health

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

Mineral Wells Crystals—W E Hoist Chicago Composition Essentially Glauber's salt with small quantities of magnesium calcium and iron carbonates and chlorides For rheumatism indigestion kidney liver skin and blood disorders, etc Fraudulent therapeutic claims—[N J 21810 September 1934]

Heal Kwik Plaster—Andrew J Pontier Clinton N J Composition Essentially a plaster containing rosin wax and starch For boils sores inflammation, sore throat swollen glands etc Fraudulent therapeutic claims—[N J 21814 September 1934]

Jacob Becker's Celebrated Eye Balsam—W M Olliffe Inc New York and Kells Co Newburgh N Y Composition Essentially mercury and finely powdered sand incorporated in fat Fraudulent therapeutic claims—[N J 21818 September 1934]

Beggs Mustorine—S C Wells & Co Le Roy N Y and Mutual Drug Co Cleveland Composition Essentially an ointment of petrolatum containing volatile oils including those of turpentine sassafras cajuput and wintergreen and red pepper with a small amount of ground mustard For sore throat chest colds lame back stiff joints or muscles rheumatism etc Fraudulent therapeutic claims—[N J 21819 September 1934]

G O Remedy—A J Holden Rawlins Wyo Composition Essentially plant drug extracts salicylic acid and water For hay fever itch eczema psoriasis etc Fraudulent therapeutic claims—[N J 21821 September 1934]

Acnoid No 1 and Acnoid Special No 2—Sergeant Acnoid Pharmaceutical Co Inc East Orange N J Composition No 1 essentially salicylic acid and small amounts of salol and camphor in a fatty acid and petrolatum base No 2, essentially salicylic acid zinc stearate and small amounts of salol and camphor in a fatty acid and petrolatum base For skin diseases etc Fraudulent therapeutic claims—[N J 21822 September 1934]

Novonol Ointment—Belmont Co Springfield Mass Composition A local anesthetic such as procaine hydrochloride in a mixture of fatty acids and petrolatum Adulterated because below professed strength and purity, and misbranded because of false and misleading claims to being antiseptic—[N J 21976 September 1934]

Belmont Germicide—Belmont Co Springfield Mass Composition Essentially common salt borax camphor menthol and a small amount of wintergreen For wounds ulcerating corns bunions infections etc Fraudulent therapeutic claims—[N J 21976 September 1934]

Lambert's Syrup—Dr J O Lambert Ltd Troy N Y Composition Essentially chloroform (0.91 minum per fluid ounce) creosote volatile oils including sassafras menthol and wintergreen epsom salt (2.4 per cent) and a small amount of a benzoate with sugar and water Misbranded because chloroform content falsely declared and because of fraudulent therapeutic claims as a remedy for coughs catarrh bronchitis asthma etc—[N J 21979 September 1934]

Fe Sen—Ellis Jones Drug Co Memphis Tenn Composition Essentially plant drug extracts including a laxative with alcohol sugar and water For liver trouble nervous and sick headache indigestion etc Fraudulent therapeutic claims—[N J 21980 September 1934]

Wallace's Liverade—Liverade Medicine Co Fulton Ky Composition Essentially plant drug extracts including a laxative such as cascara sagrada with licorice red pepper sugar alcohol (9.1 per cent by volume) and water For indigestion sick headache fevers chronic constipation piles, etc. Fraudulent therapeutic claims—[N J 21980 September 1934]

Jayne's Brio da Tonie Pills—Dr D Jayne & Son, Inc Philadelphia Composition Essentially an iron powder with calcium and magnesium glycerophosphates copper sulphate and plant drug extracts including red pepper and nux vomica For anemia debility loss of appetite etc Fraudulent therapeutic claims—[N J 21981 September 1934]

Gep Qual Yek Due—Louie Chong Dai Chinese Herb Co San Francisco Composition Essentially a small amount of plant or animal material with alcohol (29.5 per cent by volume) sugar and water Misbranded because alcohol content was greater than declared on label, and because of the fraudulent representation that the stuff was a remedy for rheumatism—[N J 21982 September 1934]

Khylex—Khylex Chemical Co Alexandria Va. Composition Essentially sodium hypochlorite sodium hydroxide sodium carbonate, common salt and water For skin eruption etc. Fraudulent therapeutic claims—[N J 22021 September 1934]

L B J Cough Syrup—Little Brown Jug Inc., Sinking Spring, Pa. Composition Essentially plant drug extracts including wild cherry tar sugar alcohol and water For coughs croup whooping cough bronchitis, etc. Fraudulent therapeutic claims—[N J 22022 September 1934]

Correspondence

MOTORING AND SCIATICA

To the Editor—The following aids are helpful for automobile drivers with sciatic neuritis 1 A snug fitting elastic stocking for the thigh 2 A rubber sponge fastened to the floor of the car with a piece of leather for the heel of the right foot to rest on, or a small rubber invalid's cushion for the left foot 3 Have car springs oiled every month

A T BLACHLY, M.D., Portland, Ore.

GYNECOMASTIA DURING HYPER THYROIDISM

To the Editor—I have just read Dr Starr's article "Gynecomastia During Hyperthyroidism" in THE JOURNAL, June 1, page 1988, and noted the rareness with which this condition has been observed. It may be of interest that I have recently observed a case of bilateral, symmetrical hypertrophy of the mammary glands in a man, aged 35, with classic exophthalmic goiter, the hypertrophy of the glands having been noticed for two months, while the subjective symptoms of hyperthyroidism had been noticed for nine months. Following operative treatment for the goiter, along with improvement of his other symptoms, the enlargement of the mammary glands receded to normal.

D L CURB, M.D., Galveston, Texas.

AUSCULTATION OF ABDOMEN

To the Editor—In the article by Wakefield, Mayo and Barger entitled "Ileus Associated With Transient Renal Insufficiency. A True Enterorenal Syndrome" (THE JOURNAL, June 22, p 2235) there appears to be no mention of stethoscopic examination and sounds heard over the abdomen in any one of the ten cases reported. It is very likely that such an examination was performed in each case for audible peristaltic sounds and was very likely absent in all, so that it was omitted in the report. The importance of listening for peristaltic sounds in the differential diagnosis of paralytic and mechanical ileus was deeply impressed on me by Dr Roger T Vaughan at the Cook County Hospital whenever the problem presented itself. Especially is this of value when the patient has had one or more previous abdominal operations. Dr Vaughan insisted, and probably still does, that one listen with the stethoscope over each abdominal quadrant for at least three minutes in all suspected cases of ileus in an attempt to determine whether the ileus is paralytic or mechanical, nonsurgical or operative. In almost all cases of nonmechanical ileus, one type of which is described by Wakefield and his associates in the article, no peristaltic sounds are audible. In mechanical ileus, especially if seen within the first twenty-four hours and particularly so in the first twelve hours of the obstruction, the peristaltic sounds are intensified up to the point of the obstruction and from there on disappear completely. Mechanical tinkling is diagnostic of complete mechanical ileus. The point which I wish to emphasize is that, in examination of acute conditions of the abdomen, auscultation to determine the presence or absence of peristaltic sounds and their character, if audible, should be performed and become a routine part in all case records of such nature.

NATHAN FLAXMAN, M.D., Chicago

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

BRONCHIAL ASTHMA IN CHILD

To the Editor—My son, aged 4 years has bronchial asthma. The father has sinusitis and bronchial asthma which has been largely overcome in the climate of Arizona together with conservative nasal surgery. The mother is living and well but her sister has hay fever of the perennial type. The grandfather on the father's side has had bronchial asthma and hay fever for practically his entire life. The family history otherwise is essentially negative regarding allergy. The birth of the patient was normal and his weight at birth was 10 pounds (4.5 Kg). During the first six or eight weeks of life there was definite pylorospasm associated with projectile vomiting controlled with atropine and postural feedings. The child had enteritis at 3½ years with uneventful recovery. For the past two years the patient has had coincident with occasional attacks of bronchitis a definite asthma which lasts from twenty-four to forty-eight hours and ceases with improvement in the bronchitis. During the past twenty-four hours he has had an attack of bronchial asthma without the usual coincident acute bronchitis to usher it in. There seems to be nothing of particular note in his physical examination except probable adenoid hypertrophy as evidenced by a slight tendency to mouth breathing at night. His tonsils are essentially normal with no history of tonsillitis. Roentgen examination of the chest is negative for thymic enlargement. I would appreciate discussion of a conservative approach to this case. I am particularly interested in the value of high voltage roentgen therapy over the tracheobronchial lymph nodes as an adjunct to conservative surgery of the pharynx. Please omit name.

M D Arizona

ANSWER.—The facts stated describe typical bronchial asthma as it occurs in children: the antecedent history of allergy in the father, grandfather and aunt, the history of pylorospasm and enteritis, then the attacks of bronchitis, so often mislabeled asthmatic bronchitis, which finally turned into frank bronchial asthma. Too often these symptoms in children are diagnosed as bronchitis and asthmatic bronchitis and are merely treated symptomatically and no effort is made to find the cause of the trouble.

The attacks become more and more severe, the bronchitic element less and less, and the asthmatic symptoms become more and more striking until finally the family and the doctor realize that they are dealing with a case of bronchial asthma, which, in truth, was bronchial asthma from the beginning and should have been so recognized.

The experience of those specializing in the treatment of bronchial asthma and other allergic diseases has shown that in these children the best method of treatment is to find and then eliminate the cause or causes as completely as possible. Furthermore, in cases in which elimination of the cause has not been possible, desensitization to the cause has given excellent results in the hands of most allergists.

The procedure, then, is to have the boy "gone over" thoroughly from the allergic standpoint. The history should be searched carefully for etiologic factors, such as food factors, house dust and weeds. Complete skin tests should be carried out for pollens, epidermal substances, such as hair, dander and feathers, for all foods containing protein that the boy has eaten and for miscellaneous substances such as orris root, cottonseed, flaxseed and house dust.

After this procedure, elimination of the positive factors should be carried out thoroughly and desensitization should be done where indicated. Any other method of treatment, while helpful, does not begin to give the successful results that may be obtained in most cases by adhering to the usual allergic procedures. It is true, however, that attention must be paid to the general hygiene, especially the teeth and tonsils, but removal of tonsils and adenoids should be carried out only if indicated for pathologic changes in the tonsils and adenoids or because they harbor foci of infection. Operative procedures on the tonsils and adenoids or on the nose rarely give more than temporary relief in cases of bronchial asthma. Likewise, high voltage roentgen therapy over the tracheobronchial lymph nodes is not especially indicated, although it is true that a measure of relief is obtained in some cases.

It is important to have the child tested out thoroughly and promptly. In this way it is usually possible to avoid emphysema and pigeon breast, which too often occur in these asthmatic children.

COLON SPASM AND MUCOUS COLITIS

To the Editor—I have at present a man under my care, aged 38, single, who gives a history of having had influenza in 1918 and since then he states he has not had a natural bowel movement. He has had to resort to colonic irrigations for the last nine years in order to obtain relief. Numerous roentgen examinations, complete blood chemistry and gastro-intestinal series have been done in four of the largest hospitals in New York, all of which were negative, as far as the findings of any pathologic changes was concerned. In fact the physical examination with the exception of the chief complaint shows no signs of abnormality. The patient is well nourished and is able to go about his work daily. There are no abdominal signs present. He appears to be very nervous and talks much about his condition. A tentative diagnosis of paralytic ileus, possibly neurotic in type has been my contention. I have tried pituitary injections, diathermy, strychnine and many other therapeutic measures to build up his resistance and nervous system but without results. There is a definite mucous colitis present with reverse peristalsis and some spasticity. I note that Osler describes similar cases as ileus hystericus. The patient has seen many physicians during this long time without relief. Can you give me any idea as to what the real condition is and what therapeutic measures should be instituted if any? Is surgery advisable.

M D New York

ANSWER.—The description of the case suggests a tendency to colon spasm and mucous colitis. While this condition may in some cases be largely a neurosis, it is by no means merely psychic in nature. It is more likely to be a neurosis of the vegetative nervous system. It is sometimes maintained by reflex irritation from the generative organs, most especially in the female. It may be an expression of allergy. It is in a large proportion of cases accompanied by a tendency to stasis in the proximal colon. In any case, no matter how the spasm originates it tends to produce a vicious circle of stasis in the proximal colon with spasm in the distal colon, a condition that might be termed "stasis spasm" because it is self-perpetuating, the spasm leading to stasis and the stasis—making the colon contents more irritating—leading to spasm. The therapy should include the determination and elimination of the cause, if this is possible. It needs unlocking the spasm, which is often best done by oil enemas taken at bedtime for several successive evenings. It needs lessening the irritative quality of the stools by softening them with liquid petrolatum or in obstinate cases by the use of castor oil. The diet needs to be of the "smooth" type, i. e., as free from mechanically irritating particles as possible. As this diet is essentially constipating and as such a diet may maintain the stasis spasm, it is necessary for the patient to make persistent efforts to change the diet to a more or less "high residue" type as soon as or whenever his condition shows evidence of improving. Sedatives rather than stimulants for the central nervous system are likely to be of advantage, such as the administration of bromide. Antispasmodics of the type of atropine are likely to be of advantage to relieve acutely painful paroxysms, and this may be well combined with analgesics, such as acetylsalicylic acid and phenobarbital. Surgery is not advisable unless a definite malformation, correctable by it, is discovered.

TREATMENT OF AMEBIASIS ECHINACEA

To the Editor—Will you kindly inform me on the subject of the treatment of *Amoeba histolytica* and *Giardia*? A patient, who for five consecutive years has been under the continuous treatment of several physicians has still a positive stool test and marked clinical symptoms. The treatment consisted of repeated courses of carbarsone, vioform, chiniofon by mouth and enema, emetine, neosarphenamine, iodoxyquinolin sulphonic acid, mercurochrome and iodine retention enemas. A druggist recommends Lloyd's Echinacea. What kind of drug is this? Is it specific? What are the Lloyd preparations? Please omit name.

M D, California

ANSWER.—A case of amebiasis persisting for five years under such treatment as mentioned suggests first a serious question as to whether one is dealing with *Endamoeba histolytica* at all. This matter should be verified by authoritative examination. The next step would be a detailed roentgen study of the large intestine and sigmoidoscopic examination to determine the nature, location and extent of any lesions present. If *Endamoeba histolytica* is proved present the treatment recommended would be a course of carbarsone, 0.25 Gm twice a day for one week, followed after one week by six retention enemas on alternate nights each consisting of 200 cc. of 1 per cent carbarsone in 2 per cent sodium bicarbonate solution, introduced slowly and retained over night. This retention enema should be preceded by a cleansing soda enema two hours earlier. Again, after a ten day interval, a course of vioform 0.5 Gm. twice a day for ten days should be given by mouth. Persistence of *Endamoeba histolytica* after this treatment would suggest strongly the need of surgical attention to some deep focus.

So-called specific medicines are prepared by Lloyd Brothers, Pharmacists, Inc., Cincinnati. Echinacea is described as a liquid preparation made from the dried root of *Echinacea augustifolia*, the purple cone flower of our Western prairies, in unstated dilution in 65 per cent alcohol. According to John Uri Lloyd, Echinacea was used by the American Indians and taken up by the early settlers in the West under the name "Indian Head Root." Based on this use it was exploited first as a secret remedy ("Meyer's Blood-Purifier") and then as a proprietary panacea. C. G. Lloyd (1885) determined its botanic place, and the eclectic professors King, Goss, Webster, Ellingwood and Felter studied its clinical applications. The root contains resins and no alkaloids, according to Heyl and Staley, 1914. Several proprietary preparations of it have been praised for sialagogue, diaphoretic, antiseptic, stimulant and general alterative effects, but no good evidence of its value has been published and the claims appear to be extravagant. The drug was disapproved by the Council on Pharmacy and Chemistry in 1909. Among medical men in general, echinacea remains without use or repute.

References

- Sollmann Torald. A Manual of Pharmacology ed 4 Philadelphia W. B. Saunders Company 1932 p 204.
Solis-Cohen Solomon and Githens T. S. Pharmacotherapeutics New York D. Appleton & Co 1928.

DERMOGRAPHISM

To the Editor—A man aged 30 weighing about 190 pounds (86 kg) and standing 5 feet 10 inches (178 cm) tall and apparently in perfect health came to me recently complaining of severe dermatographia. His past history relates only his having the usual childhood diseases and when about 10 years old he suffered from what he was told was severe pyelitis of both kidneys. He made an uneventful recovery from this and has never been troubled since. He has had fairly severe attacks of acute arthritis and had all his upper teeth removed about five years ago with no return of his arthritis. At present he is in excellent health and works hard daily without any complaints except suffering from this dermatographia. The physical examination reveals nothing pathologic. I have seen the patient scratch himself anywhere on the arm, legs and face (his hands, body and feet are immune from this) and immediately raise large red welts. This particularly bothers him while shaving; his face becoming streaked red and burning just after a shave. He must shave always at night and then retire. The condition will persist for two or three hours and then disappear entirely. Can you suggest what the cause of this might be and what I might do for him?

JOHN F. MAURER, M.D., Acosta, Pa.

ANSWER—Dermatographism is caused by a sensitization of the skin to stroking. Other forms of trauma cause less reaction. The work of Ebbecke, Lewis and Grant, Gidemista and Scheffler, Torok, Lehner and Urban has shown that the trauma releases an irritating substance in the skin, which causes a localized transient edema, a wheal. This resembles the wheal of urticaria except that it often does not itch.

The name urticaria factitia given to this condition is a misnomer, for it is evidently an entirely different condition. Many patients with urticaria have no dermatographism and on the other hand, most sufferers from dermatographism have no urticaria.

Dermatographism is often associated with mental disorders, epilepsy, idiocy, insanity or catatonia. It is seen also in cases of toxemia, lead poisoning and alcoholism. It is more marked after physical or emotional strain and in women at the menstrual periods. Many cases of dermatographism, however, like the one described show no other abnormality. It has been suggested that excessive histamine production in the intestine may be responsible in some of these cases. Endocrine imbalance is an important factor in some cases.

If the cause can be discovered, indications for therapy are plain, but in many cases this is impossible. General hygiene is of course the first indication. If no cause can be discovered, reduction of intestinal histamine may be attempted by implantation of *Bacillus acidophilus*. For temporary relief, cold applications are most effective, according to Reznick (Klinische Studien ueber Dermatographism *Wien Klin Wchnschr*, Oct 29 1914, p 1424). Epinephrine and therefore probably ephe-drine are less effective. The effect of cold can be counteracted, however, by heat, which, applied within a certain time, brings back the wheals. In the case under discussion therefore cold should be maintained for some time. Possibly the use of ephe-drine before shaving and the application of cold afterward may have a better effect.

The patient can be thankful that he did not live during the days of the witchcraft hysteria. If at that time it was discovered that the word Satan could be written on a person's skin and would remain there (dermatographism), the condition was apt to be cured promptly by the application of heat—that is, by the persons being burned alive.

TREATMENT OF SYPHILIS

To the Editor—Wassermann fast acquired syphilis was discovered incidentally in a white man aged 30 by a routine blood Wassermann reaction (four plus both antigens). The probable date of acquisition of the infection was at least seven or eight years prior to the institution of treatment. No primary or secondary lesions had ever been noted. The case is not congenital as proved by investigation of the parents, and apparently not contagious at the time of marriage five years ago, as the wife and one child aged 4, are Wassermann negative. Treatment has been intensive and unremitting for two years. Chief reliance has been on neocarsphenamine alternating first with courses of bismuth salicylate in oil intramuscularly and then mercurous intravenously. No injections from treatment were allowed. Repeated Wassermann examinations during the two years have shown no change, although the patient now subjectively has never been better and there is no evidence of visceral syphilis on careful physical examination. Neurosyphilis has been ruled out by spinal fluid examination and clinical observation. Questions arise as to further management of the case. Is one justified in continuing intensive treatment longer than two years? Should the patient be further treated or merely observed? If treatment is indicated, what is the best choice of drug or drugs, dosage and time interval between courses? Please omit name.

M. D. New York

ANSWER—Assuming that the patient has a nonsymptomatic Wassermann-fast syphilis, the treatment described could be rated as adequate to a latent infection in accordance with the experience of the Cooperative Clinical Group and the United States Public Health Service with Moore as spokesman.

A year's complete rest from all treatment may result in a gradual approach to serologic negativity, and certainly nothing more than periodic observation, particularly of the cardiovascular system, should be required in a case of this sort. It is true that occasional courses of a heavy metal, particularly bismuth, are favorably regarded in the management of these patients, but this, together with the other described methods of dealing with Wassermann-fastness in latency described in various textbooks, need not be considered until after a prolonged rest period.

LETHAL DOSE OF AMYTAL

To the Editor—Recently I was called to see a young married woman, who one hour previously had swallowed with suicidal intent twelve amytal tablets (Hilly) containing 1½ grains (0.1 Gm) each. She was comatose when I arrived. Respiration was sighing and shallow, the pulse was weak and thready, the temperature was normal, there was no nausea or vomiting and the pupils were not contracted. A stomach tube could not be introduced nor could an emetic be administered. Caffeine and later strychnine hypodermically brought her out of her comatose condition. When she was able to swallow 1 ounce (30 cc.) of whisky was given. What is the lethal dose of amytal and the attendant symptoms? Please outline treatment. The patient made a good recovery but may there not be some untoward symptoms following an experience of this kind? I would greatly appreciate any suggestion offered. Kindly omit name.

M. D. Ohio

ANSWER—A cursory study of the literature does not permit as yet the categorical statement of the lethal dose of amytal. According to Sollmann (Manual of Pharmacology ed. 4 1932) the generally fatal dose of amytal is from 2 to 3 Gm. The treatment of such cases requires evacuation of the stomach, carried out with due precautions against aspiration of fluid and leaving in the stomach cathartics such as magnesium sulphate or fluidextract of cascara. It might also be well to leave hot black coffee in the stomach after the washing. Caffeine or strychnine should be used even in heroic doses, to antagonize the depression of the nervous system. Elimination might be favored by aminophyllin or another xanthine diuretic and by dextrose phleboclysis. Artificial respiration with oxygen inhalation should be used on the appearance of enfeeblement of respirations. During the stage of reaction with the development of pulmonary complications, the treatment is that of pneumonia. Picrotoxin also is useful.

ILL EFFECTS OF HABITUATION TO BARBITAL

To the Editor—Can you give me any information about the ill effects if any of the continuous use of sodium amytal? I have a friend who is neurotic and feels he must take from six to 15 grains (0.4 to 1 Gm.) daily to control a nervous nausea. He fears that it may hurt him. Of course he has a drug habit from it which he cannot give up as yet. Can you tell me what harm either functional or organic may come from the habit? I have looked through our medical library and in the recent *Cumulative Index Medicus* and have found no information and no doctor in Rhode Island seems to know definitely of any bad effects although all of them say that an amytal drug habit is bad.

GEORGE J. McCURRY, M.D., Providence, R.I.

ANSWER—The ill effects of barbital derivatives, including isoamylethylbarbituric acid, or amytal, may be grouped under three headings: (1) idiosyncrasy, (2) overdose, and (3) habit formation. In the case under discussion it may be stated definitely that the patient is now suffering from a drug habit. While so far as available literature goes, surprisingly little

harm seems to have followed the habitual use of amytal, there is a decided danger in this habit formation, arising chiefly from two sources. The one is that all forms of chronic drug narcotism that have been studied for a sufficient length of time are known to lead inevitably to mental and sometimes physical deterioration. Secondly, there is always danger of a fatal overdose being taken when the patient finds that the dose to which he is habituated no longer suffices to produce the desired degree of comfort.

FOR DYNE

To the Editor—What is For Dyne of the First Texas Chemical Manufacturing Company Dallas Texas?

L N

ANSWER.—According to the firm's catalogue, For-Dyne consists of Formasal, $5\frac{1}{2}$ grs., Phenacetine, 1 gr., and Caffeine Citrated $\frac{1}{2}$ gr. The ridiculousness of the product is shown by the description of Formasal, which, according to the manufacturers, is "a chemical manufactured by fusing Salicylic and Acetic Acids with Phenolphthalein after which Colchicine Salicylate is added to reinforce action." What would result from the fusing of these three substances one can only guess. It seems hardly possible that there would be a concern in the days of more enlightened chemical procedure that would offer a product to the medical profession with such an unscientific statement. For-Dyne then, according to the manufacturer's statement, may contain acetphenetidin caffeine citrate, colchicine salicylate, salicylic acid, acetic acid and phenolphthalein, the latter three being a fusion mixture!

PREVENTION OF IMPETIGO IN
MATERNITY HOSPITAL

To the Editor—Will you please give me the latest routine bathing care of new-born babies in maternity hospitals with special reference to prophylaxis against impetigo. Has any method other than 0.5 per cent ammoniated mercury in oil been successfully used?

ERNEST L. SCRABLE M.D. Gary Ind

ANSWER.—Five per cent ammoniated mercury is most satisfactory for the initial anointing of the body of the new-born infant. Of course proper aseptic technic should be used by all attendants coming in contact with the infant at this time and during its subsequent hospitalization. Persons handling the infant should wear clean gowns and masks and have freshly washed hands. The nurse should carefully scrub her hands before starting the bath, which should be a daily warm sponge bath. Special attention should be given to cleaning the axilla groins and interdigital spaces. Due care should be exercised not to traumatize the skin by rough handling or rubbing.

POLLENS IN MICHIGAN

To the Editor—In THE JOURNAL April 13 page 1359 appeared a query regarding the climatic conditions in Alpena Mich. with regard to hay fever and in the April 27 issue page 1486 appeared an article on pollen studies by O. C. Durham. In this connection I will give some information obtained from the weather bureau and will quote from the communication from Mr. A. L. Weisner meteorologist U. S. Department of Agriculture.

No statistics on the pollen contents of the air are available for this place but the prevailing direction of the winds during the summer season would indicate that the amount must be very small. The prevailing direction during the summer months is almost a loss up between south east and northwest. However the detailed records show that during the daylight hours from about 9 a. m. to 8 p. m. when winds are more active and pollen is apt to be carried the winds are almost steady from the southeast while during the damper night hours when the winds are lighter the prevailing direction is northwest.

Alpena is so situated with respect to Lake Huron that all winds with easterly components from north-northeast to south-southeast are direct lake winds and must cross over from 60 to 120 miles of water before reaching Alpena. Even north and north-northwest winds are almost lake winds as they cross but short stretches of land before reaching Alpena.

It is not probable that northwest winds which would have in cross Lake Superior would bring an appreciable amount of pollen. Hence the only pollen-bearing winds would be westerly and southwesterly. Winds from both of these directions are not prominent during the summer months.

The following table obtained from a ten year average gives an estimate of how many hours the wind may blow from each direction during the summer months.

	N	NE	E	SE	S	SW	W	NW	Total
June	59	40	61	192	49	70	91	158	720
July	60	31	42	178	56	91	95	191	744
August	60	39	55	163	70	8	99	180	744
September	54	35	56	143	58	100	114	160	720

I would add that Alpena is the location of the only government weather bureau in the northern half of lower Michigan. The records of our weather bureau show that the prevailing wind at 6 p. m. is north-east, which is a lake wind and should be free from pollen.

E. S. PARKINSTER M.D. Alpena Mich

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis Nov. 18. Application must be filed before Sept. 15. Sec. Dr. William H. Wilder 122 S. Michigan Ave. Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY Cincinnati Sept. 14. Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha.

AMERICAN BOARD OF PEDIATRICS Seattle Aug. 8 Philadelphia Oct. 10 and St. Louis Nov. 10. Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF RADIOLOGY Detroit Dec. 12. Sec. Dr. Bjrl R. Kirkin Mayo Clinic Rochester Minn.

ARIZONA Basic Science Tucson Sept. 17. Sec. Dr. Robert L. Nugent Science Hall University of Arizona Tucson.

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination Sept. 16-18. Ex. Sec. Mr. Everett S. Elwood 225 S. 15th St. Philadelphia.

NEVADA Reno Aug. 5. Sec. Dr. Edward E. Hamer Carson City.

NEW HAMPSHIRE Concord, Sept. 12-13. Sec. Board of Registration in Medicine Dr. Charles Duncan State House, Concord.

NEW YORK Albany Buffalo New York and Syracuse Sept. 16-19. Chief Professional Examinations Bureau, Mr. Herbert J. Hamilton 315 Education Bldg. Albany.

OKLAHOMA Oklahoma City Sept. 10-11. Sec. Dr. James D. Osborn Jr. Frederick.

PUEBLO RICO San Juan Sept. 3. Sec. Dr. O. Costa Mandry Box 536 San Juan.

WISCONSIN Basic Science Madison Sept. 21. Sec. Professor Robert N. Bauer 3414 W. Wisconsin Ave. Milwaukee.

Connecticut Homeopathic Report

Dr. Joseph H. Evans, secretary, Connecticut Homeopathic Medical Examining Board, reports the written examination held in Derby, March 12, 1935. The examination covered 7 subjects and included 70 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. The following school was represented:

School	PASSED	Year Grad	Per Cent
Hahnemann Medical College and Hosp. of Philadelphia		(1933)	83.1
839			

Colorado April Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, April 2, 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Five physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Northwestern University Medical School		(1935)	87
Osteopath*			83.5

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
Hahnemann Medical College and Hospital Chicago		(1903) Iowa
University of Illinois College of Medicine		(1934) Arkansas
University of Minnesota Medical School		(1932) Illinois
University of Buffalo School of Medicine		(1917) Minnesota
		(1896) New York

* Licensed to practice medicine and surgery

Texas Reciprocity Report

Dr. T. J. Crowe, secretary, Texas State Board of Medical Examiners, reports 25 applicants licensed by reciprocity, April 11, 1935. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine		(1927)	Arkansas
Emory University School of Medicine		(1932)	Georgia
Bennett Medical College Chicago		(1912)	Nebraska
Chicago College of Medicine and Surgery		(1915)	Oklahoma
Loyola University School of Medicine		(1927)	Illinois
Rush Medical College		(1931)	Illinois
University of Illinois College of Medicine		(1932)	Washington
University of Kansas School of Medicine		(1926)	Kansas
Tulane University of Louisiana School of Medicine		(1918)	Oklahoma
(1925) Louisiana			
Johns Hopkins University School of Medicine		(1930)	Maryland
Harvard University Medical School		(1927)	Minnesota
University of Michigan Medical School		(1931)	Michigan
University of Nebraska College of Medicine		(1932)	Nebraska
Eclectic Medical Institute Ohio		(1902)	Ohio
University of Oklahoma School of Medicine		(1933)	Oklahoma
Jefferson Medical College of Philadelphia		(1933)	S. Carolina
University of Pennsylvania School of Medicine		(1927)	New York
Baylor University College of Medicine		(1933)	Oklahoma
Osteopaths			Iowa Michigan

Licensed to practice medicine and surgery

Book Notices

Living with the Weather By Clarence A. Mills M.D. Ph.D. James T. Heady Professor of Experimental Medicine University of Cincinnati. Cloth Price \$1.50 Pp 206 Cincinnati Caxton Press 1934

Dr. Mills has been studying for the past six years "climatic and weather effects" and has made "continuous observation of patients in clinic and hospital" and "of laboratory animals under controlled conditions." One need not read far in the book to suspect that Dr. Mills feels that Walter Hines Page understated the influence of climate when, in a letter to a friend in 1913, Page said regarding life that "half of it is climate, a fourth of it is occupation, the other fourth companionship. And the climate (with what it does) is three fourths of companionship." "Weather men," says Dr. Mills, when they speak of weather, mean the behavior of such factors as temperature, pressure, moisture, wind, and sunshine over relatively short periods of time. Climate on the other hand, refers to the sum total of weather over long periods of time. And according to Dr. Mills, weather and climate are potent, though often unrecognized factors in practically everything mankind does or doesn't do. No attempt is made by Dr. Mills to present in this book the evidence from which his conclusions are drawn, but he states that "the analysis is based on a prolonged study of the subject and practically all statements made have a certain amount of definite scientific evidence as a foundation." It was Mark Twain who observed that everybody talks about the weather but nobody does anything about it. Dr. Mills talks about the weather and also calls attention to the need of doing something about it—including further study of the part it plays in human affairs, further attention to indoor atmospheric control and further efforts toward better control of the effects of climate on man that would involve finding the set of environmental conditions best suited to his needs. This volume should prove to be of interest to physicians and public health workers in general.

Making Our Minds Behave By William S. Walsh M.D. Cloth Price \$2.50 Pp 277 New York F. J. Fulton & Company Inc. 1935

Dr. Walsh's book is a popular book of advice and suggestions intended to aid the reader in "getting more out of life," to use the author's words. A variety of subjects are treated, ranging from the initial chapter on "Mental Engineering" to a final chapter on "Expressing Ourselves." This last chapter is a dissertation on the art of making speeches. Chapter headings include "Remote Control," "Secondhand Thinking," "Removing the Mask" which may be translated to mean, respectively, "Some Unconscious Determinants of Behavior," "Prejudices and Superstitions" and "Defensive and Compensatory Behavior." Other chapter headings are less ambiguous, as "The Art of Concentration," "Making Good on the Job," "On Being an Executive" and "Can We Take It?" The author modestly states in the preface that he makes no pretensions toward any systematic presentation of theory of behavior but wishes merely to offer "more or less elementary suggestions which the writer believes to be sound." This is exactly what he does, but it is something of a question as to how helpful such a presentation can be. The work is descriptive and exhortatory. While occasional references are made to dynamics of behavior, such references are too vague to be understood by the lay reader. The author is indefinite where he does refer at all to the common psychological concepts on which understanding of behavior is based, viz., "he tends to develop a sort of super-ego which fashions ideals of personal conduct, which acts as a censor of his desires and actions" (p. 23). The style, though popular, is cumbersome and involved. The author is markedly repetitive. The book is overburdened with slang. There are innumerable and frequently rather useless references, of which the most flagrant noted reads "There are many good advisers—Lao-Tzu who, incidentally, anticipated many of the tenets of Christ, Confucius, Aurelius, Epicurus, Epictetus, Seneca, Descartes, Pascal, Kempis, La Bruyere, Bacon, Montaigne, La Rochefoucauld, Amiel, Emerson, to mention a few." The book is full of such padding, and could well be reduced to half the present size without loss of content.

The author is doubtless more helpful in his personal contacts with his patients than he could possibly be with this book, which is tedious largely on account of the stylistic defects referred to. It will not be helpful to neurotic individuals, because it does not offer them understanding of the sources of the difficulties referred to. It may be helpful to some persons who require only friendly encouragement, but the publishers are hardly justified in the announcement on the jacket of the book to the effect that the work "lifts psychology and psychoanalysis out of their technical terminology and presents them clearly and in simple language." While some psychological concepts are dealt with, one could hardly obtain the feeblest understanding of psychoanalytic psychology from the book. The author is much more modest in his claims than are his publishers.

Arbeit und Gesundheit. Sozialmedizinische Schriftenreihe aus dem Gebiete des Reichsarbeitsministeriums. Herausgegeben von Professor Dr. Martin Heck. Ministerialdirigent im Reichsarbeitsministerium. Heft 25. Nerven- und seelische Störungen bei Teilnehmern am Weltkrieg. Ihre ärztliche und rechtliche Beurteilung. Von Dr. Karl Weller. Oberregierungsmedizinrat bei der Versorgungsärztlichen Untersuchungsstelle München. Teil II. Geisteskrankheiten und organische Nervenerkrankungen. Paper Price 8.50 marks Pp 314 with 30 illustrations Leipzig Georg Thieme 1935

Weiler contributes the twenty-fifth number of *Work and Health*, edited by Martin Heck. It consists of an analysis of the nervous and mental disturbances in association with the World War. After an introduction as to how this work was carried out, Weiler discusses dementia praecox (schizophrenia). This chapter is divided into three parts: dementia praecox in general, influence of war and dementia praecox, and finally the conclusions. The second chapter takes up the manic depressive psychoses and consists of a discussion of manic depressive psychoses in general and in association with the World War, followed by conclusions. The third chapter deals with epilepsy and is divided into two parts: epilepsy as an individual entity and the influence of the war on epilepsy. The fourth chapter discusses nervous and mental diseases of syphilitic origin. This is divided into a general discussion of dementia paralytica and tabes dorsalis and the various syphilitic nervous and mental diseases in relation to the war. The fifth chapter considers other organic diseases of the central nervous system, such as multiple sclerosis, epidemic encephalitis and syringomyelia. The sixth chapter deals with the influence of power and force on the peripheral nerves, the spinal cord and the brain. There are a summary and an appendix at the end of the book. Many of the author's conclusions are open to question and discussion. There is almost no bibliography. The book does not offer much to the student interested in these subjects.

Handbook of Anesthetics. By J. Stuart Ross M.B. Ch.B. F.R.C.S.E. and H. P. Fairlie M.D. Anesthetist to the Western Infirmary, Glasgow. With a chapter upon Local Anesthesia by W. Quarry Wood M.D. F.R.C.S.E. Assistant Surgeon Edinburgh Royal Infirmary. Fourth edition. Cloth. Price \$4 Pp 299 with 66 illustrations. Baltimore William Wood & Company 1935

The preparation of this edition has been the sole responsibility of H. P. Fairlie. Anesthetic agents and methods of their administration that are in general use in Great Britain are described. The equipment used differs considerably from the equipment commonly in use in the United States and Canada and should be interesting to members of the profession in this country on that account. Stress is laid in the first chapters on the fundamentals underlying the absorption and physiologic action of anesthetic drugs. Shock in relation to anesthesia is adequately discussed in chapter 2. In chapter 7 the newer basal narcotics tribrom-ethanol (Avertin) and evipan sodium are described. Ether is recognized as the most dependable and safest anesthetic agent for the majority of operative procedures. The dangers associated with administration of chloroform are well outlined. The importance of maintaining an adequate airway during administration of an anesthetic by inhalation is stressed. One page is devoted to a description of Waters' carbon dioxide absorption technic. Accidents encountered, and methods of avoiding them and of treating them, are outlined. A chapter discussing the choice of anesthetic is limited to the anesthetics producing general anesthesia. The next chapter deals with local anesthesia and the following chapter with spinal anesthesia.

The Biochemistry of the Eye By Arlington C. Kruse M.A., Ph.D., M.D. Instructor in Ophthalmology The Johns Hopkins Medical School. The Wilmer Ophthalmological Institute The Johns Hopkins Hospital and University Monograph No. 2 Cloth. Price \$3.25 Pp 264 with 17 illustrations. Baltimore The Johns Hopkins Press London Oxford University Press 1934

Ocular biochemistry has been largely a neglected field until recent years. In this book the author has attempted to review somewhat critically the more important and more trustworthy papers that have appeared, mostly in the last thirty years. The book is essentially a review of the biochemical literature pertaining to the eye and should serve as a convenient reference source to researchers in this field. It can be read profitably only by those who have a ready grasp and appreciation of modern biochemical theory and methods. The author reviews the literature on the chemistry of the external secretions of the eye, conjunctiva, sclera, cornea, uveal tract, retina, aqueous humor, vitreous humor and lens. The literature related to the biochemistry of the eye and published up to and including 1933 is considered. It is probable that much of the quantitative data considered in this work will have to be revised, because many of the biochemical methods that were used are not specific or truly quantitative. The reader may conclude after reading this book that, although it appears that a great amount of time and effort has been spent in work on the biochemistry of the eye, but little is known that is at present of much benefit in considering the various pathologic processes of the eye. While this is probably true, books of this type are useful in their attempt to correlate scattered knowledge and thus may serve to point the way for future work in this difficult field.

Hospital Accounting and Statistics. A Manual for American Hospitals Authorized for publication by the Trustees of the American Hospital Association upon recommendation of the Council on Community Relations and Administrative Practices. Cloth. Price \$1 Pp 85 Chicago American Hospital Association 1935

The committee of the American Hospital Association to be credited with this book states that the purpose is to suggest practical ways by which (a) the administrator can use accounts to control his institution and to interpret his results to others, and (b) the bookkeeper or accountant can accumulate and present useful information with a maximum of clarity and a minimum of routine labor. It successfully carries out the purpose of the committee. It is a manual for the hospital bookkeeper and as such is useful for the hospital administrator. It is neither a textbook on bookkeeping nor a book of sample forms nor a textbook on hospital administration. This book will be an aid to all bookkeepers and administrators.

Studies on Cell Growth (Part II). The Growth in Vitro of Normal Mammalian Cells and of Mouse Cancer Cells (Carcinoma Sarcoma) in Neutral and Immune Media (Serum Plasma) By M. J. A. des Ligneris M.D. L.M.S.S.A. No. XXXIV Vol. VI Publications of the South African Institute for Medical Research. Edited by the Director. Paper. Pp. 313 322 with 109 illustrations. Johannesburg South African Institute for Medical Research 1934

The purpose of this work is to decide the controversy between Lumsden and Ludford. According to Lumsden there are specific anticancer substances formed in animals, which are immunized by inoculation with tumor tissue. The action of these serums is highly specific according to Lumsden. The specificity against the malignant cells was demonstrated by this author in tissue cultures in which he found that the malignant cells were picked out and rapidly killed and the non-malignant cells remained more or less undamaged. Ludford on the other side, came to the conclusion that those cells which were considered by Lumsden to be cancer cells in the tissue cultures were not malignant cells but stroma elements. In order to settle this question Des Ligneris inoculated sheep with tumor material from mouse carcinomas and with normal mouse organs and compared the growth of mouse carcinoma tissue and mouse sarcoma tissue as well as of normal mouse kidney, liver, lung and spleen in serum or plasma, which was obtained from the injected animals with the growth in normal sheep serum or plasma. The results were that the antibodies that had developed in the serum of sheep injected with mouse carcinoma tissue had only antispecies characters and no kind of specifically antimalignant characteristics. The author obtained the same effect on mouse carcinoma or mouse sarcoma cells in

vitro whether the serum or plasma used originated from a sheep injected with normal mouse organs or with mouse carcinoma. Furthermore, the effect on normal mouse cells in vitro was the same whether antmouse sheep serum was used that was produced by inoculation of normal mouse organs or of mouse carcinoma. There are illustrations of tissue cell for demonstration.

Guiding Your Child Through the Formative Years From Birth to the Age of Five. By Winifred De Kok M.R.C.S. L.R.C.P. Cloth. Price \$2 Pp 191 New York Emerson Books Inc. 1935

The author discusses in a clear, concise manner fears, tantrums, habits, freedom, play, independence, sex, education and the various problems with which one is daily confronted in the rearing of children. Having been trained in psychoanalysis, she attacks many of the problems of childhood from the psychoanalytic point of view and she uses the experiences in the rearing of her own children as examples of proper management. While it is impossible to agree fully with the methods outlined and many of the statements, the book in general should be found useful. Those concerned with child management will find much that is of interest.

Die unsichtbaren Krankheitserreger filtrierbare Viren. Ein Lehrbuch für Ärzte und Tierärzte. Von Dr. Josef Baló o. ö. Professor der pathologischen Anatomie und Pathohistologie an der Franz-Joseph-Universität Szeged. Paper. Price 24 marks. Pp 311 with 42 illustrations. Berlin S. Karger 1935

In the present German edition the author has rewritten and brought down to October 1934 the material included in the Hungarian edition, which appeared in 1931. The book is divided into two sections. The first consists of a brief review of the available information concerning the general characteristics of filtrable viruses and the second, which is the main part of the work, deals with most of the important virus diseases of man and animals and a few representative diseases affecting fish, insects and plants. The individual diseases are well arranged in groups according to the author's idea of classification: (1) pox diseases of man and animals, (2) herpes and herpes-like diseases, (3) neurotropic filtrable viruses, (4) organotropic viruses, (5) diseases giving the picture of a general septicemia and (6) viruses associated with proliferative conditions. The discussions in the main are limited to concise reviews of the literature and are followed in each instance by an extensive bibliography, in which an occasional important omission has been noted. One chapter is devoted to the filtrable forms of the tubercle bacilli and to bacteriophage. The details of technical procedures are not generally emphasized except for an appendix dealing with filters and filtration. Considering the fact that there are available relatively few books dealing with the rapidly accumulating information on the important subject of filtrable virus diseases, this manual is a contribution of some value in this field.

Key Catalogus of Parasites Reported for Carnivora (Cats Dogs Bears etc.) with Their Possible Public Health Importance. By C. W. Stiles and Clara Edith Baker U. S. Treasury Department Public Health Service National Institute of Health Bulletin No. 163 (Continuation of Hygiene Laboratory Bulletin Services) Paper. Price 20 cents. Pp. 913 1223 Washington D. C. Supt. of Doc. Government Printing Office 1935

The present bulletin is part 8 of the well known host catalogue being compiled by Stiles and his co-workers. Such compilations will be of great assistance to parasitologists, but it is to be regretted that the data are given in such an abbreviated style that it is often difficult to secure information on a desired subject.

Festschrift. Ino Kubo zu seinem 60. Geburtstag (26. Dezember 1934) von seinen ausländischen Freunden gewidmet. Cloth. Pp. 378 with illustrations. Tokyo The Herald Press Ltd. 1934

This book contains fifty-eight rather short articles of clinical and practical nature by European and American authors on diseases of the nose, throat and ear and their complications. The book is issued in celebration of the sixtieth anniversary of Ino Kubo, professor of otorhinolaryngology in the University of Fukuoka, Japan. The larger number of articles by far are in the German language. Various European countries are represented and there are two American contributors. The book will be of interest to specialists in the diseases with which it deals.

Medicolegal

Workmen's Compensation Acts Trauma and Arthritis

—As the result of a cave-in in the mine in which Duchant was working he fractured several ribs and two of the dorsal vertebrae. He was hospitalized for two and one-half months and his employer paid him compensation. At the time of the accident, however, he was suffering from an advanced and quite generalized progressive hypertrophic arthritis of the thoracic and lumbar spine. When he was discharged from the hospital his employer put him at light work which he performed with great difficulty because of pain in his back and shoulders caused by a stiff or "poker" spine. Alleging that the accident had aggravated his arthritic condition, he brought proceedings under the Minnesota compensation act but the industrial commission denied him compensation. He then appealed to the Supreme Court of Minnesota.

When Duchant, said the Supreme Court of Minnesota was discharged from the hospital according to medical testimony, roentgenograms indicated that the injury suffered in the cave-in had healed and that the condition of his spine was no different from what it would have been had he suffered no industrial injury. In fact, one physician testified that the hospitalization had been beneficial to the arthritic condition. Other physicians testified that the stiffness of Duchant's spine was due to the progress of the arthritis and that the injury contributed nothing to his present condition. Duchant contended that his case came within the doctrine announced in several Minnesota cases that where a hernia develops from strain or injury, suffered in the course of employment a preexisting weakness or susceptibility to hernia on the part of the worker would not bar compensation. But, answered the Supreme Court, the case at bar is easily distinguishable from the cases cited. Here we have a condition, well advanced at the time of injury which according to the testimony of disinterested physicians was neither aggravated nor caused by the injury. In addition there is credible testimony to the effect that the arthritic condition was benefited by the hospitalization made necessary by the back injury.

The Supreme Court accordingly affirmed the action of the industrial commission denying compensation to the workman.—*Duchant v. Oliver Iron Mining Co. (Minn.)* 256 N. W. 905

Pharmacists Degree of Care Required—The plaintiff was suffering a skin irritation from poison ivy. Her physician prescribed a preparation containing sugar of lead, which she applied to the inflamed area. When she went to her pharmacist to have the prescription refilled, he advised her to stop using sugar of lead and sold her a preparation that he himself manufactured. She applied his preparation, and the inflamed skin became blacker and blacker. When the plaintiff called the attention of her pharmacist to this, he advised her to keep on using his preparation. Not until after she had used two and one-half jars of it did he advise her to consult a physician. The physicians whom she consulted were able, by a painful nerve wrecking process, to remove the greater part of the blackness in her skin, but at the time of the trial there was still a dark spot on the plaintiff's breast, which would be permanent unless she submitted to a skin grafting operation. She sued her pharmacist.

At the trial, the pharmacist-defendant testified that he manufactured the preparation that he sold the plaintiff and that it contained sulphur, oil of wintergreen, vaseline and lanolin. According to his testimony, he told the plaintiff at the time that if she used his "skin cure," not to use it in connection with sugar of lead. The plaintiff testified however, that when she purchased his "skin cure" she had already been using the sugar of lead preparation for several days, that she told the defendant that she had been doing so, that he told her not to use any more of it, and that she used none after she began the "skin cure." The jury returned a verdict in favor of the plaintiff, and the defendant moved for a new trial, basing his motion in part on the claim that the court should have sustained his

demurrer to the plaintiff's evidence. The trial court conceded its supposed error and for that and other reasons ordered a new trial. The plaintiff then appealed to the Supreme Court of Kansas.

It was urged on behalf of the plaintiff, said the Supreme Court, that the defendant's demurrer could not be sustained, since the plaintiff's evidence showed negligence on the defendant's part. With this the Supreme Court agreed. The defendant, said the court, was a registered pharmacist, who was selling drugs and compounding medicines. The general rule is that a registered pharmacist is required to use great care in the sales he makes. It was a question of fact whether the defendant, when he sold his "skin cure," explained to the customer that sugar of lead could not be used and that it must be thoroughly washed out of the flesh before the "skin cure" was applied. The defendant's "skin cure" contained sulphur, the inevitable reaction of which would be to cause blackness, as the defendant well knew. When the blackness appeared and the plaintiff called the defendant's attention to it, he told her to keep on using his preparation and the blackness would come off. She followed his advice, and the area to which the "skin cure" was applied became blacker and blacker. Even then the defendant told the plaintiff that she should keep on using his remedy, that it would finally remove the blackness.

The Supreme Court of Kansas quoted with approval the rule laid down in 55 Am. St. Rep. 251, in a note to *Howes v. Rose* as follows:

In the discharge of their functions druggists, apothecaries and other persons dealing in drugs, poisons and medicines are required not only to be skillful but also exceedingly cautious and prudent in view of the terrific consequences which may attend the least inattention on their part. The highest degree of care known among practical men must be used by them to prevent injury from the use of their compounds and they are held to a special degree of responsibility corresponding with their superior knowledge and are generally held liable for the slightest negligence.

In this case, the pharmacist defendant did not exercise the care required of him in the sale of his "skin cure." He knew the effect of the combination of the substances of which it was made up and his customer did not. He persisted in telling his customer to keep on using the preparation and that it would finally remove the darkness. Such conflicts as there were in the evidence were such as must be determined by a jury.

For the reasons stated and others, the judgment of the trial court was reversed and the cause remanded for a new trial.—*Fuhs v. Barber (Kan.)*, 36 P. (2d) 962

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Cincinnati Sept. 14-20 Dr. William P. Wherry 107 South 17th Street, Omaha, Executive Secretary
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons Sky Top Pa. Sept. 16-18 Dr. James R. Bloss 418 Eleventh Street Huntington W. Va. Acting Secretary
- American Congress of Physical Therapy, Kansas City, Mo. Sept. 9-12 Dr. Nathan H. Palmer 921 Canal Street New Orleans Secretary
- American Roentgen Ray Society Atlantic City N. J. Sept. 24-27 Dr. E. P. Pendergrass 3400 Spruce Street, Philadelphia, Secretary
- Colorado State Medical Society Estes Park, September 5-7 Mr. Harvey T. Sethman 537 Republic Building Denver Executive Secretary
- Michigan State Medical Society Sault Ste. Marie, Sept. 23-25 Dr. Burton R. Corbus 313 Metz Building Grand Rapids Acting Secretary
- Mississippi Valley Conference on Tuberculosis Madison Wis. Sept. 12-14 Mr. A. W. Jones 613 Locust Street, St. Louis Secretary
- National Medical Association, New Orleans, Aug. 11-17 Dr. C. A. Lanon 431 Green Street South Brownsville, Pennsylvania Secretary
- Northern Minnesota Medical Association Duluth Aug. 12-13 Dr. Oscar O. Larsen Detroit Lakes Secretary
- North Pacific Pediatric Society Seattle August 9-10 Dr. F. H. Douglass, 509 Olive Street Seattle Secretary
- Oregon State Medical Society Gearhart Sept. 19-21 Dr. Blair Holcomb Stevens Building Portland Secretary
- Utah State Medical Association Logan September 5-7 Dr. George N. Curtis Judge Building Salt Lake City Secretary
- Washington State Medical Association Everett Aug. 12-14 Dr. Curtis H. Thomson 1305 Fourth Avenue, Seattle, Secretary
- Wisconsin State Medical Society of Milwaukee Sept. 17-20 Mr. J. G. Crownhart 119 East Washington Avenue Madison, Secretary
- Wyoming State Medical Society Lander Aug. 12-13 Dr. Earl Whedon 50 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

180: 753-892 (June) 1935

- Etiologic and Pathologic Factors in Polycythemia Vera P Reznikoff N C Foot and J M Betha New York—p 753
- *Macrocytic Anemia with Aplastic Features Following Application of Synthetic Organic Hair Dye C W Baldrige Iowa City—p 759
- *The Neurologic Aspect of Leukemia R S Schwab and Soma Weiss Boston—p 766
- Fatal Ethylene Dichloride Poisoning W C Hueper Wilmington, Del and C Smith Philadelphia—p 778
- Spindle Cell Sarcoma of Pancreas E J Oesterlin and R W Blumen thal Milwaukee—p 784
- Congenital Cysts of Lung J P Scott and A D Waltz Philadelphia—p 788
- Factors Affecting Appearance and Duration of Glycosuria C S Robinson R C Derivaux and Barbara Hewell Nashville Tenn—p 795
- Variations in Blood Pressure in Renal Tuberculosis C G Morlock and B T Horton Rochester Minn—p 803
- Factors Conditioning Transmission of Syphilis by Blood Transfusion H J Morgan Nashville Tenn—p 808
- Early Response to Venesection with Observations on So Called Bloodless Venesection W A Brams and J S Golden Chicago—p 813
- Pain in Thrombo-Angiitis Obliterans Clinical Study of One Hundred Consecutive Cases Grace A Goldsmith and G E Brown Rochester Minn—p 819
- Four Lead Electrocardiogram in Coronary Sclerosis Study of Series of Consecutive Patients A Bohning and L N Katz Chicago—p 833
- Coronary Thrombosis and Its Effect on Size of Heart E F Horine and M M Weiss Louisville Ky—p 858

Macrocytic Anemia Following Use of Hair Dye—Baldridge discusses three cases of macrocytic anemia in women who had dyed their hair just before the application of permanent waves. In one of these the temporary changes in the blood were typical of aplastic anemia. It is essential that more cases be studied in order to determine the exact relationship between the dye and the blood changes. The part played by the permanent wave must also be established. Patients having pernicious anemia are likely to lose pigment from the hair at an early age so that they have this added cause for using hair dye. Therefore the presence of a macrocytic anemia in a patient with dyed hair does not establish a relationship between the two conditions. It is possible that the substance which caused the anemia was not the original chemical compound applied to the hair but rather some product that resulted from heating the initial compound.

Neurologic Aspect of Leukemia—Schwab and Weiss cite the clinical course of an unusual case of acute lymphatic leukemia. The presenting manifestations were facial diplegia and a spinal fluid under elevated pressure, containing 2,000 cells and increased amounts of protein. The usual clinical manifestations including the blood picture, developed later over a period of ten weeks. Only about 25 per cent of cases in which there is histologic evidence of leukemic infiltration of the central nervous system exhibit neurologic signs. An analysis of the records of 334 cases of leukemia in Boston revealed an incidence of 20.5 per cent with neurologic signs, excluding retinal lesions. The frequency of neurologic complications in the acute and chronic and in the lymphatic and myelogenous types of leukemia was about the same. The most frequently observed neurologic signs were unilateral or bilateral palsies of the seventh and sixth nerves with less frequent involvement of the fifth, eighth, ninth, tenth, eleventh and twelfth nerves. Absent deep reflexes, pyramidal signs, paresthesias and signs of meningeal irritations have also been encountered. The neurologic signs and particularly involvement of the cranial nerves often exhibit rapid fluctuations. In 73.6 per cent of thirty-four

cases the spinal fluid showed abnormal changes, as indicated by increased cell count, increased protein content and elevated pressure. In view of the frequent involvement of the central nervous system, systematic neurologic examination of the patients and study of the spinal fluid may be of aid in the diagnosis and management of patients with leukemia.

Archives of Neurology and Psychiatry, Chicago

33 1143-1386 (June) 1935

- *Syndrome of Superior Cerebellar Artery and Its Branches C Davison, S P Goodhart and N Savitsky New York—p 1143
- Nature of Delirium and Allied States Dysergastic Reaction H G Wolff New York and D Curran London England—p 1175
- *Dementia Paralytica Results of Treatment with Tryparsamide H C Solomon and S H Epstein Boston—p 1216
- Intracranial Arteriovenous Fistula III Diagnosis by Discovery of Arterial Blood in Jugular Veins B T Horton Rochester Minn L H Ziegler Albany, N Y, and A W Adson Rochester Minn—p 1232
- *Quinine Therapy in Cases of Multiple Sclerosis Over a Five Year Period R M Brickner New York—p 1235
- Syringomyelia and Intramedullary Tumor of Spinal Cord R P Mackay and J Favill Chicago—p 1255
- Effects of Alterations in Posture on Cerebrospinal Fluid Pressure J Loman A Myerson and D Goldman Boston—p 1279
- Microcephalia Vera Study of Two Brains Illustrating the Agoric Form and the Complex Microgyric Form J G Greenfield London England, and J M Wolfsohn San Francisco—p 1296

Syndrome of Superior Cerebellar Artery—Davison and his associates cite nine cases of closure or obstruction of the superior cerebellar artery. Homolateral signs and symptoms due to involvement of the cerebellar lobes or the brachium conjunctivum were present in six cases. Involuntary movements of the nature of tremors were noted in only three. Contralateral sensory disturbances were of the dissociated or syringomyelic type and consisted of hemihypalgesia and hypothermesthesia of the face and body. All other modalities of sensation were intact. Such spinothalamic sensory disturbances were present in four cases. In the cases with spinothalamic involvement the lateral parts of the medial lemniscus (spinothalamic component) were diseased as a result of thrombosis of the superior cerebellar artery. In addition to the foregoing symptoms and signs, which are typical of the syndrome of the superior cerebellar artery and its branches, there were other neurologic disturbances such as diminution to absence of the deep reflexes, weakness of the extremities, vomiting, dizziness and dysarthria. In some cases the signs of cerebellar involvement and sensory disturbances could not be elicited because the patients were in an unconscious state as a result of closure of the superior cerebellar artery or because these signs were obscured by other cerebral lesions. Complete obstruction of the superior cerebellar artery (in two cases) destroys the brachium conjunctivum, the mesencephalic root of the fifth nerve, the spinothalamic component of the medial lemniscus, the lobulus anterior, lobulus simplex, lobulus ansiformis, crus I and lobulus floccularis and part of the cerebellar nuclei (dentate, emboliform and globose nuclei). The lobulus II, vermalis, lobulus IV, vermalis and lobulus C₂ vermalis in these cases are spared unless both mesial branches of the superior cerebellar artery are pathologically affected. In the cases of incomplete closure of the superior cerebellar artery, the extent of destruction of the respective structures depends on the degree of the vascular obstruction. In two cases there was involvement of the nuclei of the sixth and seventh nerves probably due to an anomalous distribution of the superior cerebellar artery. In one case there was occlusion of the branch of the superior cerebellar artery which supplies essentially the brachium conjunctivum and the lateral part of the medial lemniscus. In only one case was there selective involvement of the dentate artery, a branch of the superior cerebellar artery.

Tryparsamide in Treatment of Dementia Paralytica—Solomon and Epstein present an analysis of the effect of tryparsamide therapy in a series of eighty-one cases of dementia paralytica in which treatment was begun between the years 1923 and 1930 and in which the condition was determined in 1933. Some of the patients received other forms of antisyphilitic treatment (exclusive of fever therapy) prior to or during treatment with tryparsamide. Clinically, in thirty-four patients the condition was considered to be arrested, in twenty-four to be stationary and in twenty-three to be unimproved. In the

course of the years, fourteen patients died, but in only five cases did death appear to be due to unarrested dementia paralytica. The spinal fluid became normal in thirty patients and was greatly improved in thirteen, moderately improved in eight and unimproved in twenty-nine. There were sixty-four patients in the series who received no other treatment than by tryparsamide. In eighteen of these the spinal fluid became normal, in ten it was greatly improved, in seven it was moderately improved and in twenty-eight it showed no change. A specimen of the fluid could not be obtained in one case. The period elapsing between the beginning of treatment and the time when the spinal fluid became normal varied from less than a year to more than nine years. The number of injections of tryparsamide given up to the time when the fluid became normal varied from twenty to 230. No significant difference in results was found in patients receiving tryparsamide alone and in those receiving other types of antisyphilitic treatment, other than fever therapy in conjunction with tryparsamide. Seventeen patients of the series who did not respond satisfactorily to tryparsamide were subsequently given fever therapy, with strikingly beneficial results. The spinal fluid became normal in twelve patients, was greatly improved in three and was moderately improved in two, whereas before fever therapy the spinal fluid was unimproved in fifteen and only moderately improved in two. The clinical improvement was equally striking. Before fever therapy fourteen patients were considered to show no improvement. After fever therapy eight showed the disease to be arrested, and in six it was stationary. Before fever treatment, in three patients the disease was considered to be stationary. In two of these it was later considered to be arrested without showing notable defect, and in one the condition remained unchanged. The results of tryparsamide treatment in this series compared with the results in a series of 173 dementia paralytica patients treated with malaria did not differ to an extent that can be considered significant.

Quinine Therapy in Multiple Sclerosis—Brickner has employed quinine hydrochloride for five years in treating patients with multiple sclerosis. The forty-nine patients had a total of 308 symptoms. The majority (about 73 per cent) of the symptoms of a duration of two years or less have improved. There was improvement in about 44 per cent of the symptoms of longer standing. Thirty-five symptoms have regressed during treatment. Only seventeen new symptoms have appeared in the whole group and of these only nine were permanent. In twenty-five patients the condition is in a state of remission or they have shown marked improvement and are working or able to work. Of these, twenty are free from incapacitating symptoms and five are almost free. None who were able to work prior to treatment are now incompetent to do so. The condition in ten is apparently in a state of arrest, though the patients are incapacitated to a greater or lesser degree, two appear to be emerging from this state into one of improvement. Eight are worse than they were prior to treatment. Of these, three have died. An additional patient, in whom regression of the multiple sclerosis did not occur, died of pneumonia. All but two of those who have experienced remissions or improvements have maintained them. The dosage of quinine hydrochloride must be determined separately for each patient. As much quinine should be given as is possible without cinchonism. The administration of quinine must be continued indefinitely. The medication is given orally, in the form of quinine hydrochloride. When improvement cannot be obtained, it is worth while to try to arrest the process.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

16: 321 386 (June) 1935

- The Scotch Douche and Some Experimental Studies on Its Metabolic Influence. S. Benson and P. L. Bergstrom Chicago—p 327
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Physical Therapy in General Surgery. A. S. Jackson Madison, Wis.—p 342
Electrocoagulation of Tonsils. G. F. Zerzan Holyrood Kan.—p 345
Further Comment on Electrocoagulation of Tonsils and Adenoids. L. L. Doane Butler Pa.—p 347
The Reaction in Electrosurgical Tonsillectomy. The Multiple Stage Operation. L. J. Silvers, New York—p 350
Further Studies with Zinc Ionization in Nasal Allergy. A. R. Hollender Chicago—p 359

Arkansas Medical Society Journal, Fort Smith

31: 211 224 (May) 1935

- Health Examination in Relation to Cancer in Women. Ruth Ellis, Fayetteville—p 211
Late Syphilis. S. F. Hoge Little Rock—p 213
Sodium Thiocyanate as a Prophylaxis and in Treatment of Bacillary Dysentery, with Especial Emphasis on Shiga Type. L. D. Massey, Osceola—p 216

Delaware State Medical Journal, Wilmington

7: 123 140 (June) 1935

- Angina Pectoris. Its Treatment with Insulin Free Pancreatic Extract, Tissue Extract No. 568 (Desympatone). J. B. Wolfe Philadelphia—p 123
Opium. Its Relation to Civilization and Health. J. C. Doane, Philadelphia—p 129
Negative Aspect of Analgesia in Labor. C. L. Hudiburg Wilmington—p 134
Therapeutic Pointers. E. Podolsky Brooklyn—p 136

Iowa State Medical Society Journal, Des Moines

25: 281 326 (June) 1935

- Group Organization. G. F. Harkness Davenport—p 281
The Power of Organization. T. A. Burcham Des Moines—p 282
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Mucous Colitis. Its Clinical Study. C. J. Drueck Chicago—p 285
Treatment of Pelvic Infections. A. C. Page Des Moines—p 287
Review of Urethral Surgery. H. W. Scott Fort Dodge—p 292
*Proper Method of Treating Uterine Cancer. E. D. Plass Iowa City—p 293
The Sciatic Syndrome. J. I. Marker Davenport—p 297
Diagnosis of Gastric Malignancy. J. T. Strawn Des Moines—p 299
Surgical Procedures for Neoplasms of Right Half of Colon. C. S. Krause Cedar Rapids—p 303
Management of Cases of Apparent Sterility. B. J. Dierker, Fort Madison—p 304
Fracture of Carpal Scaphoid. Report of Case. J. A. W. Johnson Newton—p 307

Uterine Cancer—Plass believes that every patient with abnormal vaginal bleeding should be examined bimanually. If the cervix appears benign but does not respond to the usual treatment for cervical erosion, biopsy is demanded. Supravaginal hysterectomy should never be employed for the treatment of supposedly benign uterine lesions, unless the cervix appears normal. The cervix after such an operation constitutes a source of danger, since carcinoma may develop later. Ordinary vaginal and abdominal total hysterectomy do not constitute adequate treatment for cervical cancer, except possibly in very early cases in which the diagnosis can be made only microscopically. Operative intervention in even early cases of cervical carcinoma is justified only if the operator is prepared to remove the upper third of the vagina and the parametrium on each side practically to the pelvic wall by the radical hysterectomies of Wertheim or Schauta. Such operations have a primary mortality of from 10 to 20 per cent, and there are many who feel that all groups of cervical carcinoma should be treated by radiation therapy. Proper radiation treatment consists in the use of both high voltage x-rays and radium as soon as a positive diagnosis has been made. Abnormal bleeding from the uterus itself demands diagnostic curettage with microscopic examination of the curettings. Complete hysterectomy should be performed for adenocarcinoma of the uterus. In certain instances radium and x-radiation may be employed successfully, but this method of treatment has not yet obtained wide acceptance.

Journal of Comparative Neurology, Philadelphia

61: 407 594 (June 15) 1935

- Nerve Endings in Human Pleura Pulmonalis. O. Larsell Portland Ore.—p 407
Limb Movements Studied by Electrical Stimulation of Nerve Roots and Trunks in Amblystoma. J. S. Nicholas New Haven Conn. and D. H. Barron Albany N. Y.—p 413
Thalamus of Turtles and Thalamic Evolution. J. W. Papez Ithaca N. Y.—p 433
Change in Volume of Olfactory and Accessory Olfactory Bulbs of Albino Rat During Postnatal Life. C. G. Smith Toronto—p 477
Corticofugal Fiber Connections of Cortex of Macaca Mullatta. Frontal Region. F. A. Mettler Ithaca N. Y.—p 509
Cerebrospinal Hydrodynamics. V. Studies of Volume Elasticity of Human Ventriculohydrodynamic System. J. H. Masserman Baltimore—p 543
Blood Supply of Lateral Geniculate Body in Rat. Y. C. Tsang Chicago—p 553
Hippocampal and Parahippocampal Cortex of the Emu (Dromiceius). E. H. Craigie Toronto—p 563

Journal of Urology, Baltimore

33: 521 676 (June) 1935

- Renal Ectopia W G Sexton Marshfield Wis.—p 521
Solitary Cyst Associated with Tuberculosis of Kidney Review of Literature and Case Report J F Balch Indianapolis.—p 526
Papillary Epithelioma of Renal Pelvis Report of Three Cases W N Taylor Columbus Ohio.—p 531
*Wilms Tumor Clinical and Pathologic Study J T Priestley and A C Broders Rochester Minn.—p 544
The Surgery of the Upper Ureter A. Randall, Philadelphia.—p 552
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Bladder Tumors Some Results Favorable and Unfavorable R. Pearce, Toronto.—p 570
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Physiology of Urinary Tract Consideration of Factors Relating to Both Pathology and Treatment R E Cumming Detroit.—p 589
Sarcoma of Urinary Tract C E. Jeim Akron Ohio.—p 599
President's Address Report Concerning Organization of Southeastern Branch of the American Urological Association M L. Boyd Atlanta Ga.—p 603
Pain in Cases of Dilated Pelvis and Ureter G R. Livermore Memphis, Tenn.—p 607
Role of Congenital Anomalies in Production of Urologic Conditions in Children with Especial Mention of Congenital Idiopathic Dilatation of Ureter G J Thomas and J C Barton Minneapolis.—p 611
Bladder Tumors Historical Study of Treatment and Pathology E. Beer New York.—p 612
Prostatic Carcinoma B S Barringer New York.—p 616
Problem of Lesions of Right Upper Quadrant W E Lower, Cleveland.—p 621
Nupercaine as Spinal Anesthetic with Especial Reference to Employment of Nupercaine Solution of High Dilution H S Jeck, New York.—p 623
Treatment of Chronic Prostatitis by Injection O Grant, Louisville, Ky.—p 631
Repair of Rectal Tear and Recto-Urethral Fistula Report of Six Cases W W Scott Rochester N Y.—p 643
*New Acid Medication in Treatment of Bacilluria Preliminary Report A. M. Crance and T W Maloney, Geneva N Y.—p 657
Immobilizing Retractor Which Allows Direct Exposure of Bladder Carcinoma to X Ray Therapy D K Rose, St. Louis.—p 664

Wilms' Tumor—Priestley and Broders believe that probably the most common malignant growth that affects the kidneys of children is Wilms' tumor. Sixty-five cases of this tumor observed at the Mayo Clinic are reviewed. Thirty-seven of the patients were in advanced stages of the disease at the time of the original examination, and they received irradiation or symptomatic treatment alone, the remaining twenty eight patients underwent operation and in twenty nephrectomy was performed. An abdominal mass was the first abnormality noted in 40.5 per cent of the cases, and it was present at the time of examination in all but one case. Pain and hematuria as the presenting symptoms occurred in 28.9 and 17.4 per cent, respectively. The tumor is usually sharply demarcated from the renal substance, which it displaces and distorts, eventually pushing up under and distending the capsule of the kidney. The tumor may be roundish or nodular and on cut section may present a glistening appearance varying from white to brown. It may be lobulated, is usually solid and yet resilient and not infrequently gives evidence of hemorrhagic, cystic or necrotic degeneration. Microscopically all Wilms' tumors contain areas of glandular tissue ranging from ill defined to clear cut acini comparable to those seen in the average adenocarcinoma. Intimately associated with the acini are hyperchromatic round, oval or spindle cells that resemble those of fibrosarcoma or myosarcoma. Wilms tumors are highly malignant. The effect of irradiation is evidenced histologically and grossly by disintegration and necrosis, or by no change whatever, that is, the cells are either destroyed completely or are entirely unaffected. The proper treatment of these tumors should include both irradiation and at an appropriate time, surgical removal. Although one patient has lived for thirteen and one half years following nephrectomy, without receiving any irradiation, the remarkable immediate effect of roentgen therapy on highly malignant tumors of this type renders this form of treatment a valuable adjunct in combating these growths. The length of life from the onset of symptoms until death was very short for the group of patients who were in the advanced stages of the disease and who received only symptomatic treatment. The group of patients who were treated

by irradiation and nephrectomy survived approximately twice as long as the group treated by operation or irradiation separately. Both radium and high voltage roentgen therapy have been used, and sometimes the two may be used for the same patient. A large rubber tube may be left at the time of operation for the purpose of inserting radium directly into the wound during the immediate postoperative period. The general principles involved in the surgical removal of Wilms' tumors are similar to those employed in the extirpation of any malignant renal tumor. The usual posterolateral incision will generally give adequate exposure. Care should be taken to remove all the perirenal fatty tissue possible, as this may be involved by the neoplasm. One should feel for extension along the renal pedicle or retroperitoneal lymph nodes and remove any involved portions if possible. If a few involved lymph nodes remain that cannot be removed, it may be advantageous to place a large rubber tube in this region for the purpose of inserting radium directly into it. Of the forty-four patients who were traced up to the present time, forty are known to be dead. Of the twenty patients who underwent nephrectomy, fifteen are dead, four are living and one was not traced. Of the four patients who survived nephrectomy, only two have survived for any appreciable length of time (13.2 and 32 years, respectively). The other two patients were operated on too recently (six months ago) to permit any conclusion regarding the final result.

Acid Medication in Treatment of Bacilluria—Crance and Maloney used nitrohydrochloric acid successfully in the treatment of five cases of bacilluria. They administered it four times a day in doses of 10 minims (0.6 cc). They have used 4 drachms of nitrohydrochloric acid (not the dilute) and enough water to make 4 ounces (120 cc). One drachm of this mixture in two thirds of a glass of water followed by a full glass of water was given the patient after meals and late at night. The treatment is presented for use in bacilluria of the *Escherichia* variety. Nitrohydrochloric acid reduces the pH to 5 or below in apparently less time than the ketogenic diet and can be administered to the patient without hospitalization and without change in the ordinary diet. Urinalysis, regularly done, in all cases thus far treated has failed to show any damage to the kidney by the consistent absence of albumin and casts. One of the patients, in whom the ketogenic diet failed recovered under the nitrohydrochloric acid treatment. The authors continue this medication for about one week after the culture has become sterile. They have treated three cases of the aerogenes variety which, on acid therapy alone, have become symptom free and pus free but have not yielded sterile culture of the urine.

Kansas Medical Society Journal, Topeka

36: 221 264 (June) 1935

- Some Medical Problems J F Hassig Kansas City.—p 221
Acrolydia W Brewer Hays.—p 225
Primary Bronchogenic Carcinoma L E Wood L B Spake W W Summerville and G M Tice Kansas City.—p 227
Epilepsy W S Lindsay, Topeka.—p 234

Maine Medical Journal, Portland

26 83 108 (June) 1935

- Pyelonephritis of Pregnancy from the Urologic Point of View C N Peters Portland.—p 92

Missouri State Medical Assn. Journal, St. Louis

32 217 260 (June) 1935

- Our Obligation to Organized Medicine President's Address C T Ryland Lexington.—p 217
The Doctor of Tomorrow Address of President Elect. E L Miller Kansas City.—p 221
Pathologic and Clinical Aspects of Early Skin Carcinoma R L Sutton Jr Kansas City.—p 224
Thrombo-Angitis Obliterans (Buerger) Its Recognition and Treatment by the Practitioner P S Lowenstein St. Louis.—p 227
The Diagnosis of Neurosis S J Conrad Kansas City.—p 233
Diabetic Coma Without Presence of Diabetic Acid or Acetone in Urine F Neuboff St. Louis.—p 235
Cardiac Hazards of Gallbladder Surgery V T Williams Kansas City.—p 236
Undulant Fever from Goat Milk Infection Report of Case D B Robinson Kansas City.—p 239
Cooperative State Tuberculosis Control Program S P Child Mount Vernon.—p 240

Nebraska State Medical Journal, Lincoln

20: 201-240 (June) 1935

- Purposes of Our Association C A Selby North Platte—p. 201
 Allergy in General Medicine T D Cunningham and J C Mendenhall
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 Treatment of Pernicious Anemia with Especial Reference to Parenteral
 Method R H Young Omaha—p. 222
 Acute Middle Ear and Mastoid Infections B M Kully Omaha—
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 Stearns, Kearney—p. 227

New Orleans Medical and Surgical Journal

87: 809-876 (June) 1935

- Influence of the State on Medical Education S Bayne Jones New
 Haven Conn—p. 809
 Highway Accidents in Mississippi E C Parker Gulfport Miss—
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 Modified Coutard Technic in Treatment of Malignancies of Throat
 L J Menville and J N Ane, New Orleans—p. 817
 Roentgen Therapy in Nonmalignant Conditions J C Rodick New
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 Surgical Complications of Ringworm of Feet J A Colelough New
 Orleans—p. 823
 Analysis of One Hundred and Eighty Five Cases of Tetanus from the
 New Orleans Charity Hospital with Special Note on Avertin F F
 Boyce and Elizabeth M McFetridge New Orleans—p. 825
 Subdeltoid Bursitis Its Treatment by Physical Therapy N H
 Palmer, New Orleans—p. 829

New York State Journal of Medicine, New York

35: 563-612 (June 1) 1935

- Functions of the American Medical Association Address Delivered at
 the 129th Annual Meeting of the Medical Society of the State of New
 York Albany May 14 1935 W L Riccirring Des Moines Iowa—
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 Prevention of Secondary Traumas in Treatment of Automobile Fractures
 W Darrach New York—p. 568
 Emotional Imbalance in Children Calcium and Inorganic Phosphorus
 Blood Serum Determination C G Kerley E J Lorenze Jr and
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 Carter New York—p. 573
 Nonspecific Ulcerative Colitis Terminal (Distal) Ileitis and Bacillary
 Dysentery Their Common Pathogenesis J Felsen New York—
 p. 576
 *Distribution and Diagnostic Significance of Lead in Human Body
 C N Myers Florence Gustafson and B Throne New York—p. 579
 Irritating Properties of Cigarette Smoke as Influenced by Hygroscopic
 Agents M G Mullins and R L Osborne New York—p. 590
 The Ethics of Vivisection S W Lambert New York—p. 592

Diagnostic Significance of Lead in Body—The investigation of Myers and his associates in 500 cases not known to be associated with lead exposure has pointed out various syndromes that may be associated with the "subchronic" type of lead poisoning. Common sources of poisoning, such as foods, drugs and environment, are discussed. One should be on the alert for the possible presence of lead in drinking water, fruits and vegetables. People suffering with obscure gastro-intestinal and cardiovascular disturbances should be examined with the greatest care. Early symptoms that are of importance are loss of appetite, nausea, weariness, constipation, headaches, eye symptoms and circulatory manifestations. For the present, the laboratory investigator and clinician should certainly give attention to all values of more than 50 micromilligrams of lead per liter of urine. About 20 micromilligrams per liter is probably somewhere near the expected limit. In the examination of blood, it is believed that 24 micromilligrams of lead per hundred cubic centimeters covers the patients of the "subchronic" type and that 6 micromilligrams is probably a value somewhat nearer that which should be expected. In the case of hair, it appears that lead finds its way with a great deal of difficulty into the hair, and, when lead is found it may be of diagnostic significance depending on the habits of the patient. Under the present mode of living lead undoubtedly plays a part in many other diseases and should always be given consideration when the clinician is unable to place his finger immediately on some definite syndrome.

Ohio State Medical Journal, Columbus

31: 401-480 (June 1) 1935

- Problems in Treatment of Fractures of Upper Extremity W Hoyt,
 Akron—p. 417
 *Convulsions in Infancy Statistical Study of Four Hundred Cases
 J E Brown Jr Columbus—p. 423
 Thyroid Factor in Mental Disease N W Kaiser Toledo—p. 431
 Prevention and Treatment of Diphtheria H H Pansing Dayton—
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 Practical Ophthalmoscopy W C Davis Columbus—p. 439
 Complications of Otitis Media Involving the Petrous Pyramid W H
 Evans Youngstown—p. 441
 Blood Pressure Effective Method of Control W F Brokaw Cleve-
 land—p. 448

Convulsions in Infancy—Brown reviewed 2,279 consecutive records, over a period of thirty-eight and one-half months, in babies less than 2 years of age, finding 400 cases in which there were convulsions immediately prior to or during the hospital stay. Acute infection alone accounted for 30 per cent of the convulsions, with pneumonia, the acute disorders of the upper respiratory tract and sepsis being the principal offenders. The hemolytic streptococcus was responsible for the majority of the septic cases, being closely followed by the pneumococcus and Staphylococcus aureus. Acute intestinal disorder, or alimentary intoxication, accounted for only 27 per cent of the total, with convulsions usually an indication of impending death. Acute disease of the central nervous system contributed 15.5 per cent to the total, with meningitis responsible for most of the cases. The influenza bacillus, the pneumococcus and the tubercle bacillus were the principal etiologic agents. Most of the remaining cases were due to acute encephalitis, secondary to lead, to pertussis and of undetermined origin. Infantile tetany represented 11.3 per cent of the series. Tetany was found to be comparatively frequent in the first four months of life, and uncommon after 1 year of age. Rickets was commonly found in the spasmophilic infant, the incidence increasing with the age of the patient. Similarly, as the infant with latent tetany grew older, acute infection was increasingly apt to be the activating agent. The highest incidence of tetany occurred at a double peak, in winter and early spring. Cerebral birth injury is responsible for only 8.5 per cent of the entire series, although in the neonatal period it is the chief offender. Intracranial hemorrhage is most often the result of birth injury but may be due to hemorrhagic disease of the new-born or fetal erythroblastosis. Cerebral deficiency was found in 9.5 per cent of the convulsive cases and was ordinarily the sequel of birth injury. The tentative diagnosis of epilepsy was made in only 1.5 per cent of the series, because of the lack of chronicity in many cases, which may later prove truly epileptic, and the fact that encephalograms revealed cerebral deficiency in a large number that might otherwise have been called idiopathic epilepsy. Lead poisoning often with encephalitis, accounted for 2.3 per cent. Among the less frequent causes of convulsions are congenital abnormality of the heart, sinus thrombosis, subdural hematoma, congenital syphilis and other miscellaneous conditions, in several of which the convulsions were terminal accompanying a secondary infection. Sodium bicarbonate may be a dangerous drug, as two cases of alkalosis with convulsions occurred in infants to whom it had been administered therapeutically. No cases were observed in which enlarged thymus, teething, constipation, worms or pharyngitis could be held solely accountable.

Philippine Islands Med Association Journal, Manila

15: 239-304 (May) 1935

- Gastric Analysis by Fractional Method Among Normal Filipinos A.
 Liboro and S Ortiga Jr Manila—p. 239
 Dermatitis Exfoliativa of the New Born J Albert and J L Paguyo
 Manila—p. 249
 Early Leprosy in Infants Born of Leprous Parents Report of Cases
 C B Lara and B de Vera Culon—p. 252
 Ureteral Calculus When to Operate J Eduque and A T Zavalla
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 Treatment of Trichophytosis of the Feet by Formalin and Wright Stain
 E Y Garcia Manila—p. 273
 Height and Weight of Aged Filipinos G T Lantin Manila—p. 277

South Carolina Medical Assn. Journal, Greenville

31: 95-110 (May) 1935

- Cardiovascular Renal Disease in the Negro J C Norris Atlanta, Ga.
 —p. 95
 Brucellosis O B Mayer Columbia—p. 99

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Medical Gazette, Calcutta

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- *Treatment of Psoriasis D Panja and P A Maplestone.—p 241
Splenectomy for Tropical Splenomegaly A N Palit.—p 243
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Epidemic of Cerebrospinal Fever in a Closed Community Note. R B Lal and M Jacob.—p 252
Clinical Observations on Cerebrospinal Meningitis in Indore J R J Tyrrell and H S Kapur.—p 257
Nephrosis Its Nature and Incidence in Indians S P Gupta.—p 258
Clinical Evidence of Rheumatic Fever in the Punjab K L Wig.—p 260
*Simple Technic for Detection of Small Traces of Chloroform in Vaccine Lymph. K S Shah.—p 263

Treatment of Psoriasis—Owing to the burning pain at the site of injection and the number of injections required in the treatment of psoriasis with alcoholic and formaldehyde suspensions of scales of psoriasis Panja and Maplestone decided to cut out a piece of tissue from psoriasis lesions and make an emulsion of it for injection. Their idea was that the parasite, if it is a filtrable virus will be found not only in the scales but also deeper down in the dermis. This probability they state, is supported by the fact that the epidermal changes have been shown to follow changes in the dermis, such as dilatation of the vessels and elongation of the papillae. These pathologic manifestations suggested that the filtrable virus might be present in the corium in a more virulent state than in the more or less dry epidermal scales. They select an acute or a subacute early patch and dab it with rectified alcohol, then a small piece of the diseased skin to the depth of the corium is snipped off. The piece is weighed and mixed with pumice-stone dust and crushed in a sterile mortar until a uniform paste is produced. A few drops of physiologic solution of sodium chloride may be necessary to make a good paste. The paste is mixed with a measured quantity of physiologic solution of sodium chloride to make up the suspension to the strength of 10 mg in 1 cc. It is filtered through an infusorial earth filter and the filtrate thus obtained is filtered again through sterilized Pasteur-Chamberland L3 candles, and 0.05 per cent phenol is added to the final filtrate. The initial dose was 0.1 cc. and it was injected intradermally. The injections were repeated every third or fourth day the dose being increased each time by 0.1 or 0.2 cc. up to 1 cc. When the dose reaches 0.5 cc subcutaneous injection is better, as by this means the pain of intradermal infiltration is avoided. A course of from ten to twelve injections was given as a rule and if necessary, this was repeated after a fortnight but only in a few cases was a second course necessary. There was no reaction or pain following injections. Twenty-eight cases were treated by the method. Four were quite cured, eight were nearly cured only a few minute spots being left, two cases were apparently cured but relapses took place after three months and they are now improving on another course of injections, three cases did not respond to treatment and one flared up after two injections. The authors obtained equally good results with an autogenous filtrate or one from some other patient.

Detection of Chloroform in Vaccine Lymph—Shah describes a method for detecting chloroform in vaccine lymph. About 5 cc. of absolute alcohol is put in a glass test tube. A current of air (supposed to contain traces of chloroform) is passed through it for a few minutes. About 2 cc of a solution of beta naphthol in a strong solution of potassium hydroxide is added. This is heated to 50 C in a water bath. If chloroform is present a blue or greenish blue color will develop. The author believes that the method will be of considerable help in determining the time lymph should be subjected to aeration after chloroform has been used.

Irish Journal of Medical Science, Dublin

No 113: 193-240 (May) 1935

- Discussion on Relations of the Teaching Hospitals to the Medical Schools the Medical Profession and the Public. H Moore.—p 193
The Milk Bill 1934 W P O Callaghan.—p 217
Ten Years Work at the Children's Sunshine Home Stillorgan Ella Webb.—p 225

Lancet, London

1: 1199-1256 (May 25) 1935

- Biochemical Basis of Thyroid Function C R Harington.—p 1199
*Staphylococcal Pneumonia Among Infants in a Maternity Hospital C M Smith.—p 1204
Recent Observations on Psittacosis W Levinthal.—p 1207
Cardiac Mensuration F G Wood.—p 1210

Staphylococcal Pneumonia Among Infants—Smith reports the instances of four infants born in July in a maternity hospital who died of pneumonia within four days of one another. Three of the children became ill within twenty-four hours after leaving the institution, although no abnormality was observed at the time of dismissal, and the other one died in the hospital. The duration of illness in each case was about two days. At necropsy, which was held in two cases, the cause of death was shown to be staphylococcal pneumonia, and a pathologic feature was that in both instances consolidation was on macroscopic examination confined to a single lobe, thus simulating acute lobar pneumonia. From swabs taken from infants in the hospital, six of whom were suffering from catarrhal symptoms, profuse growths of *Staphylococcus aureus* were recovered from the nasal and faucial passages in practically all cases. Examination of a control group of infants in another institution demonstrated the unusual incidence of the staphylococcal infection among the children in the infected hospital. It was ascertained that within the previous fortnight an infant had died of a phlegmonous abscess, that three mothers and an infant had suffered from suppurative mastitis, and that among the infants there had been an unusual prevalence of minor septic skin lesions followed by a number of cases of mild catarrh of the upper respiratory tract. Further, six cases of mastitis after dismissal were discovered among fifty-five mothers who left the hospital during July and the first week of August. With the possible exception of the phlegmonous abscess, the author considers all the foregoing cases, including the four fatal pneumonia cases, to have been different manifestations of staphylococcal infection and to form one epidemiologic group. The spread of the disease was possibly facilitated by the nature of the temporary sleeping arrangements provided for the infants.

Practitioner, London

134: 577-704 (May) 1935

- Advance of Medicine During the Last Quarter of a Century H Rolleston.—p 577
The Problem of Allergy R J S McDowall.—p 581
Treatment of Asthma J L Livingstone.—p 591
Hay Fever and Its Treatment C Francis.—p 601
Some Unusual Examples of Allergic Reaction G W Bray.—p 610
Bacterial Allergy and Its Relation to Tuberculosis and Rheumatic Fever W R F Collins.—p 617
Allergy in Relation to Diseases of the Skin G B Dowling.—p 627
Vitamins in Health and Disease A Abrahams.—p 637
Influenza A Comparison H S Gaskell.—p 646
Total Thyroidectomy in Treatment of Heart Disease and Angina Pectoris G Bankoff.—p 656
The Problem of the Mental Patient: Methods of Admission into County Mental Hospitals E D T Roberts and S A Mackenzie.—p 665
Treatment of Internal Hemorrhoids J W Riddoch.—p 673
Nonoperative Treatment of Urinary Stone, S Power.—p 678
Thrombophlebitis in Cancer T G I James and N M Matheson.—p 683
Favorite Prescriptions V The Pharmacopoeia of the Middlesex Hospital E A Cockayne.—p 685

South African Medical Journal, Cape Town

9: 253-292 (April 27) 1935

- Pneumonia I Clinical Aspects of Pneumonia on the Rand J M Verster.—p 255
Id II Pneumonia as It Occurs on Witwatersrand in Non Europeans F Daubenton.—p 257
Id III General Treatment W H Palmer.—p 259
Id IV Serum Treatment H L Heumann.—p 261
Mental Disorder and the Law H E Brown.—p 264
Narrow Mindedness in Medicine J B V Watts.—p 269
Random Recollections A F G Guinness.—p 272
Specialist M G Pearson.—p 276

9: 293-328 (May 11) 1935

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First South African Institution for Epileptics M J Cohen.—p 299
Intra Ocular Foreign Body Removed by Means of Two Incisions of Cornea T Wassenaar.—p 301
Peptic Ulcer A L McGregor.—p 302
Vertex Presentation with Extended Head L J de Groen.—p 305
Organization of Fight Against Cancer M J A des Ligneries.—p 306
Introduction to Psychic Diagnosis P J Van Coller.—p 313

Annales de l'Institut Pasteur, Paris

54: 649-776 (June) 1935

- Primary Tuberculous Infection of Conjunctiva in Man V Morax and E Rist—p 653
- *Studies on Tuberculous Ultravirus G Sanarelli and A Alessandrini—p 676
- Antituberculous Immunization of Newly Born Guinea Pig and Rabbit by Means of BCG Absorbed Orally L Nègre—p 697
- Serologic Analysis of Different Lipoid Fractions of BCG E Chargaff and W Schaefer—p 708
- Microbic Variation Observed in Strain of Bacterium Dysenteriae A. Compton—p 715
- Biochemical Studies on Bacterium Tumefaciens Smith and Townsend G Amoureux—p 730
- Antirabic Vaccinations J Viala—p 764

Tuberculous Ultravirus—Sanarelli and Alessandrini report a series of experiments on the tuberculous virus, using double collodion sacs for both in vivo and in vitro investigations. They attempted to determine the extremes and limits of use of the collodion sacs for this type of experiment. It was confirmed that the "tuberculous protogenes" developed in the external cells of the double collodion sacs either in the peritoneal cavities of rabbits or in tubes containing Sauton's liquid and could become implanted and develop equally well in the new Löwenstein medium. The tuberculous protogenes, usually weakly or nonpathogenic for guinea-pigs, could develop in the latter medium into typical tuberculiogenic macrocultures or into invisible, nonpathogenic microcultures. The last mentioned are capable, by subculture, of producing macrocultures possessing tuberculiogenic properties. The use of egg nutrient mediums is necessary to obtain cultures of "tuberculous protogenes." Long cultivation in vivo or in vitro progressively weakens the vitality and powers of adaptation and multiplication of the tuberculous protogenes. Among the factors able to impede the development of the protogenes is the weakly bactericidal action exerted by the peritoneal fluid. The progressive diminution of vegetative power of the protogenes occurring in the double collodion sacs lying in Sauton liquid suggests that it is the long absence of air that causes their arrested development. This absence of air has also an unfavorable effect on adult tubercle bacilli. The authors conclude that the technic of double collodion sacs lends itself well to the study of filtrable elements of the tuberculous virus.

Archives de Maladies de l'Appareil Digestif, Paris

25 441-552 (May) 1935

- Cancerized Ulcer or Ulcer like Cancer B Desplas and G Dnrand—p 441
- Rectosigmoid Pseudocancer of Amebic Origin Gutchard and Paponnet—p 450
- *Histidine in Gastric Therapeutics L Manginelli—p 460

Histidine in Gastric Therapeutics—On the basis of the conception gained largely from animal observations that gastric ulcer is a result of general metabolic disorder due to amino acid (histidine) deficiency, Manginelli treated fifty-one patients with histidine. He used 2 cc. of a 4 per cent solution at a dose. The solution was weakly acid. The injections were usually made intramuscularly, although the intravenous route was also found satisfactory. They were made daily for twenty or thirty consecutive days and, after a brief period of rest, a second series of from fifteen to twenty injections was given. Rarely was a third series employed. When the injections were given intramuscularly the author preferred the hour just before a meal, when intravenously, just after eating. In gastroduodenal ulcers the rapid and intense analgesic effect of histidine was striking. The accessory symptoms also improved: tolerance for food, localized areas of tenderness to pressure and the roentgenologic picture. In gastritis the results were less prompt and constant. Histidine is indicated for the gastric neuroses because of its analgesic effect and of the reestablishment of the vegetative system equilibrium. He concludes that histidine exerts an intense analgesic action on several painful syndromes. In ulcers and some forms of gastritis it has in addition a specific curative action on the final phase of the anatomic process, serving also as a specific reconstructive material. The mechanism of action is probably both plastic and chemical, which accounts for its elective therapeutic effect.

Minerva Medica, Turin

1: 769-800 (June 2) 1935

- Primary Endocarditis Due to Streptococcus Viridans F Micheli—p 769
- *Serum Proteins in Pathologic Pregnancy and Puerperium R. Olivetti and G Valle—p 777
- Metabolism of Carbohydrates in Prehypophyseal Disturbances Diagnostic Value of Glycemia G C. Dogliotti—p 783
- *Positive Casoni Reaction in Suppurative Echinococcosis Two Cases. M Cortesini—p 785

Serum Proteins in Pathologic Pregnancy and Puerperium—Olivetti and Valle state that the content of whole proteins in the blood in normal pregnancy and the puerperium is lower than that in normal conditions, although there is a shift to the left of the albumin-globulin quotient, which is more marked during the puerperium. The variations of proteinemia in either normal or pathologic pregnancy are not related to a dysfunction of the liver, but the hypotheses that hyperglobulemia is a reaction of defense of the pregnant organism against ovarian toxins or a modification of the plasma due to endocrine hyperfunction are not as yet proved. The predominance in the quantity of globulins over that of serum albumins during the first days of the puerperium seems to be due to the greater velocity in regeneration of the former over that of the latter, following considerable or repeated losses of plasma due to the hemorrhage of labor, the elimination of lochia and lactation. Serum proteins follow the same behavior in normal pregnancy and in the various diseases that occasionally complicate it. But the fact that they act differently in the diseases that specifically complicate pregnancy makes the conception of Seitz and Eufinger, that certain toxicoses of pregnancy are due to a dysfunction of the blood colloids and ions, unacceptable. The occasional deviations of the protein formula in the various toxicoses of pregnancy are neither constant nor univocal and are not proportional to the seriousness of the pathologic condition. The determination by the authors of the osmotic pressure by Govaert's formula, in cases of pregnancy edema, showed that there is a relation between the lowering of the osmotic pressure and the retention of the fluids in the tissues. The results indicate that qualitative and quantitative variations of serum proteins are an important factor in the pathogenesis of edema. In puerperal infection there is a lowering of the protein quotient similar to that which is observed in some other infectious diseases. If globulins have mechanical properties for the transportation of immune bodies, as has been hypothetically assumed, the deviation of the protein quotient in puerperal infection should be considered a reaction against the infection.

Casoni's Reaction in Suppurative Echinococcosis—Cortesini calls attention to the importance of a positive Casoni reaction in the diagnosis of suppurative echinococcosis of the liver and of the lung, after removal of an echinococcus cyst from either organ. He reports two cases in which the reaction continued positive after removal of a large nonsuppurative echinococcus cyst of the liver in the first case and of a suppurative echinococcus cyst of the lung in the second. The reaction became negative after a second elimination of the cysts, both suppurative and nonsuppurative, in the two cases. The author explains that the persistence of the positive reaction was caused by antigens in the circulation, originating in the remaining cyst and maintaining the allergy of the patient. The suppuration probably caused leukocytosis and the disappearance of eosinophils in the two instances without interfering with the biologic mechanism of the allergy.

Pediatria, Naples

43 617-743 (June 1) 1935 Partial Index

- Actual Reaction of Feces of Children Colorimetric Determination. R. Pachiohi and V Mengoli—p 617
- Allergy to Cow's Milk and to Egg White in Children with Cutaneous Manifestations of Exudative Diathesis E Zambrano and E. Pezza—p 642
- Hematologic Composition of Marrow in Early Childhood Studies in Vivo F Teclazic—p 658
- Blood Enemas in Treatment of Dystrophy of Infants N Carrara—p 686
- Asymptomatic Evolution of Pulmonary Abscess in Course of Sepsis in Infant Case. F Pontieri—p 708

Klinische Wochenschrift, Berlin

14: 809-840 (June 8) 1935 Partial Index

- *Prognosis and Treatment of Children with Tetanus C Noeggerath—p 814
Fluorescence of Dry Picture of Human Cerebrospinal Fluid C J Keller and H Schoen—p 817
*Clinical Experiences with Carbohydrate and Low Fat Diet in Patients with Diabetes Mellitus M Krakauer—p 820
Standardization of Estrus Producing Hormone and Its Derivatives W Schoeller M Dohrn and W Hohlweg—p 826
Comparison of Action of Cardiazol and Coramine on Respiratory Center of Human Subjects H Steininger and E Gauhatz—p 827

14 841-880 (June 15) 1935 Partial Index

- Present Status of Chemistry and Biochemistry of Vitamins H Willstaedt—p 841
Adrenal Cortex Extract and Vitamin C in Treatment of Circulatory Weakness Developing in Diphtheria P Bamberger and L Wendt—p 846
Angina Pectoris in Severe Anemia O Zimmermann—p 847
*Prognosis and Treatment of Children with Tetanus C Noeggerath—p 852
Cells in Cerebrospinal Fluid in Tuberculous Meningitis H E Wedemeyer—p 858

Treatment of Children with Tetanus—Noeggerath, in discussing the prognosis of children with tetanus, points out that formerly it was based, just as in adults on the length of the period of incubation. The shorter incubation periods (up to ten days) were considered as a much more unfavorable sign than the longer incubation periods. In the new-born the limit was set at six days. The author analyzes his own material of fourteen cases and finds that their outcome largely corroborates the former opinion in regard to the unfavorable prognosis of cases in which the incubation period is short. However, he gained the impression that the rapidity of the progress of the disease is likewise an indicator of the outcome. In this connection he calls attention to the five phases that have been differentiated in the course of tetanus. It appears that, if the symptoms of the advanced stage appear soon, the prognosis is unfavorable whereas, if they do not, the prognosis is relatively favorable. In discussing the prospects of the treatment of tetanus in children, the author points out that he saw no noticeable difference in the efficacy of the earlier or later onset of the treatment. The author gives his attention to the causes of death and stresses that the failure of the circulatory and respiratory systems is of great importance. He points out that spasms of the involuntary muscles particularly of those of the respiratory organs, play an important part in tetanus of children. In the treatment of tetanus, attention must be given chiefly to the respiration. The spasms of the respiratory organs must be counteracted by spasmolytic remedies, but the administration of oxygen is likewise important. An oxygen tank should always be in readiness, particularly during the stage of the reflex spasms. It is also important to quiet the patient and to counteract the spasms. In this connection the author evaluates the use of sedatives and hypnotics. The specific treatment of tetanus has two chief aims to render the focus of infection harmless and to neutralize the toxin of tetanus. Not much can be gained by the surgical treatment or cleansing of the infected wound after tetanus has already developed. Opinions are still divided on the second aim of the specific treatment, the neutralization of the tetanus toxin. The author thinks that large doses of the tetanus antitoxin are required.

High Carbohydrate and Low Fat Diet in Diabetes—Krakauer reports his observations on adult patients with diabetes mellitus who were free from coma and from other complications. He commences the treatment by completely stopping the old diet and putting the patient on a milk diet for from one to three days. After the milk days he gives a mixed diet if possible without insulin. Carbohydrates are added to the diet in proportion to the increasing tolerance. The fat intake is restricted so as to avoid acidosis. Protein is given in quantities of 1 Gm. or slightly more for each kilogram of body weight. The diet is varied and takes into account the desires and requirements of the patients. The calories are reduced to a minimum. This type of dietetic treatment produced better results than the diet providing large quantities of fat formerly employed by the author. The new diet proved especially helpful in patients with persistent hyper-

glycemia and acetonuria. In general, this diet produced a higher carbohydrate tolerance and made possible the intake of a larger number of calories when it was completed. In 83 per cent of the patients, sugar as well as ketone disappeared from the urine. The blood sugar became normal in 25 per cent. In 23 per cent, insulin treatment had to be continued. The patients liked the diet, for it satisfies, adjustment to it is effected quickly and it can soon be complemented, so that it can serve as a satisfactory permanent diet.

Medizinische Klinik, Berlin

31: 769-800 (June 14) 1935 Partial Index

- Tuberculous Polyarthrits W Berger and Paul Lindewig—p 772
*Local Hyperplasia of Fat Tissue Following Insulin Injections D Adlersberg—p 779
Roentgen Therapy in Bone Metastases of Carcinoma, J Borak—p 782
Etiology of Acute Necrosis of Pancreas Maria Mittelbach—p 785

Local Hyperplasia of Fat Tissue Following Insulin Injections—Adlersberg observed in a woman, aged 20, who had had diabetes since her 14th year, soft, cushion-like, symmetrical swellings, about the size of a fist on the lateral portion in the lower third of the upper arms and on the thighs. The skin over these swellings can be moved readily and there is no sensitivity to pressure. Palpation reveals that the fat tissues at these sites are from two to three times the normal thickness. These lipomatous formations are at the sites used by the patient for the insulin injections. In the course of three years the patient was repeatedly advised to avoid injections into the one or the other of these lipomatous formations. When injections into a certain swelling were avoided for two or three months there was only a slight reduction in their size, never a complete disappearance. At first it was considered possible that the procaine hydrochloride which the patient added to the insulin might be a cause of the fat hypertrophy. This was considered the more likely since procaine hydrochloride exerts a favorable influence on the atrophy of the fat tissue that has been observed in some diabetic patients at the site of the insulin injection. That this assumption was erroneous was proved by the fact that for several years the patient had added procaine hydrochloride only to the insulin that she injected into the arms but not to that which she injected into the thighs, justifying this by asserting that the skin of her arms is more sensitive than that of the thighs, yet the swellings on arms and thighs were of about the same size. The assumption that traumatic influences might be responsible could not be corroborated, and the author concludes that the lipomatous swellings are due to the insulin injections as such. A careful search for similar cases among the large diabetic material of the author's clinic disclosed one other case concerning a man, aged 21. The author thinks that this disorder affects chiefly young persons, and he assumes that, like the insulinogenic atrophy of the fat tissue, this hypertrophy is largely the result of a predisposition. He thinks that the disorder might be prevented by using for the injection as many different sites as possible.

Strahlentherapie, Berlin

53: 1192 (May 29) 1935 Partial Index

- Technic and Dosage of Roentgen Irradiation in Intracranial Disorders M Sgalitzer—p 3
Coutard's Method of Roentgen Treatment of Malignant Tumors J Nielsen—p 25
Transcutaneous Radium Therapy of Cancer of Tonsils L. Mallet—p 54
*Indications for Roentgen Therapy in Metrorrhagias During Menopause M C. Bécère—p 62
Roentgen Irradiation of Hypophysis in Treatment of Hyperthyreosis J Borak—p 73
Does Thymus Influence Number of Granulocytes? S Radojević and A Hahn—p 90

Roentgen Therapy in Metrorrhagias During Menopause—Bécère discusses the indications for roentgen therapy in the metrorrhagias that develop during the menopausal age. He emphasizes the importance of an etiologic diagnosis, in order to discover the patients who have objective pathologic changes in the uterus or in the oviducts. He thinks that such changes can be found in about 30 per cent of the patients. Especial efforts must be made to detect the cases of cancer of the uterus, which amount to about 8 per cent of the total. The objective pathologic changes can usually be determined

by means of hysterosalpingography following the intra-uterine injection of iodized poppy-seed oil. Moreover, hystero-graphy is helpful in guiding the biopsy. Biopsy and histologic examination are necessary in order to arrive at a definite diagnosis of cancer of the uterus. In about 70 per cent of the women who have metrorrhagia during the menopausal period, hystero-graphy or histologic examination shows that the hemorrhages are of purely functional, usually ovarian, origin. In such cases roentgen therapy is helpful. The author recommends one irradiation each week and suggests that the doses be applied in such a manner that the total dose necessary for castration is given in eight sessions, that is, the treatment is distributed over a period of two months.

Zeitschrift für experimentelle Medizin, Berlin

98: 257-374 (May 24) 1935 Partial Index

Technic and Interpretation of Electrocardiogram W. Schmitz and H. Schaefer—p. 257

Quantitative Determination of Elimination of Lead in Urine of Healthy Persons and of Persons with Lead Poisoning by Means of Diphenyl thiocarbazon B. Behrens and H. Taeger—p. 282

To What Extent Is Nitrogen Balance a Criterion for Sufficient or Insufficient Protein Intake? G. Machnitzky—p. 304

Experimental Studies on Action of Quinine on Extrasystoles and Extrasystolic Tachycardias D. Scherf and H. Siedek—p. 311

Biologic and Chemical Properties of Antigonadotropic Hormone of Pineal Body P. Engel—p. 328

*New Technic of Fuchs' Reaction for Diagnosis of Cancer H. Minibek—p. 362

New Technic of Fuchs' Cancer Reaction.—Minibek points out that Fuchs' cancer reaction is too difficult to be performed in the average laboratory. He therefore devised a new technic which is based on a titration of the amino groups and which indicates differences of 0.23 mg. per hundred cubic centimeters. He determines the amino nitrogen value of the serum (1) without any addition, (2) following the addition of normal fibrin and (3) after the addition of carcinoma fibrin. He compared his technic with other methods of determination of the amino acids and found that his titration is well suited for a carcinoma reaction because it also determines the peptides and other cleavage products and because it is simple. In seventeen patients with carcinoma the outcome of his titration method tallied with the clinical diagnosis as was the case also in twenty-three patients without carcinoma. In six cases the outcome of the test was doubtful. The determination of the amino acids according to Folin and Wu makes it possible, particularly in the cerebrospinal fluid, and, if larger quantities of cleavage products are present, to prove the presence of new amino groups in a parallel test to the titration. Without hydrolytic cleavage this colorimetrically determinable increase is only slight. A hydrolysis, as it is required for the determination of the peptides by the colorimetric method, is unnecessary in titration. The cleavage products cause from 10 to 60 per cent increase in the titrable amino nitrogen. These great fluctuations facilitate the estimation of the reaction.

Zeitschrift für Tuberkulose, Leipzig

73: 81-160 (June) 1935

*Stage Preceding and Course of Early Pulmonary Infiltrate T. Rehberg—p. 85

*Significance of Nondetached Pleural Strands in Failure of Originally Successful Pneumothorax Treatment O. Jüttemann—p. 94

Congenital Pulmonary Cyst Simulating a Disintegrating Infiltrate H. Braeuning—p. 106

Occupation of Patients in Public Sanatoriums T. Peters—p. 109

Pneumothorax Empyemas with Mixed Infection by Bacillus Lactis Aerogenes J. Alföldy—p. 117

Stage Preceding and Course of Early Pulmonary Infiltrate.—Rehberg points out that the opinions about the mode of development of the early infiltrate are still divided. He stresses that, in view of the deficiency of symptoms, roentgenologic examination is highly important during this period. He describes a case of early infiltrate in which the patient was under roentgenologic control from the time when the lung was still without a focus until five weeks later, when the infiltrate had already undergone cavernous disintegration. Then he describes another case in which the early infiltrate, the cavern as well as the dissemination, disappeared rapidly.

Nondetached Pleural Strands in Pneumothorax Treatment.—Jüttemann illustrates the danger presented by pleural strands first on the basis of an extreme case of so-called hang-

ing cavern. Then he describes a number of cases in which the success of the pneumothorax therapy persisted for some time but in the end proved nevertheless to be only an apparent success. He shows that the failure of the pneumothorax treatment in these and similar cases is due to the persistence of pleural strands. He discusses how pleural strands may become harmful during the different phases of pneumothorax therapy and how they may prevent a permanent success of the treatment in spite of a good result in the beginning.

Zentralblatt für Gynäkologie, Leipzig

59: 1393-1440 (June 15) 1935

Metastasis of Cancer of Internal Genitalia II. Huckel—p. 1394

*Indophenol Blue-Oxygen Reaction of Blood in Cancer of Uterus W. Michaelis—p. 1409

Therapy of Cancer of Corpus Uteri: Surgery or Irradiation? K. Nordmeyer—p. 1415

Contribution to Casuistics of Melanosarcoma of Vulva. L. Gerhardt—p. 1421

New Cock Hand Dropper with Scale for Administration of Anesthetic. O. Mader—p. 1424

Tubal Sterilization E. Engel—p. 1428

Indophenol Blue-Oxygen Reaction of Blood in Cancer of Uterus.—Michaelis determined the molecular oxygen in the venous blood of cancer patients. The venous blood is with drawn and prepared under the exclusion of oxygen. In a mixture of dimethylparaphenylenediamine base and alpha naphthol with the addition of a 5 per cent solution of ammonia the envelopes of the erythrocytes are destroyed and the molecular oxygen is liberated. During this process indophenol blue develops. After a certain time the quantity of indophenol blue is determined in the colorimeter that employs the monochromatic sodium light and is equipped with a millimeter scale. This determination is likewise made under the exclusion of oxygen. The author concedes that the quantity of molecular oxygen (that is, the indophenol blue value) has a definite relation to the hemoglobin content, for a person who has a hemoglobin value of only 50 per cent has, of course a lower indophenol blue value than a person who has a hemoglobin content of 80 per cent. For this reason it is necessary to determine the hemoglobin content of the blood and to compare it with the indophenol blue value. The author found that, whereas in normal women a hemoglobin value of 70 per cent corresponds to an indophenol blue value of from 40 to 44.5 mm. on the colorimeter scale, in women with cancer a hemoglobin value of 70 per cent corresponds to indophenol blue values of from 48 to 55 mm. The higher indophenol blue value indicates thus the presence of cancer. The author shows tabular reports that bear this out. The correctly recognized positive cases (verified by histologic examination) amounted to 83 per cent. Tests on persons who were free from cancer gave positive results in 10 per cent, but in all other persons who were free from cancer the reaction was negative. In attempts to improve the indophenol blue-oxygen reaction, attention was given to the frequently increased sugar content of the blood of cancer patients and to the substances resembling fatty acid contained in it. The modified indophenol blue method overcomes these disturbing factors by preceding the blood withdrawal from the fasting patient by an administration of 20 units of insulin (two hours before) and by washing the blood with ether.

Hospitalstidende, Copenhagen

78: 505-532 (May 7) 1935

Facial Pain V. Christiansen—p. 507

*Atrioventricular Block. Peculiar Case W. T. Andersen—p. 524

Pellagra Three Cases A. Nyfeldt—p. 529

Atrioventricular Block.—In a boy, aged 15, the electrocardiogram showed complete block. After rest in bed for five months the condition was apparently unchanged. There is no history of any infection. The entire course, Andersen says, testifies against rheumatic block. Coronary sclerosis is excluded. The condition is attributed to a congenital malformation not manifested until now, the anomaly has caused an aortic and a mitral insufficiency and interrupted the connection between atria and ventricles. Because of the disorder of the valves the prognosis is grave.

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SOME ROENTGENOLOGIC STUDIES OF THE DYNAMICS OF THE THORAX

CHAIRMAN'S ADDRESS

J W PIERSON, M D
BALTIMORE

A knowledge of the dynamics of the thorax is important not only from the standpoint of diagnosis but also for the aid it affords in evolving new therapeutic procedures. The activities of the physical agents that participate in respiration are well understood and the changes that result from suppression or abolition of one or more of these activities have furnished a fertile field for investigation. The most potent force acting within the thorax is the negative intrathoracic pressure. It is absolutely essential to the normal expansion of the lungs and, if it is not maintained, diminished lung capacity must ensue. Another important factor is the elasticity of the lungs, which, acting in conjunction with the negative intrathoracic pressure, serves to keep the thorax filled. This is true in the presence of abnormal as well as of normal conditions. Whenever diminished lung volume occurs; the compensatory mechanism of the chest, acting chiefly through the negative intrathoracic pressure, seeks to establish an equilibrium by reducing the size of the thorax and causing dilatation of the normal lung tissue. The compensatory dilatation of the lungs becomes progressively greater the longer the abnormal condition persists, until finally it causes the normal lung to become large enough to restore the original size of the thorax. This mechanism works in exactly the same way in all cases of diminished lung capacity from whatever cause, whether congenital absence, atelectasis, or surgical removal of a lung.

Cases of congenital absence of one lung furnish noteworthy examples of the compensatory mechanism of the thorax acting at its maximum capacity. Most of these patients succumb early, chiefly because of the effects of other abnormalities, but reports indicate that some do reach adult life and attain a normal physical development. The single lung of these individuals becomes enormously enlarged and apparently functions effectively, as the patients have led normal active lives and have displayed no embarrassment to the functions of respiration. The following case is an excellent example of the manner in which a single lung will dilate and fill the entire thorax.

C. C. was an infant who was born with many abnormalities including absence of one lung, deformities of the spine and ribs, and aberrations in the development of the intestinal tract. He finally succumbed to the latter. Roentgen examinations revealed that the right lung completely filled both sides of the thoracic cavity and that the heart occupied such a position that its out-

line was not silhouetted on the film. Postmortem examination demonstrated that there was complete absence of the left lung and that the entire thorax was filled with the right lung. The heart was displaced to the left and rotated posteriorly. The great increase in the size of the lung was accomplished solely by dilatation and not by proliferation of lung tissue. Heuer and Ruenhoff have definitely proved this point by animal experimentation.

Complete atelectasis of an entire lung produces essentially the same conditions as if the lung were absent. In the following two cases of traumatic atelectasis, injury fortunately occurred when the patients were quite young, a time that is ideal for the functioning of the compensatory processes of the chest.

A white man, aged 28, was easily fatigued, complained of an occasional precordial pain of two months' duration, was troubled with a slightly productive cough, had dyspnea on exertion, noticed slight palpitation, and had lost 12 pounds (54 Kg). The family history was not important. He had been run over by an automobile at the age of 9 without any fractures, but he did cough up a little blood for a short while afterward. Tonsils and adenoids had been removed at the age of 16, with uneventful recovery. The past history was otherwise negative.

Physical examination revealed chest expansion on the left side distinctly limited as compared with the right. The left supraclavicular fossa was deeper than the right. The percussion note was everywhere resonant and natural except at the left base. Breath sounds on both sides were natural. No rales were detected even after coughing. There was a well marked systolic impulse at the left base posteriorly, with flatness over the entire left lower lobe. The heart sounds were heard clearly at the left base posteriorly but were loudest in the left mid-axilla. Otherwise the physical examination was negative.

Roentgen examination on admission showed that the left side of the thorax was contracted and that the heart, trachea and great vessels were displaced to the left. The lower portion of the left lung field was clouded and the shadow of the diaphragm obliterated. The right lung field was clear. The lateral view showed that the heart was rotated posteriorly, causing a great increase in all dimensions of the anterior mediastinum. This lateral shifting and posterior rotation of the heart constitute a characteristic sign, which appears whenever the left lung is either greatly reduced in size or entirely absent.

The clinical impression was that there were pleuropericardial and pleurodiaphragmatic adhesions.

Operative intervention for the release of the adhesions was decided on as the proper method of treatment.

Preoperative pneumothorax was done in several stages over a period of a month, with expectoration of small amounts of blood in the same afternoon after the fourth stage, prior to which there was thought to have been more than 50 per cent collapse of the left lung.

Roentgen examination after repeated introduction of air into the left side of the thorax disclosed that the heart, trachea and great vessels had resumed their normal positions, that the contour of the left side of the cardiac shadow was very unusual and that the left side of the diaphragm was not clearly demonstrated. The lateral view showed that the cardiac shadow still lay in a position that was more posterior than normal and that a conical shadow was superimposed on the cardiac shadow, which in the light of later developments, could evidently have been interpreted as collapsed and atelectatic left lung. The

return of the heart and great vessels to their normal positions following pneumothorax was no doubt the result of the positive pressure within the left side of the thorax.

When the thorax was opened, the main bronchus was found to be occluded, the left lung was but a small fraction of its normal size, and it was of the consistency of rubber. Adhesions extended from both the upper and lower borders of the pericardium to the chest wall, from the anterior surface of the lung to the pericardium, and from the lower pole of the pericardium to the diaphragm. The entire aorta was found to be mobile after the adhesions had been cut, and a space about 6 inches long was seen between the sternum and the conus. This space was filled with pleura, but it provided free communication between the two sides of the thorax, as shown by the fact that the pleura was seen to bulge through the space and into the left thoracic cavity on reinflation of the right lung. The left lung did not reinflate but seemed solid, and a piece of it was removed for study.

The operation showed complete atelectasis of the left lung, with rotation and posterior displacement of the heart. The conjecture was made that a portion of the right lung had extended into and almost completely filled the left side of the thorax. Pathologic examination revealed atelectatic lung tissue.

Roentgen examination made the day after the operation showed that a most pronounced change had taken place in the positions of the thoracic organs. The right lung was now partially collapsed and the heart, instead of lying in the left thoracic cavity, now lay wholly within the right. This sudden postoperative shifting of the heart from the left side to the right was due primarily to the large opening in the mediastinum which permitted the positive pressure in the left side of the thorax to exert an unusual amount of force on the right lung. The presence of atmospheric pressure in the left side of the thorax was, of course the result of surgical invasion of that side. The portion of the right lung that presented through the opening of the mediastinum was covered by three layers of pleura, its own visceral and parietal and the left parietal. These three layers of pleura must have remained intact, because the x-ray film made on the following day revealed the astonishing fact that the heart had returned to the left side. The left thoracic cavity must by this time have become sealed and the atmospheric pressure reduced to zero, or else the right lung could not have expanded and displaced the heart to the left. This case, in which the heart occupied preoperatively the left side of the thorax and the first day after operation the right and finally the next day returned to the left side, serves to demonstrate the swiftness with which changes in the intrathoracic pressure act to produce dislocations of the thoracic organs.

The postoperative course was relatively calm with occasional thoracenteses. After the patient's temperature had been down for several days he was discharged, the thirty-fourth day after operation. Eight months following operation, injection of iodized oil demonstrated that the obstruction to the left bronchus persisted and that the right lung filled the entire right side of the chest and the major portion of the left.

In the second case both the clinical manifestations and the results of the roentgen examination were so similar to the previous case that a diagnosis of atelectasis of the left lung and overexpansion of the right lung was made. Demonstration of the bronchi by means of contrast mediums revealed obstruction to the left bronchus and occupation of both sides of the thoracic cavity by the right lung.

The two outstanding features of these cases were the great size attained by the right lung and the ease with which it traversed the mediastinum. This was demonstrated both at operation and later by bronchography. These cases of traumatic atelectasis of one lung are examples of true herniation of the lung and are not to be confused with the herniations that are sometimes produced in cases of therapeutic pneumothorax. The physical effects in the latter group of cases are just the opposite of those under consideration and are the result of high positive pressure on the side on which the pneumothorax has been induced.

The observations made in these cases were of further interest because they established the soundness of Rienhoff's theories regarding thoracic surgery. The technic employed by him produced exactly the same set of physical conditions as in the cases that have been just described. He abandoned all attempts to reduce the size of the thorax following the removal of all or part of a lung. Instead he preserved the thorax intact and depended on the normal lung to expand and occupy the space left vacant by the portion that had been removed.

Rienhoff employed this technic in a patient $3\frac{1}{2}$ years of age. The left lung was removed because of a tumor that obliterated the main bronchus. The thoracic cage was kept intact and the thorax was closed, leaving a large cavity in the left side. Four days after operation both the physical signs and the x-ray films indicated the presence of fluid in the left thoracic cavity together with immobility of the left side of the diaphragm and displacement of the heart to the right. Later films disclosed gradual absorption of the fluid and development of dense bands of pleural adhesions, which formed pockets for the retention of the fluid. At the end of three weeks the heart had returned to the left of the sternum and it was evident that the right lung had expanded and occupied a portion of the left thoracic cavity. This process continued until the right lung had expanded to such a size as to cause displacement of the trachea and heart to the left and obliteration of the major portion of the vacant space in the left thoracic cavity. This was vividly demonstrated on x-ray films ten months later, with the assistance of the intratracheal injection of iodized oil. As soon as the left side of the thorax had become filled with the right lung, the fluoroscopic examination revealed that the diaphragm and intercostal muscles had almost completely resumed their normal function. The same condition existed at the end of twenty months.

The same type of operation was performed on a patient, aged 23 years, whose left lung was removed for a tumor that occluded the bronchi of the lower lobe. Four days after operation, signs of fluid appeared and 100 cc of fluid and 500 cc of air were removed by thoracentesis, changing a well marked positive into an equally well marked negative intrathoracic pressure. Small amounts of fluid were withdrawn from time to time, but the negative intrathoracic pressure did not persist as at the end of three weeks x-ray films revealed a pocket containing free air and communicating with the bronchus. The left side of the thorax, because it was not occupied by expanded lung, was gradually diminished in size, the ribs did not move on inspiration and the diaphragm was fixed. At the end of nine months the right lung was greatly increased in size in all dimensions and the vital capacity of the patient was approximately two-thirds that of normal. The persistence of the bronchial fistula maintained a mild positive pressure in the left side of the thorax, which prevented the right lung from entering it.

Different results were obtained in these two cases because a different set of physical factors prevailed. In the first the compensatory mechanism of the thorax functioned perfectly and complete restitution was obtained because the negative intrathoracic pressure was restored in the side from which the lung had been removed and the mediastinum was patent. In the second, the persistence of the bronchial fistula prevented the restoration of the negative intrathoracic pressure on the left side, thereby preventing the right lung from entering the left thoracic cavity. The persistence of the

cavity in the left side of the thorax has not so far caused any difficulty. The cavity is gradually diminishing in size and the roentgen examination at the end of nineteen months reveals that it is approximately one-third as large as it was immediately after the operation.

Consideration of these three groups of cases shows that the same compensatory mechanism functions in the presence of diminished lung size, no matter what the primary cause. Several essentials are necessary in order to permit of the proper functioning of the processes of restitution. First, the lung must be capable of expansion. Certainly an overexpanded emphysematous lung is not able to respond to the influence of a negative intrathoracic pressure as readily as a lung in which the normal elasticity has been preserved. Second, the mediastinum must be patent. This factor is governed very largely, though not wholly, by the age of the patient. The reason for this is quite obvious, because advancing age causes fixation of the mediastinal structures. Infection in operative cases plays an important role in a negative sense. If present it also causes fixation of the mediastinum and it renders the permanent closure of the bronchus more difficult.

The results obtained in the operative cases would seem to justify the technic, which is designed to utilize the compensatory mechanism of the thorax. Furthermore, preservation of the thoracic cage provides protection for underlying structures, aids in early restoration of the normal physiologic functioning of the thorax, and avoids the necessity of a deforming operation.

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FACIAL ERYSIPELAS

EVALUATION AND COMPARISON OF SPECIFIC ANTISERUM AND ULTRAVIOLET THERAPY

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AND

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Many years ago one of us¹ lauded the merits and superiority of antistreptococcus serum over many other methods in the treatment of facial erysipelas. Shortly after this the specific antiserum came into use and replaced to a great extent the antistreptococcus serum.² Although the advocated use of ultraviolet rays as a treatment of erysipelas is not new,³ it was only after the work of Ude⁴ and Titus⁵ that much attention was drawn to this form of treatment and the efficacy of the ultraviolet rays was evaluated. The work reported here was completed in order to compare our results with those of other investigators, to draw conclusions and to mention some points in the comparison that may be not only pertinent but interesting as well.

It is important to note that only adult facial erysipelas, in which no operation had been done and which were seen during the seasons 1933-1935 inclusive, were considered in this study.

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¹ Lavender, H. J. Antistreptococcus Serum in the Treatment of Facial Erysipelas. Cincinnati J. Med. 5: 288 (Aug.) 1924.

² Tauber, E. B. The Serum Treatment of Erysipelas. Cincinnati J. Med. 9: 471 (Dec.) 1928.

³ Petenyi, Géza. Leber die Quarzlampe-lichtbehandlung des Säuglingserysipels. Monatsschr. f. Kinderh. 21: 269. 1921. Becker Josef. Die Wirksame Dosis bei der Quarzlichtbestrahlung des Erysipels. München med. Wchnschr. 74: 497 (March 25) 1927.

⁴ Ude, W. H. and Platon, E. S. Erysipelas. J. A. M. A. 95: 1 (July 5) 1930. Ude, W. H. Erysipelas. Arch. Phys. Therapy 12: 16 (Jan.) 1931.

⁵ Titus, N. E. Erysipelas—Treatment with Ultraviolet Light. Arch. Phys. Therapy 14: 22 (Dec.) 1933.

In all, ninety cases were studied. Of these, seventy patients were white, sixty-three were males, and the ages ranged from 18 to 78 years. The ninety cases were subdivided as follows: thirty-two cases in which the specific antiserum alone was used, twenty-six cases in which ultraviolet therapy alone was used and thirty-two cases which were used as controls with no therapy.

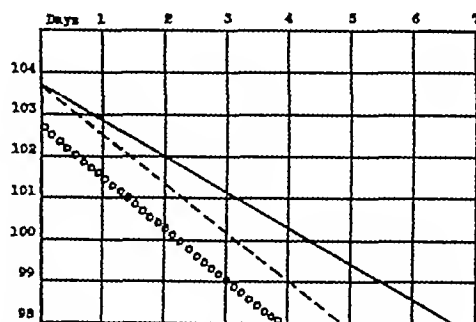


Chart 1—Febrile period. Solid line indicates serum, broken line indicates ultraviolet therapy, circles Burrow's solution.

other than continuous wet applications of diluted Burrow's solution.

No case in which a combination of these treatments had been used was considered in this series. Alkalinization and complete bed rest during the febrile period were carried out in all cases. The total lapse of time after onset, before treatment was instituted, gave a total average of 2.4 days, with 2.5, 2 and 2.8 days for the serum, light and control cases, respectively.

This factor is important for, especially in general hospital practice, patients are not seen immediately at the onset of their infection. Naturally, this information was obtained usually from the patient's history. These data, as a rule, have not been mentioned specifically in many of the previous articles on erysipelas. The fever peak (before therapy) gave a total average of 103.3 F, with 103.7, 103.8 and 102.6 F, respectively, for the serum, light and control cases. In forty-five cases, or 50 per cent of the whole series, the entire face was involved at the time of the onset of treatment, and there was a general average in the white blood count of 14,000 cells.

In the serum series (thirty-two cases) the same make of a standard and uniform preparation of specific serums was used throughout. All injections were

TABLE 1—Comparison of Hospital Febrile Periods in Control Cases of Various Investigators

Authors	Number of Cases	Days of Fever
Ude	151	6.15
Titus	20	6.85
Rosenbaum and Kazzelson	22	8.50
Lavender and Goldman	32	3.90

made intramuscularly and at twenty-four hour intervals. The white count gave a mean value of 15,000. An average of 4.8 injections per patient was administered. The febrile period gave an average of 6.6 days. An interesting observation was made between this febrile period (6.6 days) for intramuscular injections of the serum in comparison with the series in 1924, with 3.9 days (early cases) and 5.4 days (entire series), following antistreptococcus serum when given intravenously.

In the ultraviolet series (twenty-six cases), quartz mercury burners of a standard make were employed.

Tests were made several times weekly to determine as closely as possible the factors governing the erythema dose of the burners. The white blood count gave the same average (15,000) as the serum cases. These patients received an average of three exposures (given approximately twenty-four hours apart) to and slightly beyond the involved area or areas, each area receiving a total of fifty-seven erythema doses, or an average of 188 erythema doses per treatment.

The vast majority of the patients showed a decided improvement within twenty-four hours after the first exposure. Inflammation was lessened, edema was reduced, and areas appeared darker in color and were much drier where excessive vesiculation had been manifested previously. There was at the same time a reduction in fever, in most cases a drop of from 2 to 3 degrees, accompanied by an improvement in the general condition. In fact, it was interesting to note the relative absence of pain or any marked discomfort following the exposure to ultraviolet rays.

If the temperature remained down, no further ultraviolet therapy was administered. If no appreciable drop was noted in twenty-four hours, or if the temperature again began to rise, a second treatment was instituted, and so on. Our patients with an initial average fever of 103.7 F had a febrile course, averaging 4.9 days, in comparison with those of the serum patients with 6.6 days (chart 1).

It should be pointed out, however, that the ultraviolet cases were treated on the average of twelve hours earlier than those of the serum series (chart 2). It was only after the patient remained afebrile for at least twenty-four hours that a 5 per cent ointment of boric acid was applied to the treated areas in order to soften them and to hold the scaling and crusting to a minimum.

One hundred and thirteen cases of Ude and his associates,⁶ treated with ultraviolet rays, required, on an average, 3.8 days to reach normal temperature, and eighteen cases of Titus⁵ required 4.83 days till the temperature became normal, both of these indicating the duration of the hospital febrile period.

The control series (thirty-two cases), as stated previously, was treated only with a uniform strength, approximately 1,000 aluminum acetate (diluted Burow's solution), in the form of continuous wet dressings. We were surprised to learn that the febrile period averaged only 3.9 days, a difference of almost three days shorter than the serum-treated cases and one day shorter than those treated with ultraviolet rays.

Febrile periods in control cases varied from 8.5 days⁶ to 6.15 days in Ude's 151 cases.⁴ Such similar wide variations were reported even earlier, such as eight days in the series of Lenhartz (1902)⁷ and four days of the cases of Pontano (1912)⁷ (tables 1 and 2).

When we began to investigate and to determine, if possible, the reason for the great difference in our own series, we found that twenty-three of our control cases were admitted and treated in the spring and early summer (from March to June inclusive) while the

vast majority of both the serum and the ultraviolet-treated cases were seen in the fall and winter months (chart 3). It was also noted that the control cases gave only a 12,000 white count average against 15,000 each for the other series and had an average initial peak of only 102.6 F, and, which was even more striking, that ten of the control cases originated in the same lodging structure, an old building for housing persons then under the Federal Relief Administration.

Our control series, therefore, was not a fair and just comparison, since seasonal influence and common source of infection had played a large role in our

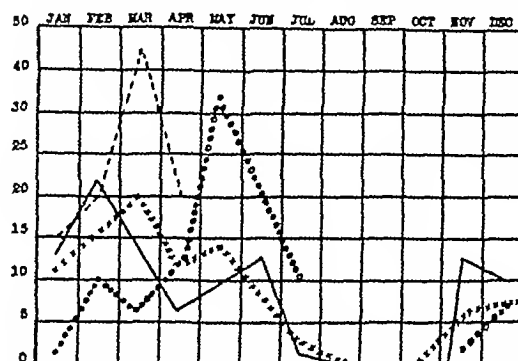


Chart 3—Seasonal incidence. Percentage of cases. Solid line indicates serum, broken line ultraviolet therapy, circles Burow's solution, crosses entire series.

comparative investigation. One should not make comparisons on the length of stay in the hospital, since so many factors play a role in these determinations that it makes the conclusions inaccurate and, indeed, in many respects, puts them on a false basis.

Of the complications in the serum series, there were seven cases of serum sickness, one necrosis of the lids, one abscess of the scalp, two toxic arthritides and one alopecia of the scalp, in the ultraviolet series one toxic psychosis, one polyarthritis, one otitis media and two abscesses of the scalp, in the control series, one bilateral external otitis.

Of our total series of ninety cases, it was interesting to note that only five gave a history of previous attacks of erysipelas, these with an average of two attacks.

TABLE 2—Comparison of Hospital Febrile Periods in Cases Treated with Ultraviolet Rays by Various Investigators

Authors	Number of Cases	Days of Fever
Ude	113	3.80
Titus	18	4.83
Lavender and Goldman	26	4.90

There were seven deaths in our total series, or about 6 per cent. Of these, six deaths occurred in the control series. The causes of death were listed as:

- 1 Coronary thrombosis
- 2 Streptococcal septicemia and diabetic coma, postmortem.
- 3 Arteriosclerotic hypertensive heart disease with congestive failure.
- 4 Diabetic coma
- 5 Lobular pneumonia, obliterative pericarditis, postmortem.
- 6 Rupture of aortic aneurysm, postmortem done
- 7 Peritonitis, probably streptococcal.

Blood cultures were obtained in all these cases and were positive ante mortem only in the case of streptococcal septicemia.

It must be emphasized that there are many variables in making comparisons of any nature, and especially is this true of the treatment of facial erysipelas.

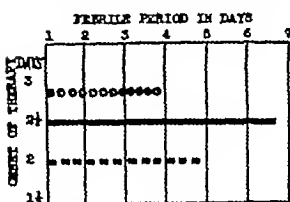


Chart 2—Comparison of febrile periods with time of onset of therapy. Solid line indicates serum, broken line, ultraviolet therapy, circles, Burow's solution.

⁶ Rosenbaum M and Karselson R. Gegenwärtige Erysipelbehandlung. *Wien klin Wchnschr* 42: 1534 (Nov 28) 1929.
⁷ Cited by Tuleston.

The seasonal incidence, the lapse of time before the onset of treatment, the general condition or debilitation of the patient and previous treatment are just a few of the matters that play a marked role in the evaluation of the therapy instituted

We believe that, if all these factors are considered, one should not be so confused in evaluating the effect of various types of therapy, and, therefore, we do not agree with the statement that "the duration of the disease is so variable that it is very hard to judge the effects of therapy"⁸

That ultraviolet therapy is equal if not superior to serum therapy is, we feel, very evident. Aside from the economic issue, which is an important one (cost of serums), the end results, governed by the quicker response to treatment and the fewer complications, make ultraviolet therapy for facial erysipelas quite distinctive, and, indeed, the method of choice

CONCLUSIONS

1 In all, ninety cases of adult facial erysipelas were observed from 1933 through the spring of 1935

2 Thirty-two of these cases were treated with specific antiserums with an average of 48 injections

3 Twenty-six patients were given intensive ultraviolet therapy with an average of 188 erythema doses at a treatment and an average of three treatments for each patient

4 Thirty-two cases were used as controls with simple wet dressings

5 A critical analysis of the data showed ultraviolet rays to be the therapy preferred

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HEMATURIA AS A COMPLICATION OF PREGNANCY

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DETROIT

Hematuria as a symptom of the presence of pathologic changes in the urinary tract is well known, and, from the urologic point of view, has had a rather comprehensive study, especially in the past few years, in respect both to systemic disease and to lesions within the urinary tract proper. As a result of these studies the term "essential hematuria" is seldom used, and when used it is applied only to those cases in which a painstaking medical and urologic investigation has not revealed the etiologic factor or factors causing the hematuria

Stevens⁴ states that "the causes, medical and surgical, of blood in the urine are so manifold that the more one studies the subject the more one is inclined to the belief that a thorough understanding of hematuria means a comprehensive knowledge of diseases of the whole body"

While this is a rather ambitious statement, nevertheless the importance of hematuria as an indication of grave renal disorder cannot be too strongly emphasized. Concerning hematuria as a symptom of systemic disease, Locke and Minot² say "Although patients with hematuria dependent on diseases other than those of

the urogenital tract form but a small minority of all, they are, nevertheless, important and will explain at least some of the cases heretofore called essential hematuria"

The systemic conditions in which hematuria may arise comprise a relatively large number of morbid states, which have been grouped thus (1) diseases and conditions of the hematopoietic system, (2) diseases and conditions resembling those associated with pathologic conditions of the blood, (3) infections, (4) conditions causing chronic passive congestion of the kidneys, (5) toxic agents and (6) miscellaneous conditions

In all instances of blood in the urine, the lesions to be looked for in the urinary tract may occur anywhere from the external urethral orifice to the renal capsule, and their presence must be either proved or disproved. The conditions in the genito-urinary tract which the urologist must exclude by his examination are

1 Congenital defects and anomalies of the upper urinary tract, including polycystic disease.

2 New growth, benign and malignant, of the urethra, prostate, bladder, ureters, renal pelves, and kidneys

3 Foreign bodies anywhere in the urinary tract

4 Trauma, either instrumental or from direct violence

5 As a result of chemicals either by direct application or by drugs given

6 Mechanical defects as a result of abnormal motility, this being the primary factor in stasis and infection in localized areas of the urinary tract

7 Infections, acute and chronic.

In many instances there is a combination of two or more of these factors present in a single case, as well as the presence of a systemic disease

The literature is replete with works dealing with hematuria, but the infrequency with which hematuria in pregnancy has been dealt is noteworthy, since the number of pregnancies complicated by hematuria is by no means small. Out of the total of 154 consecutive pregnancies seen by me for urologic consultations, thirty, or about 20 per cent of them, were complicated by hematuria. The dearth of material in the literature regarding the presence of hematuria during pregnancy led me to review the pregnancies referred to my service at the Womans Hospital with urinary tract complications. A brief review of the literature to date follows.

Becker³ finds hematuria an important symptom because of its early appearance in the toxemias of pregnancy. When one realizes that 100,000 women in the United States have pregnancies complicated by toxemia and that many of these toxemic women are partly incapacitated or that their life expectation has been definitely shortened because of irreparable injury to the kidneys, vascular system or heart, its importance is readily appreciated

In 1921 Dattin⁴ reviewed the literature from 1843 to 1921 on the subject of hematuria occurring in the course of pregnancy. Some twenty cases had been reported during that period. None of them were properly investigated according to present urologic standards, and it is impossible to evaluate them.

Dattin presented nine cases of his own. In only four of these cases was cystoscopy performed. Pyelograms were not made in any of them. The hematuria was ascribed to such causes as cystitis following retention in two cases, congestion of the mucous membrane of the bladder with rupture of veins of the mucosa,

³ Becker H. Hematuria and Hemoglobinuria in Pregnancy. *Zentralbl f Gynak* 45: 965-971 (July 9) 1921

⁴ Dattin A. Contribution à l'étude des hématuries au cours de la grossesse. Paris thesis 1920-1921 vol 13

⁸ Tixelson Wilder. Erysipelas in Oxford Medicine, New York, Oxford University Press, 1928 4 part 111

Read before the Section on Obstetrics Gynecology and Abdominal Surgery at the Eighty-Sixth Annual Session of the American Medical Association Atlantic City N J June 13 1935

¹ Stevens A R. Hematurias of Obscure Origin. *J A M A* 79: 1302-1305 (Oct 14) 1922

² Locke, E A and Minot G R. Hematuria as Symptom of Systemic Disease. *J A M A* 83: 1311-1315 (Oct 25) 1924

ptosis of the kidney with hydronephrosis, and varicose veins in the bladder in two cases. In three cases no cause for the hematuria was discovered.

Kirkwood⁶ reports a case in which hematuria appeared in the ninth month of pregnancy. The hematuria continued until ten days post partum. Delivery was normal. In this case symptoms of toxemia did not appear until the patient was very nearly at term. Too frequently, however, the hematuria occurs in the fourth or fifth month and is disregarded until toxemia is well advanced, the end result being death to either the mother or the baby or both.

Two cases are reported by Bugbee.⁶ One in which there was a profuse hematuria localized as unilateral, occurring in a woman five months pregnant, was not relieved by pelvic lavage but ceased two weeks after the uterus was emptied. Another case of hematuria, the source of bleeding being the left kidney, came under observation when the patient was two months pregnant. Complete urologic examination showed deficient function of this kidney but no evidence of infection. The patient had a positive Wassermann reaction. The bleeding ceased after the administration of arsphenamine.

Quigley⁷ cites a case of which he says: "Of the various causes offered for hematuria, and for hematuria in pregnancy in particular, it seems to me that the most plausible etiologic factor in this case was toxemia, as evidenced by increased blood pressure and edema."

Bazan⁸ reports the case of a woman, aged 38, in her third pregnancy, who had right renal pain, hematuria, pyuria, and staphylococci in the urine. Repeated cystoscopies did not reveal the source of the hematuria. Roentgenograms were negative for calculi, and no tubercle bacilli were found.

Livermore⁹ presents another interesting case, showing evidence of bilateral pelvic infection and hematuria at the sixth month of pregnancy. The hematuria ceased after bilateral pelvic lavage with 5 per cent silver nitrate.

Perez¹⁰ reported a case in which a woman, aged 27, had hematuria from the sixth month during her eighth pregnancy, in which was demonstrated a *Bacillus coli* right pyelitis. He considered this case an example of essential hematuria. No pyelograms were made.

Reist¹¹ concluded, after a study of eighty patients, in whom the hematuria was present in forty-four cases ante partum and thirty-six cases post partum, that the hematuria was the result of contusion of the soft parts by crushing between the osseous birth tract and the fetus. These conclusions were based on cystoscopic observation of the bladder mucosa, in which he found various types of ulcerations and areas of necrosis in the fundus, trigon and anterior wall of the bladder. No study of the higher urinary tract was made from a bacteriologic or roentgenologic point of view.

Bazan¹² found an abundant hematuria in a woman, aged 42, in the third month of her eighth pregnancy. Cystoscopy revealed some vesical varices and congestion

of the right ureteral orifice. The source of the hematuria was the right kidney. The treatment consisted of pelvic lavage and administration of calcium chloride. The cultures were negative, and no pyelograms were made.

Swanson¹³ reported a case of hematuria of pregnancy occurring in the fifth and sixth pregnancies of a woman, aged 33, at the time of the last pregnancy. The hematuria was accompanied by intermittent attacks of pain in the right renal region. Cystoscopy revealed bloody urine coming from the right ureter. Pyelograms showed right-sided hydronephrosis. No treatment was instituted. The hematuria ceased spontaneously two weeks before delivery in the fifth pregnancy and eighteen days post partum in the sixth pregnancy.

Bolaffio¹⁴ reported two cases of severe hematuria occurring in two patients, one aged 30, during her fifth pregnancy, and one, aged 22, a primipara. Both patients had pyelitis, one on the right side and one on the left side, accompanied by elevation of temperature and corresponding renal tenderness and pyuria. The first patient was given methenamine and anhydrous methylene citrate with methenamine in equal parts in doses of 3 Gm daily. Five days later there was a microscopic hematuria, and seven days after starting the drug there was an abundant hematuria with severe abdominal pain. This required morphine and atropine on the twelfth day. Twenty-four hours later uterine contractions were noted and a stillbirth occurred. The patient was greatly agitated during the day and that night was found dead.

Autopsy revealed "a hyperemia of the meninges, cerebral congestion, hyperemia and chronic inflammatory infiltration of the myocardium, siderosis of the liver, and especially a complex renal lesion of the kidneys and urinary pathways."

"Examination of the kidneys showed a suppurative nephritis with small cortical foci (hematogenous) of recent chronic nature and marked regressive alterations in the parenchyma. The congestion and hemorrhagic infiltration was especially intense in the medullary portion. Congestion and hemorrhagic infiltration was encountered also in the interstitial and subserous parts of the ureters, while a slightly acute inflammatory infiltration was noted in the mucosa. The congestion and hemorrhagic infiltration had involved also the base of the bladder."

"The postmortem examination of the fetus did not reveal anything special outside of those causes inducing fetal asphyxia, although the picture was characterized by an unusual hyperemia and hemorrhagic suffusion of the meninges and kidneys."

The second case ran essentially the same course. The patient was given methenamine and anhydrous methylene citrate with methenamine, and a severe hematuria developed, but because of the sad termination in the first case this pregnancy was interrupted. A live baby was obtained, and the mother was discharged in good condition. In neither case was a urologic study of the higher urinary tract made.

Three cases of hematuria occurring in pregnancy are reported by Albanese.¹⁵ The first patient, aged 39, had suffered from attacks of renal colic, which radiated into the iliac fossae, since she was 16. She never noted blood in the urine. She had had four previous preg-

5 Kirkwood, W. L. Hematuria Complicating Pregnancy. *Brit. M J* 1: 765 (May 1) 1915.

6 Bugbee, H. G. Complications of Pregnancy. *J A M A* 71: 1538-1541 (Nov. 9) 1918.

7 Quigley, J. K. Hematuria in Pregnancy. *Tr. Am. A. Obstet. Gynecologists and Abdominal Surgeons* 23: 110-111 1920.

8 Bazan, J. Hematuria During Pregnancy. *Semana méd* 33: 291 (July 20) 1923.

9 Livermore, G. R. Possible Causes of Renal Bleeding Which Can not be Accurately Diagnosed. *J A M A* 83: 1390-1392 (Nov. 1) 1924.

10 Perez, M. L. and Pla Cardenas, C. A. Essential Hematuria in Pregnancy. *Semana méd* 31: 368 (Aug. 14) 1924.

11 Reist, A. The Clinical Significance of Hematuria at the Time of Parturition on the Basis of Cystoscopic Observations. *Zentralbl. f. Gynak.* 50: 351 (Feb. 5) 1927.

12 Bazan, J. Primary Hematuria in Pregnancy. *Semana méd* 35: 262 (Feb. 2) 1928.

13 Swanson, C. N. Hematuria as a Symptom of Pregnancy Hydro-nephrosis. *J A M A* 93: 1551-1552 (Nov. 16) 1929.

14 Bolaffio, M. Grave Hematuria in Pregnancy Due to Methenamine. *Clin. Obstet.* 33: 607 (Oct.) 1931.

15 Albanese, A. Comment on Three Cases of Hematuria in Pregnancy. *Ann. di ostet. e ginec.* 54: 1117 (July 30) 1932.

nancies, and the last two had been complicated by nephritis. In the fourth month of the fifth pregnancy pain developed in both renal regions, diminution of sight, and edema of the face and legs. The urine was bloody for fifteen days previous to examination. The blood pressure was 250 systolic, 170 diastolic. Urinalysis showed numerous red blood cells, and some leukocytes and casts. The case was diagnosed as hemorrhagic nephritis. Because of the persistent hematuria, a partial hysterectomy was performed.

The second patient, aged 38, had had three previous normal pregnancies. From the first month of her fourth pregnancy she began to pass blood in the urine, subsequently edema of the lower extremities developed. The urine contained red blood cells, leukocytes and casts. Cystoscopy revealed that the right ureteral orifice was edematous and that blood clots were being ejected from both ureters. The diagnosis was "primary nephrologic hematuria." Treatment consisted of rest in bed, diet, and the administration of calcium chloride. The urine continued to be tinged with blood, but the patient gave birth to a normal child, and both were in good condition at the time of discharge.

The third patient, aged 32, had had five previous pregnancies. From the second month of her sixth pregnancy the urine had been tinged with blood. Urinalysis in the third month revealed traces of albumin and some red blood cells. There were no urinary symptoms. The treatment consisted of injections of calcium chloride. The patient was discharged as cured nine days after treatment was begun.

In these three cases the author concluded that there could be no doubt that a previous nephritis had become acute again, owing to the state of pregnancy.

As I have previously stated, during the past four years I have seen 154 pregnant patients in urologic consultation, approximately 20 per cent of whom had, as a complication of their pregnancy, gross or microscopic blood in the urine. Hematuria, as considered in a review of the following cases, means that there was either gross blood in the urine or more microscopic blood than the occasional or few red blood cells found in the ureteral catheter specimen, such as might be expected as a result of trauma from the catheter.

Of the thirty patients studied, the average age was 27 years, the youngest being 16 years and the oldest 39. This was the first pregnancy for the one aged 16 years, with urinary tract complications at the fifth month of the pregnancy, and the third pregnancy for the one aged 39, with urinary tract complications at the sixth month of pregnancy. The greatest number of pregnancies had occurred in a woman, aged 25, this being her tenth pregnancy, with urinary tract complications during the second month of this pregnancy.

Of the thirty patients, this was the first pregnancy for sixteen, the second pregnancy for seven, the third pregnancy for four, the fifth pregnancy for one, the sixth pregnancy for one and the tenth pregnancy for one. Of the sixteen primiparas, the majority of the urinary tract complications developed between the sixth and the seventh month of pregnancy, however the average time of onset for the thirty patients was four and one-half months. In four of the thirty patients the urinary tract complications developed post partum, the onset being within forty-eight to seventy-two hours in three cases, and thirteen days in one.

Bladder symptoms, such as smarting and burning during urination and urgency, were present in all thirty cases. There were seventeen patients having definite

renal pain. Eight had bilateral pain. In six the pain was on the right side, in three on the left side. Renal pain was twice as frequent in the right renal area as in the left renal area, thus being significant of the preponderance of pyelitis of pregnancy occurring most frequently in the right renal pelvis.

The frequency of toxemia of pregnancy, as observed by the obstetrician, was not notable in this series of thirty cases, as only four showed evidence of renal insufficiency, and those only to a mild degree.

Gross hematuria was present in eighteen of the thirty patients, the remaining twelve had microscopic blood in the urine.

The origin of the hematuria in nine patients was from the urinary bladder, six had gross blood and three microscopic blood. From the right kidney the hematuria occurred in twelve cases and from the left kidney in eight cases.

Of the thirty patients, the charts show evidence of cultures of the bladder and the right and left kidney urine in only twenty-three, which is a deplorable record and one for which no excuse is offered. *B. coli* was the organism found in thirteen, *staphylococcus* in six, and mixed *staphylococcus* and *B. coli* in one. Three patients had normal cell counts and negative cultures of the urine. Two had an impacted calculus in the lower right ureter and one had gross blood from a megalo-ureter. In an attempt to evaluate the laboratory examinations in these twenty-three patients, the task is almost hopeless as, over a period of years, various technicians have been responsible. The greatest lesson to be learned is to have procedures of this kind so standardized from the technical point of view that irrespective of which technician does the work the reports will at least be uniform for study. Twenty of the twenty-three patients who had adequate urine studies showed the presence of a pyelitis. Very definite dilatation of the renal pelvis, to the extent that one would be justified in using the term hydronephrosis, occurred in ten patients. In two of these the dilatation was bilateral, and in two others a right pyonephrosis was found.

In ten of the thirty cases, roentgenograms were made in two postures, horizontal and vertical. Of these ten, five showed a right renal ptosis, one a left renal ptosis, and four a bilateral renal ptosis. Again these observations are not complete because of the absence of films made in the upright posture in all instances. In describing the existing conditions, I have used the term "megalo-ureter" for all dilatations from slight to dilatation the size of the small undistended intestine. Eleven cases of megalo-ureter were found to be present, the dilated ureters were bilateral in four, and there was dilatation of the right ureter in six, and dilatation of the left ureter in one. In two cases a calculus was found in the lower right ureter. Ureteritis was observed in two cases. In one the condition was bilateral, in the other it was confined to the right ureter.

In none of the cases was the urethra the site of the hemorrhage.

The complications and the end results in the thirty studied cases were as follows. One case, cholecystotomy and death. Autopsy in this instance revealed the cause of death to be acute fibrinous pericarditis. One case, intestinal obstruction and enterostomy followed by death, autopsy in this instance revealed a gangrenous peritonitis. One case, induced abortion in the third month. One case, therapeutic abortion followed by death from pulmonary embolus. Two cases ureterotomy followed by normal delivery.

SUMMARY

1 In a routine study of 154 urologic consultations because of urinary tract disturbance during pregnancy, hematuria occurred in thirty cases

2 Further study of these thirty patients revealed Cystitis in all cases

Pyelitis in twenty-two, of which twenty were bilateral and two were unilateral

Hydronephrosis in ten, two of which were bilateral and eight unilateral

Pyonephrosis of the right kidney in two cases

Ptois in nine cases, four being bilateral, four right and one left

Megalo-ureter in eleven cases, of which four were bilateral, six right and one left

Ureteral calculus of the right ureter in two cases

Ureteritis in two cases, one bilateral and one of the right ureter

3 Hematuria is a grave complication of pregnancy, and in all instances of hematuria occurring during pregnancy the very least the patient is entitled to is a thorough investigation by a competent urologist

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ABSTRACT OF DISCUSSION

DR JOHN M BERGLAND, Baltimore At the Johns Hopkins Hospital, hematuria in pregnancy apparently occurs very rarely There have been only two cases in the last year in which there was macroscopic blood in the urine The patients had cystitis and not pyelitis Cystitis seemed to be the cause of the bleeding No specific treatment was necessary except that indicated for the bladder condition, and the patients recovered without further complication At several other hospitals in which I have access to the records, hematuria during pregnancy seems to be almost unheard of, and in my private practice I have noted it in only a few instances, and in those cases the symptoms cleared up without difficulty The presence of microscopic blood, of course, is often noted but in the great majority of cases this is a symptom of but little moment and is usually caused by some slight trauma, either by the presence of a stone in the ureter or by instrumentation for the treatment of pyelitis or cystitis As far as my experience is concerned, hematuria during pregnancy has no bearing on the toxemias found in that condition

DR JOSEPH B DELEE, Chicago I was called to do a cesarean section on a woman about 35 years of age whom I hadn't seen until that moment It was a clear case of placenta praevia The woman had gone through a normal pregnancy She wasn't in labor Everything was going along nicely when she suddenly began to bleed—a sudden painless, causeless uterine hemorrhage of the last trimester While I was getting ready for the operation, the nurse who was preparing the patient for the cesarean section reported that the blood was coming from both the vagina and the urethra So we washed out the vagina and got the clot out of it, and then we got pure blood by the catheter out of the bladder The cesarean section was postponed and the woman delivered herself the next day without any trouble Cystoscopic examination showed a little congestion of the trigonum

Fats Overheated in Cooking—All fats ordinarily used as food are almost completely digested and absorbed Large quantities of fat may cause digestive upsets by prolonging unduly the stay of food in the stomach, or, when cooked so as to form a coating over other foods, they may retard the action of the digestive enzymes Fats overheated in cooking may be directly irritating to the digestive tract These latter unfavorable effects, it should be pointed out, are not properly chargeable to fats themselves but rather to their wrong use in cookery—Sherman, H C. Food and Health New York, Macmillan Company 1934

INTRASPINAL (SUBARACHNOID)
INJECTION OF ALCOHOL

FOR PAIN ASSOCIATED WITH MALIGNANT CONDITIONS
OF THE FEMALE GENITALIA

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AND

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At least 75 per cent of all women who have carcinoma of the cervix die as the result of the condition Nearly all these women suffer severe pain during the latter part of the disease and in a large proportion of cases the pain is constantly present, both day and night, and is almost unbearable This is due to the fact that the sensory nerves become involved in the malignant growth There are at present three means of relieving this pain The first and the one almost exclusively used at present is the administration of derivatives of opium, chiefly morphine However, there are disadvantages to this form of therapy, particularly the necessity of giving constantly increasing doses as the patient's tolerance increases, the nausea and vomiting that some women experience, the idiosyncrasy of others, the excitement produced in some, and the expense for poor patients The second method of giving relief from pain is surgical and consists essentially of pelvic sympathectomy and chordotomy While the former operation is simple, it nevertheless necessitates an abdominal operation and it does not relieve all cases The latter operation is a serious one and requires the skill of a neurosurgeon The third means of relieving pain consists of blocking the nerves that conduct pain sensation This may be accomplished by a number of different solutions, but alcohol is the one most commonly used

The injection of alcohol into nerves for the relief of pain was advocated many years ago by Sicard,¹ but this procedure has not been employed for the relief of pelvic pain until recent years Reding¹ in 1925 suggested this form of injection for pain caused by inoperable carcinoma in the region innervated by the sacrococcygeal plexus Van Erps¹ in 1930 reported a series of sixteen cases of pelvic pain treated by the injection of alcohol into nerves and in the same year Condomin and Arnulf² reported five cases of pelvic cancer treated by such injections Reding, Van Erps and Condomin and Arnulf injected the alcohol directly into the nerve roots at the level of their exit from the spinal column In December 1930 Dogliotti³ recommended subarachnoid injection of alcohol for the relief of pain This suggestion was based on Lugaro's studies on the physiology of pain Among Lugaro's conclusions was a statement that, in order to relieve surgically pain due to neuralgia, it is not necessary to block or destroy all the involved sensory neurons It is essential only to produce a block or destruction of part of the fibers, the amount depending on the severity of the pain

Leriche and others deny the existence of peripheral fibers that convey pain sensations They maintain that the sensation of pain in the cerebral centers is due to

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¹ Quoted by Dogliotti³

² Condomin F and Arnulf G Traitement de névralgies des can-cers pelviens par les injections neurolytiques Rev de chir Paris 51: 635 (Oct) 1932

³ Dogliotti A M Traitement des syndromes douloureux de la périphérie par l'alcoolisation subarachnoïdienne des racines postérieures à leur émergence de la moelle épinière, Presse méd 39 1249 (Aug 22) 1931 Rev neurol 2: 485 (Oct) 1931

the transmission of sensory impulses by the nerves which convey general sensibility, particularly those which carry heat, cold and pressure sensation and to a lesser extent those of muscular and tactile sense. Ordinary stimulation of the heat, cold, pressure and other sensory fibers produces the sensation characteristic of each one but excessive stimulation of these fibers produces the sensation of pain. Hence it is Lugaro's contention that a simple reduction in the number of the peripheral sensory nerve fibers is sufficient to prevent the occurrence of a sensation of pain. With this theory Dogliotti agrees and on it he based his idea of decimating the peripheral nerve fibers in the posterior roots. He chose the subarachnoid space for this purpose because this region is the most central one for attacking the nerve roots. Injection in this region will prevent all painful peripheral stimuli from reaching the medullary centers, even if the stimuli act at the level of the spinal ganglions, the intervertebral foramina or the spinal roots.

Absolute alcohol was selected for injection by Dogliotti because the action of alcohol on nerve tissue has been known for a long time, it has no secondary toxic effects, it is easily and rapidly diffused, and it has a specific gravity much lower than that of the spinal fluid. As may be seen *in vitro*, absolute alcohol floats on top of liquor amni in a pure state for a few minutes.

Dogliotti treated forty-five patients by means of subarachnoid alcohol injections and he used between 0.2 and 0.6 cc for each injection. In some cases relief was immediately obtained whereas in others no effect was observed for from twenty to thirty days. About 10 per cent of his patients had to remain in bed for two or three days after the injection, and a large proportion suffered from headaches and backaches for a few days. Examination of the spinal fluid a few days after injection showed an increase in cerebrospinal pressure, a perfectly clear fluid and a slight increase in albumin and leukocytes in the sediment. After ten days, however, the cerebrospinal fluid was normal. Most of Dogliotti's patients had sciatic pains, but not one of them had carcinoma of the female genitalia. Yeomans⁴ reported the use of subarachnoid injections in cases of gastro-intestinal cancer. Saltzstein⁵ employed this procedure in eleven cases, eight of which were cases of

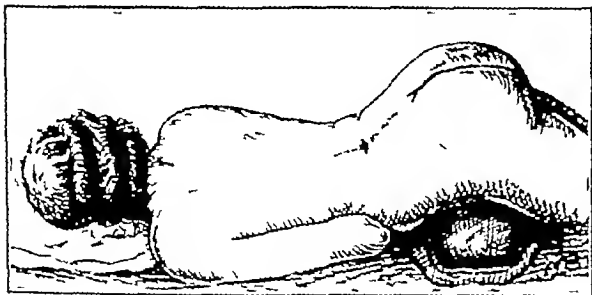


Fig 1—Attitude assumed by patient for subarachnoid injection to relieve pain on right side. The pillow elevates the lumbosacral region which is tilted forward and the dark line indicates the first lumbar interspace where the injection is to be made.

cervical carcinoma. These appear to be the first reported cases of cervical carcinoma so treated. There was only one failure among the eight cases. Saltzstein made his injections in the first and second lumbar inter-

spaces as did Yeomans. At about the same time Stern⁶ reported a series of fifty subarachnoid injections, of which twenty-six were for cancer in nineteen patients. Only five of these patients had carcinoma of the female genitalia and all were relieved by the alcohol injections. Stern obtained complete relief in 70 per cent of his cases, partial relief in 20 per cent and failures in 10 per cent. He observed better results when the injections were given in the upper lumbar interspaces and more

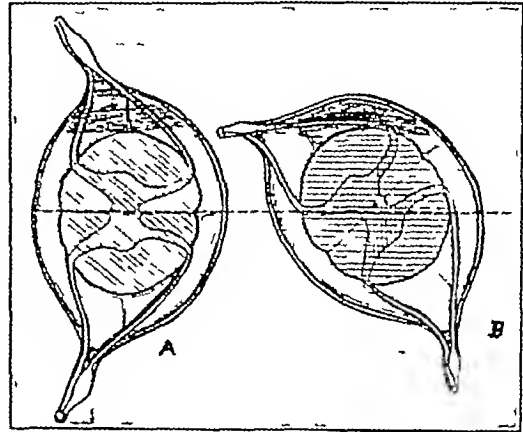


Fig 2—A cross section of spinal column when patient rests on her side but without ventral tilting. B the same cross section when the body is tilted ventrally. This position removes the anterior or motor roots from the field of the floating alcohol, which affects essentially the posterior or sensory roots and the dorsal root ganglions. (Slightly modified from Stern.)

satisfaction with absolute alcohol than with 95 per cent alcohol. Stern kept his patients on the side only ten minutes after the injections, whereas Saltzstein, Yeomans and Dogliotti kept their patients in this position for twenty minutes following the injection. To these thirteen cases of carcinoma of the female genitalia treated for pain by subarachnoid injection of alcohol we add twenty-five more.

TECHNIC OF INJECTION

Our technic for intraspinal (subarachnoid) injection is as follows. We prefer not to give any preliminary medication because we wish to observe the immediate effects of the injection. Most patients with advanced carcinoma of the cervix and other genital organs have much more pain on one side than on the other. The patient is placed on the side opposite to that on which most of the pain is present. A pillow or pad is placed under the pelvis and side to elevate the sacral and lumbar portions of the spine, the back is arched as much as possible, the body is turned somewhat ventrally and the head is lowered slightly (fig 1). By placing the patient in this attitude we raise the sacrolumbar region of the spine to the highest level and at the same time make the posterior or sensory nerve roots lie horizontally. The anterior or motor nerve roots come to lie in a plane that is usually out of reach of the alcohol (fig 2). Even if the motor nerves are not removed from the field of the alcohol they are not often affected because, as Sicard contended and Byrne⁷ confirmed, sensory nerves are more susceptible than motor fibers to the effects of alcohol.

Some one should hold the patient in the proper position. A weak solution of iodine or other antiseptic is applied over the lumbar and upper sacral regions.

⁴ Yeomans, F. C. Care of Advanced Carcinoma of the Gastro-Intestinal Tract. *J. A. M. A.* 101:1141 (Oct. 7) 1933.

⁵ Saltzstein, H. C. Intraspinal (Subarachnoid) Injection of Absolute Alcohol for the Control of Pain in Far Advanced Malignant Growths. *J. A. M. A.* 103:242 (July 28) 1934.

⁶ Stern, E. L. Relief of Intractable Pain by the Intraspinal (Subarachnoid) Injection of Alcohol. *Am. J. Surg.* 26:217 (Aug.) 1934.

⁷ Byrne, quoted by Gilcreast, E. L., and Mullen, T. F. *S. Clin. North America* 11:989 (Oct.) 1931.

Dogliotti recommended that the lumbar interspace chosen as the site of injection should depend on how high up the pain extended. In most of our early cases we selected the fourth lumbar interspace, and our results were highly satisfactory. We are now making our injections in the first lumbar interspace to relieve the pain that some women develop high up in the abdomen and back. An ordinary lumbar puncture needle with a stylet is used. The needle is injected into the desired interspace just as for an ordinary lumbar puncture, and we prefer not to use procaine in the skin before inserting the needle. After the needle is in the subarachnoid space, as evidenced by the flow of spinal fluid, 0.5 cc. of 95 per cent alcohol is injected into the cerebrospinal fluid. For this purpose it is best to use a tuberculin syringe so as to be sure that not more than 0.5 cc. is injected. Furthermore, the alcohol must be injected very slowly, drop by drop, about two minutes being taken for the injection of the 0.5 cc. This will avoid a mixture of the alcohol with the spinal fluid. The alcohol rises immediately to surround the posterior roots, because the specific gravity of alcohol is about 0.806 whereas that of the spinal fluid is 1.007 per cent. No attempt should be made to draw spinal fluid into the syringe to mix it with the alcohol, because this is exactly what is not wanted. After the injection is made the needle is withdrawn and the puncture hole covered with sterile gauze and adhesive plaster.

Before the injection is completed, the patient will complain that the upper leg feels numb or hot and that she cannot move the leg. The numbness is experienced almost as a routine after the injection but disappears spontaneously after a few hours or few days in most of the cases. In spite of what the patient says concerning her inability to move the leg, she can easily move it when requested to do so. At the same time that the patient informs us of the numbness she also often tells us either voluntarily or in answer to our query that her pain has disappeared. We have found that the longer the patient is permitted to lie on her side, the better are the results. Hence we now keep our patients on their side for two hours after the injection. Then we permit them to get up and walk around. Some find difficulty in getting up from a chair because their "leg is asleep." Sometimes the leg feels heavy and the patient experiences some trouble in walking up steps because the knee flexes readily. These sensations usually wear off in a few hours, although in some women they last a number of weeks. We have permitted all our patients who were ambulatory to go home within three hours after the injection and have observed no ill effects from this procedure.

If the patient has pain on both sides, an injection is made a week later with the patient lying on the opposite side. The same amount of alcohol is injected.

We have restricted subarachnoid injection of alcohol to patients with hopelessly advanced cancer. Until we know more about the effects of 95 per cent alcohol on the spinal cord we shall not extend the use of this procedure to other cases, except perhaps for unusual circumstances.

ANALYSIS OF RESULTS

We have performed twenty-seven subarachnoid alcohol injections in twenty-five women. Two women had two injections on opposite sides.

Our patients ranged between the ages of 31 and 58, and the carcinomas were of the cervix in twenty-two, of the clitoris in one, of the vulva in one and of the ovary in one.

At the time of the injection, the patients had the following complications: "frozen pelvis," twelve, invasion of inguinal glands, three, and one instance each of rectovaginal fistula, vesicovaginal and rectovaginal fistula, invasion of the bladder, invasion of the bladder and rectum, invasion of the labia, and radiation bladder ulcer.

The locations of the pain for which the injections were made were as follows: on one side of the pelvis and down the posterior thigh, six, in the sacro-iliac joint and down the thigh and leg, five, in the lower part of the back and down the leg, three, on both sides of the pelvis and down the legs, three, in the hip and leg, two, and on one side of the pelvis, in one thigh and leg, in the vagina, labium and lower spine, in the vagina and thigh, in the bladder and in the rectum, one case each.

For twenty-one injections we used 0.5 cc. of 95 per cent alcohol, for four injections we used 0.75 cc. and for two we employed 1 cc. We kept the patients on their side for twenty minutes in five instances, for one hour in twenty cases, and for two hours twice. We made most of the injections in the fourth lumbar interspace but are now making all of them in the first interspace.

Our results show that twenty women were completely relieved of their pain, three were partially relieved, and in two cases the injections failed. One of the failures was subsequently overcome by repeating the injection in a higher lumbar interspace. The other failure occurred in a woman who had previously had a pelvic sympathectomy which relieved her for six weeks. Then the pains returned. She was given 1 cc. of alcohol first on the left side and two days later on the right side but she obtained no relief. Atrophy and anesthesia of the left leg developed. This condition was most likely due to the large amount of alcohol injected and perhaps also to the short interval between the two injections. This case was one of our very early ones and was the only case in which we used such a large amount of alcohol and repeated the injection within such a short time. Autopsy on this patient revealed the cause of failure. The patient had bilateral pyonephrosis, which could not have been relieved by the alcohol injections made in the fourth lumbar interspace. Had we made the injection in the first interspace, the patient might have been relieved of her pain.

Thus far, of the twenty-four patients who have been relieved of their suffering, two have been free from pain for six months, one for five months, one for four and a half months, three for four months, two for two months, four for six weeks, four for four weeks, four for three weeks, and three for two weeks.

The complications that followed the alcohol injections were numbness of the leg for three days, six, numbness of the leg for more than three days, six, and in one case each, urinary retention for two days (had bladder invasion of carcinoma), urinary incontinence the first night, pollakiuria, "leg cold at night," paralysis of the leg for one and one-half hours, anesthesia and atrophy of the leg, and diarrhea for twenty-one days.

CONCLUSIONS

Our experience with twenty-seven subarachnoid injections of alcohol in twenty-five women with advanced carcinoma of the genitalia leads us to recommend this procedure in all women who suffer from excruciating and persistent pain that is associated with

genital carcinoma This injection is simple to carry out, it entails very few risks, and it has brought relief to twenty-four out of our twenty-five patients Because it is simpler than any operative procedure and because the results are so satisfactory, we are now using it in preference to pelvic sympathectomy, which we advocated two years ago for the same purpose We shall resort to sympathectomy in the cases in which alcohol injections fail Until we know more about the late effects of 95 per cent alcohol on the spinal cord itself, it is best to restrict subarachnoid injections to patients in whom the malignant condition is far advanced
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CONGENITAL SYPHILIS

THE RESULTS OF TREATMENT IN CHILDREN

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All the case records of patients with congenital syphilis seen in the Harriet Lane Dispensary of the Johns Hopkins Hospital from its opening in 1914 until June 1934 have been studied, with special emphasis on the end results of treatment There were 991 patients in all, of whom 621 had early congenital syphilis and 370 the late form An arbitrary dividing line of two years of age is made between the early and late groups In the study of the therapeutic results, no patient was included unless he had been followed for at least two years Many had been under treatment and observation for as long as fifteen years Babies remain under the care of the obstetric service until they are 2 weeks old, and all patients in the Harriet Lane Dispensary on reaching the age of 15 years are transferred with their records to the adult clinic regardless of the length of observation Thus in this series neither the babies dying in the obstetric wards nor those suffering relapses after puberty are included, so that in this respect the data are not complete and therefore not entirely representative for congenital syphilis as it actually occurs in the community

Of the 991 patients there were approximately 70 per cent Negroes and 30 per cent white There were slightly more females than males The mean age of admission for babies with early congenital syphilis was 3.3 months and for the late group 7.9 years

EFFECT OF ANTEPARTUM TREATMENT

The effect of antepartum maternal treatment on the incidence and severity of lesions in the syphilitic children was made the subject of particular study No treated mothers who bore congenitally syphilitic children had had over fifteen injections of arsphenamine during the pregnancy The more treatment given the mother, the less was the incidence of lesions in the child The percentage incidence was 80 for the children of untreated mothers as compared with 64 for those of mothers who had received some, though inadequate, antepartum treatment Likewise no relapse occurred in any of those children whose mothers had been given antepartum treatment, and only 4.7 per cent

(about one fifth of that of the group as a whole) remained Wassermann fast at the end of the observation period

During the last decade, when more attention has been paid to the routine treatment of mothers during their pregnancy and more reliance has had to be placed on serologic reactions and x-ray studies of the bones for early diagnosis in the child, there has been a noticeable decrease of children with florid lesions of congenital syphilis The two decades covered by this paper show the contrast of the two periods The first, from 1914 to 1924, was the one in which few mothers received any and most children received wholly inadequate treatment and most of the children showed lesions, in the second, from 1924 to 1934, the treatment given both mother and children was more thorough and the number of patients with syphilitic lesions was less

METHOD OF TREATMENT

The treatment scheme for both early and late congenital syphilis has varied greatly in the past two decades with the introduction of newer drugs of both the arsphenamine and heavy metal groups, and with changing ideas about rest periods That in use since 1928 has been the continuous method, with courses of an arsphenamine alternating with courses of a bismuth compound, each calculated for age and weight With small babies and those children with poor veins, the arsphenamine chosen is sulpharsphenamine, with the older children neoarsphenamine, and silver arsphenamine in special cases The bismuth preparation is the salicylate, 10 per cent suspension in oil, given intragluteally, and has all but entirely replaced the mercury preparations formerly used Only rarely is the old inunction prescribed Even in small premature infants a bismuth compound is employed Malaria, tryparsamide and potassium iodide have been used for special indications Up to this time acetarsone has not been tried Each course of treatment consists of six or eight injections, there are no planned rest periods, and treatment is continued for a minimum of a year or for at least fifty injections (twenty-five of each drug) Whether treatment is carried further depends on the presence of active lesions and on the Wassermann response In Wassermann-fast patients, probation is not allowed until the spinal fluid is found to be normal, and in such cases treatment is continued for an arbitrary minimum of two years (100 injections) The justification for the prolongation of treatment in Wassermann-fast patients lies in the fact that relapse or progression is four times as common in such individuals with early congenital syphilis as in those in whom Wassermann reversal is secured by treatment The limitation of from one to two years of treatment does not apply to those children who show persistent active lesions, especially interstitial keratitis and involvement of the central nervous system

With deliberate intent to avoid the word "cure," the term "ultimate clinical outcome satisfactory" has been used By this term is meant that the patient at the end of the observation period is for all practical purposes well, free from symptoms, and may lead a normal life Irremediable stigmas, such as old inactive corneal scarring, healed perforation of the nasal septum or even a positive blood reaction may persist, but all these signs are asymptomatic and in no way affect his activities

In tabulating the amounts of treatment received by each patient the terms "inadequate," "moderate" and

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"adequate" have been used, representing less than thirty, from thirty to fifty and over fifty injections respectively. It is felt that this procedure gives a better measure for comparison than if the total amounts of drugs given were used, since the doses vary more in children than in adults, in whom the amounts are more or less standard. "Relapse," in this paper, means that a fresh active lesion appeared after treatment had been started in a patient in whom all previous symptoms had disappeared and any previous one healed. "Progression" signifies that the lesion present continued and became worse during treatment and the observation period. This actually refers exclusively to central nervous system involvement, because it was found that all the other syphilitic lesions responded with more or less readiness to treatment.

DEATHS

There were 169 deaths (27 per cent) among the 621 patients admitted with early congenital syphilis. Syphilis could be considered the direct cause of death in sixty, or 35.5 per cent. More than 90 per cent of these were in children less than 6 months of age. The number of deaths truly attributable to syphilis was found to decline rapidly with age and with the amount of treatment given. Only one child with early congenital syphilis followed for more than two years died primarily of this disease, and all but fourteen of the total 169 deaths were of children under 2 years of age. A number of patients arrived at the clinic in an almost moribund condition, so that effective treatment could not be administered. If the baby had received even one course of treatment, typical lesions of syphilis were not found at necropsy. Only 5.5 per cent of those who died had received more than six injections.

There were twenty-three deaths in the group with late congenital syphilis. Of these, eleven were attributable to syphilis, all of the central nervous system. Only three had had adequate treatment.

It may be said then that congenital syphilis, excepting when the central nervous system is involved, is rarely if ever the cause of death in a child that has had more than four courses of treatment, and that in young babies death usually occurs because of other complicating illnesses that do not allow the antisymphilitic remedies to have an opportunity to arrest the infection. Death from congenital syphilis per se is very rare in any patient born of a mother who has had even one course of antepartum treatment.

SEROLOGIC REACTIONS ON ADMISSION

The blood Wassermann reaction was positive on admission in all but five of the patients. In these, other signs of the disease and facts of the family history were sufficient to make the diagnosis of congenital syphilis unmistakable.

The spinal fluid has not been examined in a routine way in every patient. It was examined in sixty-one instances in the early group and in seventy-one in the late group at the time of admission. It was found to be positive in twenty-one of the former (33 per cent) and thirty-six (50 per cent) of the latter. The total gives an incidence of central nervous system syphilis of approximately 10 per cent of the total number of cases. The existence of a positive fluid in small babies is not as significant for the development of subsequent nervous system disease as when found in children over 2 years of age. Only one of the babies with early congenital syphilis still had a positive fluid when

reexaminations were made at some time during the observation period, and two that originally were negative had become positive.

Of the sixty-one babies of the early group whose fluids were examined, twenty-two died before they were 2 years old. Of these the number with positive fluids was slightly greater than of those whose fluids were negative. In the late group, six of the seventy-one with abnormal fluids died of dementia paralytica before they had been followed for a year. None of those in this group with originally negative fluids developed positive fluids at a later examination.

At some time during the observation period, though not at the time of admission, twenty-five additional patients with early and fifty-four with late congenital syphilis were examined by lumbar puncture. This was done either for signs suggesting central nervous system involvement, because of Wassermann fastness, or as a part of a diagnostic work-up. None of those in whom the Wassermann reaction was the only indication of syphilis showed any alteration of the spinal fluid. Fifteen of the seventy-nine patients had clinical signs that were interpreted as meaning neurosyphilis. In only four of these fifteen patients was the spinal fluid found to be positive for syphilis. These four patients were diagnosed as having tabes or juvenile dementia paralytica and the other eleven were classified as having late congenital syphilis with mental deficiency. The term neurosyphilis has been used strictly to include only those patients who at one time or another had positive serologic evidence in addition to positive clinical signs. There were four instances of patients having a positive spinal fluid without clinical evidence of central nervous system involvement.

RESULTS OF TREATMENT

The results of treatment will be considered in several ways: the effect on the disappearance of lesions and on the incidence of relapse and progression, the ultimate clinical outcome, and the effect on the Wassermann response.

In congenital syphilis there are three age periods when lesions are most prevalent: (1) from 1 to 6 months, (2) from 6 to 8 years, and (3) at puberty. In the first period the lesions are equivalent to those of early acquired syphilis, i.e., chiefly ectodermal, mucocutaneous and osseous, all of which heal rapidly under not more than two courses of treatment. In the second period occur chiefly osteitis and periostitis, especially of the tibia and nasal septum, interstitial keratitis and in a few instances central nervous system involvement. In the third are common interstitial keratitis, eighth nerve deafness and neurosyphilis. Periostitis responds well to treatment, if of the nasal septum, the active process is arrested though the perforation may remain. Nerve deafness was not encountered in this group of young patients, all of whom had had treatment before puberty. Interstitial keratitis more often than not was very resistant to treatment and required from twelve to fifty injections for its relief. Neurosyphilis alone failed to give a satisfactory clinical response in 90 per cent of the patients, even after a complete serologic reversal.

The incidence of relapse in the group with early congenital syphilis was 9.4 per cent, or twenty-six of 279 patients. As far as can be determined with the means available, the incidence of relapse was less as the

amount of treatment was increased. Several patients who had had irregular, though in the sum total adequate, treatments (more than fifty injections) did return with a relapse after a lapse of several years. The relapses were scattered in type but were most frequently interstitial keratitis.

The incidence of relapse in the late group was higher, 13.2 per cent, or thirty-two of 242 patients. The ultimate clinical outcome was in general more satisfactory as more treatment was given. Of thirty-two patients who relapsed during the earlier part of treatment, fourteen obtained a completely satisfactory clinical outcome after treatment had been continued.

In the early group, no patient with adequate treatment had a relapse when the serologic reactions were negative. Of the late group seven, or 22 per cent, did have a relapse or progression, two of these developing interstitial keratitis and five progression of central nervous system involvement. It thus seems that it is safe to place on indefinite probation any patient whose treatment was started before the age of 2 years and was adequate, who has no active lesion, and whose blood Wassermann and spinal fluid reactions are negative.

The question of the Wassermann response resolves itself into an analysis of Wassermann fastness. This phenomenon varies with the age at the start of treatment. Serologic reversal was obtained in 77 per cent of the patients whose treatment was started under the age of 6 months and decreased steadily with increasing age to only 16 per cent when the start of treatment was delayed until from 11 to 15 years. It was determined also that the percentage of Wassermann-fast patients varied with the total amount of treatment received during the first year of treatment rather than on the aggregate received during the whole observation period.

OBSERVATIONS

1 Early congenital syphilis is "curable." The start of treatment at an early age is an important factor, as is the amount of treatment given in the first year. It is safe to say that a baby whose treatment is started under 6 months of age has an 84 per cent chance of serologic as well as clinical "cure," if fifty injections of drug are given before the age of 2 years.

2 The incidence of relapse increases with the age at which the treatment is started and decreases with the amount of treatment.

3 Syphilis per se, except when the nervous system is involved, is rarely a cause of death in children over 6 months of age or in infants younger than 6 months who have had more than one course of treatment.

4 All clinical manifestations of congenital syphilis respond to antisyphilitic treatment except neurosyphilis, in which progression may occur in spite of it and even after the serologic reactions are negative.

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ABSTRACT OF DISCUSSION

DR. E. J. TROW, Toronto. Antepartum care is of prime importance in the prevention of congenital syphilis. In centers where antepartum clinics are established one sees extraordinarily good results, and the lowered incidence of congenital syphilis as noted in children's hospitals is proof of this. Once a child is infected every effort must be put forth in arriving at an early diagnosis and immediately administering treatment. Only when treatment is not given until a considerable length of time has elapsed are serious degenerative changes found. Dr. Smith's results correspond almost exactly with the results obtained at the Hospital for Sick Children in Toronto. The

only suggestion I can make is that acetarsone or some such remedy be given by mouth to the premature infants who are not able to stand the more concentrated arsenicals. This saves time and allows the infant to gain sufficient strength before arsenical injections are administered. In Toronto great satisfaction is felt because of the marked decrease in congenital syphilis noted in the wards. In fact the Wassermann test is no longer made as a routine procedure except for older and chronically ill children, as it is seldom that this procedure elicits more information than does the clinical evidence except in older children. Along with the decreased incidence of congenital syphilis in the Hospital for Sick Children there has been a marked decrease in syphilis among adults in the Toronto General Hospital. From a percentage of 12 of admissions to the wards of patients with syphilis in 1913 to that of 17 per cent in 1934 is an excellent demonstration of the value of the clinics where treatments are given.

DR. ADOLPH ROSTENBERG, New York. I should like to refer to an instance in which syphilis affected members of three generations. An American woman, about 35 years of age, had two children and was pregnant when at antepartum examination it was found that she showed a positive Wassermann reaction. The new-born infant was examined and also showed a four plus Wassermann reaction. In this woman's 6 year old son paraplegia developed when he was 2 years old and he was treated at one of the leading orthopedic hospitals, but a Wassermann test had not been made. The 4 year old son was apparently healthy. When it was found that the mother was syphilitic, the two older children were examined and they both showed a four plus reaction. The mother did not know very much about her father, but she brought her mother, aged about 56, to the clinic. She was found to have active syphilitic lesions and a four plus Wassermann reaction. I went into the history of the daughter and felt convinced that she had inherited syphilis from her mother and that she had not acquired it. The daughter's husband was examined repeatedly. Three Wassermann tests were negative, and he had no syphilitic stigmas. What should be the treatment of the children in the third generation? All had a four plus Wassermann reaction. The oldest boy has stigmas but the others do not. I am giving them all antisyphilitic treatment. Has Dr. Smith seen cases of syphilis in a third generation and should the treatment be similar to that given in the ordinary congenital cases?

DR. FRANK R. SMITH, JR., Baltimore. I think that the few patients with syphilis of the third generation should be treated as are the congenital syphilitic children. The problem is how much treatment should be given the child with latent syphilis, that is, the child who presents the positive Wassermann reaction and nothing else. I feel that a treatment of at least 100 injections will prevent the development of interstitial keratitis, syphilis of the central nervous system and deafness due to involvement of the auditory nerve. Certainly two years' treatment is warranted in order to prevent the development of some of the serious irremediable stigmas. Acetarsone has not been tried at the clinic, as it has not been felt that the social service department is sufficiently well organized to make absolutely certain that the doses are given. As with the mercury injections, one is never sure that the amount prescribed has been used. It is hoped that acetarsone can be tried in the next year or two when it can be assured that each dose will be administered. To me the study of congenital syphilis has been an excellent hobby. The running of a clinic should be the job of a full-time physician who plans to remain at the clinic. The disease is becoming less interesting academically because fewer lesions have been seen in the last decade than before and one had had to depend more on roentgenograms and serologic reactions for diagnosis. I do believe that congenital syphilis is comparable, with minor variations as to types of lesions, with acquired syphilis and that the same problems that prevail in latent and asymptomatic neurosyphilis in the acquired form carry over also to congenital syphilis. It is useless to treat the patient with late congenital syphilis with an occasional dose of antisyphilitic medication, either give thorough, adequate treatment or none at all.

TREATMENT OF INTRACTABLE NASAL
HEMORRHAGE BY INJECTIONS OF
MOCCASIN SNAKE VENOM

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The use of moccasin venom for the treatment of bleeding was introduced by Peck in 1931. The rationale of this form of treatment was based on the observations of Peck and Sobotka¹ in 1931 that animals could be made resistant to the experimental purpura known as the Schwartzman phenomenon by previous injections of moccasin venom. Since Peck could not demonstrate any circulating antibodies in the blood serum that would explain this antihemorrhagic effect, and since large doses of antivenin did not influence the course of the Schwartzman phenomenon, he deduced that the antihemorrhagic effect was probably produced through a direct action on the vessel walls.

In studying the factor or factors in moccasin and other snake venoms that were responsible for the resistant state in rabbits as far as the Schwartzman phenomenon was concerned, Peck² observed that the antihemorrhagic factor was entirely independent of the neurotoxins and hemorrhagins in the venoms. Even individual moccasin snakes varied in the content of this antihemorrhagic factor. Furthermore, he seems to have shown in his experimental animals that the antihemorrhagic effect was not due to a foreign protein effect in the broad sense of the term, since the addition of antivenin or even normal horse serum neutralized the antihemorrhagic factors in the venom.³

In 1932 Peck⁴ reported the results of his treatment of hemorrhagic diseases with moccasin snake venom (*Ancistrodon piscivorus*). His clinical results seem to substantiate the premise that the moccasin venom exerted its therapeutic effect through an action on the blood vessel walls. In these cases there was cessation of hemorrhage, although the platelet count did not rise and the clotting factors of the blood were not appreciably influenced. Since this favorable report, Peck has extended the use of snake venom therapy to many hemorrhagic conditions, including functional uterine bleeding,⁵ the Henoch-Schönlein syndrome, epistaxis, thrombocytopenic purpura, and other cases of blood dyscrasia in which hemorrhage is a leading symptom.⁶

The method of treatment as described by Peck consists of subcutaneous injections of moccasin snake venom (*Ancistrodon piscivorus*) in 1:3,000 dilution (The venom may now be obtained from the Lederle Laboratories, New York). The initial dose for adults is 0.3 cc, which is rapidly increased to 1 cc, given twice weekly. The injections are continued for at least three months, and with the appearance of a ther-

apeutic effect the interval between injections is gradually increased to from two to four weeks. In about 50 per cent of cases a local sensitivity to the proteins in the snake venom appears after the fourth or fifth injection, manifested by local edema, discoloration and itching. Peck⁷ has devised an effective method of desensitization, which consists in reducing the dose to 0.4 cc of 1:10,000, 0.1 cc of 1:6,000, 0.4 cc of 1:6,000, 0.1 cc of 1:3,000, and finally 0.4 cc of 1:3,000 dilution. This method has succeeded in abolishing the local reaction in nearly all the cases in which sensitivity developed.

I have recently had the opportunity of observing the effects of snake venom injections in two cases of nasal bleeding. The two patients (one of whom is myself) were members of the intern staff of the Mount Sinai Hospital, New York, at the time Dr. Peck introduced this new form of therapy. Both cases will be described in some detail, because this is the first report of the successful use of snake venom in intractable nasal hemorrhage. Furthermore, the two patients were physicians who were able to follow their own clinical course more accurately than the ordinary layman can. In both instances the therapy was under the direct supervision of Dr. Peck.

REPORT OF CASES

CASE 1—The author, aged 27, has had frequent epistaxis since childhood. There is no familial history of bleeding. Until the age of 20 the nasal hemorrhages occurred either spontaneously, during an infection of the upper respiratory tract or after slight trauma, most often from the right nostril and occasionally from the left. During the five years prior to snake venom therapy, there was (almost daily) spontaneous nasal bleeding which was often very profuse.

Examination of the nose in 1929 revealed a septal deviation to the right, an atrophic rhinitis and a small ulceration on the right side of the septum, which was seen to be the site of the bleeding. The ulceration of the mucous membrane was considered the result of local irritation and pressure secondary to the deviation of the septum. Local treatment of the ulcerated area at this time with epinephrine ointment and other astringents was effective only for a few weeks. An attempt was then made to cauterize the bleeding area with trichloroacetic acid, but this therapy was also unsuccessful and the nasal bleeding recurred with increasing frequency and severity.

Reexamination of the nose in 1932, by Dr. Rudolf Kramer, showed the same condition previously noted. A study of the blood at this time revealed that the hemoglobin, red and white cells, platelets, bleeding and clotting times were normal. Cauterization of the bleeding area on the septum with a caustic was attempted several times in November 1932 but again was ineffective. An intranasal operation (submucous resection) was then advised as the only means of controlling the intractable hemorrhage.

Injections of snake venom were instituted in January 1933 by Dr. Peck. The initial dose was 0.3 cc of 1:3,000 dilution, given subcutaneously into the arm. The dosage was rapidly increased to a maximum of 1 cc injected twice weekly, a different site being used at each injection. After the fifth injection local sensitivity to the venom developed, manifested by redness and edema at the site of injection. Desensitization was rapidly carried out by a modification of the routine method described by Peck.⁸ The dosage was reduced to 0.05 cc of 1:3,000 and at each subsequent injection was doubled, until the original dose of 1 cc. was again reached. Desensitization by this method was achieved in about five injections. The therapy was continued for five months. During the first two months, 1 cc was given twice weekly. During the third month only one injection was given weekly, and during the last two months the interval between injections was increased to two weeks. The last injection was given on May 31, 1933.

1 Peck, S. M. and Sobotka, Harry. Production of a Refractory State as Concerns the Schwartzman Phenomenon by the Injection of Venom of Moccasin Snake. *J. Exper. Med.* 54: 407 (Sept.) 1931.

2 Peck, S. M. A Refractory State as Concerns the Schwartzman Phenomenon. Observations on Potency of Individual Venoms. *J. Immunology* 25: 447 (Nov.) 1933.

3 Peck, S. M. A Refractory State as Concerns the Schwartzman Phenomenon. II. Inhibition of Refractivity Producing Factors in Moccasin Venom by Antivenin and Normal Horse Serum. *J. Immunology* 27: 1 (July) 1934.

4 Peck, S. M. Attempts at Treatment of Hemorrhagic Diathesis by Injections of Snake Venom. *Proc. Soc. Exper. Biol. & Med.* 29: 579 (Feb.) 1932.

5 Peck, S. M. and Goldberger, M. A. The Treatment of Uterine Bleeding with Snake Venom. *Am. J. Obst. & Gynec.* 25: 887 1933.

6 Peck, S. M. and Rosenthal, Nathan. Observations on the Effect of Moccasin Snake Venom (*Ancistrodon Piscivorus*) in Hemorrhagic Conditions. *J. A. M. A.* 104: 1066 (March 30) 1935.

7 Peck, S. M. Sensitization and Desensitization in Man with Snake Venom. *Arch. Dermat. & Syph.* 27: 312 (Feb.) 1933.

It required about three weeks of treatment before any definite diminution in bleeding was noted. Then on January 30 the bleeding suddenly ceased for ten days. This was the first time in five years that such a long free interval had occurred. The bleeding subsequently recurred about once in from three to seven days but was comparatively slight. From March to July 1933 a nasal hemorrhage occurred only once every two to three weeks. From July 1933 to the present time (December 1934), a period of eighteen months during which snake venom injections have been entirely discontinued, there has been only an occasional nasal hemorrhage, which occurred usually during an infection of the upper respiratory tract and which ceased readily within a few minutes.

It is interesting to note that a nasal examination in July 1933 (six months after the institution of snake venom therapy) revealed no essential change in the local condition, despite the complete cessation of bleeding. However, in a more recent examination (December 1934) the ulcerated bleeding area on the nasal septum was seen to be entirely healed.

CASE 2—H J, a physician, aged 27, had frequent nosebleeds since the age of 5. During boyhood the bleeding occurred irregularly, the intervals between attacks varying from several weeks to several months. The attacks usually lasted for several hours. After the age of 20 the hemorrhages became more frequent and more severe and were difficult to control. The periods of bleeding now lasted from several hours to several days. The bleeding occurred with equal frequency from the right and left nostrils. There was no familial tendency to bleeding.

The general physical examination in this case was negative at all times. Examination of the nose at the age of 14 revealed numerous small ulcerations of the mucosa on both sides. These areas were seen to be the source of the bleeding. Reexamination of the nose in 1932 revealed a similar condition. The ulcerated areas were considered by the rhinologist to be too numerous to cauterize.

In January 1933, after a free interval of several months, the epistaxis recurred with increased severity. The bleeding was quite profuse and difficult to control with pressure or local applications. Since no other conservative therapy was available, it was decided to study the effect of moccasin venom injections in this case. This therapy was instituted two weeks after the onset of the daily hemorrhages. The patient received a total of four injections of moccasin venom subcutaneously at weekly intervals. The initial dose was 0.5 cc. of 1:3,000 dilution and this was increased to 1 cc. in subsequent injections. The nasal bleeding ceased spontaneously after the first injection. After the fourth injection a local sensitivity developed at the site of injection manifested by moderate itching and edema. As the nasal bleeding had already ceased entirely four weeks prior to this, the patient received no further injections. Despite the early discontinuation of the injections he remained free from all bleeding for a period of eight months. During the past twelve months he has had only three attacks of bleeding which were very slight and ceased within a few minutes.

COMMENT

The two cases reported are of special interest because the patients were physicians who were able to follow their clinical course closely and to evaluate critically results of the therapy. In both cases the injections of snake venom were instituted after other conservative measures had failed. In case 1 a submucous resection was advised as the only effective means for controlling the nasal bleeding, as the presence of the bleeding area in the mucous membrane was considered secondary to the deviation of the nasal septum. In case 2 the sites of bleeding in the mucosa were so small and so numerous that surgical intervention was contraindicated.

There was a marked beneficial effect in both cases following the injections of snake venom. A definite therapeutic effect became manifest in case 1 in three weeks. Thereafter the nasal bleeding rapidly diminished in frequency and severity over a period of three months and then ceased almost entirely. The anti-

hemorrhagic effect of the snake venom has persisted for a period of two years. In case 2 there was almost an immediate cessation of bleeding following the first injection. Despite the discontinuation of therapy following the fourth injection, the antihemorrhagic effect of the venom lasted for eight months. The few slight recurrences may have been due to the wearing off of this effect because of too few injections. Should the hemorrhages continue to recur, a second course of injections will be instituted.

SUMMARY

In two cases of epistaxis of many years' duration occurring in two physicians, in which other conservative measures were ineffective, injections of moccasin snake venom (*Ancistrodon piscivorus*) seem to have been effective in controlling the bleeding. In both cases there has been almost a complete cessation of bleeding during a period of eighteen months, although injections have been discontinued.

SEX DETERMINATION, SEX DIFFERENTIATION AND INTERSEXUALITY

WITH REPORT OF UNUSUAL CASE

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There is no more interesting biologic or clinical problem than that of intersexuality. What, as a matter of fact, does one mean by sex? Biologists answer that there is no such biologic entity and that the concept of sex is confused with that of the sexes. The latter term, again, merely indicates our concept of what constitutes maleness on the one hand and femaleness on the other, and opinions are quite apt to vary on this point. To begin with the absurd, a visitor to earth from some sexless planet might soon deduce that the males of our population are those wearing trousers and the females those wearing skirts. The trousered Marlene Dietrich on the one hand and the kilted Scotch Highlander on the other would later convince him of the fallacy of such a generalization.

Such sex attributes as hair distribution, character of voice and body contour are certainly unreliable criteria, for many females of the "virago" type exhibit extensive hairy overgrowth, possess deep voices and show the large frame, flat breasts and angular body contour commonly associated with the male. Conversely, one sees the effeminate "pansy" type of man, with little or no beard, a rounded figure, large fat breasts, and a soft, high-pitched voice. In short, there are few 100 per centers among human beings from this standpoint, there being a bit of the feminine in all men and a corresponding tinge of the masculine in all women.

The external genitalia are not safe criteria in the distinction between the sexes, for typically female external organs have been found in individuals in whom the gonads, and perhaps the only gonads, were testes. Furthermore, in some intersexual conditions it is difficult to determine whether the external genitalia are primarily of male or of female type.

Even the character of the gonads, on which the decision of actual sex has been commonly based in doubtful cases, is an incorrect criterion, as the biologic

From the Gynecological Department, Johns Hopkins Medical School. Read before the Section on Pathology and Physiology at the Eighty Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

studies of recent years have shown. It is really this consideration, more than any other, that has served as the incentive for the writing of this paper. The usual classification of hermaphrodites and pseudohermaphrodites, that originally suggested by Klebs, is based on the concept of gonadal characters, and, if recent studies of sex determination and sex differentiation are to be accepted, this classification is incorrect and should be abandoned.

It is my purpose in this paper to review, at least sketchily, some of the newer biologic points of view concerning the general question of sex, more particularly as they bear on clinical problems in the same field. Biologic knowledge in this field is still lamentably incomplete, and the study of this question involves methods of approach which those of us who are primarily clinicians do not find it easy to grasp. And yet certain general truths seem to be crystallizing out fairly sharply, and familiarity with these should be of great practical interest and value to the clinician.

Before discussing the factors concerned in sex determination and sex differentiation, I will report briefly an unusual case, because, aside from its rarity, it illustrates the mingling of anatomic, physiologic and psychic attributes so characteristic of intersexuality. It will thus constitute a good starting point for the discussion.

REPORT OF CASE

History—A college student, aged 19, had been looked on in early life as a fairly normal girl. The family history is not significant, and she has two normally developed brothers. Aside from an attack of bronchopneumonia at the age of 2 years and a hernioplasty at the age of 8, she had enjoyed good health. The surgeon who performed the hernioplasty is quite sure that nothing else was done at this time and that no gonadal tissue was removed. The first suspicion of abnormality arose when she failed to menstruate at the usual age, and with each succeeding year she had become more imbued with the idea that she was in some way different from other girls, especially as other heterosexual body attributes made themselves evident. As a child, however, she had played with dolls, and her playmates had been girls. As she developed, all her instincts had been typically feminine. She had well marked libido toward males and had frequently noted turgidity of the clitoris. She had a strongly developed maternal instinct, her mother remarking that the patient had often expressed a longing for the time when she might have a home and children of her own. She had never menstruated. Her mother consulted Dr. Raymond O. Hitchcock of Alfred, N. Y., to whom I am indebted for the opportunity of studying and treating this patient.

Examination—The patient (fig 1) is 6 feet 1 inch (185.5 cm) in height and weighs 147 pounds (66.7 Kg). The body contour is rather angular, the shoulders are rather broad, and the muscles are well developed. There is a moderately heavy growth of hair on the upper lip, the upper part of the abdomen and the extremities, with a masculine type of crines. The breasts are flat and undeveloped. Mentally the patient is quite alert and highly intelligent. The voice is of a deep baritone masculine pitch. The external pelvic measurements are as follows: interspinous 25.5 cm, intercrural 29.5 cm, intertrochanteric 32.5 cm, external conjugate 18.0 cm, and bi-ischial 4.5 cm.

On examination of the external genitalia, the most striking feature was the marked hypertrophy of the clitoris, which measured 6.5 cm in length (fig 2). The glans was large and broad, measuring nearly 2 cm in diameter, and was almost entirely concealed beneath a well developed prepuce. It was obviously not a hypospadiac penis, for the normal looking meatus was situated more than 1 inch posterior to it. The labia majora and minora were both well developed and the former were covered with a heavy growth of hair, which extended outward to the perineum and buttocks. No gonads were palpable in the labia or inguinal canals. There was a very small

vaginal orifice protected by an intact annular hymen. An instrument introduced into the orifice passed in for a distance of 3.5 cm, the vagina ending blindly at this point.

Rectal examination showed an apparently complete absence of the uterus, although two oval bodies, evidently the gonads, could be palpated at the usual site of the ovaries. Roentgen studies of the pituitary were negative, the sella turcica being slightly smaller than normal. Similar studies of the adrenal were likewise negative. The Aschheim-Zondek test was negative, but qualitative study of the urine showed the presence of estrogenic substance. An exploratory laparotomy was considered advisable, to determine the nature of the gonads and the presence or absence of other abnormalities.

Operation—A medium suprapubic incision revealed an unusual picture in the pelvis (fig 3). There was a complete absence of the uterus and tubes. The bladder occupied its usual location anteriorly. Behind it there was a rather sharp ridge of peritoneum (plica vesicalis) stretching from one wall of the pelvis to the other. It was made up only of a double thickness of peritoneum, with nothing in its folds to suggest muellerian structures. Laterally this ridge merged into a somewhat triangular broad ligament-like structure with its base toward the pelvic wall. From its narrow median border there hung on each side a gonad which grossly suggested testis rather than ovary, measuring 3 by 2 by 2 cm. The surface of each gonad was white and perfectly smooth. Curled over each gonad was a structure that grossly suggested an epididymis (fig 4).

There was no sign of uterus, tubes or upper vagina. A careful search for possible other gonads or other abnormalities was made in the pelvis, broad ligaments, inguinal regions, retroperitoneally and along the ovarian vessels, but none were found. The adrenal glands were palpated, with no evidence of enlargement or neoplasm. There was, however, an incomplete descent and rotation of the cecum which, with the appendix, was found in the right upper quadrant.

A small wedge of each gonad was excised for frozen sections. When the gland was cut into, a rather dense albuginea-like capsule was encountered, and beneath this the tissue was found to be rather pulpy, not in any way suggesting the consistency of ovary (fig 5). It was uniformly rusty brown.

Microscopic examination showed what was evidently a cryptorchid testis, with extensive degeneration of the seminiferous tubules but with a rather remarkable increase of the interstitial cells (figs 6 and 7). There was no trace of ovarian elements. Because of the obviously testicular character of the gonad, in spite of the dominantly female characters of the patient, it was considered advisable to remove the testes. This was very simply done by ligation of the pedicles, with peritonealization of the stumps. Finally, the hypertrophied clitoris was excised.

Comment—The diagnosis as to the gonadally male sex of the patient was confirmed by further microscopic studies of many blocks from both gonads, all showing the features mentioned. Incidentally, the degeneration of the seminiferous epithelium is quite characteristic of the cryptorchid testis, and hypertrophy of the interstitial elements has likewise frequently been noted, some looking on this as important evidence that it is these elements which are responsible for the internal secretory function of the gland. The typical nature of the epididymis is well shown in figure 8.

In spite of the microscopic characters of the gonad, there seemed to be no question whatever that the patient should be allowed to continue life as a female. Aside from her dominantly female characters and her female psychology, the external genitalia were of the normal feminine type except for the overgrown clitoris and the rudimentary vagina. Clitoridectomy left only the vaginal defect to be dealt with, though this has been deferred for the present, at least until the patient has had a chance to recover her physical and mental equilibrium. Certainly, however, it would seem absurd in such a case as this to try to adapt the external genitalia for male purposes, even were this technically possible aside from the tremendous psychic upheaval that such an attempt would have inevitably entailed.

Subsequent Course—Much of the postoperative treatment was along psychological lines, as it should always be in such cases, with the object of reassuring the patient and making her feel that she could lead an essentially normal female life. There

seemed no advantage, and possibly much disadvantage, in having her know the masculine character of the gonads that had been removed. In the light of what has recently been learned as to the possibility of even the male gonad producing the female sex hormone, it is not certain that the removal of the testes served any useful physiologic purpose, though the natural reaction would be to look on their presence in such an individual as a "contaminating" male factor.

There were no menopausal symptoms after operation but the patient has been given preparations of the estrogenic



Fig 1—The patient by the side of a nurse of average height. The hypertrichosis is not shown in this picture as the patient had been shaved preparatory to operation.

substance from time to time since then. She reports that there has been only slight development of the breasts, but her general attitude toward life has been immeasurably improved. Life certainly has a different and more open-eyed outlook than it did a year ago. She says in a recent letter: "That her instincts are still highly feminine is indicated by another excerpt viz: 'Every normal desire a woman ever had is doubly strong in me now. Naturally, the fact that I can never have my own children is probably the most poignant and the greatest disappointment of my life.'

COMMENT

In discussing this unusual case, I shall devote little time to reviewing the extensive literature of hermaphroditism and its treatment. Until recently this literature has consisted largely of the reports of cases illustrating various incongruities and interminglings of internal

or external sex characters, often quite bizarre. No less than 1,891 such cases, observed up to 1908, were collected by von Neugebauer¹ in his monumental work "Hermaphroditismus beim Menschen." Many of the reports, too, have dealt with the problem of treatment and many ingenious surgical procedures have been performed in an effort to adapt the sex apparatus as nearly as possible to that of the sex to which the patient has been assigned, sometimes rightly, sometimes wrongly. The tremendous importance to the patient of making the right decision and the fact that this is not always dependent on gonadal characteristics were stressed by many writers even before much was known concerning the biology of the sex problem. The surgical treatment usually indicated involving as it so often does plastic procedures of delicate nature is obviously of the greatest importance to the patient. But the most interesting aspect of the whole problem it seems to me is the biologic one and it is highly desirable that all human cases of intersexuality be evaluated in accordance with the newer knowledge that is being obtained by biologists, geneticists and endocrinologists. At any rate it is with this aspect of the problem that the present paper concerns itself.

No intelligent discussion of the subject is possible unless one is familiar, in at least an elementary way, with the present day views as to the factors concerned in sex determination and sex differentiation. With reference to the first, there is a general acceptance of the view that it is the chromosomal make-up of the germ cells, and particularly that of the male, which determines whether the fertilized egg or zygote is to start out along male or female lines. The grouping of the chromosomes which in the human cell number forty-eight, differs in the two sexes. In both there are twenty-three pairs of autosomes (general body chromosomes), but it is in the remaining pair that the chief sex-determining function lies, and it is in these that the ovum and the spermatozoon differ. In the former this sex pair of chromosomes is made up of two so-called X units, so that the XX combination is the characteristic one for the female. In the spermatozoa, however, this pair of chromosomes consists of an X unit and a black sheep, the so-called Y chromosome.

In each cell, as is well known, fertilization is preceded by a halving of the number of chromosomes through the agency of a reduction mitosis. In this way the fertilized ovum will again contain not $48 + 48$ but $24 + 24$ chromosomes, this being the number characteristic of the human cell. As will be seen from the accompanying diagram (fig 9), each half of the female chromosome group will contain twenty-three autosomes and an X chromosome while on the other hand the two male halves will be dissimilar, one type of spermatozoon containing the X, the other the Y chromosome. The former type, fertilizing either of the female halves, produces a zygote with the double X combination, i.e., a female. The Y-containing spermatozoa, on the other hand, bring about the XY combination, which determines maleness in the zygote.

This, at any rate appears to be the mechanism of sex determination in the human being though vari-

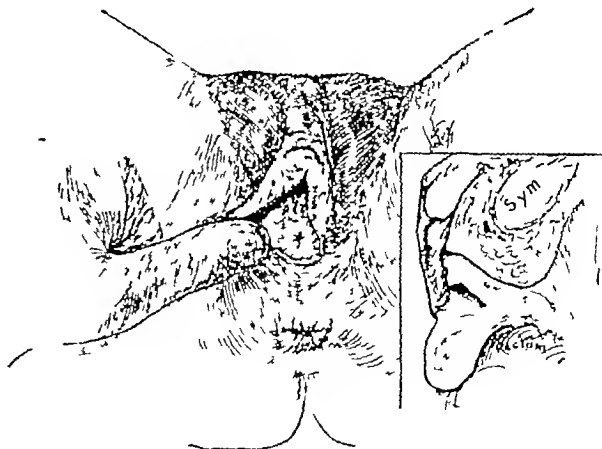


Fig 2—The external genitalia showing especially the large clitoris. The inset shows a longitudinal section of the short rudimentary vagina.

ations of one sort or another characterize the process in other animal forms. For example, the oddness of one pair of chromosomes in the male cell may be indicated by the entire absence of one of this pair instead of by the presence of a Y chromosome. In certain lower forms, again, it is the female instead of the male cell that determines zygotic sex by its possession of an atypical sex-determining chromosome. This elementary description, however, is intended only to emphasize, in the simplest possible fashion that the initial sex-

¹ Von Neugebauer, F. L. *Hermaphroditismus beim Menschen*. Leipzig: Dr. Werner Klinkhardt, 1908.

determining impulse originates at the moment of fertilization and that it emanates from the germ cells themselves. How its sex-determining influence is impressed on the cells of the soma, all of which have the chromosomal make-up characteristic of the sex, is not known, though more and more evidence seems to be accruing that it is brought about by modifications of cell metabolism.

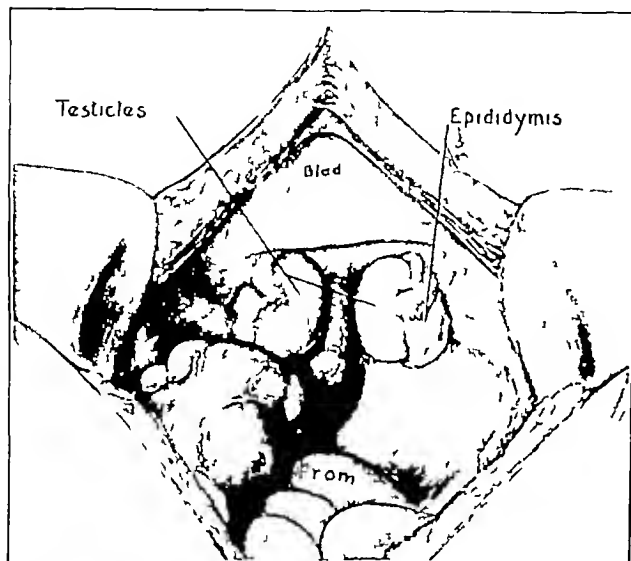


Fig. 3—Appearance of pelvis at operation showing no generative organs except the gonads (testes)

The determination of maleness or femaleness in the zygote, however, does not mean that the sex direction is purely male or purely female, for, as a matter of fact there is inevitably an admixture of the opposite influence. This, it is believed, may be due to the fact that the heterologous sex character present in the germ cell before maturation has already impressed itself on the cytoplasm. To put it another way, every zygote is bisexual, though the characters of one sex dominate and those of the other are submerged. This bisexual potency is carried through life, and its results are illustrated in the occurrence of organs and tissues, which are exactly homologous in the two sexes. For example, every woman has a potential testis in the rete ovarii; every man has a potential uterus (the uterus masculinus in the floor of the prostatic urethra), the woman has a vas deferens (Gartner's duct), and so on. Most biologists accept Goldschmidt's view that there is a quantitative balance or valence between the male and the female sex tendencies and that this balance can be overturned at a certain point (drempunkt), with sex reversal as a result. This is a crude summation of an extremely abstruse subject, but it will serve as a working basis for the purpose of this paper.

It would be confusing to elaborate on the conflicting theories concerning many aspects of the problem. Nor would it be worth while speculating on the mechanism whereby the chromosomal influence operates in unfolding the male or female development of the endocrine glands, especially the gonads. It is the latter which, in the human being, take over the dominant role in the unfolding of the secondary sex characteristics. It seems probable that the genetic balance is the dominating one

in the early phases of development but that later its influence is lessened, while that of the endocrine glands becomes correspondingly more important.

In certain lower forms, such as some of the insects, the initial impulse imparted by the chromosomal pattern is the all important one, determining quite inflexibly the sex characters of the animal. In the higher forms, including the human being, the initial impulse can, as already stated, be modified or even reversed by other factors that may become operative in later development, so that the sex characters may be profoundly modified or even reversed. The most important factor in such modifications of the genotypic impulse, and the one with which a consideration of the human problem especially must concern itself, revolves about the endocrine system. In the case of the insects, as already mentioned, both the sex determination and the differentiation of sex characters are purely chromosomal in origin, for there is no endocrine apparatus in such animal forms. In the higher animals, however, the ductless gland system assumes an auxiliary role of great importance in the molding of sex characters, so that the problem of the relative importance of the initial chromosomal impulse and the endocrine glands has become a very complicated one, and one whose explanation still baffles biologists.

What evidence is there for the role of the endocrines in modifying the original sex direction of zygotic development? Innumerable examples of the importance of the endocrines in this respect have been demonstrated by biologists. Perhaps most impressive of these is to be found in the classic studies of Lillie³ on the so-called freemartin. In cases of twin pregnancy in cattle, in which one fetus is genetically a male and the other a female, it often happens that the female at birth is found to show striking evidence of intersexuality, constituting the form to which the term "freemartin" is now universally applied (the German "zwickel"). The explanation of this phenomenon, as Lillie has shown, lies in the fact that at an early phase of development the two chorionic circulations anasto-



Fig. 4—Gross appearance of testes removed at operation. Note the attached epididymis on each side.

mose quite freely, so that the female is subjected to the influence of the male sex hormone, with the production of intersexual phenomena. These affect both the external and the internal genitalia, while even the female gonad may undergo testis-like transformation. Moreover, the "freemartin" is always sterile.

A similar influence of the gonads on sex characters has been demonstrated by Lipschutz⁴ in the case of mice and rats. Even more striking are the observations

2 Halban J. (a) Arch. f. Gynak. 70: 205-309, 1903. (b) ibid. 130: 415-438, 1927. Wiesner B. P. J. Obst. & Gynaec. Brit. Emp. 4: 18-78 (Feb.) 1935. Plate L. Arch. f. Rassen u. Gesellschaft. Biol. 24: 133-167, 1930.

3 Lillie, F. R. J. Exper. Zool. 23: 371, 1917.
4 Lipschutz A. Virchows Arch. f. path. Anat. 285: 35-44, 1932.
ibid. 276: 665-673, 1930.

made on birds by Crew⁵ and others. In hens, for example there is only one active gonad, the other remaining latent and rudimentary. In the well known case of Crew a hen in which the active left gonad had been destroyed by tuberculosis grew spurs and a comb, being both physically and behavioristically converted into a rooster. Although the animal had been the mother of a number of chicks, it now became the father of others. Autopsy in such cases shows the destruction of the hitherto active female gonad, in

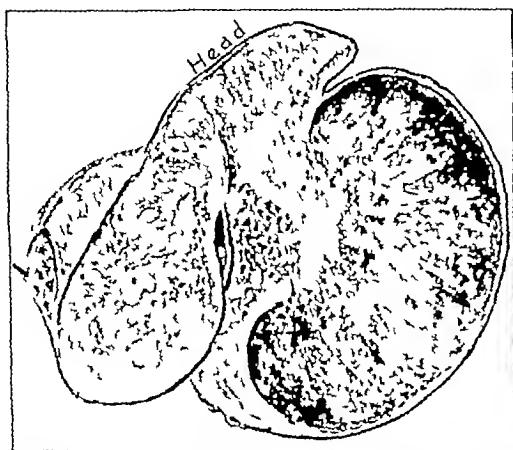


Fig. 5—Cut surface of testis and epididymis. The former was reddish brown and of pulpy consistency.

Crew's case by tuberculosis, while the rudimentary right gonad shows striking development along testicular lines, with even actual spermatogenesis.

Similar instances of the reversibility of sex in fish, amphibian reptiles and other species are known to all biologists, the common frog furnishing a classic example of this reversibility under different environmental conditions, because of the fact that it possesses what is essentially an ovotesticular gonad. This, at any rate, is the interpretation commonly accepted as to the presence of the "Bidder's organ" associated with the gonad proper. For a discussion of this subject, and of other instances of sex reversibility in the lower species, the reader may be referred to the work on "Sex and the Internal Secretions" edited by Allen,⁶ and especially to the chapters of Danforth and Witschi.

Even as regards the human being, however, there is no lack of evidence as to the influence of the endocrines on the secondary sex characters. In this connection impressions are necessarily loose and superficial, because of ignorance of the mechanisms involved. For example, there is a tendency to look on hirsutism as an evidence of masculinity or arrhenoidism, a term suggested many years ago by Brant. At times this is unquestionably true as when it is associated with other arrhenoid characteristics such as flatness of the breasts, a muscular angular figure or a deep voice. On the other hand every clinician is familiar with the fact that extensive hypertrichosis, involving the face, extremities, thorax and abdomen, may be seen in women who otherwise seem normally feminine who menstruate normally, and who often bear many children.

Various endocrinopathies have been held responsible for this abnormality, especially the gonads, the adrenal cortex, the pituitary and the pineal body. When our

knowledge is increased it will probably be shown that the interrelationships of the glands are responsible for this apparently multiple etiology and that the seat of the disturbance can be narrowed down much more sharply. The evidence to date would seem to indicate that the adrenal cortex is to be suspected most strongly in this connection. That it actually is at fault in some cases is shown by the well known association of hirsutism with cortical tumors and other lesions. Unfortunately, even profound phenomena may be due to lesions, usually adenomas, so tiny as to be beyond recognition by any clinical or laboratory method now available. Cushing has shown the frequent coexistence of small anterior pituitary and cortical adenomas with the syndrome that he ascribes to basophilic pituitary adenoma. Hypertrichosis is not always present in the Cushing syndrome, and I know of no evidence to indicate that its presence is linked up with the adrenal adenomas that have been found in a number of these cases. A lot more will have to be learned about hypophyseocortical relationships before one can even speculate intelligently, but the recent report of Walters⁷ indicates that at least some cases of extensive hypertrichosis may be treated surgically, by removal of cortical lesions.

Just why hirsutism is at times so extensive in women with no definitely intersexual manifestations, and why, on the other hand, it may be slight or absent in some cases of marked intersexuality, cannot be explained, though this fact makes one question the significance of hairy overgrowth per se as a manifestation of abnormality in sex differentiation. With reference to such changes as marked regression of the breasts the problem seems different, for here one is dealing with a manifestation of defeminization, while with such manifestations as overgrowth of the clitoris one may assume a positive masculinization. If the views held by many as to the antagonism of the sex hormones are correct, this may be a distinction without much difference, but the evidence on this point is far from complete.

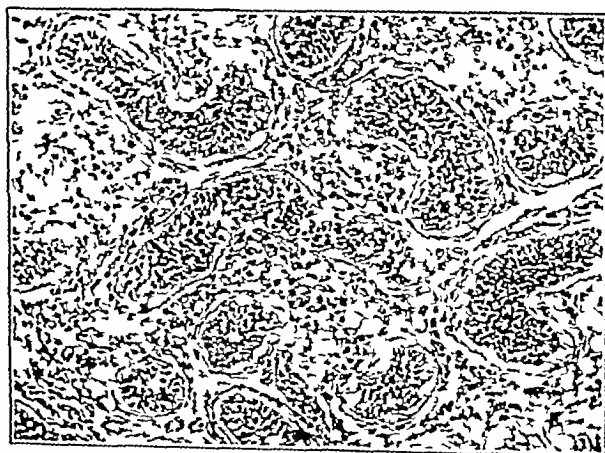


Fig. 6—Microscopic appearance of removed gonads showing in this area fairly well preserved seminiferous tubules. Note the marked increase of interstitial cell elements.

When one has to deal with actual anatomic manifestations of intersexuality in the external and internal organs of generation, there would seem to be little question that the underlying disturbance involves the mechanism that normally governs the differentiation of the two sexes. All grades of intersex have been described and usually with a sharpness of classification.

⁵ Crew, F. A. E., Proc. Roy. Soc. London B 95: 256, 1923.
⁶ Allen, Edgar S., Sex and Internal Secretions, Baltimore: Williams & Wilkins Company, 1932.

⁷ Walters, Waltman, Ann. Surg. 100: 670-688 (Oct.) 1934.

that the slowly growing knowledge of the subject does not appear to justify. The division into true hermaphroditism and pseudohermaphroditism may be convenient, as may be the subdivision of pseudohermaphrodites into groups according to the juxtaposed characters of the gonads and the internal and external genitalia according to the plan originally suggested by Klebs and still widely employed. Biologists, however, are beginning to look on such classifications as artificial and obsolete, urging that they represent merely grades of intersexuality produced by quantitative sex imbalance.

This is well illustrated in the case of true hermaphroditism. In its strictest sense this term would indicate the production in the same individual of both female and male germ cells (ova and spermatozoa), and in this sense no human case has ever been described. The more common plan has been to designate as true hermaphrodites individuals possessing both male and female gonadal tissue, but a moment's reflection will convince one of the incorrectness and uselessness of such a criterion. In the first place almost all the reported cases of this group have been characterized by the presence of ovarian and testicular tissues in the same gonad, the so-called ovariotestis. In some of these it is probable, and in some of them quite certain, that the testicular portion is to be interpreted as a pathologic new growth developing in the rete region of the ovary of an individual who is genetically a female. This is undoubtedly true in the case of Polano⁸ originally reported as a true hermaphrodite and certainly belonging to this group if the possession of gonadal tissue of both sexes is accepted as a criterion. In this case, however, as Meyer has shown the testicular elements are neoplastic, constituting the so-called testicular adenoma originally described by Pick. In Blair Bell's⁹ case, also described as an unquestionable instance of true hermaphroditism, the gonad can now be readily interpreted as an ovary in which there has

As a matter of fact, there have been a considerable number of cases reported in which the only gonads possessed by the patient have been testes and in which nevertheless, the external sex characters of the patients have been typically feminine. My own case belongs to this group, as does a second case reported by Blair Bell⁹ as having been observed by Russell Andrews. In this group are also to be placed the cases reported by



Fig 8—Microscopic appearance of epididymis

Prince,¹⁰ Jordan,¹¹ Halban,^{2b} Cadiz and Lipschütz,¹² Wagner,¹³ and Guggisberg.¹⁴

Emphasis may again be placed on the sex-modifying capacities shown by certain tumors of the ovary to which attention has been called in recent years, chiefly through the studies of Robert Meyer.¹⁵ One of these the granulosa cell carcinoma, secretes the female sex hormone so that if it occurs in children it brings about precocious puberty and menstruation while in old women it may cause an apparent reestablishment of menstruation, perhaps many years after the menopause. With this feminizing tumor the present paper is not concerned.

By contrast, the arrhenoblastoma produces the testis hormone, so that especially in its more undifferentiated forms it may bring about striking masculinization of sex characters, such as hirsutism, deepening of the voice, atrophy of the breasts, amenorrhea and enlargement of the clitoris to even penis-like proportions. As the removal of the tumor is followed by a complete or partial disappearance of these phenomena, these tumors offer a striking illustration of the ability of the hormones to influence the secondary sex characters. As I have discussed this group of tumors elsewhere,¹⁶ I shall not elaborate further in this paper. It is not amiss however to point out the close embryologic relationship between the adrenal cortex and the ovarian medulla so that it is not surprising that there is a close similarity in the masculinization syndromes produced by tumors of these two structures.

No consideration of this subject would be complete if it did not include at least a brief reference to the

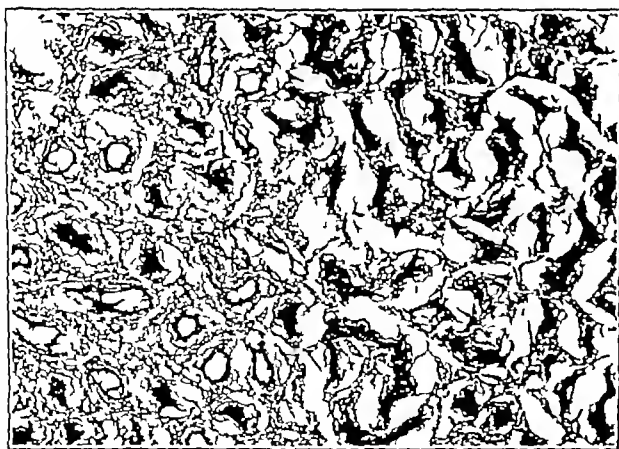


Fig 7—Another area showing degenerated tubules

developed an arrhenoblastoma, the cells of which possess the capacity of secreting the testis hormone and thereby bringing about a greater or less degree of masculinization. An analysis of these and other cases tends to weaken one's faith in the value of the aforementioned criterion of true hermaphroditism and to convince one that the underlying factor lies deeper than this.

- 10 Prince cited by Jordan¹¹
- 11 Jordan H. E. *Am J Anat* 31: 27-53 (Sept.) 1922
- 12 Cadiz R and Lipschütz A. *Arch f Gynak* 153: 593-611 1933
- 13 Wagner G A. *Zentralbl f Gynak* 51: 1304 (May 21) 1927
- 14 Guggisberg H. *Schweiz med Wchnschr* 64: 481 (May 26) 1934
- 15 Meyer Robert. *Am J Obst & Gynec* 22: 697 (Nov.) 1931 (This paper includes references to all the author's previous publications on the subject.)
- 16 Novak Emil and Long J H. *Ovarian Tumors Associated with Secondary Sex Changes* J A M A 101: 1057-1063 (Sept 30) 1933

8 Polano O. *Ztschr f Geburtsh u Gynak* 82: 114 (Dec.) 1921
9 Bell W B. *The Sex Complex*, London: Baillière Tindall & Cox 1916

recent epoch-making studies on the chemistry of the male and female sex hormones. The molecular structures of both ovarian hormones (estrin and progesterin) and also of the male hormone have apparently been established, the remarkable feature being that all three of these substances are chemically so closely related that they may well be looked on as derivatives of one another. All three of them exhibit the same phenanthrene nucleus, and this same three-membered hexagonal ring characterizes certain well known chemicals of the sterol group, the bile acids, certain vitamin principles, and the carcinogenic substances that have long been known to be capable of producing skin cancer in experimental animals. With the latter aspect of the question, perhaps the most suggestive of all this paper is not concerned, though the interested reader will find it authoritatively discussed in the recent paper of Loeb.¹⁷

The intimate chemical kinship of all the sex hormones, however, may prove to be very pertinent to the question of sex differentiation. It has long been known that the urine of some men contains the female sex hormone, while on the other hand the finding of the male hormone in the urine of women during the reproductive phase of life seems quite constant, according to the careful studies of Siebke¹⁸ and others. There are quite a number of experimental studies, too, to indicate an apparent facultativeness in sex hormone effects. Laqueur and Fellner, for instance, have produced definite estrous effects, as determined by the vaginal smear method, by means of testicular extracts, while masculinization effects have been produced by means of corpus luteum extract (Steinach and Kun). Cadiz and Lipschütz¹² noted typical and pronounced vasomotor menopausal symptoms after removal of the testes from an intersexual patient who, like my own, exhibited dominantly female body characteristics though no ovarian tissue was present. I have myself seen typical vasomotor flushes and sweats in a male castrate. And the examples might be multiplied.

Evidence of this kind rather than indicating mild degrees of intersexuality, supports the growing view that the cells of either sex type of gonad are capable under different conditions of producing either male or female sex hormone. This question is closely related to the view championed by Witschi⁹ and accepted by many biologists that the male or female character of the germ cell is determined by whether it develops in the medulla or the cortex of the gonad. To put it another way, the cortex is a determiner of femaleness, the medulla of maleness. That this is true in the case of the frog has been established by abundant experimental evidence. If there is such a facultativeness as regards the germ cells, it would not be surprising if there should also be an environmental influence on the character of the sex hormones. It is easy to see too why the present hormone studies on the blood and urine of intersexual patients cannot be expected to yield decisive information as to the real or genetic sex of these individuals.

After all every intersex is primarily male or female and in the case of the human being at least practically always female. The so-called true hermaphrodite, commonly looked on as the acme of intersexuality because of the possession of both male and female gonadal tissue, represents as a matter of fact a lesser degree of intersexuality than some individuals with only one type of gonadal tissue who are by common usage spoken

of as mere 'pseudohermaphrodites'. The justification for this statement as regards certain lower animals is quite clear from the evidence already in hand, and there can be little doubt that, though obviously difficult of proof, the same thing applies to human intersexuals also.

If this assumption is correct, such patients as the one I have described and others of similar nature represent genetic females in which the sex reversal took place at very early phases of development, with complete replacement of ovarian by testicular elements. Depending on the time and intensity of the sex switch, all sorts of intergrades may develop, including perhaps one in which both ovarian and testicular tissue are still present. The secondary sex characters constitute a mosaic that reflects these changes occurring in the endocrine glands, though too little is known of pathways and time relationships to permit of any accurate interpretation of the disturbances underlying these abnormalities.

SUMMARY

The prime purpose in this paper is to apply to the study of human intersexuality the newer biologic knowledge concerning sex determination and sex differentiation. Some of these new principles must materially alter the interpretation of many cases of intersexuality. To take the most extreme example, true hermaphroditism in which both ovarian and testicular

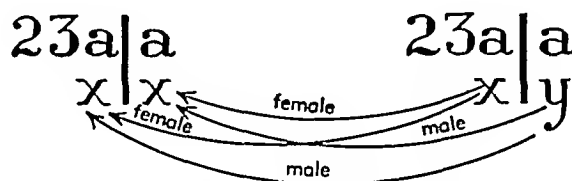


Fig. 9—Chromosomal pattern of male and female germ cells and manner in which sex is determined according to type of spermatozoon that fertilizes ovum (see text).

tissue is present in the same patient, has been commonly thought to represent the maximum grade of intersexuality. As a matter of fact, a certain group of these patients are females in whom there has developed in the region of the rete ovarii a testicular type of tumor, of either the differentiated or the undifferentiated type (arrhenoblastoma). Other cases of "true" hermaphroditism are to be interpreted as representing a less complete sex reversal than is seen in such instances as the one I have reported in this paper, in which an individual who is genotypically a female exhibits only testicular gonadal tissue so that she would technically be classified as a masculine pseudohermaphrodite. These cases are perhaps explainable on the same basis as the cases of sex reversal seen in certain lower animals, though the proof of this is not yet available.

The two great forces in determining the sex development of the individual are, first, the initial germinal impulse dependent on the chromosomal pattern of the zygote and second the endocrine glands. The former factor is presumably dependent on a quantitative balance between the male and the female elements of an always bisexual cell and this balance is capable of partial or complete reversal by abnormalities in the endocrine system with the production of sex intergrades of one sort or another. The chromosomal impulse is probably most important in the early phases of sex differentiation, the endocrine system in the later stages. The

¹⁷ Loeb, Leo. *Estrogenic Hormones and Carcinogenesis*. I. A. M. A. 104: 159, 1601 (May 4) 1935.
¹⁸ Siebke, H. *Arch. f. Gynäk.* 150: 317-321, 1933.

character and degree of intersexual phenomena depend largely on the phase of development at which the sex switch occurs

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ABSTRACT OF DISCUSSION

DR ELIAS P LYON Minneapolis Regarding the psychologic differences it occurred to me to ask whether the author thinks that these might not be environmental. This person was raised as a girl. A hotmist has told me that somebody has recently discovered some form of fungus in which there appear to be four sexes. Two sexes are accepted as something that is natural and inevitable. He says that the phenomena of human intersexuality can be explained only by thinking of four sexes.

DR P M MENLOWE McKeesport Pa There is a patient in a hospital in McKeesport in whom sex peculiarities were noted when he was admitted following a railroad accident. His latest vocation was apparently that of a freak in a circus side-show. He was born twenty nine years ago in Russia. At the age of 8 years he was brought to this country and was dressed as a girl until the age of 19 sleeping with his stepsisters. He then became a nurse at one of the local eastern hospitals. The following year he became ill and a gynecologist who examined him told him that he was a male and that it was probably best that he dress as one. He subsequently accepted odd jobs all over the country leaving each place as soon as the people he worked for noticed that he had peculiarities. Recently he had been receiving testicular treatments. His body lends itself to either male or female attire. In wearing men's clothing he says that he feels fairly comfortable. There is no feeling of awkwardness about him. He says that as a child he preferred to play with boys rather than girls toys. He says he has been able to participate in intercourse giving pleasure both to himself and to his partner. He has a delicate skin and face and thick long brown hair but no widening of the pelvis. The distribution of hair over the pubis is definitely feminine. The clitoris as he calls it looks like a small atrophied penis. There is no urethral opening in the penis. Below the penis two testicles show definitely. The cleft is very small. In the space below the penis but independent of it are three openings and he does not know from which one urine is voided. Below this is another large opening which admits the tip of the small finger. He does not menstruate and he does not care for feminine attire.

DR JACOB AUSLANDER New York Were any of the quantitative tests used such as those outlined by Dr Robert T. Frank e. g., the quantitative assay of estrogenic substance in the blood? Dr Frank has repeatedly described the technique of this method by which it can be definitely established whether ovulation takes place in a particular person and whether or not any functioning ovarian tissue is present. I believe that this method is invaluable in determining the sex in doubtful cases.

DR EMIL NOVAK Baltimore I think it unlikely that the female psychology of this patient was due to environmental influences. In many cases of intersexuality the psychology develops along sex lines directly opposed to what might be expected from environmental conditions. Furthermore in some fairly similar cases the removal of the testes has produced typical vasomotor menopausal symptoms indicating the presence of an endocrine rather than an environmental influence. Unfortunately it is not possible as yet to determine the genetic sex of an intersexual person by a study of the chromosomes in the body cells. Nor does the demonstration of the sex hormones help in this respect, as Dr Auslander suggests. Aside from the possible facultativeness of the gonads and hormones it is now well known that the male hormone is commonly found in the urine of women and the female hormone in the urine of some men. The case described by Dr Menlowe seems to belong to the category of masculine pseudohermaphroditism, of which there are many gradations. Little enough is known about the whole problem and further knowledge can be obtained only by studying human cases from the biologic rather than the merely anatomic standpoint and by utilizing such knowledge as scientists are gradually accumulating.

THE BALANITIDES

JOHN F. MADDEN, M.D.

ST. PAUL

The balanitides are inflammations of the glans penis that are usually associated with inflammations of the prepuce. A classification of the balanitides should be made on a bacteriologic, anatomic, histopathologic and clinical basis.

CLASSIFICATION

- 1 Balanitis simplex
- 2 Balanitis vulgaris
- 3 Balanitis due to specific local infections
- 4 Balanitis as a part of general exanthematic diseases
- 5 Balanitis accompanying metabolic disorders
- 6 Balanitis accompanying new growths
- 7 Balanitis following local tissue changes

BALANITIS SIMPLEX

Balanitis often occurs as a complication in various forms of congenital and acquired phimosis. Infants and small boys may have an adherence of the prepuce to the glans, which produces a pseudophimosis. When this adhesion is loosened manually, a slight secretion is formed, which has its basis partially in the liquefaction of the connecting cell layer. This secretion can also be produced by the mechanical irritation caused by the bridge-like connections between the two sheaths of the prepuce or by the action as foreign bodies of the epithelial cords remaining at the junction of the prepuce and glans. The constant irritation of the secretion plus mechanical factors lead to a true phimosis and balanitis.

Atrophic and hypertrophic congenital phimosis of the adult promote the occurrence of balanitis. Many people with atrophic congenital phimosis never have balanitis, especially when the urethral orifice lies opposite the opening in the prepuce and urine does not accumulate in the foreskin sac. However, distress is experienced during coitus and marginal tears may result which increase the chances of getting syphilitic and other infections. The hypertrophic form causes frequent retention of urine within the prepuce. This results in chronic irritation, in thickening of the epithelium and often in leukoplakia. Smegma accumulates in greater amounts, bacteria grow more rapidly, and the erosions which often form may heal with such extensive adhesions that the entire prepuce may become adherent to the glans.

Balanitis can occur as a complication of acquired phimosis. In these cases the phimosis is primary, and the balanitis appears usually after repeated long standing or very severe phimosis. External chemical agents, pediculi, urticaria, Quincke's edema, erysipelas, elephantiasis of the genitalia as the result of inflammatory changes in the inguinal lymph glands, cancer, freezing, tuberculosis, actinomycosis and cardiorenal disease can all cause edema of the prepuce and phimosis that result in balanitis. Hoffman² described a case of xanthomatosis in which the presence of xanthomatous deposits in the prepuce caused edema,

Owing to lack of space this article is abbreviated in THIS JOURNAL. The complete article appears in the author's reprints from the Division of Dermatology and Syphilology, University of Minnesota Medical School, Dr. H. E. Michelson, director. Read before the Section on Dermatology and Syphilology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.
² Hoffman, G. Balanitis. Handb. d. Haut u. Geschlechtskr. 21: 324, 1927.

phimosis and finally balanitis. In all of these the phimosis is acquired primarily and the balanitis secondarily.

BALANITIS VULGARIS

There is a large group of the balanitides which is clinically characteristic but the bacteriology of which is not completely understood. This type may be called balanitis vulgaris. The causes are trauma, chemicals or bacteria, and all may produce a diffuse inflammation of the preputium.

Traumatic balanitis is the result of mechanical irritation such as is commonly produced by tears and rarely by preputial stones. The bacteria are usually the same as in the normal preputium.

Chemical balanitis sometimes results from the use of certain chemicals in antiseptic washes, compresses or urethral injections. Corrosive mercuric chloride in strong solutions, phenol and compound solution of cresol produce a diffuse, painful, weeping or blistering balanitis. Iodoform can cause a severe eczematous eruption. Cordier¹ found that iodine preparations given internally with simultaneous application of mild mercurous chloride into the preputium could produce a very painful diffuse balanitis, which he thought was brought about by yellow mercurous iodide arising from the combination of mercury with iodine. Mercury used locally in any form may produce a severe reaction. Certain drugs such as cantharides, sodium nitrate and sodium iodide taken internally occasionally cause balanitis. Schreus² demonstrated that intramuscular injections of bismuth compounds sometimes produce an inflammation of the glans similar to erosive balanitis. He showed that the dark color of the smegma in these cases was due to the deposit and excretion of bismuth sulphide. This finding in the glans corresponds to bismuth deposits with occasional gingivitis in the mouth. Certain plants and powders from plants, such as the so-called itch powder made from a plant grown in the West Indies, have been known to cause inflammation of the preputium. The frequently seen postcoital balanitis has been regarded by many as only an irritation caused by vaginal secretion. Von Bokay³ observed and described a form of balanitis seen in boys from 1 to 13 years of age, which appears first around the urethral orifice as a lentil sized inflammation with a lardaceous surface and infiltrated base. The lesion spreads and becomes ulcerous and the urethral meatus is held together by crusts. The urine is clear and normal and there is no inguinal adenitis. The balanitis is caused by chemical irritation produced by ammoniacal fermentation of the urine. This eruption is seen in children who lie for long periods in wet diapers, in older children who are troubled with enuresis, or in adults who are incontinent for a long period.

Under bacterial causes of vulgar balanitis are many of those forms of balanitis which recur frequently without apparent cause. They may be explained by an irritation of the preputium caused by an increased secretion of pathologically changed smegma. However, Tommasoli⁴ and others consider this type analogous to seborrheic eruption in other locations. Finger⁵

believed that under normal conditions certain people produced a thin smegma which acted as an irritant alone. Others thought that bacterial investigations showed that certain bacteria act as decomposers of smegma and that this action may cause balanitis. These patients produce a thin smegma associated with an itchy balanitis, which recurs from time to time. The eruption promptly disappears under proper hygienic measures and any mild treatment. A diffuse catarrhal balanitis is described in which the entire foreskin sac is involved, with or without erosions, a thin yellowish gray pus develops, and pseudodiphtheria bacilli are found in enormous numbers. This may be associated with balanitis caused by *Oidium albicans*. Benedek⁶ called the eruption balanoposthitis *oidiomycotica* and described a case. Scherber noted a form of balanitis occurring after coitus with menstruating women and recorded four cases. The patients were married, and they had frequent recurrences of balanitis after intercourse with the menstruating wife. The eruption appeared as a diffuse red inflammation with simultaneous formation of numerous pustules the size of a millet seed or larger. He thought that the irritation was from the menstrual secretion and that the pustule formation was secondary. The so-called pustulo-ulcerous balanitis of du Castel is said to begin in the sulcus coronarius following sexual intercourse. It appears in the form of yellow pustules as large as a millet seed, from which polycyclic, diphtheritic coated ulcers develop. The pustules burst and heal in a few days or the healing is slower when ulcers are formed. Pautrier and Rietman⁷ and Levy-Bing and Gerbay¹⁰ are among the few who have reported similar cases.

BALANITIS DUE TO SPECIFIC LOCAL INFECTIONS

Erosive balanitis is an acute inflammatory disease of the prepuce and glans penis caused by Vincent's spirochetes and fusiform bacilli in symbiotic relationship. The infection was first described by Bataille and Berdal¹¹ in 1891 and later by Pusey,¹² Corbus¹³ and others. It is far more common in males, but a similar eruption has been noted by several observers in females. The disease practically never occurs under aerobic conditions. The organisms are strictly anaerobic and their growth is promoted by phimosis, a long tight foreskin, heat, uncleanness, moisture and lack of air. The condition is not seen in paraphimosis or in patients who have been circumcised. Jefferson,¹⁴ Corbus and others thought that lubricating the labia or glans penis with saliva and the practice of coitus oris were contributing factors in producing the disease. It has been shown that fusiform bacilli and Vincent's spirochetes are saprophytic inhabitants of some preputial sacs.

I agree with Brams and Pilot¹⁵ that erosive balanitis need not be venereal in origin but that under suitable local conditions, often associated with lowered general

¹ Cordier. Sur une nouvelle variété de balanite. *Mém. et compt. rend. Soc. d. sc. méd. de Lyon* 20: 247-252, 1890.

² Schreus. II. T. Ueber Wismuthbehandlung der Syphilis. *Deutsche med. Wchnschr.* 49: 473-476 (April 13), 1923.

³ von Bokay. J. Ulcus orificis urethrae. *Jahrb. f. Kinderh.* 80: 303-306 (Oct.) 1922.

⁴ Tommasoli. Pierleone. Studi sulla Balanoposthite ricorrente con un contributo alla flora dermatologica. *Gior. ital. d. mal. ven.* Milano 1888, abstr. *Centralbl. f. Bakt.* 3: 254-255, 1889.

⁵ Finger. E. Die Syphilis und die venerischen Krankheiten. Vienna 1896.

⁶ Benedek. T. Ueber isolierte Vulvovaginitis *oidiomycotica* und Balano-posthitis *oidiomycotica* als konjugale Infektion bei gesunden Ehepaar. *Dermat. Wchnschr.* 60: 435-442 (March 21), 1925.

⁷ Pautrier and Rietman. La balanite pustulo-ulcéreuse de du Castel. *Ann. d. mal. ven.* 19: 481-487 (July), 1924.

¹⁰ Levy-Bing and Gerbay. Balanite ulcéreuse. *Ann. d. mal. ven.* 19: 807-812 (Nov.) 1924.

¹¹ Bataille and Berdal. La Balano-posthite érosive circinée. *Méd. moderne* 2: 340-380, 400-413, 1891.

¹² Pusey. W. A. and others. The Venereal Diseases. *Balanitis*. *Gan. grena* J. A. M. A. 60: 1080-1081 (Sept. 29), 1917.

¹³ Corbus. B. C. and Harris. F. G. Erosive and Gangrenous Balanitis the Fourth Venereal Disease. *J. A. M. A.* 52: 1474-1477 (May 4), 1909.

¹⁴ Jefferson. C. W. Specific Ulcerative and Gangrenous Balano-posthitis the So-Called Fourth Venereal Disease. *Urol. & Cutan. Rev.* 35: 334-340, 1921.

¹⁵ Brams. Julius and Pilot. Isadore. A Study of Erosive and Gangrenous Balanitis. *Arch. Dermat. & Syph.* 7: 429-438 (April), 1923.

resistance or poor personal hygiene, erosive balanitis may result from the organisms normally present as saprophytes. The patient shown in figure 1 had not had coitus for several weeks before the balanitis developed. Erosive balanitis is seldom accompanied by subjective symptoms. The epithelium becomes necrotic and the lesions soon appear as gray or white necrotic erosions on the foreskin and glans. The central part of the necrotic slough is cast off leaving a red, superficial erosion with a necrotic border. There is an associated swelling, phimosis and edema of the prepuce and glans. The erosions enlarge peripherally soon become confluent and form circinate lesions with polycyclic borders. These changes are accompanied by the formation of very foul smelling pus, which is thin yellow and abundant and increases as the eruption develops. Erosive balanitis is auto-inoculable and inoculable from patient to patient. For this reason many authors have included it among the venereal diseases.

Now and then erosive balanitis or condylomata acuminata may prepare the ground for each other and they are not infrequently seen together.

short time. The discharge is more serosanguineous than in erosive balanitis. The eruption is always very painful and is generally associated with complete phimosis.

Ulcerating, gangrenous balanitis with phagedena represents a more virulent process than gangrenous balanitis. The two types are clinically similar and histologically the same, varying only in the intensity of the inflammation present. In gangrenous balanitis with phagedena the resistance of the patient seems to play the major role in determining whether the infection will stop. Matzenauer¹⁶ described the first case in 1901 and other cases were reported before 1928, when Labadie¹⁷ published in account of several cases seen at the University of Michigan. The ulcers are similar to those seen in gangrenous balanitis when they first appear, but they spread rapidly in circumference and depth. The lesions are sharply margined, very painful and covered with a firm, necrotic, brown to black, adherent gangrenous membrane. A severe phimosis, a foul, abundant secretion, and edema of the entire penis almost always accompany the ulceration. The eruption spreads by direct extension over the genitalia and may



Fig. 1—Erosive balanitis



Fig. 2—Diffuse balanitis arising from a macular roseola in secondary syphilis



Fig. 3—Erythroplasia of Queyrat before malignant changes have appeared

Gangrenous balanitis and erosive balanitis are caused by the same organisms. However, gangrenous balanitis presents a fulminating, rapidly progressive infection with severe subjective symptoms. It occasionally results from an untreated, improperly treated or undiagnosed case of erosive balanitis, but the erosive symptoms may be entirely absent because they are passed through very rapidly. Gangrenous balanitis begins on the inner surface of the foreskin, usually near the sulcus coronarius, as small, round erosions covered with a grayish white diphtheritic membrane. The erosions enlarge rapidly, coalesce, break down and form ulcers. The ulcers extend in depth and circumference and are covered by a black, gangrenous membrane. The border is sharply margined and angry red, while the base is uneven and granular. There is an inflammatory halo of varying degrees of intensity around the ulcers. The process is much more intense and rapid than in erosive balanitis. The ulcers can form and perforate the foreskin in a few hours. Here they show through the prepuce first as dark red patches, later the color changes to black, and then the entire preputial area becomes necrotic and sloughs, and the glans shows through the opening. If the ulcers are on the glans, severe hemorrhages may occur and the entire glans may be destroyed within a

involve the abdominal wall, thighs and surrounding skin. The prognosis is poor, and many cases terminate in death. The condition can progress, no matter what type of early treatment is used.

Ulcerating, gangrenous balanitis with phagedena, gangrenous balanitis and erosive balanitis are all different clinical varieties of the same etiologic, pathologic and histologic process, which differs only in the severity of the infection.

Balanitis in gonorrhea occurs in the acute cases commonly but is rarely seen in chronic gonorrhea. There are cases of balanitis caused by direct deposits of gonococci in the crypts, sebaceous glands, and para-urethral passages. The balanitis develops in part through the effect on the epithelium of gonococci, which have come through the blood or lymph channels into the subepithelial connective tissue of the glans and foreskin. Baermann¹⁸ described balanitis circinata gonorrhoeica as numerous, round, red lesions which had a wet sheen, do not excrete and are surrounded by a

16 Matzenauer R. Noma und nosocomialgangran. Arch f Dermat u Syph 60:373 398 1902 55 67 1901

17 Labadie J H. Phagedenic Destruction of the Male Genitalia. J A M A 91:1447 1452 (Nov 10) 1928

18 Baermann G. Ueber hyperkeratotische Exantheme bei schweren gonorrhoeischen Infektionen. Arch f Dermat u Syph 69 363 378 1904

narrow corona of delicate whitish epidermal scales. Many efflorescences are completely covered by a dry, crumblike grayish yellow coating or horny shield. These lesions can coalesce to make wreathlike figures. Histologically the tissues show acute inflammation, the rete layers are chiefly affected and a temporary vesicular stage may precede the crusts and scales. Gonorrhea can also cause the following types of balanitis: balanitis circinata hypertrophicus found in a case of blennorrhagic keratosis by Haslund,¹⁹ gonorrheal follicular abscesses on the inner sheath of the prepuce,²⁰ and gonorrheal balanitis with complete phimosis but without urethritis.²¹

Balanitis caused by the diphtheria bacillus is a very rare condition although a case has been recently reported by Borovskiy.²² Infection of the female genitalia is seen more frequently. The disease can be transferred by hand from a pharyngeal diphtheria or it may arise by primary inoculation. A typical, extensive, grayish yellow, diphtheritic membrane is formed early. Crusts are formed which become loosened, drop off, and leave ulcers with irregular borders and bases covered with grayish white diphtheritic pus. Culture of the pus on Loeffler's serum shows true diphtheria bacilli. While diphtheria bacilli and Vincent's organisms have been found in the same mouth, no record was discovered of any other organism being found in a diphtheritic balanitis.

BALANITIS AS A PART OF EXANTHEMATIC DISEASES

Syphilis is the disease that most frequently produces this type of balanitis. The primary lesion of syphilis may take the form of a specific balanitis. So-called syphilis d'emblee in which a chancre is not observed and the first sign is a secondary eruption might be explained in some cases by the primary lesion appearing as a specific balanitis. Follmann²³ and others have recorded such cases. The primary manifestation of syphilis can appear as small, pinhead sized erosions covering the entire preputial sac. There is no induration or urethral discharge. The individual lesions are superficial, red and painless. Dark-field examination is always positive for *Spirochaeta pallida*. The erosions exude serum but pus is found only when secondary infection exists. The balanitis is accompanied by a typical, hard shotty discrete inguinal lymphadenitis. Microscopic examination of biopsy specimens shows the usual condition found in a chancre. Also the primary lesion may appear as a combustiform chancre in which the erosion covers the entire glans and prepuce. This lesion is accompanied by slight infiltration and *Spirochaeta pallida* is abundant.

Finger Kreibich²⁴ and others have described secondary syphilis manifesting itself as a balanitis. The lesions arise from a macular secondary roseola and appear as sharply circumscribed painless erosions which coalesce, exude serum and spread out over the glans and prepuce. The lesions may involute, become papular, or be complicated by erosive balanitis. When

phimosis exists, there usually is a diffuse balanitis such as seen in figure 2.

Many other exanthematic diseases such as pemphigus, psoriasis, erythema multiforme, lichen planus and scabies may show balanitis at some point in their course. Medicinal agents taken internally that produce exanthems rarely produce balanitis. Some of the rare examples that cause inflammation of the preputial sac are antipyrine, arsenic, quinine and iodine. Phenolphthalein on the other hand, commonly produces an erythema multiforme type of balanitis. It can also produce fixed eruptions, which appear on the glans as bluish red, fixed, itchy plaques of various sizes. The eruption subsides, becomes less itchy, and leaves a brownish discoloration between periods of ingestion of phenolphthalein.

BALANITIS ACCOMPANYING METABOLIC DISORDERS

Balanitis accompanying disturbances in metabolism can occur as the result of direct irritation by the urine or from substances contained in the urine. The balanitis may follow the retention of these substances within the foreskin sac, their excretion in large amounts, their chemical decomposition, or the production of a bacterial or vegetable growth that they promote. The excretion of large amounts of sugar, phosphates, creatinine, oxalates and urates in the urine and ammoniacal fermentation of the urine are some examples. The urine does not contain enough of these salts to produce a balanitis under normal conditions. Some salts, particularly phosphates and urates, form stones which produce balanitis when they are retained in the preputial sac. When large amounts of creatinine are excreted, ammoniacal fermentation accompanied by severe balanitis may be present.

Diabetic balanitis is the most common example of balanitis resulting from a metabolic disturbance and is present in some degree in about 7 per cent of all male diabetic patients. The eruption is usually caused by glycosuria, with retention of urine in the preputial sac and the development of a secondary mycotic dermatitis. However, balanitis has been known to appear when there is an increase only in the blood sugar and no demonstrable glycosuria. Fungi are always found in large amounts in the more marked cases and are generally conceded to be the direct cause of the balanitis. Monilia, *Aspergillus*²⁵ and *Oidium*²⁶ have been found. Cooper²⁷ emphasized that the slight bleeding from these fissures may be the only symptom of diabetes that causes the patient to consult a physician. When the eruption becomes more marked, proliferative vegetations may appear on the glans. These growths have an abundant blood supply and bleed on the slightest touch. Tuffier²⁸ saw cancer develop from such a papilloma. Ulcers may accompany or follow the numerous fissures, which appear at the foreskin opening. The ulcers are sharply margined, terraced, and covered with a whitish yellow membrane. After the ulcers heal the resulting scars are contractile and produce a rapid phimosis. The foreskin may become edematous, thick, rigid and immovable. Finally gangrene may develop. All cases are very obstinate and remissions and exacerbations are common over a long

¹⁹ Haslund O. Ein Fall von generalisierter Gonokokkeninfektion mit Keratosen. *Ges. f. Leber* 75: 325 1913.

²⁰ Hallopeau. Sur une folliculite gonococcique. *Bull. de la Soc. de dermatologie* 12: 46 (Jan. 10) 1901.

²¹ Werner A. Isolierte Balanoposthitis gonorrhoeica mit Komplikationen. *Deutsche med. Wchnschr.* 52: 1046 (June 14) 1926.

²² Borovskiy M. P. Diphtheria of the Penis. *J. A. M. A.* 104: 1399 1901 (April 20) 1935.

²³ Follmann. Ieno. Balanitis speculica (luetica). *Dermat. Wchnschr.* 69: 1558 (Dec. 1) 1934.

²⁴ Kreibich. Balanitis luetica. *Zentralbl. f. Haut u. Geschlechtskr.* 110: 105.

²⁵ Englisch J. Ueber Erkrankungen der Vorhaut bei Diabetes. *Wien med. Bl.* 6: 149 1883.

²⁶ Beauvais. De la balanite de la balanoposthite parasitaire et du phimosis symptomatiques du diabete. *Gaz. d. hop.* 47: 867 1874.

²⁷ Cooper A. Balanoposthitis and Glycosuria. *Brit. M. J.* 1: 1423 1908.

²⁸ Tuffier. Diabete et neoplasmes. *Arch. gen.* 162: 138 1898.

period Any case is in constant danger of being complicated by gangrene or erysipelas

BALANITIS ACCOMPANYING NEW GROWTHS

Erythroplasia of Queyrat was recently introduced to the American literature by Sulzberger and Sitenstein²⁹ and Stiles³⁰ It is a precancerous dermatosis of unknown cause which can change over immediately



Fig. 4 (case 2)—Raised thick patches in leukoplakic balanitis

into cancer The eruption begins on the glans penis as lentil sized, moderately elevated, shining or intensely red plaques with an uneven velvet-like surface which secretes a varying amount of fluid The eruption can spread over the entire preputium The lesions are moderately firm may show a slight scale, and are often sensitive on pressure The clinical malignant change can be noted by thickening, infiltration and finally ulceration Microscopically in erythroplasia there is a very marked acanthosis which extends deep into the cutis in the form of finger shaped processes There is a moderate lymphocytic and plasma cell infiltrate in the cutis The change to cancer is difficult to detect because the epithelium which suddenly takes on malignant characteristics, is already deeply proliferated and ramified Erythroplasia, Bowen's disease and other precancerous dermatoses should be treated as cancer as soon as they are recognized Figure 3 is an example of erythroplasia before malignant changes have appeared

BALANITIS FOLLOWING LOCAL TISSUE CHANGES

There is a group of diseases which produce clinical pictures somewhat similar to one another but which are distinct clinical and pathologic entities In these diseases, local tissue changes occur from one cause or another and balanitis often results Kraurosis penis leukoplakia, scleroderma and balanitis xerotica obliterans are included under this general heading

It cannot be denied that kraurosis penis and leukoplakia are sometimes seen in the same patient, but, for the most part, the diseases occur separately Montgomery³¹ thought that kraurosis vulvae and leukoplakia of the vulva could be distinguished from each other on clinical and pathologic grounds, and I think that this observation holds true when the two diseases are considered in the preputium

Thibierge³² and Kraus³³ believe that kraurosis penis balanitis is similar to kraurosis vulvae in women The

eruption develops late in life, more often after 50 years of age Some observers thought the disease was associated with loss of sexual power and atrophy of the penis The first symptom may be severe pruritus which usually continues throughout the course of the disease The eruption may begin as a common balanitis as in case 1

CASE 1—*Kraurosis penis* M K, a man aged 71, a laborer, first noticed redness of the glans and prepuce accompanied by burning, itching and an increased secretion within the preputium about December 1932 The itching became more marked, and adhesions began to form between the foreskin and the glans about December 1933, and white, rough patches appeared on the glans On examination, Dec 31, 1934 the prepuce was adherent to the glans anterior to the sulcus coronarius The exposed surface of the glans was atrophic, pale and bluish white, and an occasional excoriation was visible On the left side of the glans, at the site of the adhesion of the prepuce to the glans was a hard, firm slightly painful, pea sized raised white papule which had been present for about one year and recently had begun to grow quite rapidly The lesion involved both the glans and the prepuce The patient was circumcised and the papular lesion removed by electrocautery The biopsy showed kraurosis penis with questionable early carcinoma at the site of the white papule.

Later the prepuce and glans show atrophy and a continued increase in the loss of elasticity, and a peculiar paleness of the tissue develops Deep furrows appear between the patches of eruption on the glans and prepuce Atrophy and sclerosis continue, and mechanically produced fissures and tears appear at the preputial margin Epithelioma, which usually appears in the sulcus coronarius in the late stages of kraurosis penis is generally of the squamous cell type Kraus summarized the microscopic changes as follows There is an acanthosis and hyperkeratosis with inflammatory changes in the connective tissue, which go over into atrophy of the epithelium and progressive atheromatosis of the vessels

Leukoplakia can occur in the preputium, and here it is identical with that seen in the mouth It almost always follows or is associated with some form of chronic irritation produced by surface irritants or inflammatory reactions in the cutis Diabetic, erosive and common balanitis on the surface frequently precede leukoplakia Infiltrates accompanying syphilis, which can remain in the cutis even after thorough antisyphilitic treatment favor the development of phimosis and chronic balanitis, which in turn often result in leukoplakia and cancer Leukoplakia is characterized by various sized patches, which show a thickening of the epithelium a white to bluish white color, a loss of some of the normal surface markings and a smooth, shining surface, which may be eroded here and there In some cases the surface is roughened and covered with papillary excres-



Fig. 5 (case 3)—Balanitis xerotica obliterans showing a constricted urethral meatus

²⁹ Sulzberger, M. B., and Sitenstein, D. L. Erythroplasia of Queyrat Arch Dermat & Syph **28**: 798-806 (Dec) 1933

³⁰ Stiles, Frank Jr. Erythroplasia of Glans Penis (Queyrat) Arch Dermat & Syph **30**: 647-650 (Nov) 1934

³¹ Montgomery, Hamilton, Counseller, V. S. and Craig, W. M. Kraurosis Leukoplakia and Pruritus Vulvae Arch Dermat & Syph **30**: 80-100 (July) 1934

³² Thibierge. Chronische Balanitis ähnlich einem Epithelioma planum glandis Transactions of the French Society of Dermatology Arch f Dermat u Syph **137**: 167-1921

³³ Kraus, A. Ueber Leukoplakia (Leukokeratosis) penis Arch f Dermat u Syph **86**: 137-152 1907

cences If the leukoplakic inflammation is severe or continues for some time, the external sheath of the preputium and the glans becomes very thick. The entire foreskin and glans may become rigid and stiff and show various degrees of loss of elasticity such as seen in case 2.

CASE 2—Leukoplakic balanitis. L. B. a laborer aged 45 noticed white spots appearing on the foreskin and glans penis about three years ago. These lesions increased in size and thickness until most of the prepuce and the anterior half of the glans were involved in one year. There were no subjective symptoms until about two years ago when the patient experienced discomfort and pain when he had an erection and during intercourse. The patient had no sign or history of syphilis, and the blood Wassermann test was negative. On examination in March 1935 the process involved the entire prepuce and glans. The frenum had been destroyed and the glans was bluish white, covered with thickened patches, rigid and slightly tender on palpation. The microscopic section revealed typical leukoplakia.

The microscopic changes show lymphocytic infiltration in the corium and hypertrophy of all layers of the epidermis. There is a marked hyperkeratosis, with patches of parakeratosis scattered throughout. The acanthosis is usually marked, and long, narrow rete pegs and papillae result. The blood vessels of the corium are dilated, and a perivascular lymphocytic infiltrate is found. Leukoplakic balanitis is a most dangerous eruption and should be destroyed as soon as possible. Often the patients do not consult a physician until cancer has developed.

The usual changes that occur in scleroderma on the skin are seen in a sclerodermic balanitis. Gougerot³⁴ recently reported two cases of this rare disease. The eruption develops insidiously, without subjective symptoms. Edema, inelasticity or stiffness is often the first sign to be noticed. The disease may involve the entire preputium. The edematous, tense, infiltrated inflammatory stage passes quickly. The characteristics of fully developed scleroderma soon appear and include an ivory whiteness, a lardaceous appearance, atrophy, induration, rigidity and binding down of the skin to deeper structures. The microscopic changes are characteristic of scleroderma and cannot be confused with that of other forms of balanitis in this group.

Balanitis xerotica obliterans is an entity closely related to kraurosis penis and scleroderma and was first formally described and named by Stühmer³⁵ in 1928. The condition was called to the attention of Dr. Michelson by Professor Oppenheim of Vienna before that time. Dr. Michelson has observed quite a number of cases and has given me the privilege of reporting several examples of this rare and characteristic condition. As far as I know, these cases are the first ones to be described and recorded except in the German literature.

CASE 3—*Balanitis xerotica obliterans*. H. G. aged 23 a private patient of Dr. Henry E. Michelson noticed two or three red spots on the glans penis in the fall of 1932. He said that the lesions looked like blood blisters. They grew slowly became reddish blue and later changed to a whitish blue. The urethral meatus constricted steadily until the fall of 1933 when two surgical incisions were made at the urethral meatus to allow free passage of urine. The patient has not had gonorrhea, previous balanitis or instruments introduced into the urethra and he has not been circumcised. The eruption as described now involves the anterior two thirds of the glans.

CASE 4—*Balanitis xerotica obliterans*. M. O. aged 22, a private patient of Dr. Henry E. Michelson stated that the anterior portion of the glans penis began to turn white and shrink about three years ago. The process has progressed until the anterior two thirds of the glans and the urethral orifice are involved. The patient received a painful preputial tear about three months before the process started. He has not been circumcised and he has not had gonorrhea or syphilis. There are no subjective sensations except a feeling of tension when he has an erection. There is no change in the urinary stream.

CASE 5—*Balanitis xerotica obliterans*. F. R. aged 24 a private patient of Dr. Henry E. Michelson developed a similar eruption about five years ago. He first noticed a decrease in the size of the urinary stream in October 1930. The eruption progressed until the entire glans and prepuce were involved. He had great difficulty in urinating by January 1931 when it was impossible to pass even a fine filiform bougie. Following the attempt to pass the bougie, about half an inch of the distal portion of the entire lining of the urethra sloughed out. The

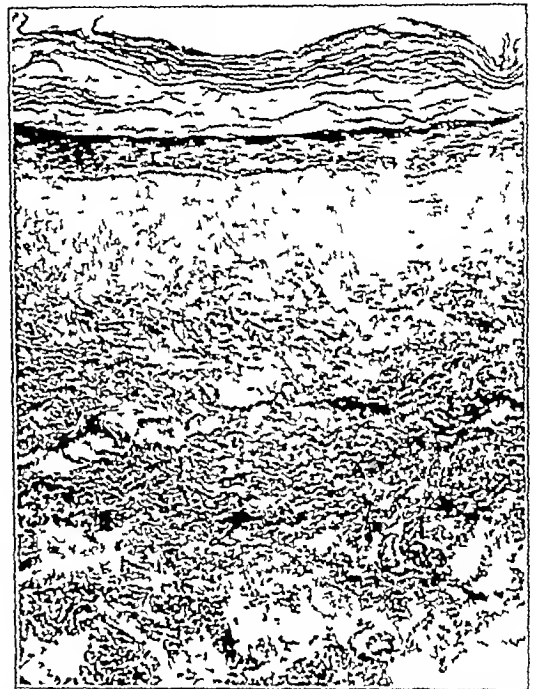


Fig. 6 (case 3)—Section under low power showing atrophy of the epidermis and homogenization of the upper portion of the cutis in *balanitis xerotica obliterans*.

patient has to have the urethra dilated at regular intervals. After each dilation a gradual shrinking occurs, the urinary stream becomes smaller, urination becomes more difficult, and the urethral meatus gets progressively smaller. The glans remains in about the same stage of atrophy. He was not circumcised but he had had gonorrhea. Several metal sounds were passed before the eruption appeared.

Stühmer's cases began following circumcision for phimosis with or without balanitis but none of our patients had been circumcised. The glans first becomes thickened, sensitive, swollen and scaly. The swelling decreases and the affected parts become pale and parchment-like and waxy. Finally adhesions form between the glans and the prepuce. Weeping, burning and the feeling of tension persist. There may be a slight urethral discharge. The foreskin often covers and is adherent to the sulcus coronarius. The rest of the glans is covered by a whitish yellow or bluish white membrane, which shines like parchment and shows firm adherent scales in the central portion. The fully devel-

³⁴ Gougerot, Degos and Bouille. Sclerodermie de l'anneau préputial. Ann. d. mal. ven. 28: 839 (Nov.) 1934.

³⁵ Stühmer, A. Balanitis xerotica obliterans (post operationem) und ihre Beziehungen zur Kraurosis glandis et praeputii penis. Arch. f. Dermat. u. Syph. 156: 613-623, 1928.

oped eruption shows the glans to be atrophic and of a bluish to white color. Two of our cases did not go through the early weeping stage but began as atrophic white patches. Running beside the bluish, smooth sections are higher and stronger white lines of scarring, which may show some scale. The eruption is more marked at the urethral orifice. The orifice may look like a mere fissure and in severe cases urine can be evacuated only under pressure or following surgical intervention, as in case 3. The process can continue up the urethra for some distance. The urethra is hard to enter and at times even as in case 5, a fine filiform bougie cannot be passed. The disease may lead to complete urethral occlusion. In Stuhmer's cases the atrophic part was strikingly tender and could be pushed together like fine folds of tissue paper. Our cases also showed a fine wrinkling and puckering of the involved portion of the glans. Where the eruption was deeper, it did not form massive plates as in leukoplakia and kraurosis penis. Here the eruption resembled finely marked ridges similar to lichen planus of the mucous membranes. Stuhmer's cases led to obliterating atrophy of the glans and prepuce. Two of our cases are becoming progressively worse, but one seems to be improving since a mild protective ointment has been used.

Balanitis xerotica obliterans has to be differentiated from kraurosis penis. The symptoms of severe violent itching, which always accompanies kraurosis penis is absent in balanitis xerotica obliterans. Kraurosis is a disease of past middle life and most cases are seen in men over 50 years of age while balanitis xerotica obliterans is a disease of the young and most of the reported cases are in men under 30. However Müller³⁶ reported a case in a man aged 66. Gierthmühlen³⁷ described a case following circumcision in a child 18 months old. Stuhmer stressed the point that balanitis xerotica obliterans often followed circumcision for phimosis or some type of balanitis. Kraus stated that phimosis did not necessarily precede kraurosis and that balanitis when preceding kraurosis was only of casual significance. Leukoplakic balanitis can be differentiated by the coarse thickening and swelling of the glans resembling oral leukoplakia and the histopathologic picture in which epithelial proliferation in the form of acanthosis and hyperkeratosis is severe and atrophy is not present. There is no constriction of the urethra in either kraurosis penis or leukoplakia.

The microscopic anatomy of balanitis xerotica obliterans has been studied by various authors. The following description was made from a study of the section taken from patient 3. The biopsy was made in the rather advanced atrophic stage of the disease, and the excision was made from the dorsum of the glans. With the hematoxylin and eosin stain there was noted a thin, corneal lamellar scaling. Remnants of the granular layer were still present, but it was of one cell depth. There was a masked atrophy of the entire epidermis, so that the basal layer made a straight line. The individual basal cells showed decidedly rounded nuclei and intracellular edema. The continuity of the basal layer was decidedly disrupted. Immediately beneath the basal layer there was a thick zone about three times the diameter of the epidermis, consisting of homogenized connective tissue. In this zone there were no nuclei or infiltrating cells. Immediately below and at the edges of this zone there was noted a scattered

infiltrate of round cells. With the van Gieson stain the collagenous material in the homogenized zone stained a pale pink, while below it the fibers took on a deeper red but were not stained as deeply as in the normal tissue. The elastic tissue stain showed a complete absence of elastic fibers in the upper two thirds of the cutis and a normal presence in the lower third. To summarize, one would state that the essential changes were an atrophy of the epidermis and a homogenization of the upper portion of the cutis with no evidence of active inflammation. The microscopic picture closely resembled that of morphea, and it was our conception that the processes were closely related.

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ABSTRACT OF DISCUSSION

DR P. H. POIRIFF, Montreal. Has Dr. Madden ever seen a patient with lichen sclerosus et atrophicus (Hallopeau) located on the penis? Many dermatologists—American, French and German, namely Oliver, Montgomery, Bizzozero, Milan, Dubreuilh and Petges—have described such cases. Schamberg and also Ormsby have asserted that lichen planus with atrophy is distinct from lichen sclerosus et atrophicus. Nomland of Chicago (*Arch. Dermat. & Syph.* 21:575 [April] 1931) said that lichen sclerosus et atrophicus should be assigned a position midway between lichen planus and circumscribed scleroderma, and he gave all their histologic and clinical characters. Does Dr. Madden think that Paget's disease may be seen elsewhere than on the nipples? Darier and Civate of Paris admitted that this may be true in exceptional cases, while Masson of Strasbourg said it could not. On the other side Busman of Pittsburgh and Woodburne of Grand Rapids (*Arch. Dermat. & Syph.* 24:396 [Sept.] 1931) described a case of Paget's disease of the glans penis.

DR JOSEPH V. KIVUDER, Philadelphia. There are many interesting points that Dr. Madden did not have time to discuss. To students of syphilis employing the dark-field microscope in the diagnosis of chancre the question of spirochetes in the flora of the male and female genitalia is of importance. One should have some idea of the spirochetes visible in the dark field microscope. *Spirochaeta refringens* is regarded by many students of spirochetalogy to be the same as *Spirochaeta balanitis*. Occasionally, one sees Vincent's spirochete and the fusiform bacillus *Treponema calligyrum* is also called *Treponema genitalis*. It resembles *Treponema pallidum* to such a degree that a differential diagnosis cannot be made microscopically. That is important in the use of the dark-field microscope in the diagnosis of concealed genital lesions. If serum from a suspected chancre on the genitalia or in the mouth cannot be obtained uncontaminated, the diagnosis cannot be made with certainty by means of the dark-field examination. *Treponema minutum* also found in smegma, is much smaller than *Treponema pallidum*. The role of spirochetes in the causation of gangrenous balanitis is a matter of controversy and that applies to other ulcerative pseudomembranous processes which have a foul odor. Vincent's spirochete and the fusiform bacillus are constantly present in such lesions and are apparently secondary invaders. The practical point is that if in secretions from beneath an adherent foreskin a number of Vincent's spirochetes and fusiform bacilli are present, it is well to perform a dorsal slit to prevent the development of gangrenous balanitis. Drug eruptions due to antipyrine and phenolphthalein may cause balanitis. Antipyrine is not frequently used now. It produces a lesion like that of phenolphthalein from which I do not believe it is possible to make a differential diagnosis. In recurring balanitis if there are lesions on the shaft of the penis and elsewhere on the skin one should consider the possibility of an eruption due to phenolphthalein or antipyrine. Such an eruption may be confined to the foreskin. I should say that in approximately 2 per cent of cases the primary lesion of syphilis is presented as balanitis. It is seen as a large number of erosive lesions that when they become confluent, very closely simulate balanitis. However, the absence of a great deal of inflammation and the free secretion of serum are points indi-

³⁶ Müller, A. Ein Fall von Balanitis xerotica obliterans. *Dermat. Wchnschr.* 92:1372-1373 (Aug. 29) 1931.
³⁷ Gierthmühlen, F. Erworbene Striktur des Meatus urethrae exter-nus beim Kleinkinde. *Arch. f. Kinderh.* 77:303-305 (March) 1926.

cating that the lesion is a chancre. As to balanitis xerotica obliterans, an atrophic process in which the urethra becomes obliterated and the foreskin becomes adherent to the glans, it is a question in my mind whether this disease is a distinct entity. One should consider the possibility of pemphigus of the conjunctiva, so-called essential shriveling of the conjunctiva. Patients with that disease present lesions similar to those of balanitis xerotica obliterans.

DR. SAMUEL AYRES JR. Los Angeles. I have had the occasion recently to observe several instances in middle aged men of a superficial erythematous plaque on the glans penis accompanied by itching of the foreskin. These cases are in no way associated with an adherent foreskin and I believe that the condition is somewhat analogous to the diaper dermatitis of an infant. As to the matter of retained urine, I think that in some of these middle aged patients there is possibly a little dribbling after urination even though they consider themselves as being reasonably careful. However, a drop of urine is retained which undergoes bacterial decomposition. Finally this rather annoying lesion is produced and may be extremely persistent yet it is surprising how simple the treatment is. In addition to extreme care in the matter of cleanliness, a little ointment of ammoniated mercury applied for two or three days seems to be sufficient to eradicate the lesion completely.

DR. JOHN F. MADDEM, St. Paul. Balanitis xerotica obliterans resembles all the aforementioned diseases in some respects, but when the clinical appearance, the course of the disease and the histopathologic picture are considered it must be admitted that it is a separate disease entity. It resembles morphea more closely than any other disease but even here there are many dissimilar points.

LOWER LOBE TUBERCULOSIS

A REVIEW

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AND

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Generalizations in medicine are dangerous, particularly with regard to lower lobe tuberculosis because of its comparative infrequency.

Experience has taught us that chronic lesions in the upper lobe should be considered tuberculous until proved otherwise. Lesions in the lower lobe on the contrary should be considered nontuberculous until proved otherwise (Fishberg¹).

It is our opinion that one should not be too ready to dismiss a diagnosis of pulmonary tuberculosis because of the location of the lesion in the lower lobe.

It is easy to understand why the internist and the phthisiologist make diligent search for confirmatory evidence of tuberculosis in upper lobe lesions, while on the other hand, they favor a diagnosis such as unresolved pneumonia, chronic pneumonitis, bronchiectasis abscess, syphilis and tumor when the lower lobe is affected. Tuberculosis becomes a remote possibility and is invariably easily dismissed by roentgen examination and one or more negative sputums.

Data on lower lobe tuberculosis is contradictory. Laënnec² whose classic works on the development of tubercle have come down practically unchanged through the past century, stated that it is extremely rare for excavations to develop first in the middle or base of the lungs. Fowler³ also states that the apex is the first site of parenchymal activity.

So generally has this opinion been accepted that even today primary basal involvement is regarded as extremely rare.

Garon, Lyall and Monta⁴ claim that râles of long standing below the middle of the chest are almost as diagnostic of a nontuberculous lesion as râles in the upper half of the chest are suggestive of tuberculosis. However, they believe that 10 per cent of all tuberculosis is primary in the lower lobes.

Fagge⁵ stated that "tuberculosis never spreads upward from the base through the upper lobe. What has sometimes been called chronic basal phthisis is a distinct affection which has been described under the name of chronic pneumonia."

In modern times one finds Fishberg¹ stating that basal tuberculosis is extremely rare. Landis⁶ states "My opinion concerning basal tuberculosis is still unchanged, children may have it at the base, but adults practically never."

Pottenger⁷ does not discuss it at all. Rabbiosi⁸ stated that there are frequent types of tuberculosis of extra-apical origin, but he was referring to lateral and infraclavicular lesions rather than to localizations in the lower lobes. Fraenkel⁹ stated that the early infiltrate in tuberculosis may be anywhere in the lung, being most rarely in the apex. He found localizations in the lower lobes. It was his experience that these may persist for weeks, months and years and that during that time the patient may apparently be in the best of health and yet, when softening and regional spread occur, symptoms appear. Similarly, Pindell¹⁰ in 1932 called attention to lower lobe tuberculosis and warned that this condition is treacherous. He also expressed the belief that this may exist for years without noticeable symptoms but that the great majority eventuate into manifest disease.

INCIDENCE

Kidd¹¹ found two instances in 412 cases of pulmonary tuberculosis. He stated that the incidence varied from one to eighty cases to one in 500 according to different writers. Rosenblatt¹² found three cases in 1000, DuFault¹³ found one in 365, Dunham and Norton¹⁴ found twenty-six cases in two years in a 250-bed hospital. Ross¹⁵ found eleven cases in sixty tuberculous nurses and Lathrop and Lyman¹⁶ found eighty-eight cases among 2,809 patients with tuberculosis.

In the wards for tuberculous adults at Kings County Hospital from September 1934 to January 1935, we have had ten proved cases of sole involvement of a lower lobe due to tubercle bacilli. Of 198 newly admitted males, three had lower lobe tuberculosis, and of 151 newly admitted females, seven had proved cases of strictly lower lobe lesions due to tubercle bacilli, showing an incidence of over 3 per cent.

We hasten to add that this obviously cannot be considered a true picture of the incidence of lower lobe

4. Garon, Lyall and Monta cited by DuFault. P. Am. Rev. Tuberc. 25: 17 (Jan.) 1932.

5. Fagge, C. H. Principles and Practice of Medicine. London J. & A. Churchill 1886, p. 947.

6. Norris, G. W. and Landis, H. R. M. Diseases of the Chest ed. 2 Philadelphia W. B. Saunders Company 1921.

7. Pottenger, F. M. Tuberculosis in the Child and the Adult St. Louis C. V. Mosby Company 1934.

8. Rabbiosi, L. Lotta contro la tubere. November 1931.

9. Fraenkel, A. Deutsche med. Wchnschr. 57: 2091 (Dec. 11) 1931.

10. Pindell, M. L. California & West Med. 36: 81 (Feb.) 1932.

11. Kidd, Lancet 2: 615 and 665 1889.

12. Rosenblatt, Joseph. Chronic Pulmonary Tuberculosis Primarily in the Lower Lobe. J. A. M. A. 76: 1647 (June 11) 1921.

13. DuFault, P. Am. Rev. Tuberc. 25: 17 (Jan.) 1932.

14. Dunham, Kennon and Norton. V. V. Basal Tuberculosis. J. A. M. A. 89: 1573 1575 (Nov. 5) 1927.

15. Ross, E. L. Canad. M. A. J. 22: 347 (March) 1930.

16. Lathrop, A. S. and Lyman. Tr. Am. Climat. & Clin. A. 40 (1924).

1. Fishberg, Maurice. Pulmonary Tuberculosis ed. 4 Philadelphia Lea & Febiger 1932, 540.

2. Laënnec, R. T. Treatise on the Diagnosis and Treatment of Diseases of the Chest. New York Wood 1835.

3. Fowler quoted by Osler, William and McCrae, Thomas. Principles and Practice of Medicine ed. 11 New York D. Appleton & Co. 1911.

tuberculosis for the reason that our series is small and because many patients with lower lobe tuberculosis have remained with an incorrect or without any diagnosis in the medical wards

MODE OF DEVELOPMENT

Colton¹⁷ states that it would seem that the most plausible explanation of basal lesions would be rupture of a tracheobronchial or hilar lymph node into a large bronchus, and lodgment of a massive infection in the terminal bronchioles and alveoli producing a bronchopneumonic involvement. H. K. Pancoast, in discussing Norton and Dunham's paper, expressed the belief that lower lobe tuberculosis is an atypical manifestation of miliary tuberculosis and is due to blood stream infection.

SYMPTOMS

In the series of cases reported by Lathrop and Lyman, cough was present in 98 per cent, expectoration in 86 per cent, loss of strength in 81 per cent, loss of weight in 76 per cent, fever in 64 per cent, pleural pain in 59 per cent, dyspnea in 50 per cent, hemoptysis in 29 per cent and casual positive sputum in 28 per cent.



Fig 1 (case 3)—Tuberculosis of the lower lobe of the left lung

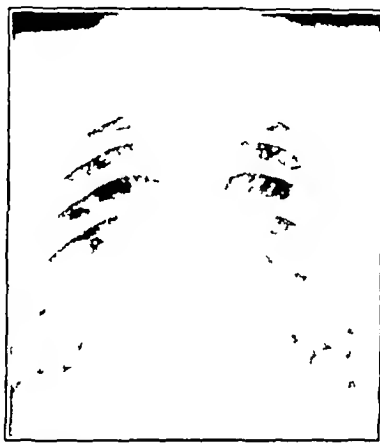


Fig 2 (case 5)—Tuberculous involvement of the lower lobes

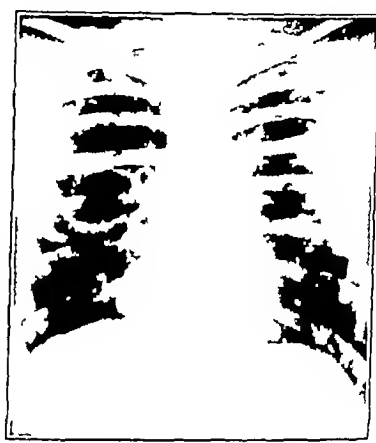


Fig 3 (case 6)—Before pneumothorax was induced

In our ten cases we found cough present in all, hemoptysis in eight, night sweats in six, loss of weight in five, fever in five and pain in the chest and expectoration in two.

We believe that the symptoms of lower lobe tuberculosis are the same as those in upper lobe tuberculosis. It is apparent that these patients were referred to the tuberculosis ward because of hemoptysis and other outstanding symptoms of phthisis.

DIAGNOSIS

That a diagnosis of lower lobe phthisis may be difficult or even impossible to make for a long time can readily be seen if it is remembered that the sputum is often negative.

Excavations in lower lobe cases are less "open" than in upper lobe cases, and an obstruction in the bronchi may interfere with the free evacuation of the cavity contents (Gordon and Charr¹⁸). Indeed in order to obtain a positive reading, there must be 100,000 tubercle bacilli per cubic centimeter present, if examined by ordinary methods (Pottenger¹⁹ and Corper²⁰).

¹⁷ Colton W. A. U. S. Vet. Bur. M. Bull. 4: 503 (June) 1928.
¹⁸ Gordon B. and Charr R. M. Clin. North America 17: 77 (Nov.) 1933.
¹⁹ Pottenger F. M. Tuberculosis in the Child and the Adult. St. Louis: C. V. Mosby Company, 1934, p. 298.
²⁰ Corper H. J. The Certified Diagnosis of Tuberculosis. J. A. M. A. 91: 371 (Aug. 11) 1928.

Pinner²¹ found that, in a series of 238 negative sputum examinations, fifty-six were found positive by other methods of examination (concentration, animal inoculation, culture). Burgess Gordon suggested the use of 5 drops of saturated solution of potassium iodide every four hours for from six to eight doses to help obtain a positive sputum in difficult cases.

If, in addition, it is remembered that the roentgenologist's interpretation often suggests unresolved pneumonia, abscess, tumor, syphilis, bronchiectasis or chronic pneumonitis rather than tuberculosis solely because the lesion is located in the lower lobe, it can readily be seen how easy it is to rule out tuberculosis if one is so inclined. As a result, chronic lower lobe processes are perhaps too often attributed to other causes, i. e., cocci.²² Yet Lathrop and Lyman found that 67 per cent of lower lobe lesions were due to tuberculosis and only 33 per cent due to other causes.

If in early cases the casual sputum examination or even concentrates and the roentgen interpretation may be misleading, what can be depended on? The answer is the history and clinical course.

We have found in the few cases that we have had the opportunity to observe that the history and clinical course are our most valuable aids until confirmatory evidence is available.

The clinical course of lower lobe tuberculosis does not differ from that of upper lobe tuberculosis. Furthermore, as Fraenkel and Pindell have pointed out, it may be necessary to observe these patients for weeks, months or even years before softening and regional spread occur to make a definite diagnosis possible.

PROGNOSIS

Dunham and Norton on the basis of their series of twenty-six cases have decided that basal lesions are virulent. They are of the opinion that basal lesions occur only in those patients who have tuberculosis elsewhere in the body. In other words, they consider that lower lobe tuberculosis is always part of a generalized tuberculosis. In the few cases we have had we have found no involvement anywhere else in the body. Dunham and Norton obtained poor results in these cases probably because their patients were colored and

²¹ Pinner M. J. Lab. & Clin. Med. 17: 611 (April) 1932.
²² Riesman Am. J. M. Sc. 146: 313, 1913. White W. C. Tr. Nat. A. Study & Prev. Tuberc. 11: 140, 1915. Finkler Dittmar. Infektionen der Lungen durch Streptococci und Influenzabacillen. Bonn F. Cohen 1895. Garvin A. H. Am. Rev. Tuberc. 1: 1, 1917.

in them tuberculosis is always virulent. Colton, in his article also stated that he considers these cases to be grave.

We are unable to agree with these statements. Of our ten patients only one has died, and she was colored. The others were treated by collapse and phrenicectomy and are doing well.

REPORT OF CASES

CASE 1—P O, a white woman, aged 28, admitted Oct 8 1934, complained of cough of fifteen months' duration, night sweats, loss of weight, hemoptysis and fever. Her past and family history were negative.

Examination revealed dullness in the right interscapular region, rales and increased breath sounds. There was no clubbing of the fingers. Repeated sputum examinations showed positive results. The sputum was not copious or fetid. X-ray films revealed clear upper lobes and a cavity in the upper part of the lower field of the right lung.

Repeated attempts at pneumothorax were unsuccessful. Right phrenicectomy was performed on October 26 and was successful. The patient has gained 9 pounds (4 Kg) in weight, the right diaphragm is raised, the cavity is smaller, the temperature is now flat, but the sputum is still positive.



Fig 4 (case 6) —After pneumothorax was induced.

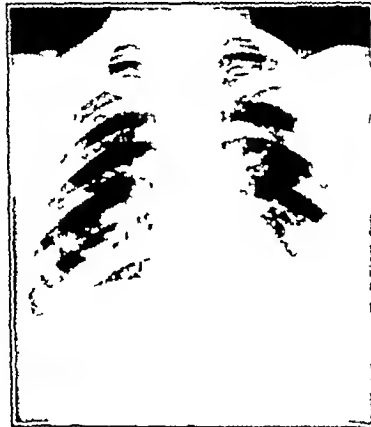


Fig 5 (case 7) —Tuberculosis of the lower lobe of the left lung

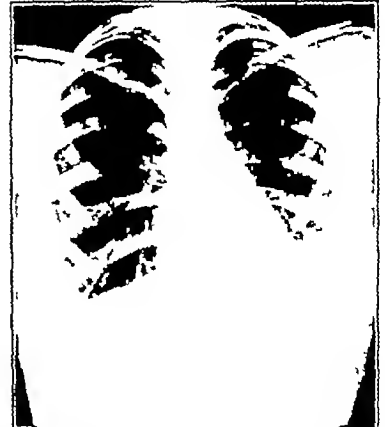


Fig 6 (case 8) —Bronchopneumonic infiltration of the lower lobe of the left lung

CASE 2—A P, a white woman aged 32, was transferred to Kings County Hospital on Aug 4, 1934, from the Israel-Zion Hospital, complaining of pain in the right chest, cough, hemoptysis and low grade fever since July 31.

Her past history revealed that following a cholecystectomy in 1933 pleurisy developed on the right side and the patient was in bed for three months. Her family history was negative.

Examination revealed impaired resonance over the apex of the lower lobe of the right lung, bronchovesicular breathing and numerous rales. The sputum was positive and the temperature was over 100 F. Roentgen examination revealed bronchopneumonic infiltration in the lower lobe of the right lung and evidence of destruction and cavitation in the middle lobe.

Pneumothorax was induced and a good collapse was obtained. The patient appears to be improving, the temperature is now flat and the sputum is negative.

CASE 3—C N, a white woman aged 20, admitted May 17 1934, complained of cough, fever and pain in the left side of the chest of one week's duration.

Her past history revealed that her case had been diagnosed as tuberculosis in 1932 and she had been at the Municipal Sanatorium at Otisville for six months. She was discharged as an arrested case and the board of health had found the sputum negative. Her father died of tuberculosis.

Examination revealed dullness and fine rales over the lower lobe of the left lung posteriorly. The case was characterized by low grade fever, weakness, cough and expectoration. The concentration method for sputum examination was carried out and numerous tubercle bacilli were found. X-ray plates revealed

a lesion of almost homogeneous density in the lower lobe of the left lung. The upper lobes were clear.

Pneumothorax was induced. The patient gained 12 pounds (54 Kg) and improved so much that she was discharged August 25 to continue her treatments at the board of health.

CASE 4—C S, a Negress aged 19, admitted May 22, 1934, complained of cough, fever, night sweats and hemoptysis of one month's duration.

Her past history revealed that she had 'caught cold' in November 1933 and had never fully recovered. The case had a septic course with profuse expectoration and hemoptysis.

The chest showed impaired resonance, bronchial breathing and many fine rales over the lower lobe of the right lung posteriorly. The sputum on six occasions was negative but then became consistently positive. X-ray films revealed an irregular involvement of the base of the right lung and a distorted enlarged hilar shadow. The upper lobes were clear. The Wassermann reaction was 4 plus.

The patient's condition became progressively worse. The process extended into the upper lobe of the right lung. She finally consented to pneumothorax, which was started September 10. Her condition was unimproved and on September 18 the process was found to have spread over to the upper lobe of the left lung. The patient died October 18.

CASE 5—A C, a white man, aged 21, admitted Dec. 11, 1934, complained of cough, hemoptysis, loss of weight, low grade fever and night sweats of four months' duration. His past history was unimportant.

Examination revealed involvement of the lower lobes of both lungs with signs of vomicae. Roentgen examination showed diffuse interstitial changes in the lower lobes of both lungs with cavitation. The upper lobes were clear. The sputum was found to be loaded with tubercle bacilli when studied by the concentration method.

The patient was given conservative treatment as he refused pneumothorax, and his condition has improved. However the sputum still contains tubercle bacilli.

CASE 6—M L, a white man aged 21, admitted Oct 22, 1934, complained of cough of nine months' duration, fever at night, night sweats and hemoptysis. His past history revealed only that at 10 years of age he was sent to the country because of malnutrition. His mother has an 'arrested case' of tuberculosis.

Examination revealed dullness over the middle lobe of the right lung anteriorly and the upper part of the lower lobe posteriorly, with numerous rales. The sputum was positive. X-ray films revealed clear upper lobes with a large cavity in the midfield of the right lung. Pneumothorax was started on November 5 and a good collapse was obtained. The patient was transferred to Bedford Hills, improved.

CASE 7—L S, a white woman, aged 29, admitted Aug 17 1934, complained of cough, expectoration, night sweats and loss of weight. Her illness dated back to May 1934 when pleurisy developed on the left side and persisted.

Roentgen and sputum examinations by the board of health were negative, but after many sputum examinations were made positive reports were obtained. The sputum after admission to the hospital was consistently positive. X-ray films revealed an area of consolidation in the lower lobe of the left lung. On September 17 pneumothorax was started. A good collapse was obtained and the sputum became negative. The subsequent course was uneventful save for the development of a pleural effusion, which cleared up. She was finally discharged to continue her treatment at the board of health.

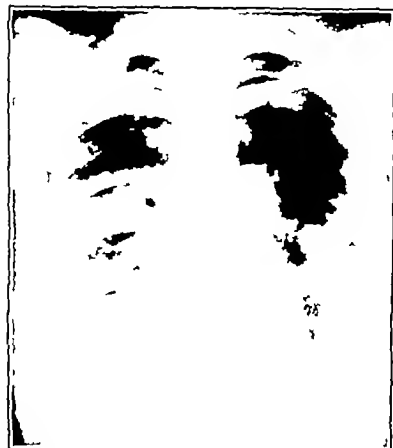


Fig 7 (case 10)—Exudative lesions in the lower lobes

Her family history revealed that her father had hemoptysis but studies made by the board of health were negative for tuberculosis.

Examination revealed dullness, and fine rales in the lower lobe of the left lung with bronchovesicular breathing. Roentgenograms showed bronchopneumonic infiltration in the lower lobe of the left lung. The sputum was positive (six times). She is being treated by bed rest and the affected area has undergone slight resolution.

We feel that pneumothorax will be resorted to in this case, although the patient has gained weight (8 pounds or 3.6 Kg) and the sputum is now negative.

CASE 9—M. S., a white man aged 26, admitted Nov. 3, 1934, complained of cough, hemoptysis, night sweats and loss of weight of four months' duration.

His past and family history were negative. His present illness started four months before, when he "caught cold." He had an evening fever and occasionally blood-streaked sputum. Examination revealed dullness, bronchovesicular breathing and numerous rales in the left subscapular region. X-ray films revealed a caseous pneumonic process affecting the lower lobe of the left lung with evidence of a cavity in the upper part of the lobe. The upper lobes were clear. The sputum was positive. The patient stated that thirty sputum examinations made before admission were negative.

Pneumothorax was started on November 17. The patient improved and gained weight, and the sputum became consistently negative. However, there seemed to be a spread to the lower and middle lobes of the right lung in January although there were no confirmatory physical signs. He was finally transferred to Seaview for continued treatment.

CASE 10—E. M., a white woman, aged 21, was admitted Dec. 11, 1934. Her chief complaint was hemoptysis of one day's duration. Her past history revealed that she had an appendectomy performed, and a diagnosis of tuberculous peritonitis was made. At that time pleurisy developed on the right side and the sputum became positive. She has been at Seaview for the past eight months and has been treated conservatively. However, the cough has persisted.

Examination revealed dullness with diminished breath sounds and numerous rales over the lower lobes of both lungs posteriorly. X-ray films revealed an exudative lesion in the lower fields of both lungs. The upper lobes were clear. The sputum has been negative on four occasions and positive twice. The temperature has been slightly elevated. Pneumothorax therapy will probably be instituted.

CASE 8—L. McG., a girl, aged 15, admitted on Sept. 3, 1934, complained of hemoptysis, cough, expectoration and loss of weight (6 pounds, or 2.7 Kg) for the past month. She had been admitted the year before with similar complaints, but studies for tuberculosis had been entirely negative. Roentgen examination by the board of health two weeks before admission was negative. Fifteen sputum examinations were negative.

SUMMARY

1 In ten cases of lower lobe tuberculosis, there was no involvement of the upper lobes.

2 The history and the clinical course are the most valued aids in making a tentative diagnosis.

3 Negative sputum examinations do not rule out lower lobe tuberculosis.

1289 Carroll Street

Clinical Notes, Suggestions and New Instruments

TABLE KNIFE IN CRANIUM CRANIECTOMY WITH COMPLETE RECOVERY

JOSEPH E. FULD, M.D., NEW YORK

While many skull injuries have been reported, this case is of such an unusual character that I felt it would be of interest to record it.

REPORT OF CASE

History—In 1930 the patient was shot by a patrolman, and four bullets were removed at Fordham Hospital—two from the neck and two from the right arm. From this, he recovered completely.

Oct. 24, 1934, the patient, while an inmate at the penitentiary, was attacked and forcibly held by two prisoners while a third prisoner viciously struck him a terrific blow in the head with a table knife, which had been previously sharpened to a point. Had it not been for the fact that the patient suddenly ducked his head forward and downward to protect himself the blade would probably have entered the skull in a horizontal plane. What did occur was a deviation of the line of penetration obliquely downward and backward, so that the vital structures were spared.



Fig 1—Lateral view taken before operation

The patient was seen immediately by the resident physician who stated that the knife was buried to the hilt about one-half inch above the root of the nose. There was no evidence of any hemorrhage from the site where the blade had entered. The patient was expectorating a considerable amount of blood.

An attempt was made by the resident physician to remove the blade but the handle snapped off leaving about one-half inch of the blade above the surface of the wound. A remark

able fact is that the patient at no time showed any evidence of pain or distress and was perfectly calm and collected, notwithstanding that 4 inches of blade was embedded in the skull and cranial cavity.

The patient was removed at once to the Correction Hospital, where I operated on him under a general anesthetic about two hours after the assault.

Examination—The patient, a white man, aged about 23, was lying quietly in bed, showing no signs of pain or distress. Examination showed that there was protruding from the forehead about one half inch of the proximal end of the blade of a table knife. Lumbar puncture was done and 15 cc. of spinal fluid was removed. There was a considerable amount of blood in the spinal fluid. Dr. Bonoccolto, attending ophthalmologist, who examined the patient, reported that the pupillary reflexes were normal, the ocular reflexes were normal, the media were clear, the fundus was normal, and there was no evidence of any impairment of vision. There was a considerable amount of bloody expectoration. Neurologic examination by Dr. R. A. Gerber was entirely negative.

A sketch (fig. 2) made from the roentgenogram (fig. 1) by Dr. L. Vosburgh Lyons represents a sagittal section of the

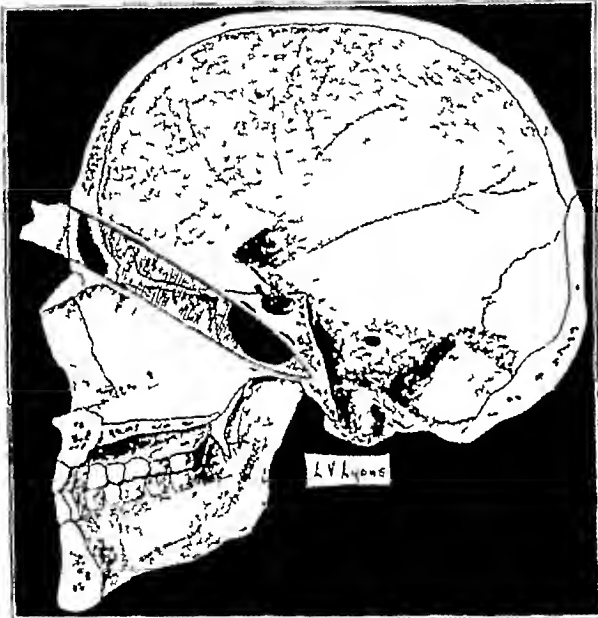


Fig. 2—Sketch from the roentgenogram (fig. 1), representing a sagittal section of the skull. By referring to this sketch the structures through which the blade passed can best be indicated. After penetrating the frontal bone the blade entered the cranial cavity. The edge of the blade is embedded in the cribriform plate of the ethmoid bone.

skull. By referring to this sketch the structures through which the blade passed can best be indicated. After penetrating the frontal bone, the blade entered the cranial cavity. As it is in the midline the blade probably passed between the under surface of the frontal lobes of the brain and so escaped penetrating them. However, it is observed that at this point the edge of the blade is embedded in the cribriform plate of the ethmoid bone, so that the dura and its vessels must have been injured. The extravasation of blood at this point is probably the source of blood that was found in the spinal fluid. The olfactory nerve fibers pass into the brain here and many of them must have been injured.

It is evident that as a result of this injury there was a real danger of meningitis starting at this point, owing to contamination from the knife or from bacteria from the nasal cavity, which could either travel up through the ethmoid bone or be introduced into the meninges as the knife was removed.

The tip of the instrument was embedded in the sphenoid bone. The cavernous sinus, the pituitary gland and the optic chiasm were avoided above by a fraction of an inch. Infection at this point could be drained through the nasal cavity. Had the blade passed a small distance to the right or left it would have severed the internal carotid artery with serious results.

Roentgenograms taken before the operation revealed a metallic foreign body, about 4 inches in length, which entered the skull through the orbital ridge of the frontal bone slightly to the left of the median line. In its penetration the object went through the frontal sinus, extending for a short distance along the base of the skull, through the anterior cerebral fossa. The farthest point of the foreign body is noted in line with the acoustic meatus, having probably penetrated through the

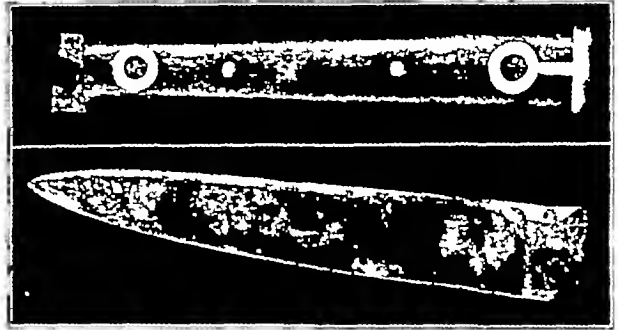


Fig. 3—Showing the blade and handle of the table knife used in the assault. The full length of the blade, which had been ground and sharpened to a point in the form of a stiletto was embedded in the skull and was removed by open operation.

sphenoid sinus. The anterior end of the foreign body is seen protruding from the skin.

Operation—A 4 inch blade entered the patient's skull about one-half inch above the root of the nose about one-eighth inch to the left of the midline and in an oblique direction at an angle of about 45 degrees with the horizontal plane. From the x-ray film and at operation, it was found to pass obliquely downward and backward through the frontal sinus, penetrating the sphenoid bone and its cells, the point being apparently embedded in the body of the sphenoid bone and protruding through the roof of the pharynx.

Before resorting to an open operation, I made an attempt to remove the blade by means of heavy forceps, but the attempt was unsuccessful. It became necessary to resort to a general anesthetic, and the following procedure was adopted.

About 1 inch from the embedded knife blade, the wound of entrance was enlarged and extended about 1½ inches vertically. An opening was bored into the skull by means of a Hudson drill. Then the intervening bridge of bone was cut away by means of rongeur forceps. When this was completed, the Hudson bone rongeur forceps was employed to remove enough of the bone surrounding the blade, so that sufficient play was allowed to loosen it at its distal end by tapping the knife laterally. When it was evident that the blade was slightly loose, the blade was removed by means of forceps.

Hemorrhage at the point of entrance was controlled by iodoform packing. A postnasal packing was used to control the hemorrhage due to the wound in the posterior pharyngeal wall.

Progress Notes—The next day the patient was seen by Drs. Broones and Tateka, attending otolaryngologists. Examination of both nostrils revealed no evidence of injury or hemorrhage.



Fig. 4—Appearance of the scar on the forehead of the patient four weeks after operation.

Packing was removed from the nasal pharynx, and posterior rhinoscopy revealed a transverse slit one-fourth inch long in the posterior nasopharynx to the right of the midline and approximately one-half inch below the lower border of the sphenoid ostium

Six days after the operation the packing was removed from the wound, and a profuse serous discharge was noted. Eleven days after the operation, both the upper and the lower angles of the wound had completely healed. A narrow slit in the center of the wound was still open, discharging a serous fluid three days later the patient was up and around the ward.

During the entire postoperative period, the patient had no elevated temperature and no complaints. Repeated examination revealed no evidence of any cerebral injury.

There was an uneventful recovery after a period of eighteen days in the hospital. The present condition is excellent, about one month after injury.

COMMENT

Numerous cases of serious penetrating wounds of the skull have been reported. I am offering the facts of this case, especially for the following reasons:

- 1 The type of weapon used (an ordinary table knife)
- 2 The terrific force that must have been employed to drive it to the hilt, embedding it 4 inches within the skull
- 3 The postoperative course, which was uneventful
- 4 Above all, the fact that the patient reacted with no shock or distress, either before or after the removal of the blade.

It is surprising to note that meningitis did not develop here, while in most cases it usually is expected.

125 East Eighth-Fourth Street

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

ANTIANEMIC MATERIAL OF LIVER AND STOMACH

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed, the series will be published in book form.—Ed

The observation of Minot and Murphy¹ that adequate liver feeding induces and maintains remissions in pernicious anemia has led to far-reaching results. In addition to establishing the first effective therapy in this and some allied diseases, it has initiated investigations that have resulted in a marked revision of ideas concerning gastric physiology and deficiency diseases and should further contribute materially to our knowledge of cellular physiology, particularly that of nerve tissue and bone marrow.

Though the idea of dietary therapy in the treatment of pernicious anemia is not new,¹ the earlier, moderately encouraging reports that appeared were not sufficiently convincing to rule out the possibility of spontaneous remission, and the life span of the patients treated was not significantly increased. Mosenthal² had shown that the forced feeding of a diet rich in meats restored

nitrogen balance in pernicious anemia. Gibson and Howard³ had found that a diet rich in iron, and incidentally containing considerable amounts of liver, established a positive nitrogen and iron balance and appeared to increase the frequency of remissions. The work of Whipple and Robschert-Robbins⁴ on the anemia of dogs secondary to hemorrhage demonstrated the efficacy of the addition of liver to a basic diet in accelerating hemoglobin regeneration, and the high nutritive value of liver and kidney protein had been long established.⁵ There were also certain observations¹ suggesting that a high fat intake was undesirable. These considerations, together with the analogy to several deficiency diseases such as sprue, pellagra and beriberi, and the nature of the changes in the bone marrow, led Minot and Murphy to devise a diet containing from 120 to 240 Gm of liver, 120 Gm of beef, 300 Gm of vegetables and 40 Gm of fat daily. Bread and cereals were added for caloric value. The clinical improvement in the first forty-five patients to whom the diet was administered was dramatic, and further observations showed that liver or kidney was the essential ingredient, a daily intake of 240 Gm proved effective in causing a return to and maintenance of a normal red cell and hemoglobin level.

EFFECTS OF LIVER FEEDING IN PERNICIOUS ANEMIA

The administration of approximately half a pound of cooked liver or kidney daily to individuals ill with pernicious anemia is followed by a marked rise in the blood count, a definite but much slower improvement in spinal cord symptoms, and a disappearance of sore tongue and diarrhea, but no return of gastric acidity. The patient, barring severe cord symptoms, is rapidly transformed from a state of invalidism to practically unimpaired health and strength, a sense of well being often appears within a day after the administration of large doses of liver or liver extract.

The changes in the blood and marrow are most striking. By the fourth day after starting liver feeding the reticulocytes,⁶ usually less than 2 per cent before treatment, increase sharply and reach a peak between the seventh and the tenth day, the height of which is inversely proportional to the initial red cell count. From red cell levels of one million, reticulocyte peaks of 40 per cent or more may follow, with two million red cells the peak may be 20 per cent and with three million 8 per cent, while initial red counts of over three and a half million are not followed by any significant rise in the reticulocytes. Within three weeks after the initiation of therapy the reticulocyte count again sinks to normal levels. The red blood count and hemoglobin usually begin increasing shortly after the reticulocyte peak and continue to rise until approximately normal values are attained within from one to two months. The color index also tends to return to 1 or less, and, although poikilocytosis disappears, an examination of the blood smear generally reveals the presence of a few

³ Gibson R. B. and Howard, C. P. *Metabolic Studies in Pernicious Anemia*. Arch. Int. Med. 32:1 (July) 1923.

⁴ Whipple, G. H., and Robschert-Robbins, Frieda S. *Favorable Influence of Liver, Heart and Skeletal Muscle in Diet on Blood Regeneration in Anemia*. Am. J. Physiol. 72:408 (May) 1925.

⁵ McCollum, E. V. *The Newer Knowledge of Nutrition*. New York, Macmillan Company 1923.

⁶ Minot G. R., Murphy, W. R., and Stetson R. P. *Response of the Reticulocytes to Liver Therapy Particularly in Pernicious Anemia*. Am. J. M. Sc. 175:581 (May) 1928. Bethell, F. H. and Goldhamer, S. M. *Standards for Maximum Reticulocyte Values Following Venitriculin and Intravenous Liver Therapy in Pernicious Anemia*. Ibid. 180:480 (Oct.) 1933. Goldhamer, S. M., Isaacs, Raphael, and Sturgis, C. C. *Short Interval Observations on the Blood in Pernicious Anemia After Nonpurified Liver Extracts Intravenously*. Ibid. 180:84 (July) 1933.

From Columbia University.

¹ Minot, G. R. and Murphy, W. R. *Treatment of Pernicious Anemia by a Special Diet*. J. A. M. A. 87:470 (Aug 14) 1926.

² Mosenthal, H. O. *The Effect of Forced Feeding on the Nitrogen Equilibrium and the Blood in Pernicious Anemia*. Bull. Johns Hopkins Hosp. 20:129 (June) 1918.

macrocytes The white blood cell and the platelet counts also return to normal It is of interest that during the first week of therapy there may be a transitory appearance of a few myelocytes Occasionally patients on the liver diet develop a marked eosinophilia, which has not been noted when stomach preparations or partially purified injectable liver extracts are used⁷

Peabody⁸ studied the bone marrow by trephining the tibia at various stages of the disease When the blood count is low there is a marked hyperplasia, the fatty marrow of the long bones being largely replaced by red marrow, which is characterized microscopically by the accumulation of large numbers of megaloblasts As the peripheral blood picture improves, the hyperplastic marrow reverts to the normal type with a disappearance of megaloblasts It appears that the active liver material causes the megaloblasts to mature and reach the peripheral circulation first as reticulocytes, later as normal adult blood cells During the reticulocyte rise there is a sharp increase in the urinary excretion of uric acid,⁹ probably derived from disintegrating red cell nuclei

The increased excretion of urobilin in the stools and urine, the elevation of bile pigment in the serum, and the general organ siderosis, long interpreted as evidences of the presence of an active hemolytic toxin, also return to normal following adequate liver therapy¹⁰ The lowered serum protein and cholesterol values, too, resume their usual levels¹¹ In short, all the abnormalities that have been observed in the morphology and chemistry of the blood disappear, with the exception of a slight tendency to macrocytosis

The changes in the nervous system have to be judged by the clinical course The essential lesion is a myelin sheath degeneration,¹² affecting chiefly the dorsal columns and pyramidal tracts of the spinal cord, and to a lesser extent the white matter of the brain and peripheral nerves Pathologic studies of the nervous system following effective therapy have not been reported, but signs and symptoms indicate that with adequate amounts of liver the progress of the lesions is arrested, and a gradual improvement takes place over a period of months or even years¹³ The most important point in treating patients with spinal cord involvement is the maintenance of the blood at or above normal levels,¹⁴ for even with the red blood count as high as four million the development of cord lesions has been observed, while with red cells at five million or better this has not taken place This probably accounts for the discrepancies in the literature reviewed by Fouts,¹⁵ who found that vitamin B was inert in the treatment of cord lesions The most severe cases, even those presenting bed sores, paralysis and bladder involvement, may respond to adequate parenteral liver therapy

The point of view which has also been advanced that, while peripheral nerve lesions may improve, spinal cord lesions do not, is hardly in keeping with the disappearance of the Babinski reflex and ataxia The rate of improvement in spinal cord symptoms is inversely proportional to their duration, the outlook for complete recovery being much brighter if symptoms have been present only for a few months, but even those of years' duration may show improvement with prolonged intensive treatment

The response of the gastro-intestinal tract to liver therapy is of great interest The sore tongue rapidly improves, and the papillary atrophy of that organ may gradually become less The diarrhea that at times is present usually disappears

The central lesion of pernicious anemia, the gastric anacidity, however, persists It has long been known that achlorhydria is practically always present in classic Addison's anemia¹⁶ and often exists for many years before the onset of involvement of the blood or nervous system It has now become clear that with rare exceptions¹⁷ it persists¹⁸ after liver therapy has brought about a return of the blood and marrow to normal and has favorably affected the nervous system Though the gastric atrophy thus appears to be the most constant feature of the disease, it must be noted that following gastrectomy in man the development of pernicious anemia is not constant,¹⁹ while the disease has not yet been produced in animals by this method It seems that, important as gastric atrophy is, there may be additional factors, possibly an inability to synthesize liver material in the body, that are necessary for the development of the disease It is also well known that the disease is very rare under the age of 30, though this may be due to the rarity of gastric atrophy in the young

PARENTERAL ADMINISTRATION OF LIVER EXTRACT

The chemical studies of Cohn and his associates and of others²⁰ of the nature of the material in liver active in pernicious anemia led to the preparation of liver extracts that were suitable for intravenous or intramuscular administration These earlier methods, however, involved such huge amounts of material that the product was not generally available Gänsslen²¹ and Castle,²² employing a simpler technic, introduced extracts of such potency that maximal reticulocyte responses were obtained following the daily injection of material derived from 15 to 20 Gm of liver To obtain a similar response by oral administration, from fifty to seventy times as much liver is necessary It became clear that the active material in liver was either poorly absorbed from or partially destroyed in the gastro-intestinal tract

Therapeutically these observations were of the greatest importance, and they opened the way to an effective

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21 The Nature of the Substance Effective in Pernicious Anemia, Tr A Am Physicians 45 343, 1930 West, Randolph and Nichols Emily G Liver Fractions in Pernicious Anemia J A M A. 91:867 (Sept 22) 1928

22 Gänsslen M Ein wirksamer injizierbarer Leberextrakt Verhandl. d. deutsch. Gesellsch. f. inn. Med. 1930

23 Castle W B and Taylor F L H Intravenous Use of Liver Extract J A M A 96:1198 (April 11) 1931

control of the disease by the injection of a suitable amount of liver extract every one to three weeks, and to the intensive treatment of certain refractory cases and of those with involvement of the central nervous system

The question of the standardization of liver extracts and adequate dosage is vexing. The only available method of standardization has been the reticulocyte response of an untreated case of pernicious anemia to a submaximal dose of liver extract, the paucity of cases has rendered standardization difficult. Bethell²³ has pointed out that the total reticulocyte production is probably more important in standardizing extracts than is the reticulocyte percentage on any given day. Recently a method of assay utilizing the reticulocyte response of normal guinea-pigs has been devised by Jacobson²⁴ and holds great promise but is not yet in general use. The statement that a given volume of extract is derived from a given weight of liver may be misleading, as losses of potency occur in manufacture. It is therefore wisest for the clinician to treat each case individually, adapting the dosage to the needs of the patient.

The initiation of a remission and attainment of normal blood values is comparatively simple, after that, proper amounts of extract should be given at sufficiently frequent intervals to maintain the red blood count at or above normal levels. This is imperative in patients with spinal cord involvement, who, when desperately ill, should be given amounts of parenteral extract daily that will normally maintain a patient for intervals of two or even three weeks. Most of the commercial extracts are prepared so that injections of from 3 to 10 cc will be followed by a maximal reticulocyte response, and a similar amount injected every one to three weeks will maintain an average case. In general, older patients, particularly those with marked arteriosclerosis, require larger doses.

Certain preparations may be injected slowly intravenously,²⁵ but occasionally severe reactions follow and the intramuscular route is to be preferred unless very large doses are imperative. A few severe reactions may follow even intramuscular injections, characterized by urticaria, falling blood pressure, vomiting and intestinal peristalsis. These are usually due to idiosyncrasies of the patient rather than to impure preparations and have been observed with highly purified material. "Allergic" individuals particularly should be treated with caution.

It must also be borne in mind that multiple deficiencies may occur and that, while iron is generally superfluous, in certain instances it may be needed to maintain normal hemoglobin values.

THE NATURE OF THE ANTIANEMIC MATERIAL IN LIVER

The absence of a nonclinical test for activity has greatly retarded investigation of the chemical nature of the material in liver active in pernicious anemia. The earlier work²⁶ soon established certain facts. Protein could be removed by heat and proved inert. All active material could be precipitated from the filtrate by

phosphotungstic acid or by Remeke's salt, and it could be regenerated from these precipitates. Unfortunately the salts of gold, silver, platinum or mercury destroy clinical activity, as does exposure to normal sodium hydroxide at room temperature, or boiling with mineral acids. Heating to 80 C or even 100 C at pH 5.0 does not lessen clinical potency. The active material is readily soluble in water, and, when partly purified, it is also soluble in large volumes of slightly acid 95 per cent alcohol. It is insoluble in ether. The reported isolation of a crystalline quinine salt was incorrect.²⁷

The best preparations obtained have given no biuret reaction, they contain carbon, hydrogen, oxygen and nitrogen. Phosphorus and sulphur are absent. Intravenous doses of 75 mg have been followed by maximal reticulocyte responses. In the absence of crystallization it is possible that the effects obtained are due to traces of impurities, but this seems improbable.

In addition to the material active in pernicious anemia, there is evidence that another chemical fraction of liver has to do with the accelerated hemoglobin formation following hemorrhage described by Whipple²⁸. This fraction is not rich in the antipernicious anemia material and probably contains a mixture of substances that may act as building blocks for hemoglobin.

GASTRIC FUNCTION IN PERNICIOUS ANEMIA

In 1928 the experiments of Castle²⁹ clarified the role of the stomach in this disease and added a new chapter to gastric physiology. The almost universal relationship of achylia gastrica to Addison's anemia and to subacute combined degeneration of the spinal cord has been mentioned, as has the fact that the achylia precedes clinical symptoms and persists after otherwise effective liver therapy.

Castle has shown that gastric digestion liberates antianemic material from certain foodstuffs which before digestion had no antianemic properties. His classic experiment consisted in feeding a patient suffering with pernicious anemia a half pound (225 Gm) of rare hamburger steak each morning, and 200 cc of fresh normal human gastric juice each evening for ten days. There was no blood response. For the next ten day period the steak and gastric juice were fed together, and a rise in reticulocytes and blood count followed, analogous to that described for liver feeding. The reaction of the gastric juice with the beef steak may also be carried out in vitro by incubation in slightly acid solution, and positive responses follow when the resulting product is administered orally to patients. In the earliest experiments a normal individual ate 250 Gm of steak and regurgitated it after a short time, the product was then administered by stomach tube.

The factor in beefsteak was called the extrinsic factor and that in gastric juice the intrinsic factor, the lack of which causes Addison's anemia.

The intrinsic factor is thermolabile, heating to 70 C completely inactivates it. It is presumably an enzyme,

23 Bethell F H. The Relationship Between the Total Reticulocyte Production and the Degree of Bone Marrow Involvement in Pernicious Anemia. *Am J M Sc* 188: 476 (Oct) 1934.

24 Jacobson B M. The Response of the Normal Guinea Pig to the Administration of Liver Extracts. *Science* 80: 211 (Aug 31) 1934.

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26 Cohn Minot, Allen and Salter. Cohn McMeekin and Minot. West and Nichols. West, Randolph Howe Marion and Dakin, H D. A Precipitant for Material in Liver Active in Pernicious Anemia, *Proc. Soc. Exper Biol & Med* 28: 512 (Feb) 1931.

27 West, Randolph and Howe Marion. A Crystalline Derivative of an Acid Present in Liver. A Correction. *J Biol Chem* 94: 611 (Dec) 1931.

28 Whipple G H. Robschtein Robbins, Frieda S and Walden G B. Blood Regeneration in Severe Anemia. *Am J M Sc* 179: 628 (May) 1930.

29 Castle W B and Locke E A. Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. *J Clin Invest* 6: 2 (Aug) 1928. Castle W B. Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. *I, Am J M Sc* 178: 748 (Dec) 1929. Castle W B, and Townsend W C. Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. *II, ibid* 178: 764 (Dec) 1929. Castle W B, Townsend, W C, and Heath C W. Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. *III, ibid* 180: 305 (Sept) 1930.

but experiments carried out by substituting various preparations of pepsin and rennin for fresh gastric juice have yielded negative results

Castle has shown³⁰ that there may be a dissociation of gastric acidity and the intrinsic factor. Cases of tropical sprue with normal stomach acid values may present an anemia that responds to liver, while elderly individuals often have achlorhydria but no anemia. Acid gastric juice from an anemic patient with sprue, when mixed with meat and fed to a patient with Addison's anemia, failed to induce a reticulocyte response, while achlorhydric gastric juice from an elderly nonanemic individual contained the intrinsic factor by the same test. Isaacs and Goldhamer³¹ have called attention to the diminished quantity of gastric juice secreted in pernicious anemia; they collected 1,500 cc during a period of eight weeks from five patients. This, when incubated with meat and fed to a patient, was followed by a fair rise in reticulocytes.

The extrinsic factor has been studied by Strauss and Castle,³² who substituted various substances for the beefsteak of their original experiment and digested them with normal gastric juice. By this method the extrinsic factor has been found to be absent from casein, gluten, nucleoprotein from hen's blood, and nucleic acid of yeast and of animal origin. Washed beef muscle protein contained moderate amounts, and spleen pulp and autolyzed yeast large amounts of the extrinsic factor. The further observations that the extrinsic factor in yeast was not destroyed by autoclaving and was soluble in 80 per cent alcohol led to the suggestion that it might be identical with or closely allied to vitamin B₂ (G). Further work has made this suggestion untenable, for Lassen,³³ Wills³⁴ and Diehl and Kühnau³⁵ have failed to obtain responses on feeding various sources of vitamin B₂ and gastric juice to patients having pernicious anemia. Furthermore, potent liver material has been purified till free from this vitamin.³⁶

That Cassel's yeast preparation (Vegex) contained the extrinsic factor is clear, and the observations of Wills^{34b} on tropical macrocytic anemias, in which the intrinsic factor is presumably present and the extrinsic factor lacking in the diet, confirm this. Adequate reticulocyte responses followed the feeding of Marmite (a yeast preparation) autoclaved at pH 5.0, and an 80 per cent alcoholic or an aqueous extract of Marmite. No response was elicited with alkaline autoclaved Marmite, vitamin B₂ from egg white, or vitamins B₁ and B₆. The experiments of Miller and Rhoads³⁷ also indicate that vitamin B₂ and the extrinsic factor are not identical; certain sources of the extrinsic factor are

poor in vitamin B₂. They found both present in egg white, however, failing to confirm the observation of Wills.

ANTIANEMIC FACTORS IN DESICCATED STOMACH AND IN GASTRIC JUICE

The evidence of the essential role of the stomach in the causation of pernicious anemia was now firmly established, and in 1929 Sturgis and Isaacs³⁸ administered to patients powdered hog's stomach, defatted and desiccated at low temperature. The daily administration of from 20 to 30 Gm of the desiccated material derived from 150 to 200 Gm of the fresh organ was promptly followed by a response analogous to that already described for liver feeding, and all the effects obtainable by the oral administration of liver and liver extracts were duplicated with desiccated powdered stomach. Reports of active extracts of stomach suitable for injection have been published by Gänsslen,³⁹ the daily dose being the material derived from 4 Gm of gastric mucosa. No chemical details are given. Other workers have failed to confirm this observation.

All activity of the stomach preparation is lost on heating for an hour at 70 C, and the desiccation is usually carried out below 45 C. The material must not be heated before administration to the patient. The question at once arises as to the relationship of stomach material to liver material, and to Castle's two factors. It seems highly probable that in feeding whole desiccated stomach one is feeding Castle's extrinsic and intrinsic factors simultaneously. Isaacs and Sturgis⁴⁰ report but slight response when mucosa and muscularis are fed separately, but Wilkinson⁴¹ found the two equally potent. The potency of various parts of the stomach has been studied, and Meulengracht⁴² summarizes the literature on this point. In very careful experiments he found preparations from the pylorus highly active clinically, while those from the fundus were inert. Material from the cardia is under investigation. Pepsin and rennin activities were considerable in preparations from the fundus and small in those from the cardia and pylorus. Sharp⁴³ found dried defatted duodenum active in pernicious anemia, but Henning and Brugsch⁴⁴ found duodenal preparations inert. The opinions regarding the relative potency of mucosa and muscularis alone vary, probably owing to the technical difficulties in cleanly separating the layers.

Morris and his collaborators⁴⁵ have reported a principle, to which they have given the name "addisin," in normal gastric juice which produces reticulocytosis and a rise in red count and hemoglobin when administered

38 Sturgis C C and Isaacs Raphael. Desiccated Stomach in the Treatment of Pernicious Anemia. *J A M A* 93:747 (Sept 7) 1929.

39 Ederle W, Kriech H and Gänsslen M. Behandlung der Anämia perniciosa mit injizierbarem Magenextrakt. *Klin Wchnschr* 10:313 (Feb 14) 1931.

40 Isaacs Raphael and Sturgis C C. Some New Remedies in the Treatment of Pernicious Anemia. Desiccated Stomach. *J A M A* 95:585 (Aug 23) 1930.

41 Wilkinson J F. Pernicious Anemia. Preliminary Report on the Results Obtained by Treatment with Certain Preparations of Stomach. *Brit M J* 1:236 (Feb 8) 1930.

42 Meulengracht E. The Presence of the Antianemic Factor in Preparations of Dried Stomach Substance from the Cardia, Fundus and Pylorus. Respectively. *Acta med Scandinav* 82:353 1934. Meulengracht E and Schipdt E. Pepsin and Rennin Activity of Preparations of Dried Stomach from the Cardia, Fundus and Pylorus. Respectively. *ibid.* 82:375 1934. Meulengracht E and Ohlsen A. Spørgsmålet om den topografiske fordeling af de kirtler i Cardia, Fundus og Pylorus i Stomachet af Pig. *ibid.* 82:384 1934.

43 Sharp E A, McKeen R M and Vonder Heide E C. Pernicious Anemia. The Behavior of Various Extracts of Stomach and Duodenum Used to Induce Remissions. *Ann Int Med* 4:1282 (April) 1931.

44 Henning A and Brugsch H. Ueber die Verteilung des anti-anämischen Faktors in der Magenschleimhaut. *Deutsche med Wchnschr* 57:757 (May 1) 1931.

45 Morris R S, Schiff Leon, Foulger J H, Rich M L and Sherman J E. Treatment of Pernicious Anemia. Effect of a Single Injection of Concentrated Gastric Juice (Addisin). *J A M A* 100:171 (Jan 21) 1933.

30 Castle W B, Heath C W and Strauss M B. Observations on the Etiologic Relationship of Achylia Gastrica and Pernicious Anemia. *IV. Am J M Sc* 182:741 (Dec) 1931.

31 Isaacs Raphael and Goldhamer S M. Role of Decreased Amount of Gastric Secretion in Production of Pernicious Anemia. *Proc Soc Exper Biol & Med* 31:706 (March) 1934.

32 Strauss M B and Castle W B. The Nature of the Extrinsic Factor of the Deficiency State in Pernicious Anemia and in Related Macrocytic Anemias. *New England J Med* 207:55 (July 14) 1932. *Lancet* 2:111 (July 16) 1932.

33 Lassen H C A and Lassen H K. Yeast or Vitamin B₂ as Extrinsic Factor in Treatment of Pernicious Anemia. *Am J M Sc* 189:461 (Oct) 1934.

34 (a) Wills L and Naish A. A Case of Pernicious Anemia Treated with Vitamin B₂ from Egg White. *Lancet* 1:1286 (June 17) 1933. (b) Wills L. The Nature of the Hematopoietic Factor in Marmite. *ibid.* 1:1283 (June 17) 1933.

35 Diehl F and Kühnau J. Ist Vitamin B₂ der therapeutisch wirksame aussere Factor beim Morbus Biermer? *Deutsches Arch f klin Med* 176:149 1933.

36 Brand E, West Randolph and Stucky C J. Vitamin G. Potency of Purified Liver Preparations. *Proc Soc Exper Biol & Med* 30:1182 (June) 1933.

37 Miller D K and Rhoads C P. The Vitamin B₂ and B₆ (G) Content of Liver Extract and Brewers' Yeast Concentrate. *J Exper Med* 59:315 (March) 1934. The Presence in Egg White and in Rice Polishing Concentrate Low in Vitamin B₂ (G) of Antipernicious Anemia Principle. *New England J Med* 211:921 (Nov 15) 1934.

parenterally in pernicious anemia. Injections of from 10 to 20 cc of normal gastric juice elicit no response, but when from 3 to 5 liters of swine gastric juice is concentrated in vacuo at relatively low temperatures, and injected, a response occurs, which is earlier and more sustained than that occurring with liver extract. As a rise in both red cells and hemoglobin follows, it is probably analogous to that obtained with liver, although the analogy may lie with the response following the administration of arsenic, which has long been known to initiate, but not to maintain, remissions in this disease. The work of Fouts and his co-workers,⁴⁶ however, makes it probable that the large volumes of gastric juice employed contain sufficient amounts of intrinsic and extrinsic factors and that the latter undergoes a digestion during the vacuum distillation generating active material which produces a response analogous to that of liver. These workers found that, if fresh gastric juice from normal individuals was at once chilled and passed through an ultrafilter in the icebox, and the ultrafiltrate was then concentrated in vacuo, no response was obtained on injecting either concentrate or ultrafiltrate alone. If, however, the juice was first stored for two months in the icebox, or first distilled in vacuo and then subjected to ultrafiltration, the ultrafiltrate was active. It is difficult to escape the conclusion that prolonged storage or warming during distillation had permitted a reaction between extrinsic and intrinsic factors to form active material. The fact that addisin is thermolabile also supports this point of view. Morris's suggestion⁴⁷ that polycythemia vera results from an excess of addisin has not been confirmed.

Walden and Clowes⁴⁸ have reported a marked increase in potency of liver extracts incubated with unheated stomach tissue, suggesting that liver contains extrinsic factor which is activated by gastric intrinsic factor, in addition to finished antipernicious anemia material.

Herron and McElroy⁴⁹ have reported a marked increase in the antipernicious anemia potency of liver autolyzed for several days in weak acid, suggesting the presence of both extrinsic and intrinsic factors in liver itself. Castle,⁵⁰ however, has been unable to detect increased potency in either experimental or commercial preparations made in this way.

Of great interest are preliminary reports by Castle⁵¹ that, though mixtures of extrinsic and intrinsic factors are potent when administered orally, there have been no responses observed following parenteral administration.

LIVER THERAPY IN OTHER ANEMIAS

The interaction of extrinsic factor and intrinsic factor administered orally generates antipernicious anemia factor, which is stored in liver and kidney. Addison's anemia may be defined as due to a lack of intrinsic factor,⁵² though dietary extrinsic factor is adequate. In tropical sprue the intrinsic factor may be absent but is

probably usually present, the lack of extrinsic factor in the diet together with a marked impairment in absorption in the intestinal tract being the chief faults. The response to parenteral liver therapy is dramatic.⁵³ Sprue is probably due to a multiple deficiency in which vitamins and iron at times play a part.

That the pernicious anemia factors may play a part in the complex picture of pellagra is probable. Rhoads and Miller⁵⁴ have produced black tongue in dogs with anemia and bone marrow changes closely simulating those of pernicious anemia. The diet was poor in vitamin B₂ (G) and probably in extrinsic factor. Spies⁵⁵ reports clinical improvement following maximal doses of parenteral liver extract in pellagra.

The anemia of pregnancy⁵⁶ is complex, the added needs of the fetus along with a temporary loss of maternal intrinsic factor causes a deficiency of liver material or of iron or both.

Various disturbances of the gastro-intestinal tract,⁵⁷ such as diarrhea or intestinal obstruction, may interfere with the proper absorption of antianemic material, while its storage in the liver may be impaired in cirrhosis.⁵⁸

The anemia of infestation with *Bothriocephalus latus*⁵⁹ has been found to yield to liver therapy without the removal of the worm. This anemia is better interpreted as due to a deficiency than to a hemolytic poison, and the observation⁶⁰ that liver extract protects rabbits from saponin but not from phenylhydrazine anemia can be well interpreted on the probable assumption that liver material is a precursor of red cell stroma.

Secondary anemias of the types that yield to iron have been shown by Murphy⁶¹ to yield more rapidly if parenteral liver extract is also given at weekly intervals.

It is of interest that, although spinal cord involvement is common in Addison's anemia, it is extremely rare in sprue. It is not yet possible to say whether a lack of a single substance is responsible for both spinal cord and blood involvement, but this seems probable. The impression of certain observers that stomach preparations are more effective than liver in the treatment of combined systemic disease is questionable. It is also of interest that liver extract from an untreated patient dying of Addison's anemia was inert.⁶¹ Jacobson⁶² has confirmed this, using his guinea-pig method.

Reimann and Weil⁶³ have recently developed an improved technic in testing for the intrinsic factor, using from 10 to 20 Gm of liver instead of 200 Gm of beefsteak as the source of extrinsic factor.

Edmunds, Brueckner and Fritzell⁶⁴ have shown that a reticulocytosis follows the administration to pigeons

46 Fouts P J, Helmer O M and Zerfas L G. The Formation of a Hematopoietic Substance in Concentrated Human Gastric Juice. *Am J. M. Sc.* 187: 36 (Jan.) 1934.

47 Morris R S, Schiff L and Foulger M. Erythema—A Theory Regarding Etiology. *J. Med.* 13: 318 (Aug.) 1932.

48 Walden C B and Clowes G H A. Pernicious Anemia Method Whereby the Therapeutic Efficiency of Liver and Liver Fractions May Be Substantially Increased. *Proc. Soc. Exper. Biol. & Med.* 29: 873 (April) 1932.

49 Herron W F and McElroy W S. The Use of Autolyzed Liver in the Treatment of Pernicious Anemia. *J. A. M. A.* 100: 1084 (April 8) 1933.

50 Castle W B and Strauss M B. Effect of Autolysis on Potency of Liver in Treatment of Pernicious Anemia. *J. A. M. A.* 104: 798 (March 9) 1935.

51 Castle W B. Personal communication to the author.

52 Strauss M B. The Role of the Gastro-Intestinal Tract in Conditioning Deficiency Disease. *J. A. M. A.* 103: 1 (July 7) 1934.

53 Castle W B and Rhoads C P. Observations on the Etiology and Treatment of Sprue in Porto Rico. *Tr. A. Am. Physicians* 47: 245 1932.

54 Rhoads C P and Miller D K. The Production in Dogs of Chronic Black Tongue with Anemia. *J. Exper. Med.* 58: 585 (Nov.) 1933.

55 Spies T D. Observations on the Treatment of Pellagra. *J. Clin. Investigation* 13: 607 (Sept.) 1934.

56 Strauss M B and Castle W B. Studies in the Anemias of Pregnancy. *III. Am. J. M. Sc.* 185: 539 (April) 1933.

57 Goldhamer S M. Liver Extract Therapy in Cirrhosis of the Liver. *Arch. Int. Med.* 53: 54 (Jan.) 1934.

58 Birkeland I W. Bothriocephalus Anemia. *Diphyllobothrium Latum* and Pernicious Anemia. *Medicine* 11: 1 (Feb.) 1932.

59 Paschke K and Taylor G. Ueber die Wirkung des antianemischen Leberstoffes bei toxischen Experimentalanemien. *Klin. Wchnschr.* 13: 1538 1934.

60 Murphy W P. Treatment of Secondary Anemia, with Special Reference to Use of Liver Extract Intramuscularly. *Arch. Int. Med.* 51: 656 (May) 1933.

61 Richter O, Ivy A C and Kim M S. Action of Human "Pernicious Anemia Liver Extract." *Proc. Soc. Exper. Biol. & Med.* 29: 1093 (June) 1932.

62 Jacobson B M. On a Pernicious Anemia-like State in the Guinea Pig. *J. Clin. Investigation* 13: 714 (July) 1934.

63 Reimann F and Weil R. Ueber den Nachweis des Castleschen Fermentes III. *Ztschr. f. klin. Med.* 126: 568 1934.

64 Edmunds C W, Brueckner H H and Fritzell A I. On a Laboratory Test for Liver Extract. *J. Am. Pharm. A.* 22: 91 (Feb.) 1933.

of various liver and stomach preparations, this may prove a useful method of assay of antianemic potency. Miller and Rhoads⁶⁵ have found that swine fed on the Goldberger diet develop the blood picture of pernicious anemia, and that their gastric juice loses both acid and intrinsic factor, and their livers antianemic potency. Salus and Reimann have noted that the gastric juice of patients with subacute combined degeneration but without marked anemia contains Castle's intrinsic factor although no hydrochloric acid is present.⁶⁶

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER Secretary

ADLANCO PORTABLE ULTRATHERM ACCEPTABLE

Manufacturer Adlanco X-Ray Corporation, New York

This machine is recommended for medical diathermy, that is, for producing heat within the body tissues.

The Portable Ultratherm is a short wave diathermy machine of the two-tube push-pull oscillating type. The hook-up is laid out simply, all electrical parts are well made, and the workmanship appears satisfactory. The unit is not equipped with a meter, but a small lamp is used to indicate when the patient's circuit is in resonance. The machine is about 18 by 18 by 12 inches in size, weighs about 35 pounds, and is provided with a carrying case.

Under full load this unit was operated for two hours and the temperature of the cabinet and transformer did not rise above the limits of safety previously established by the Council. The wavelength was found to be approximately 6 meters. The input power is about 395 watts. So far as is known, there is

no reliable or acceptable method of measuring the power output of short wave diathermy machines.

In a clinic acceptable to the Council, the machine was tested and the investigator reported that the unit supplied sufficient energy to heat the body tissues whenever such treatment is indicated. The tissue heating effect in the human thigh was investigated. The technique used was that recommended by the manufacturer. Cuff electrodes of pliable metal encased in rubber,



Adlanco Portable Ultratherm

about 20 inches long and 3 inches wide, were used. When applied to the patient, the rubber cuffs are separated from the skin by a thickness of felt and toweling. This technique was used throughout the tests. Thermocouples were introduced into the subcutaneous deep lying tissue (quadriceps extensor). After twenty minutes treatment, operating the machine at the patient's tolerance, the temperature rise (average of eight tests) was observed to be more than that for conventional diathermy.

Burns may be produced by this machine, but, with ordinary care, they may be avoided, their likelihood to occur is much less than with conventional diathermy.

In view of the foregoing report, the Council on Physical Therapy voted to include the Adlanco Portable Ultratherm in its list of accepted apparatus.

⁶⁵ Rhoads, C. P., and Miller, D. K. The Experimental Production of Loss of Hematopoietic Elements of the Gastric Secretion of the Liver in Swine with Achlorhydria and Anemia. *J. Clin. Investigation* 14: 153 (March) 1935.

⁶⁶ Salus, F. and Reimann, F. Das Castle'sche Ferment und die funktionale Spinalerkrankung. *Klin. Wchnschr.* 13: 986 (July 7) 1934.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG Secretary

LARSEN'S "FRESHLIKE" APPLESAUCE

Manufacturer—The Larsen Company, Green Bay, Wis.

Description—Canned, peeled, strained apples, cooked in a small amount of water, retaining in high degree the natural mineral and vitamin values.

Manufacture—Matured apples of chosen varieties are peeled (all stem, core material and bruised parts are removed), washed and immersed in a 2 per cent salt solution, after removal from which they are washed to remove the salt, heated to 82 C in closed aluminum kettles with a small amount of water, strained through a paddle type monel metal pureeing machine in an atmosphere of steam, and automatically filled into enamel-lined cans, which are sealed, processed, and quickly cooled.

Analysis (submitted by manufacturer) —	per cent
Moisture	87.9
Total solids	12.1
Ash	0.2
Fat (ether extract)	0.03
Protein (N X 6.25)	0.3
Reducing sugars as invert sugar	6.3
Sucrose	0.7
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference)	11.1

Calories—0.5 per gram 14 per ounce

Claims of Manufacturer—Scientifically prepared to retain in high degree the natural color, flavor, mineral and vitamin values.

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Manufacturer—Church Grape Juice Company, Kennewick Wash.

Description—Bottled, processed Concord grape juice.

Manufacture—Concord grapes grown in company vineyards or under contract are washed and crushed. Stems are removed and the resulting pulp is heated to 70 C. The juice is expressed, heated to 80 C, hermetically sealed in 5 gallon glass demijohns and stored at 7 C for three months. The juice is siphoned off the argols, filtered, heated to 60 C, bottled, and heated for forty-five minutes at 78 C. Aluminum steam jacketed kettles are used. No toxic spray is used in the culture of the grapes.

Analysis (submitted by manufacturer) —	per cent
Moisture	82.2
Ash	0.3
Fat (ether extract)	1.0
Protein (N X 6.25)	0.2
Reducing sugars as invert sugar	16.9
Sucrose	0.0
Total carbohydrates (by difference)	16.9
Titrate acidity as tartaric acid	0.7

Calories—0.8 per gram 23 per ounce

Claims of Manufacturer—Processed Concord grape juice for all table uses.

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SATURDAY, AUGUST 10 1935

ANIMAL VS VEGETABLE PROTEIN

The controversies of the latter part of the last century regarding the importance of protein in the diet were concerned chiefly with the relative importance of the nitrogenous components of the food to the other ingredients ingested. Beginning some thirty years ago with the pioneer work of Osborne and Mendel and of Hopkins, there developed the more modern interpretation of the importance of protein in nutrition. The value of any protein or food or ration in meeting the protein requirement of animals depends on the nature and the amounts of amino acids yielded on hydrolysis. Proteins that are unsatisfactory for nutritive purposes are not toxic or poorly utilized but are lacking in one or more of the so-called essential amino acids, which cannot be synthesized by the animal organism and must therefore be adequately supplied in the diet. The emphasis thus has been transferred from one of quantity of protein in the diet to that of quality of ingested protein.

The development of methods for the preparation of purified proteins and for their analysis for amino acid composition, and the elaboration of procedures for determining the biologic value of proteins,¹ have emphasized the importance of the individual amino acid components of a protein in determining its value in nutrition. Investigators have clearly established that, in general, the proteins of animal origin are superior to the vegetable proteins for purposes of nutrition.

Within recent years, results have been made available on the effects of the prolonged ingestion of proteins of vegetable origin on a variety of functions. Since the diet of the majority of the Chinese people is largely vegetarian, extensive studies were conducted by Wu and his collaborators² at Peiping Union Medical College on the question of vegetarian diets with a laboratory animal

of the omnivorous type. The white rat has proved ideal for this study, the high degree of standardization of the behavior of this rodent, together with the opportunity which the rat affords for the study of successive generations, is of importance. It is obvious that the rate of growth, for example, of rats is not an adequate test of the value of a diet, if the animals used are born of mothers on a good diet and have been nursed by them. The true quality of the diet is revealed only in the offspring of these animals. It might be pointed out, therefore, that the testimony of human vegetarians is worthless, because they were probably not vegetarians during the first part of their lives and they do not carry the test to the second generation.

The results of the studies of Wu and his group clearly demonstrate that animals ingesting a vegetarian ration grow at a slower rate than controls ingesting a mixed diet. Furthermore, the diminished growth rate is accentuated in successive generations. There is no decided difference in life span, however, and in view of the slower rate of growth it follows that the vegetarian rats attain a smaller final body weight than do the control animals. Fertility remains normal, but the ability of the experimental animals to nurse young is quite inferior to that of the rats in the stock colony. The basal metabolism of the vegetarian rats is somewhat lower than that found in the control omnivorous animal. A detailed study has been made of the weights and size of the various organs of rats of different ages on the vegetarian diet. Calculated on the basis of equal body weights, the organs, with the exception of the kidneys, liver, spleen and testes, of the vegetarian rats are heavier and larger than those of the omnivorous rats. The differences are statistically significant. The thyroid gland of the vegetarian rat is about three times heavier than that of the control. Adding iodine to the diet of the former reduces the thyroid to normal size but has no effect on the growth curve or on the weights of other organs. This indicates that the poor growth of the vegetarian rats is not due to the lack of iodine in the diet.

There was little effect of the vegetarian diet, continued for many generations, on the gross physical characteristics or on the general health of the animal. It is of some significance that the vegetarian rats may grow to maturity and reproduce, even when continued for several generations on the same diet, without any sign of abnormality except the lowered growth rate. A diet which is so deficient as to be inadequate for growth and reproduction is easily recognized by its effect, it must be changed to a better one or the race will perish. In either case no weaklings remain. However, a diet that is slightly deficient and yet suffices to propagate the race after a fashion may never arouse suspicion and hence continues to exert its insidious effects. This is true not only of a strictly vegetarian ration but of any slightly deficient diet.

¹ Lusk, Graham. *Science of Nutrition*, ed. 4. Philadelphia: W. B. Saunders Company, pp. 511 ff. Mitchell, H. H. and Hamilton, T. S. *Biochemistry of the Amino Acids*. New York, Chemical Catalog Company, pp. 503 ff.

² Wu, Hsien, and collaborators. *Publications in Chinese Journal of Physiology* from 1928 to present. Most recent publication: Wan Shung and Wu Hsien. *Chinese J. Physiol.* 9: 119 (May 15) 1935.

UNDERNUTRITION

Undernutrition may be arbitrarily defined as a condition characterized by a deviation of body weight amounting to from 10 to 15 per cent below the statistical ideal for a given age, sex and height. Lusk¹ some time ago reviewed the large amount of information available regarding the detrimental effects of undernourishment. Among the unfavorable effects are general weakness and tiredness, physical and mental incompetence and increased susceptibility to disease. At present the so-called acute and chronic forms of undernutrition are recognized. It is generally conceded that the weight loss in acute undernutrition has a direct relation to a period of inadequate food intake, resulting from either a qualitative or a quantitative deficiency of the diet. This may occur during economic crises, as in wartime or in droughts, or it may occur as a result of acute pathologic processes. Chronic undernutrition, on the other hand, is regarded as a different type of phenomenon, the etiology of which is not clearly understood. The various explanatory hypotheses advanced include those which postulate abnormal functioning of the endocrine glands, peculiarities of the nervous system, chronically inadequate dietaries, and anomalies of metabolism. Although there is some evidence for the first of these hypotheses, the current opinion appears to favor the view that they are of secondary importance and perhaps a result of disturbances initiated by one or both of the latter two circumstances. The importance of an adequate dietary in the correction of undernutrition is well known. A short time ago further evidence for the favorable therapeutic value of the dietary procedure was reported.² A group of twenty-one undernourished office patients given a diet containing adequate amounts of the known dietary essentials and supplying a positive energy balance showed consistent body weight responses. During an average period of eleven weeks the subjects showed an average increase in weight of 17 per cent, or $1\frac{1}{10}$ pounds (770 Gm) per week. Similar results were obtained on a group of eighteen hospital patients, their average body weight increase was 13 per cent in a period of five weeks. In addition, many diverse symptoms disappeared, the patients expressed a feeling of well being, and they became more resistant to fatigue and to infection.

Studies on the metabolism of this series of patients, which have been reported recently,³ lend further evidence against the view that anomalies of metabolism are major factors in the production of chronic undernutrition. The average basal metabolic rate of the series of eighteen hospital patients before treatment was a minus 2, a value not unlike one that might be obtained from a similar series of normal subjects.

After the period of five weeks on the high caloric diet, no significant change in the basal rate occurred, the average value being a minus 6. However, as might be expected in view of the fact that the total heat production of undernourished individuals is low, there was some increase in this value. Simultaneous studies of the nitrogen metabolism and of the efficiency of digestion of these subjects revealed no abnormality in the utilization of nitrogen or in the digestion and absorption of the dietary constituents, either before or during treatment. Indeed, the figures relating total weight of food ingested to the total weight of feces excreted indicated that 92 per cent of the food consumed was digested and absorbed during the period of treatment. This value is well within the recognized limits for normal subjects ingesting an ordinary mixed diet. Furthermore, an even more efficient digestion of foods (94 per cent) was found in subjects consuming the higher caloric diets than in those provided a ration of somewhat lower caloric content. Therefore it appears that the gastro-intestinal tracts of these undernourished subjects were not inferior to those of normal individuals and that their undernutrition was not the result of anomalies of metabolism.

The hypothesis that chronic undernutrition is caused by inadequate food intake apparently alone remains unchallenged by convincing contradictory evidence. Whether or not this thesis will stand the test of time and, if so, the ultimate reason for the consumption of subnormal amounts of food, remain to be determined.

INHIBITION OF LEUKOPOIESIS BY
CERTAIN DRUGS

Recognition of the relationship of the administration of certain compounds, notably amidopyrine, to the occurrence of granulocytopenia¹ has led to studies of the effects of such substances on circulating granulocytes. The results of animal experiments have for the most part proved equivocal. Administration of drugs suspected of being implicated as etiologic factors has had little detectable effect in most cases, even when the substances were given in large amounts. This is not surprising in view of the infrequency with which granulocytopenia occurs clinically, despite the large quantities of amidopyrine and similar drugs employed. The attention of investigators has therefore been diverted from study of the circulating blood to observation of changes in the bone marrow.

Miller² of the Rockefeller Institute administered amidopyrine in daily doses of 0.3 Gm per kilogram of body weight by mouth to sixteen dogs. With this large dose no marked decrease in circulating granulocytes occurred, even when the treatment was continued

¹ Lusk, Graham. *The Physiological Effect of Undernutrition*. *Physiol. Rev.* 1: 523 (Oct.) 1921.

² Strang, J. M. and Evans, F. A. *Undernutrition and Its Treatment by Adequate Diet*. *Ann. Int. Med.* 7: 45 (July) 1933.

³ Strang, J. M., McCingage, H. B., and Brownlee, M. A. *Metabolism in Undernutrition. Its Changes During Treatment by High Caloric Diet*. *Arch. Int. Med.* 55: 958 (June) 1935.

¹ Reznikoff, Paul. *The Relation of Amidopyrine and the Barbiturate Acid Derivatives to Granulocytopenia*. Special Report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 102: 2183 (June 30) 1934.

² Miller, D. K. *Histological Changes in the Bone Marrow of the Dog Following Amidopyrine Administration*. *Science* 80: 320 (Oct. 5) 1934.

for four weeks or more. There was a decrease in the number of circulating erythrocytes of varying degree. Despite the absence of a notable effect on the white cells of the circulating blood, striking changes were noted in the bone marrow. The hematopoietic elements failed to mature and the number of young, relatively undifferentiated cells was increased, the granulocytes were decreased in number, sometimes almost to zero. In the more advanced cases the orderly arrangement of the bone marrow into hematopoietic islands had been disturbed. It appears, therefore, that marked changes may take place in the bone marrow with little or no reflection of these alterations in the formed elements of the circulating blood.

Further evidence as to the mechanism of the action of certain cyclic drugs in the production of granulocytopenia has been presented by Climenko,³ working at Cornell University. The latter investigator determined the effect of administering to rabbits amidopyrine, antipyrine, 2,4-dinitrophenol, phenylhydrazine hydrochloride, catechol and orthoquinone on the response of the leukogenic tissues to stimulation by nucleic acid. Normally the injection of this substance produces a sharp rise in the number of circulating leukocytes. It was found that, after the administration of any of the cyclic compounds mentioned, the ability of the hematopoietic tissues to respond to this stimulus was lost long before any change could be observed in the cellular constituents of the peripheral circulation. A normal rabbit with a white blood count varying between 8,100 and 10,400 responded to the intramuscular injection of 5 mg of nucleic acid per kilogram of body weight with a rise in the count to 15,100. Beginning ten days later this animal received daily 0.2 Gm of amidopyrine per kilogram by mouth for eighteen days. At the end of this time a similar dose of nucleic acid caused no detectable increase in the leukocyte count of the peripheral blood. Similar reactions were obtained with the other drugs, phenylhydrazine being the most potent and antipyrine the least active in this respect. Changes in the bone marrow were observed similar to those reported by Miller. Dinitrophenol required a dosage of 20 mg per kilogram to inhibit leukogenesis; in this dosage a preliminary increase occurred in the percentage of juvenile cells in the circulation, this reaction disappeared in a few days while the drug was being administered. Shortly after this the administration of nucleic acid failed to evoke a response. Information is not yet available as to how long the refractoriness to stimulation by nucleic acid persists after administration of any of these drugs is stopped.

Thus it appears that certain cyclic compounds may readily cause marked changes in the bone marrow without significant alteration in the formed elements of the blood. Whether or not this occurs in human beings

as readily as in animals is not known, it may be that suppression of the bone marrow occurs more frequently than is commonly believed and that untoward effects may arise when concomitant infection or some other factor increases the physiologic demand for circulating granulocytes. Further study possibly will eliminate the uncertainty entailed by the commonly accepted thesis that the production of granulocytopenia by a drug depends on the presence of "hypersensitivity" in the person receiving the drug.

Current Comment

AURICULAR FIBRILLATION AND RHEUMATIC HEART DISEASE

De Graff and Lingg¹ have recently investigated the frequency and influence of auricular fibrillation on the course of rheumatic heart disease. The report is based on the records of 644 deceased patients. The type of valvular lesion seemed to have some effect on the incidence of auricular fibrillation, the highest incidence having been found among patients with mitral stenosis. The percentage of men and women with rheumatic heart disease who developed fibrillation was about the same. Of the total number studied, 42.8 per cent developed auricular fibrillation. There was no evidence that fibrillation per se determines prognosis or life expectancy. It was demonstrated, however, that fibrillation is usually a late manifestation in rheumatic heart disease and that it is most commonly observed in the relatively long standing cases. There was no correlation between the age when patients first acquired rheumatic fever and the subsequent development of auricular fibrillation. Children who were attacked by rheumatic fever in the first decade of life were as likely to develop this arrhythmia as patients affected later in life, provided the children lived long enough. The longer the disease lasted, the greater were the chances that patients would develop the irregularity. The reason for the short average duration of life after the establishment of fibrillation is therefore obvious.

OXALIC ACID AND CALCIUM UTILIZATION

In a recent editorial in *THE JOURNAL*,¹ attention was called to the ubiquitous distribution of oxalic acid and its salts among natural food products. The leafy vegetables are particularly rich in these substances. Despite the known toxicity of oxalic acid, the quantities ordinarily ingested with these food materials are too small to cause apprehension. Aside from this feature of its biochemistry, oxalic acid might reasonably influence adversely the utilization of food calcium through the formation of the highly insoluble calcium oxalate. This question is worthy of careful study, particularly in the light of the repeated assertions that the calcium of leafy

³ Climenko, D. R. Inhibition of Leukogenic Activity in the Rabbit by Certain Cyclic Compounds. *Proc. Soc. Exper. Biol. & Med.* 32: 823 (March) 1935.

¹ De Graff, A. C. and Lingg, Claire. The Course of Rheumatic Heart Disease in Adults. III. The Influence of Auricular Fibrillation on the Course of Rheumatic Heart Disease, *Am. Heart J.* 10: 630 (June) 1935.

¹ Oxalic Acid in Metabolism editorial, *J. A. M. A.* 103: 1152 (Oct. 13) 1934.

vegetables is less readily available to man than is that ingested in other forms. A recent note by Kohman and Sanborn² describes some timely experimental studies bearing directly on this question. Although, in their experience, some calcium for the formation of bone is provided by the insoluble calcium oxalate, this salt is not a readily available source of lime. Furthermore, it was found that, if soluble oxalates are present in the food, the utilization of calcium from a known available source is interfered with. The administration of soluble oxalate in nontoxic doses was shown to increase the loss of calcium from the body. It appears then that oxalic acid can interfere not only with the absorption of calcium from the intestine but also with the retention of this element once it has been taken into the body. When further investigation has made these biochemical relationships more definite, there may be presented the nutritional paradox of certain natural foods relatively rich in calcium with other features that actively interfere with its utilization by the organism.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 1016 has been reported to the House, proposing to empower the health officer of the District of Columbia to authorize the opening of graves, and the disinterment and reinterment of dead bodies, in cases in which death has been caused by certain contagious diseases. S 2013 has been reported to the House, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr. Pak Chue Chan. S 2939 has been reported to the House, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr. Ronald A. Cox. H R. 8437 has been reported to the House, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr. Arthur B. Walker. S 3284, introduced by Senator Copeland, New York, proposes to provide for the issuance of a license to practice the healing art in the District of Columbia to Dr. Dexter P. Reynolds.

FLORIDA

Society News—Speakers before the Dade County Medical Association, July 5, were Drs. Elmer H. Adkins and Lee W. Elgin, Miami Beach, on "Rectal Abscesses and Fistulas" and "Trichomoniasis of the Male Urethra and Prostate," respectively. Dr. Emil Novak, Baltimore, spoke on a gynecologic topic before the Orange County Medical Society in Orlando, June 29. Dr. Wilfred McL. Shaw, Jacksonville, was elected president of the Florida State Radiological Society at its recent annual meeting in Ocala. Dr. Frazier J. Payton, Miami Beach, vice president, and Dr. Gerard Raap, Miami, secretary. The next annual meeting of the association will be in May 1936 at Miami.

"Ice Memorial Week" Commemorates Physician.—The governor has proclaimed the week of August 11-17 the "Dr. John Gorrie Ice Memorial Week," in honor of the physician who invented artificial refrigeration. Dr. Gorrie, who was born in Charleston, S. C., Oct. 3, 1803, went to Apalachicola in 1833 and practiced there until his death in 1855. In 1847-1848, while preparing a series of papers for the London *Lancet* on "Equilibrium of Temperature as a Cure for Pulmonary Consumption," one of his chemical experiments on air cooling resulted in the making of artificial ice. He immediately set about perfecting this idea with the result that the first ice machine ever made and operated was patented in 1850. A year

ago the John Gorrie Memorial Foundation was chartered in Florida to provide hospitalization to needy persons in the town where Dr. Gorrie perfected his invention and to carry on a nation-wide drive against cancer. The ice manufacturers of Florida will begin to collect funds to establish an endowment for the foundation during "ice memorial week," during which they will contribute 14 per cent of their income each day. The Florida State Medical Association, several members of which are on the foundation's board of directors, endorsed the memorial at its recent annual meeting in Ocala.

GEORGIA

Society News—Dr. William W. Anderson, Atlanta, addressed the Cobb County Medical Society at Marietta, June 4, on "Digestive Disturbances of the Season in Children," and Dr. George F. Eubanks, Jr., "Surgical Treatment."—Papers were presented before the Georgia Medical Society, Savannah, at its meeting, June 11, by Drs. Marion K. King on "Treatment of Fracture Below the Knee with Walking Plaster Cast," and Shelton P. Sanford, "Vascular Lesions of the Lung Simulating Pneumonia."—Dr. Thomas P. Goodwyn, Atlanta, discussed fractures before the Spalding County Medical Society at Griffin, June 18. At a meeting of the Thomas County Medical Society in Thomasville, June 19, Dr. Ernest F. Wahl, Thomasville, among others, discussed "Pneumothorax in the Treatment of Pulmonary Tuberculosis."—The Ware County Medical Society was addressed in Waycross, July 3, among others, by Dr. Thomas J. Ferrell on "The Mortality in Appendicitis."

ILLINOIS

Funds for Work on Trachoma—The state department of health announces an appropriation of \$45,000 to extend for two years its work on trachoma among the indigent of the southern fourteen counties of Illinois, which has been in progress for more than a year under the supervision of Dr. Harry S. Gradle, Chicago. The state department of public welfare and the Illinois Society for the Prevention of Blindness are cooperating in the project, which includes the operation of outpatient clinics for treatment and preventive work.

Chicago

Study of Maternal Mortality—About 600 cases have been studied to date in a survey of maternal mortality being conducted by the maternal welfare committee of the Chicago Gynecological Society. It is hoped to continue the study until data on about 1,000 cases have been accumulated. Sixty-eight physicians compose the committee, which represents the seventy-six hospitals in Chicago doing obstetric work. The executive committee has nine members, five appointed by the society, three elected from the membership and the president of the board of health; this committee outlines the policies and methods of procedure. All information is obtained by mail, in 1933 all but one case report blank was returned, and in 1934 all but twelve. Information for 1934 is still being received, however. The board of health supplies the secretary with a copy of any death certificate in which pregnancy is mentioned. The secretary in turn mails a form to the hospital representative, who fills out the blank and returns it to the secretary. In case the woman dies at home, the form is mailed to the attending physician.

INDIANA

Personal—Purdue University conferred the honorary degree of doctor of laws on Dr. Richard B. Wetherill, Lafayette, at the commencement, June 11. Dr. Arthur J. Steffen, Somerset, has been appointed health commissioner of Wabash County.

Ravdin Medal Awarded.—Dr. Edward L. Efroymson, Indianapolis, was awarded the Ravdin Medal of the Indiana University School of Medicine recently. The medal is given annually by Dr. Marcus Ravdin, Evansville, to the medical school senior who makes the highest scholastic average in the course.

Early Medical Publications—An exhibit of early medical publications was held recently at the Indiana University School of Medicine library and museum. Included among the works on display were the *Indiana Journal of Medicine and Surgery*, considered to be the second purely local medical journal in the state, the *Western Quarterly Reporter of Medicine, Surgery and the Natural Sciences*, the first medical journal published west of the Allegheny mountains, which published six issues at Cincinnati in 1822-1823, the *Medical Repository*, started in 1797 and continued for twenty-three volumes, and the first volume of the *New England Journal of Medicine and Surgery* of 1812, which has been published continuously with a few changes of name and form for 123 years.

² Kohman, E. F. and Sanborn, N. H. J. Indust. & Engin. Chem. 27: 732 (June) 1935.

IOWA

Changes in Health Regulations—Several changes in the rules and regulations of the state board of health were approved at a meeting, July 9. Notable among these changes are those affecting scarlet fever, for which the quarantine period has been reduced from twenty-eight to twenty-one days from the date of report of a mild, uncomplicated case to the local department of health and the state board of health. The minimum isolation period may be extended if the patient develops a complication, if abnormal discharges continue or if others in the home become ill. In any case, after removal of the quarantine notice from the house, the patient should remain at home one additional week before returning to school or attending public gatherings. Psittacosis has been made a reportable disease, and typhoid made placardable from the onset of illness to the time of receipt of laboratory reports indicating freedom of bodily discharges from the presence of typhoid germs. The period of placard and isolation for measles and chickenpox is reduced, in the uncomplicated case, from fourteen to ten days.

KENTUCKY

Personal—Dr. Ollie M. Goodloe, Paducah, has been appointed health officer of Mason County with headquarters at Maysville and Dr. Aubrey Y. Covington, of Union County, with headquarters at Morganfield.—Dr. Eugene W. Demaree, formerly of Ashland, has returned from five years' service in Korea and will take up practice in Ashland.—Dr. Ernest B. Bradley, Lexington, was honored at a dinner given by the Fayette County Medical Society at the Lexington Country Club June 27 in recognition of his recent election to the presidency of the American College of Physicians. Informal addresses were made by Drs. Chauncey W. Dowden and William Barnett Owen, Louisville, and Dr. Bradley. Dr. Harry G. Herring, Lexington, president of the county society, presided. Dr. Bradley will take office in 1936.

MAINE

Radium Exempted from Taxation—The legislature of Maine, during its 1935 session enacted a law exempting radium used in the practice of medicine from taxation.

MINNESOTA

Medal to Dr. Hanson—Dr. Adolph M. Hanson, Faribault, who prepared active thymus and pineal extracts for experiments on biologic effects of the extracts on rats, was awarded the medal of the Southern Minnesota Medical Association, presented annually during the meeting of the Minnesota State Medical Association, for his exhibit at the state meeting in Minneapolis, June 24-26. Dr. Hanson, who graduated from Northwestern University Medical School, Chicago, is now engaged in private practice.

Dr. Dunn Accepts Washington Post—Dr. Halbert L. Dunn, professor of biometry, University of Minnesota Graduate School of Medicine, Minneapolis, and director of the University of Minnesota Hospitals, Minneapolis, has resigned to become chief statistician of vital statistics, division of the bureau of census U. S. Department of Commerce, Washington, D. C. Dr. Dunn is 39 years of age and a graduate of the University of Minnesota Medical School, class of 1922. The new appointment was effective July 1.

Investigation of Typhoid Outbreak—Twenty thousand dollars has been appropriated by the state executive council to conduct a survey of the city water systems of Minneapolis and St. Paul to determine the source of an outbreak of typhoid in which 111 cases had been reported up to July 22. About 100 cases had been recorded with the city health department of Minneapolis between May 25 and July 15 (THE JOURNAL, August 3, p. 377). Specimens taken from the cities' water supplies were found to be slightly contaminated. A staff of investigators will be employed to cooperate with the city health departments in the survey, which will last six months, it was reported.

NEW JERSEY

State Board Election—The Board of Medical Examiners of New Jersey at its annual meeting July 20 elected Dr. Harry H. Satchwell, Irvington, president, Dr. Arthur W. Belting, Trenton, secretary, and R. M. Colborn, D. O., Newark, treasurer.

Art and Hobby Exhibit—One hundred and fifty-two items were shown in the art and hobby exhibit at the annual session of the Medical Society of New Jersey. The exhibit was managed by the Woman's Auxiliary under the chairmanship of Mrs. Harold D. Corbuser, Plainfield. Among the articles displayed were paintings and photographs, sculptures, hand-made jewelry, ancient Peruvian textiles, antique instruments, Indian

relics, a model engine and a collection of arms. Physicians and members of their families were eligible to enter their hobbies.

Society News—Dr. George G. Ornstein, New York, was the guest speaker at the May meeting of the Bergen County Medical Society at Bergen Pines, on "Pulmonary Tuberculosis, with Special Emphasis on the Childhood Type." The society's spring festival was celebrated in the afternoon preceding the scientific meeting, with baseball, trap shooting, horseshoe pitching and archery.—Dr. Francis Ashley Faught, Philadelphia, addressed the Cumberland County Medical Society at the home of Dr. Reba Lloyd, Bridgeton, July 9, on "Low Blood Pressure and Its Significance."

Safety Council Awards Medal to Physician—The National Safety Council has awarded to Dr. Benjamin A. Treiber, Trenton, the President's Medal for saving a human life through the use of the prone pressure method of resuscitation. Last February Dr. Treiber, responding to a telephone call, found seven persons in a household overcome by gas from a coal heater. He opened the windows, called the police for assistance, and directed the police and firemen in applying artificial respiration for an hour and a half until six of the victims recovered. Dr. Treiber is the first physician to receive the award.

NEW YORK

State-Owned Spa at Saratoga Springs Dedicated—Saratoga Spa, with new buildings erected by the state at a cost of \$4,500,000, was formally opened July 26. Governor Lehman in his address outlined the history of the state's interest in the springs of Saratoga, which began in 1910. At that time the springs were being exhausted by commercial exploitation. Between 1910 and 1912 the state acquired 163 springs and about 1,000 acres of land and built two buildings, an investment of \$4,000,000. Of the funds for the present development, \$3,200,000 was a loan from the Reconstruction Finance Corporation. In the group of buildings some of which are not yet completed, are the Hall of Springs, the central structure in which there are marble fountains serving the three principal waters of the spa, the Simon Baruch Research Laboratory, the Roosevelt Baths, the state bottling works for the water that is distributed through commercial firms, and the Gideon Putnam Hotel for patients and their families. In the Baruch Laboratory are physicians' offices and examination rooms, experimental baths for clinical study, a museum, a mineral water laboratory and an auditorium with a capacity of 600. The medical director is Dr. Walter S. McClellan. The Gideon Putnam Hotel takes its name from the man who is said to have built in 1802 the first hotel at the resort. Besides the governor, the speakers were George Foster Peabody, a member of the original committee appointed to buy the springs and land and Dr. Frederic E. Sondern, New York, president of the Medical Society of the State of New York. The spa will be operated under the Saratoga Springs Authority, of which Pierrepont B. Noyes, New York, is president.

New York City

Twenty Thousand Children Immunized—A ten weeks campaign for immunization of children against diphtheria, conducted by the department of health in Brooklyn and Manhattan, resulted in the protection of 14,591 in Brooklyn and 7,346 in Manhattan. The board of education, medical societies, Catholic school boards, and social and civic organizations of the two boroughs cooperated, and school children acted as special health officers to round up children under 6 years of age and have their parents sign immunization requests.

The New Floating Hospital—A new all steel hospital ship completed this spring was placed in operation July 1 by St. John's Guild, which has provided free excursion trips for poor children for sixty-seven years. The new boat, which is the fourth the guild has used, can accommodate about 1,500 persons and has water-tight compartments. Its facilities include a clinic where physicians and nurses are on duty, day nursery, milk room, shower baths, rooms for treatment, play rooms, and a motion picture theater with a capacity of 1,000. It makes six trips a week, three from an East River pier and three from Brooklyn.

New Health Center—A new district health center to be built under a program planned by the department of health was begun with the laying of the cornerstone, June 17, in the Mott Haven district of the Bronx. The Public Works Administration provided funds for seven of these centers, of which the Mott Haven unit will be the first. Dr. John L. Rice, health commissioner, pointed out that the general death rate as well as the rates for infant mortality and tuberculosis were

higher in that district than for the Bronx as a whole. The program to be conducted will be educational rather than clinical, it was said.

Gifts to New York University—Among gifts to New York University since March for support of work in the medical college are the following:

Carnegie Corporation of New York, \$8 750
Rockefeller Foundation \$1,000 for salaries of visiting teachers
Georgia Warm Springs Foundation for research on poliomyelitis under Dr. William H. Park other donors \$2 160 47
Bernard M. Baruch \$3 092 93 for studies on pneumonia under Dr. Milton B. Rosenberg
International Cancer Research Foundation \$1 500 for research in cancer under Robert Chambers Ph D Washington Square College
New York University
E. R. Squibb and Sons \$1,250 for a fellowship in the department of surgery
Mrs. Alfred F. Hess, \$1 000 to establish the Alfred F. Hess Nutrition Fund under direction of Dr. Jacques M. Lewis

Opening for Psychiatrist—The Municipal Civil Service Commission of New York announces an examination for the position of director of the division of psychiatry in the department of hospitals (Bellevue Hospital), October 16-19. The examination is open to all citizens of the United States, but the appointee must reside in New York after he has accepted the position. Applicants must not be more than 55 years old and five years of which must have been as a member of the clinical staff of a recognized mental hospital or as a member of the psychiatric department of a general hospital with an organized psychiatric department. Applications will be received up to October 4. Full information may be obtained from the commission, of which William H. Allen is secretary, room 1400, Municipal Building, Center and Chambers streets, Manhattan.

OHIO

University News—A portrait of the late Dr. John Eaton Darby for many years professor of materia medica and therapeutics, was recently presented to the Western Reserve University School of Medicine by Dr. Darby's son, Dr. John Charles Darby. Dr. Darby died in 1918. Dr. Howard T. Karsner, professor of pathology at Western Reserve, was recently elected to membership in the French Association for the Study of Cancer.

Society News—The eighth district of the Ohio State Medical Association held its spring meeting at Rocky Glen Sanatorium, McConnsville, June 20. Speakers were:

Dr. William E. Lower Cleveland Management of Benign Prostatic Hypertrophy
Dr. Jonathan Forman Columbus Allergy in General Practice.
Dr. Willard Van Hazel, Chicago, Treatment of Empyema with Special Reference to the Chronic Case
Dr. Moses E. Bland Cleveland Peptic Ulcer and Its Surgical Management
Dr. Allen A. Tombaugh McConnsville Collapse Therapy of the Lungs

Typhoid Outbreak Caused by Carrier—Thirty-eight cases of typhoid in persons who attended a social occasion in St. Marys, May 12, have been traced to food prepared by the hostess, who was a carrier. About twenty cases occurred in St. Marys, and the remainder were in guests from other towns. Three were contact cases. The woman gave a history of having had "undulant fever" in 1930 and gallbladder infection twenty years before, two of her children had had typhoid. The facts that typhoid developed only in persons who attended the party and ate chicken salad sandwiches and that the woman who prepared the salad was found to be a carrier substantiated the diagnosis and the source of the outbreak, the state health department concluded. The department's report says that none of the cases had been reported and the state's first knowledge of the outbreak came when several specimens of blood were sent to the laboratory for Widal tests.

PENNSYLVANIA

Society News—Dr. George E. Pfahler, Philadelphia, addressed the Schuylkill County Medical Society, Shenandoah in June, on diagnosis and treatment of cancer. Dr. Richard A. Kern, Philadelphia, addressed the Lehigh County Medical Society, Allentown, July 9, on clinical allergy. Dr. Walter C. Alvarez, Rochester, Minn., addressed the Lehigh Valley Medical Association at its annual meeting at Pocono Manor, July 15, on "Some Useful Tricks in the Treatment of Gastro-Intestinal Disease." Dr. Herbert B. Gibby, Wilkes-Barre, also spoke on "Duty of Individual Physicians to Organized Medicine." Members of the staff of the Torrance State Hospital presented the program of the Westmoreland County Medical Society at the hospital July 18, as follows: Drs. John I. Wiseman, Sterilization; James M. Henninger, Results of Treatment of General Paralysis with Malarial Inoculation at This

Hospital" and E. M. L. Burchard, Ph D, "A Comparative Study of Body Types and Psychoses."—Drs. J. Allen Jackson, medical superintendent, and Peter O. Kwitrovich, of the staff of the Danville State Hospital, addressed the Chester County Medical Society, Chester, June 18, on practical phases of mental hygiene and on the use of atropine in treatment of the parkinsonian syndrome following encephalitis, respectively.

TEXAS

Society News—Drs. Elliott M. Mendenhall and Oscar M. Marchman, among others, addressed the Dallas County Medical Society, June 13, on "Artificial Pneumothorax in Treatment of Lobar Pneumonia" and "Emergency Tracheotomy," respectively. Speakers at a meeting of the Twelfth District Medical Society at Cameron, July 9 included Drs. Ross B. Trigg, Fort Worth, on Compression Fractures of the Body of the Vertebrae; Monroe C. Sapp, Cameron, "Burns, with Special Reference to Burn Toxins;" and Charles M. Simpson, Temple, "Carcinoma of the Prostate."

VIRGINIA

Personal—Dr. William Tate Graham, Richmond, received the honorary degree of doctor of science at the commencement of Hampden-Sydney College in June. The University of North Carolina conferred an honorary degree on Dr. James K. Hall, Richmond, at the June commencement. Dr. William B. Porter, professor of medicine, Medical College of Virginia, Richmond, is studying for two months in Puerto Rico the adjustment mechanisms occurring in the circulatory apparatus in chronic anemias associated with parasitic infections. He will give a series of lectures and clinics while on the island.

Graduate Courses in Pediatrics—Dr. George M. Lyon, Huntington W. Va., gave two graduate courses in pediatrics during July under the auspices of the department of clinical and medical education of the Medical Society of Virginia. The first was at Nassawadox, July 8-19, in cooperation with the medical societies of Northampton and Accomac Counties. The second at Norfolk, July 22-August 2, in cooperation with the Norfolk County Medical Society. Dr. Samuel F. Ravenel, Greensboro, N. C., gave a similar course in Christiansburg, beginning June 19 with meetings twice a week for five weeks, under the auspices of the Montgomery County Medical Society.

WEST VIRGINIA

New Tumor Clinic—Davis Memorial Hospital, Elkins, marked the opening of a new tumor clinic, July 10, with a cancer symposium. The following guests made addresses:

Dr. Max Culler Chicago The Tumor Clinic A Progressive Step in Modern Hospital Organization
Dr. Charles F. Geschickter Baltimore Tumors of the Breast
Dr. Robert Denison Harrisburg Pa. Tumors of the Lungs
Dr. Joseph Colt Bloodgood and Leopold Clarence Cohn, Baltimore Benign Breast Lesions with Special Consideration of Borderline Tumors
Dr. Louis M. Rosenthal Chicago Recent Progress in Radiation Treatment of Cancer
Dr. Benjamin Rice Shore Jr. New York, Care and Cure of Cancer Patients

At a banquet in the evening Dr. William S. Fulton, Wheeling was toastmaster and Dr. George T. Pack, New York, spoke on "Neoplasms of the Gastro-Intestinal Tract."

WYOMING

State Medical Meeting—The thirty-second annual meeting of the Wyoming State Medical Society will be held in Lander August 12-13. The scientific program will be as follows:

Dr. Leonard Freeman Denver Gastric and Intestinal Spasms Their Relation to Surgery
Dr. Henry W. Meyerding Rochester Minn. Dupuytren's Contracture
Dr. Emerson F. Root, Salt Lake City Treatment of Cholecystitis
Dr. Robert T. Jellison Salt Lake City John W. Ames and William Bernard Yegge, Denver and R. Carlton Trueblood Cody Symposium on Pneumonia
Dr. Peter M. Schunk, Sheridan Tetanus Treatment by Serum Intra-cranially
Dr. Reuben J. Boesel Cheyenne Value of Proctology in General Medicine
Dr. Homer R. Lathrop Casper Fractured Femurs
Dr. Louis G. Booth Sheridan Torision of the Spermathe Cord

A golf tournament will be held in two parts, Monday and Tuesday mornings. There will be a clinic dealing with feeble-mindedness and epilepsy at the Wyoming State Training School Monday morning and one on trachoma at the Shoshone Indian Hospital Tuesday. Dr. Herbert L. Harvey, Casper, is president and Dr. Joseph L. Wicks, Evanston, president-elect.

GENERAL

Society Changes Name—The American Federation of Organizations for the Hard of Hearing has changed its name to the American Society for the Hard of Hearing. At the annual conference in Cincinnati, June 3, Dr. Frederick N. Sperry, New Haven, Conn., was elected president. The next conference will be held in Boston, May 26-30, 1936.

Section Appointments—At the recent meeting of the Section on Obstetrics and Gynecology of the American Medical Association at Atlantic City, the following appointments were made: Drs. Fred L. Adair, Chicago, Robert D. Mussey, Rochester, Minn., and Everett D. Plass, Iowa City, to represent the section on the American Board of Obstetrics and Gynecology, and Drs. James R. Miller, Hartford, Conn., Mussey and Plass as representatives on the American Committee on Maternal Welfare.

Study of Fireworks Accidents—The American Museum of Safety has undertaken a nation-wide study of fireworks accidents under the direction of Dr. Leland E. Cofer, New York. The study will seek to ascertain how serious the hazard is, which items of fireworks are involved in most accidents, the effect of prohibitory legislation and the sources of the fireworks that cause accidents. The leading manufacturers of fireworks through Pyrotechnic Industries, Inc., have made a grant to the Museum of Safety and have agreed in advance to take steps to eliminate the elements in fireworks responsible for serious hazards, it was announced. The study was undertaken as a result of a study made by the National Society for the Prevention of Blindness, which found that twenty-nine persons died and more than 3,000 were injured in fireworks accidents in 1934. The organization plans to interview every person injured this year and obtain details of the accidents from him or from the physician or hospital that treated him.

Award in Honor of Theobald Smith—At the summer meeting of the American Association for the Advancement of Science in Minneapolis, the Theobald Smith Award in Medical Sciences was established by Eli Lilly & Co., Indianapolis. The new award will be \$1,000 and a bronze medal, which will be given yearly for "demonstrated research in the field of the medical sciences, taking into consideration independence of thought and originality." Fellows of the association are to submit to the permanent secretary's office in Washington, D. C., the name of a proposed recipient with full information concerning his personality, training and research work. Any investigator who is less than 35 years old on January 1 of the year in which the award is to be made is eligible. Nominations must be received before May 1 each year. The president of the association and four fellows will be the committee of award. The name of the winner will be announced at the summer meeting, and the presentation will be made at the winter meeting of the association.

Change in Status of Licensure—The Wisconsin State Board of Medical Examiners reports the following actions taken at a meeting June 24-28:

Dr. Clayton Eugene May, Minneapolis, Ill., license revoked on reading of his court record for reason of harboring and caring for one John Dillinger.

Dr. William Jerome E. Clancy, Indian Hill, Ohio, license revoked on reading of court record for reason of taking undue liberties with a minor.

At a meeting of the Indiana State Board of Medical Registration and Examination, July 9, the following action was taken:

Dr. Benjamin F. Patton, Terre Haute, license revoked for violation of the Harrison Narcotic Act. Now in federal prison at Leavenworth.

Dr. Frederick J. Freshley, Plainville, license revoked for conviction of automobile banditry. In state prison at Michigan City.

Dr. Hugh Smith Detchon, Victor, Iowa, license revoked for attempted criminal operation. In Iowa State Prison.

The Massachusetts Board of Registration in Medicine announces the following action:

Dr. Eli Silverman, Boston, license restored July 1.

The Kansas Board of Registration in Medicine announces the following action:

Dr. John F. Northrup, Topeka, license reinstated June 18.

The North Dakota State Board of Medical Examiners reports the following action taken July 5:

License of Patrick E. Shortt, Bowdle, S. D., revoked because he obtained restoration of a license previously revoked by making false and unreliable statements.

Society News—Dr. Raymond R. Squier, New York, has been appointed executive secretary of the National Committee on Maternal Health, which has headquarters in the building of the New York Academy of Medicine. Dr. Robert L. Dickinson, New York, is chairman of the executive committee and Dr. Haven Emerson, New York, chairman of the board of

directors.—Dr. Gilbert J. Thomas, Minneapolis, was chosen president-elect of the American Urological Association at the annual meeting in San Francisco, June 25-28. Dr. George G. Smith, Boston, was installed as president, and Dr. Clyde L. Deming, New Haven, Conn., was elected secretary. Dr. Hugh H. Young, Baltimore, delivered the Ramon Gutierrez Lecture on "Abnormalities and Plastic Surgery of the Lower Urogenital Tract," and Dr. Luigi Caporale, Turin, Italy, was a guest speaker, on "Segmental Peridural Anesthesia."—The twenty-first National Recreation Congress will be held in Chicago, September 30-October 4, at the Sherman Hotel.—The first annual session of the Tennessee Valley Medical Association, made up of physicians of eastern Kentucky and Tennessee, western Virginia and North Carolina, and parts of Alabama and Georgia, was held, June 26-27, in Knoxville, Tenn. Dr. Ernest R. Zemp, Knoxville, was made president, and Dr. Tom R. Barry, Knoxville, president-elect. Drs. Ancil A. Richardson, Williamsburg, Ky., Glenn T. Foust, Norton, Va., and James Frank Pate, Canton, N. C., were elected vice presidents, and Dr. Jesse C. Hill, Knoxville, secretary. Knoxville will be the permanent meeting place, it was said. Among speakers on the program were:

Dr. Willis C. Campbell, Memphis, Surgical Treatment of Arthritis.
Dr. William T. Davis, Washington, D. C., Ophthalmological Symptoms of Endocrine Dysfunctions.
Dr. William D. Haggard, Nashville, Surgery in Goiter.
Dr. Henry G. Bugbee, New York, Diseases of the Prostate.
Dr. William D. Stroud, Philadelphia, Coronary Disease.
Dr. Hugh H. Trout, Roanoke, Prevention of Cancer of the Breast.

Medical Bills in Congress—*Changes in Status* S 2969 has been reported to the Senate, proposing to authorize the deportation of aliens who violate the narcotic laws of the several states, territories and the District of Columbia. S 3060 has passed the Senate, extending the provisions of existing law providing hospitalization and domiciliary care for veterans so as to include men discharged from the Army, Navy, Marine Corps or Coast Guard who are in receipt of pension for service-connected disabilities. H R. 4513 has been reported to the House, proposing to authorize payment of claims for unauthorized emergency treatment of World War veterans when the claims were filed prior to March 20, 1933. H R. 5764 has been reported to the House, proposing to compensate the Grand View Hospital and Dr. Augustus J. O'Brien, Ironwood, Mich., for services rendered to men shot by federal agents during the Dillinger raid on the Little Bohemia Lodge, April 22, 1934. H R. 6995 has passed the Senate, reenacting all laws in effect on March 19, 1933, providing pensions to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection, their widows and dependents. *Bills Introduced* S J Res 169, introduced by Senator Glass of Virginia, proposes to authorize Drs. Hugh S. Cumming, Surgeon General of the United States Public Health Service, John D. Long, medical director, United States Public Health Service, Bolivar J. Lloyd, medical director, United States Public Health Service, and Clifford R. Eskey, surgeon, United States Public Health Service, to accept and wear certain decorations bestowed on them by the governments of Ecuador, Chile, Peru and Cuba. S 3334, introduced by Senator Sheppard of Texas, proposes to provide for the care and treatment of members of the National Guard, Organized Reserves, Reserve Officers' Training Corps and Citizens' Military Training Camps who are injured or contract disease while in military training. H R. 8964, introduced by Representative Clark of North Carolina, proposes to erect a veterans' hospital in the state of North Carolina.

FOREIGN

Personal—Sir Cuthbert Wallace was recently elected president of the Royal College of Surgeons of England, succeeding Sir Holburt Waring.—Sir Ewen Maclean has been elected president of the British College of Obstetricians and Gynaecologists to succeed Dr. John S. Fairbairn.

International Medical Week in Switzerland—Under the patronage of the federal council of Switzerland, an International Medical Week will be held at Montreux, September 9-14. Among speakers listed on the program are:

Dr. Henry E. Sigerist, Baltimore, The Present Unrest in the Medical World.
Dr. Charles Nicolle, Tunis, Hidden Infections.
Sir Henry Dale, London, The Pharmacology of Ergot.
Prof. E. Laqueur, Amsterdam, Male and Female Hormones.
Prof. Max Askanazy, Geneva, The Role of Experimental Studies on Tumors.

In addition to lectures there will be clinics presented by the faculty of the University of Lausanne. Detailed information may be obtained from the secretary, International Medical Week in Switzerland, Klosterberg 27, Basle (*Swiss Journal of Medicine*).

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 12, 1935

Unemployment and National Health Insurance

The national health insurance system is financed by contributions from the employed, the employers and the government. When it was introduced before the war, no unemployment of the magnitude experienced in recent years was known in this country and therefore was not anticipated. The result of this unemployment has been to derange the finance of the system and deprive a large number of the insured of their title to benefit. The minister of health has therefore introduced a bill which excuses arrears of contributions due to unemployment for the year 1934-1935. Many approved societies have already paid up arrears out of their surpluses. A sum of \$7,500,000 a year is required to finance the bill. The burden will be distributed equally between the taxpayer and the approved societies.

The Lasting Effects of Shell Shock

At a conference on the persisting effects of war neuroses Dr Edward Mapother, medical superintendent of Maudsley Hospital (mental), said that at a low estimate there were approximately 60,000 men suffering from war neuroses. Many of them could work in sheltered conditions but not in competitive positions. There was need for permanent care of those who would need institutional treatment and also for those who broke down under stress and for getting them back to resume work in the world through private industrial colonies. The mental treatment act might well be applied to the foundation of such colonies, which could be a small scale model of something that was a national need.

The End of the Search for a Shaving Brush

Three years ago a consignment of twelve shaving brushes came into Lambeth (a district of South London) and was found to be infected with anthrax. The health officer seized eleven, but the twelfth had been sold and could not be traced. Every one of the eleven was found to be infected with anthrax. The brushes had apparently come from Germany and were sold wholesale at the rate of six for 30 cents. The ministry of health issued a warning concerning the brushes to the hospitals and newspapers in the neighborhood. At last the brush has been found, but unfortunately as the result of a fatality. At an inquest on a boot repairer, who died in the neighboring district of Brixton, the pathologist stated that death was due to anthrax and that the brush was freely infected with the bacilli and spores of anthrax. The health officer gave evidence that a man might use an infected shaving brush every day for two years with impunity until he cut himself and then became infected. The coroner remarked that the only satisfactory feature about the case was the vigilance exerted by the health authorities.

Defense of the Civil Population Against Air Raids

The government has sent to the local authorities the circular on the precautions for safeguarding the civil population against air raids. The use of poison gas in war is forbidden by the Geneva gas protocol of 1925, to which all the most important countries of western Europe are parties, but the possibility of its being used cannot be disregarded. An air raid precaution department has been set up and will give advice to local authorities and the civil population, but local organization is necessary. The construction on any extensive scale of shelters proof against direct hits by bombs is impracticable, because the expense would be prohibitive. But effective protection against blast and splinters from bombs costs little and people can provide it themselves for their households.

PROTECTION AGAINST GAS

Information will be published as to the means by which premises can be made gas proof. Further, the government will accumulate reserves of respirators and protective clothing and will issue them to persons employed on air raid precautionary services. Supplies of bleach powder will also be accumulated for purposes of decontamination. A civilian gas school will be established for training instructors in antigas measures to give training in their own districts. For enrolment and training of emergency personnel, especially for medical and antigas services and instructing the public in air raid precautions, the government has arranged with the Order of St. John and the British Red Cross Society. Arrangements will be made for the decontamination of vehicles, buildings and their contents and contaminated ground, as well as for the organization of expert gas detectors who can determine whether a bombed area is free from gas or requires decontamination.

MEDICAL SERVICES

Provision must be made for the mobilization and expansion of the medical first aid resources of each district, so as to provide first aid posts, casualty clearing stations and hospitals, with an adequate ambulance service. Casualty clearing stations should be within easy reach of first aid posts, but hospital treatment should as far as possible be outside areas of special danger. A series of handbooks on air raid precautions will be issued.

The Prevention of Tuberculosis

At the conference of the National Association for the Prevention of Tuberculosis a number of important suggestions were brought forward. Dr Norman Tattersall, chief clinical tuberculosis officer for Leeds, said that too much stress was laid on malnutrition as evidence of tuberculosis, whereas more often than not the child in danger of active tuberculosis was well nourished and looked well. He suggested that the time had come when every child should have a tuberculin test when he started school. This test should be repeated twice more—once in the middle years and again on leaving school. Every child, not just the positive reactors, should be roentgenographed at the same three age periods. The clinical examination of school children as now carried out was valuable in recognizing malnutrition, rickets, heart conditions and so on but of little practical value in detecting tuberculosis. Dr C. J. Thomas, senior medical officer, and Dr N. D. Bardswell, principal assistant medical officer to the London County Council, in a joint paper declared that the experience of the last twenty-eight years showed that no school medical service in city areas could perform its duties to the children effectively without ample provision for open air education. A most important point in the experience of open air schools was the remarkably complete freedom from attacks of catarrh and colds which the children enjoyed. Councillor Brett of Leeds said that Leeds had gone even further than open air schools and was building a certain number of open air houses—houses with a special bedroom with a large window suitable for tuberculous persons. Professor Christiansen of Copenhagen stated that, while tuberculosis was transmitted from cattle to men mainly by milk, it was also transmitted by direct contact and even through the air. Even if milk infection was effectively prevented there would still remain a lurking danger of transmission from cattle to men until bovine tuberculosis was eradicated altogether.

A New Index of Genera

Since the Swedish naturalist Linnaeus introduced the modern system of zoological nomenclature, several million new species have been named and about 190,000 new genera. For several years the work of systematists has been impeded by the lack of a complete list of the generic names used in zoology. The ground has been partly covered by Sherborn's *Index Animalium* and by annual lists in the *Zoological Record*, as well as by a

work in process of publication by the Prussian Academy of Science. But none of these exhaust the field and it is inconvenient to have to consult several different publications. The Zoological Society has approved a scheme for the preparation of as complete a list as possible of the generic names used in zoology from 1758 to 1935, with references to their sources. It is hoped to publish the work at the end of 1937. Meantime it has been begun under the direction of Dr. S. A. Neave of the Imperial Institute of Entomology and president of the Entomological Society of London, who has had wide experience in zoological bibliography but who hopes to have expert assistance from specialists throughout the world and in particular from the staff of the British Museum of Natural History. The Zoological Society has undertaken to pay for the cost of compilation.

PARIS

(From Our Regular Correspondent)

June 28, 1935

Proofs of Efficacy of the BCG Vaccination

There are two methods of proving that the vaccination with the BCG vaccine is efficacious. One method is to cite statistics, the other to show its efficacy by experimental research. At the March 26 meeting of the Academy of Medicine the associate of the late Professor Calmette in the discovery of the vaccine, Professor Guérin, presented the experimental side of the question. He first recalled the observation of Professor Marfan to the effect that persons who presented evidences during infancy of tuberculous lymphadenitis involving the superficial nodes rarely developed pulmonary lesions. Apparently the earlier infection had enabled the individual to build up a resistance to a superadded infection. This observation has served as a starting point for the research on the subject, carried out at the Pasteur Institute of Paris during the past twenty-four years with the object of preventing tuberculosis by vaccination. Experimental work on animals has confirmed the theory on which vaccination is based. Two cows are inoculated with the same dose of a culture of virulent tubercle bacilli. If the first animal gave a positive reaction to tuberculin before the injection and the other animal a negative reaction, the former does not appear to show any ill effects from the injection of the virulent tubercle bacilli, in fact, any preexisting lesions do not seem to be made worse. The second animal, whose tuberculin reaction had been previously negative, dies in fifty or sixty days of a widespread military form of pulmonary tuberculosis. The first animal at necropsy shows only lymph nodes containing virulent tubercle bacilli which kill guinea-pigs inoculated with the macerated lymph nodes. These experiments have been verified by bacteriologists in Austria, Italy and Russia.

Young calves can be given subcutaneous or intravenous injections of the BCG vaccine in doses sufficiently large to be followed by a positive tuberculin reaction without resulting in a generalized tuberculosis. If such animals are given injections of cultures of virulent tubercle bacilli, such as were given to the cows with a positive tuberculin reaction, they also seem to show no ill effects. At necropsy there are no demonstrable evidences of a tuberculous infection except in the lymph nodes, which appear normal but which, on inoculation into guinea-pigs, show the presence of virulent tubercle bacilli. Control calves not vaccinated die of the lesions of military pulmonary tuberculosis in sixty days.

In the case of guinea-pigs and rabbits, Boquet and Nigre have shown that vaccination is followed by well marked but transitory resistance to the injection of virulent tubercle bacilli.

The injection of the BCG vaccine into new-born infants and into adults is followed by a positive reaction to tuberculin. Walgreen of Sweden has succeeded in obtaining this in all of 350 children.

Emphasis was laid on the fact that resistance to tuberculosis is not entirely dependent on a positive tuberculin reaction. The scientific proof of the efficacy of vaccination with the BCG vaccine is that experimentally every allergic animal becomes extremely resistant to superadded tuberculous infection. It confers on both man and the bovine race the ability to react positively to tuberculin. From experimental observation made on allergic cows and calves, one can expect the same results in allergic human beings.

Paris Prepares for Air Raids

About half of the city of Paris was subjected to both day and night tests against potential attacks by air with incendiary and toxic gas bombs. For several hours during the day recently, sirens placed on church steeples and on the tops of high buildings sounded the alarm, so as to test the efficacy of various types of sirens.

The large-scale daytime drills were carried out with complete success in the vicinity of the medical school buildings. Rescues were effected by passive defense workers exactly as they would be in a case of a real attack. Three minutes after the warning shriek of the sirens, "bombs" began falling in the courtyard of the medical school. Several "victims" fell and a fire, consisting of bengal light, broke out. All traffic on adjoining streets was stopped and automobilists had to draw up at the curb, while through the clear space firemen speeded wearing gas masks. First aid workers at the medical school hurried to the rescue of the gas "victims" lying on the sidewalk. Gas masks were speedily slipped over the faces of the "victims," who were placed on stretchers and carried to first aid stations in the basement of the medical school. As the firemen, clad in gas-proof rubber suits, thick gloves and heavy boots, arrived on the scene, further "bombs" began to fall in numerous nearby streets and the red flash of bengal lights broke out on all sides. Gas "victims" were also brought to the first aid stations in gas-proof automobiles. The first aid station at the medical school is equipped with separate rooms, all gas proofed, for the wounded, the burned, and persons overcome by toxic and by mustard gas.

For a half hour during the night, the entire city was awakened by the lugubrious shrieking of the sirens. The half hour was chosen so as to interfere as little as possible with the life of the city. All street, house and automobile lights were ordered extinguished during the trial air raid. Squadrons of planes of all types flew over the city, in order to determine whether important buildings, such as railroad stations, could be distinguished. These observations revealed absolute inability of the planes to identify well known structures in the dark. Physicians were notified that they would be permitted to drive through the streets during the period of darkness, provided they screened their headlights with blue cloth.

Although the danger of war and its accompanying air raids on civilians is fortunately not imminent, every one in the larger cities of France is urged to provide himself with a gas mask. It has been demonstrated that one is safer in the upper stories of buildings than in cellars, because poison gas will seldom reach the level above twenty feet from the ground. Rooms can be rendered gas proof by paper pasted over the edges of windows.

Preoperative Roentgenography in Acute Intestinal Obstruction

The subject of preoperative roentgenography in acute intestinal obstruction has been extensively discussed at recent meetings of the Société nationale de chirurgie. Michel-Béchet has employed the method in twelve cases. In one case, plain films (without a barium sulphate enema) revealed the presence of an S-shaped coil of small intestine near the stomach. A diagnosis was made of obstruction and at the operation a coil of

small intestine was found strangulated in the foramen of Winslow. In the second case the plain film revealed a marked dilatation of a coil of small intestine and a round dark shadow in its midportion. At operation an obstruction due to a biliary calculus was found, thus enabling much time to be saved in the search for the seat and cause of obstruction.

In Moulouguet's paper, attention was directed to the use of preoperative roentgenography, either with or without barium sulphate enemas, in acute ileus. Moulouguet prefers to examine the patient without preparation, but the majority of those who participated in the preceding part of the discussion maintained that this was of much less diagnostic value than with a barium enema. Moulouguet believed that the latter might be employed as a supplementary measure and preferred to examine without preparation before using the enema, because if the plain film revealed marked distention of the small intestine the enema was superfluous. He admitted that gas and fluid in the small intestine were often seen in normal individuals, but except in infants such a finding was of no value in the diagnosis of obstruction of the small intestine. The interpretation of plain films (without a barium sulphate enema) requires considerable experience, but Moulouguet is still certain that plain films with or without the enema, are indispensable in acute obstruction. He expressed the belief that a diagnosis of the seat of obstruction can be made from the plain film without a barium sulphate enema.

First Lectures by Professor Bezançon

Prof Fernand Bezançon, who now occupies the chair of phthisiology rendered vacant by the death of Prof Leon Bernard, will begin a series of conferences on pulmonary tuberculosis, May 10 at the Laennec Hospital Paris.

Committee on Laboratories

In order to determine the qualifications from the medical point of view of those in charge of the many laboratories in Paris a committee has been appointed composed of well known pathologists, bacteriologists and internists.

Fourth French Gynecologic Congress

The fourth annual meeting of the fourth French Gynecologic Congress was held on June 8 at Salies-de-Bearn a watering place that specializes in the treatment of gynecologic disorders. The president of the congress was Professor Buyot. The chief subjects discussed were the etiology and treatment of hemorrhages of general and local origin.

Election of Nonresident Members of the Academy of Medicine

Professor Hopkins of the University of Cambridge, the author of numerous publications on vitamins, and Professor Inada professor of pathology at the University of Tokyo, who has made a study of icterohemorrhagic spirochetosis have been elected nonresident fellows of the Academy of Medicine in the division of biologic sciences.

Death of Professor Jeanselme

Professor Jeanselme, dermatologist of Paris died recently at the age of 77 years. He was a member of the Academy of Medicine professor emeritus at the Faculté de médecine of Paris and attending (emeritus) dermatologist at the Hôpital St Louis. His contributions to the literature of dermatology and syphilis are as familiar as his book on leprosy. Of recent years he had devoted his energies to the history of medicine.

Death of Prof Charles Marie

Dr Charles Augustus Marie chief of service at the Pasteur Institute, died March 29 aged 71. He was the author of numerous papers on vegetable toxins tetanus toxin and epinephrine. An important portion of his research work was devoted to vaccination against hydrophobia.

BERLIN

(From Our Regular Correspondent)

June 3, 1935

The Number of German Physicians

According to the statistical report just published, there are 52,342 licensed physicians in the German reich, including the Saar region. It would appear, therefore, that the increases in the medical profession have terminated, for the present. This standstill in the numerical trend is not due to any lack of aspirants. An increase of about 1,400 over the last census was expected, whereas the actual increase is only 125. The physicians who have emigrated to foreign countries, about 1,300 in number, have of course influenced the present status (THE JOURNAL, May 11, page 1766). Of the 52,342 registered physicians, 3,590, or 6.85 per cent, were women (5.63 per cent in 1930, 6.44 per cent in 1932). The percentage of women physicians therefore shows a constant increase, so that now there is a woman physician for every fourteen male physicians. There are 10,595 physicians connected with institutions, not counting those in roentgenologic institutes, laboratories and pathologic institutes. Owing to a temporary dearth of assistant physicians, a considerable number of positions for assistant physicians have been changed into positions for department or chief physicians. The number of nonpracticing physicians also has increased. In 1932 there were 3,015 such physicians, whereas in 1935 the number had increased to 3,679, or 7 per cent of

TABLE 1—Distribution of Specialists in Germany

Specialties Represented	Total Number Representing Each Specialty	Percentage of Specialists Representing Each Specialty	
		1935	1930
Internal diseases	3,862	25.0	24.4
Surgery including orthopedics and diseases of women	2,932	19.1	16.7
Gynecology	1,630	10.6	11.0
Diseases of children	1,178	7.6	8.2
Mental and nervous diseases	1,058	6.8	6.4
Diseases of the eye	1,853	8.8	9.1
Laryngology rhinology and otology	1,517	9.8	10.2
Dermatology venerology and urology	1,905	12.3	14.0

the total number of physicians. This increase is doubtless due not so much to disqualification on account of age as to the fact that numerous non-Aryan physicians have given up their practice. Furthermore, a more exact registration may account for part of the increase. Of the 48,663 male and female physicians connected with institutions or having an independent practice, 15,456 were specialists (which does not include the specialists for physical and dietetic therapy, radiologic diagnosis and therapy, medicomechanics, diseases of the mouth and jaws disorders of the lower extremities, homeopaths and medical directors of athletic associations). The recognized specialists constitute at present 31.7 per cent of the registered practicing physicians (in 1930, 28.9 per cent). Table 1 shows their distribution.

While there has been a general increase in the number of specialists some specialties show an increase (the internists and the surgeons) and others a decrease (the dermatologists and the pediatricians). In the fifty-three large cities with 100,000 or more inhabitants, 49 per cent of the physicians reside and the forty-eight cities with between 50,000 and 100,000 population claim 8.2 per cent. In the whole German reich there is an average of 7.9 physicians for each 10,000 inhabitants in the groups of cities just mentioned, however, there are 12.8 and 12.3 respectively, for each 10,000 inhabitants so that in the communes with fewer than 50,000 inhabitants there are only 5.3 physicians to 10,000 of population. While there is a wide range of difference in the percentage of physicians in the several groups of cities, the distribution of the specialists in the various areas shows but slight differences. For example,

the percentage of specialists in the large cities is almost the same as in the cities with from 50,000 to 100,000 population. On the other hand, the proportion of women physicians in the large cities is 88 per cent, in the middle-sized cities 68 per cent, and in the smaller communes only 47 per cent.

Formerly few physicians emigrated to foreign countries. According to recent statistics, 1,307 physicians have emigrated, which constitutes more than 24 per cent of the medical profession. About two thirds of the emigrants belonged to the 30-45 age group, approximately one tenth were younger, while

TABLE 2—Percentage of Specialists Among the Emigrants Belonging to Each Specialty, Also Among the Physicians Remaining

Specialties	Representation of Each Specialty	
	Among the Emigrants	Among Physicians Remaining
Internists	12.4%	7.4%
Surgeons	5.4%	5.0%
Gynecologists	4.4%	3.1%
Pediatricians	5.6%	2.2%
Dermatologists	6.3%	3.0%
Ophthalmologists		
otologists	3.3%	5.5%
laryngologists,		
rhinologists	63.7%	72.6%
Other physicians		

16 per cent were women. More specialists were among the emigrants than their representation in the medical profession would lead one to expect. Table 2 shows the percentage of specialists among the emigrants belonging to each specialty, and also the percentage of specialists among the physicians remaining.

From Berlin, 572 physicians have emigrated, from Frankfurt-on-Main 59, from Hamburg 58. Table 3 shows the percentage of physician emigrants going to the various countries, in addition, 584 failed to state the country to which they were emigrating.

TABLE 3—Percentage of Physician Emigrants Going to the Various Countries*

Foreign Destinations of Physician Emigrants	Percentage of Physician Emigrants Going to Various Foreign Countries
Africa	2.9
America	18.0
Asia	5.6
Austria	2.6
Czechoslovakia	2.4
England	7.6
France	7.7
Italy	5.0
Netherlands and Belgium	4.6
Northern Europe	3.2
Palestine	33.6
Poland, Portugal and Spain	1.6
Southeastern Europe	4.0
Switzerland	5.8

* Of THE JOURNAL, March 9, p. 847.

Operations on Skull and Brain Lesions

Professor Jentzer, surgeon of Geneva, recently addressed the Münchener ärztlicher Verein on "Operations on Fresh Traumatic Skull and Brain Lesions." He reviewed the material that had accumulated in his clinic during twenty years, and on this basis discussed symptoms that may be regarded as indications for operation. They are unilateral mydriasis, unilateral exophthalmos, incontinence of urine and stool, and traumatic lesion of the meninges at the site of the external lesion. By far the most important symptom is unilateral mydriasis, which is a sure sign of increased pressure on the same side of the brain, even when crossed neurologic symptoms are present. In rare instances an increase of pressure may be produced by a sympathetic irritation from the other side of the brain. In the presence of unilateral mydriasis, observation of the patient is necessary every fifteen minutes, for the mydri-

asis often changes its aspect within that period. It may disappear as rapidly as it came, but it is always a sign of an increase of pressure on the same side of the brain and reveals in most cases a hematoma. Of the trephinations, interventions on the occiput are much more dangerous but cannot be avoided in bulbar lesions. Jentzer found in eight cases of lesions of the bulbus no visible external signs of a lesion of the bulbus, in spite of precise bulbar focal symptoms. If possible, Jentzer resorts to ventricular puncture before every trephination, in order to ascertain the pressure conditions within the cranium. According to Jentzer's statistics, more than 50 per cent of cranial lesions can be cured without operation.

The Robert Koch Memorial

Just as three years ago, in commemoration of the semicentenary of the discovery of the tubercle bacillus, so now, on May 26, in celebration of the year of Koch's death, special ceremonies were organized, which the minister of the interior and the regional health officers were invited to attend. The memorial address was delivered by Professor Kolle, who was a pupil of Koch and whose death has since been announced.

On this occasion the Robert Koch-Stiftung for the combating of tuberculosis, which had been destroyed by the period of inflation, was reestablished. The new organization, however, will be devoted not only to combating tuberculosis but also to other scientific research for the combating of infectious diseases. Donors of substantial sums may possibly become members of the honorary committee or may be permitted to inscribe their names in the so-called Goldenes Buch. Thus far 100,000 marks (\$40,000) has been collected, and further sums are being added from time to time. The basal donation is a gift of a group of Japanese physicians, dating from 1932.

JAPAN

(From Our Regular Correspondent)

June 29, 1935

Prevention of Epidemic Diseases

Dr. J. Inoguchi, chief of the section on prevention of epidemic diseases of the metropolitan police board, has reported with regard to the preventive measures applied by the central and local governments throughout the country. The number of epidemics introduced from abroad has decreased remarkably of late. There was an outbreak of 205 cases of cholera in 1929, but since then no cases have occurred except four cases in 1932. Only 1,032 cases of smallpox have occurred during the last five years. Typhus still appears in some northeastern provinces, but not more than twenty cases at a time. Epidemic encephalitis also has decreased, but every year about 300 cases appear. On the contrary, dysentery, typhoid and paratyphoid still continue to rage every year to the number of 30,000 or 40,000 cases. Scarlet fever and diphtheria have suddenly increased of late. In 1930 there were 24,582 cases, including both diseases, but in 1934 there were 46,801. Totals for the last five years have been: cholera 4, dysentery 172,432, typhoid 197,267, paratyphoid 25,952, smallpox 1,031, eruptive typhus 38, scarlet fever 50,030, diphtheria 120,249, encephalitis 2,352.

The police try to find the cases early. They have been instructed to follow up the rumors of neighbors, never fail to visit a house where the doctor goes to see patients, closely investigate the family condition of houses where much ice is used, and make an investigation where odors of disinfectants prevail. If students, clerks or workers who leave their houses regularly through the year fail to appear, an investigation should be made. Police who discover a case are given a prize. In 1934, 466 policemen were rewarded for discovering patients.

Since 1924, the board has performed typhoid vaccinations on more than 1,500,000 persons. Of those vaccinated, 1,661 persons contracted typhoid. The effect of this vaccination has been more effective as years pass, in spite of much opposition.

The Benefactor of Japanese Dentistry

It has long been regretted that the man who introduced western methods of dental surgery into Japan died in obscurity. His grave was nowhere to be found for a long time. Dr. Inada's earnest efforts were at last successful, and the benefactor was found to be William Clark Eastlake. According to reports, he was born in 1834 of a noble family in England. When 22 years old he married in America, where he learned dentistry. In 1860, with his eldest son and wife, he came to Japan and practiced dentistry in Yokohama. He had many followers, some of whom went to America when he returned to the United States, that they might study dentistry. He came back to Japan in 1864 and his office in Yokohama had a great reputation, but his residence was in Tokyo and when the foreign settlement was put under strict limitations by the government he alone was allowed to live anywhere he liked, because of his services. He died Feb. 26, 1887, at the age of 54. His grave was found in the Aoyama cemetery in Tokyo. Next year will be the fiftieth anniversary of this first foreign dentist. His biography will be published and a monument will be erected by the members of the dental society of Japan to celebrate his great services.

Standard Technical Medical Terms

The Japanese language society which was formed in 1932, has established a section on medical terms. This section is to endeavor to unify the technical terms in medicine of this country. Through lack of uniformity in medical terms, many misunderstandings have arisen. All branches of medicine are now obliged to standardize their terms in Japanese. The ophthalmologic and gynecologic societies and the anatomic section have already completed the unification of technical terms used in these branches of medicine. The physiologic society is proceeding to do so. The general policy of selecting proper terms is based on the following principles. The selection of terms should adhere to the spirit of the rules adopted by the national language council of the bureau of education and should employ the Chinese character in common use selected by that council. The medical names used by the national resources bureau of the cabinet will be employed as much as possible. As for words of foreign origin, there will be much discussion as to whether the foreign term should be adopted as has heretofore been done or whether it should be translated into Japanese. The only difficulty of this important work is that it has no central authority but the bureau of education will take up this work in due time.

Emperor Honors the Oldest Practitioner in Japan

Dr. Hikomasa Sasagawa has reached the age of 99 years. He was born March 18, 1836 in the northeastern province of this country, the second son of a physician. He came to Tokyo in 1855 to learn medicine and afterward became the adopted son of Dr. Sasagawa in recognition of his sincerity and diligence. After practicing in several places he went back to his native town, where he has been in practice for more than forty years. He is still strong and at present is as busy as a young doctor. He says that only faithful obedience to the laws of health permits one to enjoy longevity and physical strength. The provincial medical association recently held a celebration in honor of his long career and public spirit. The emperor bestowed a gift on him as a token of his sympathy with the aged.

Increase in Automobile Accidents

A rapid increase in automobile accidents has been occurring all over the country, especially in the cities. In 1926 the deaths caused by automobiles numbered about 500 but in 1932 they had risen to more than 1,300. The injured numbered about 13,000 in the former year and 37,000 in the latter. In Tokyo alone in 1934 there were 340 killed and more than 13,000 injured. The victims are usually the poorer pedestrians and the drivers

of taxicabs, who are also generally poor, for in Japan owners of cars do not usually drive them themselves but hire drivers. The urgent need for accident insurance is obvious.

Preservation of a Dying Race

As the race of Ainu is decreasing in numbers, the government has been urged to take measures to protect and preserve the members of the race. In the Iburi districts there are 719 families, including 1,742 men and 1,716 women. Their daily life is quite insanitary, and venereal diseases and tuberculosis are common. The Hokkaido Imperial University is going to establish a health center for examination and treatment. At the same time advice will be given with regard to healthful modes of living.

Experimental Cancer of the Liver

The Cancer Research Society has awarded its annual prize for 1935 to Dr. Tomizo Yoshida of the Sasaki Institute for his success in producing experimentally tumors in the liver. He is reported to be the first man to succeed in producing in the viscera tumor of any kind. He experimented on 300 black rats for months and he is going to make public the details of the experiments before long.

Marriages

JAMES CORNELIUS PASS FEARRINGTON of Winston-Salem, N. C., to Miss Florence McCanness of South Boston, Va., April 17.

THOMAS WALTER LONG NEWTON, N. C., to Miss Thelma Alice Gill of Wake Forest, February 3, announced June 8.

FLETCHER JOHNSON WRIGHT JR., Petersburg, Va., to Miss Martha Jeanette Andrews of Lynchburg, June 29.

JOHN PORTER FLANDERS, Battle Creek, Mich., to Miss Viva Richardson of Lansing, at Keokuk, Iowa, July 7.

ROBERT M. HOLLAND, Boston, to Miss Helen Geary of Waltham, Mass., at Fountain Springs, Pa., June 29.

CLARENCE PORTER JONES JR., Newport News, Va., to Miss Selma Schunk of Sacramento, Calif., April 25.

LAWRENCE RICHARD BANNER, Kalamazoo, Mich., to Miss Rosellen Goiman of Huntington, Ind., June 29.

WILLIAM HOLMAN HANNING, Dayton, Ohio, to Miss Hannah Rebecca Lewis at Chadbourn, N. C., June 18.

WILLIAM O. BEDINGFIELD, Savannah, Ga., to Miss Carolyn Marvin in Yemassee, S. C., June 25.

JOSEPH F. MCGOWAN, Youngstown, Ohio, to Miss Frances Oddi of Yatesboro, Pa., June 28.

ALVIN M. JENSEN, Minneapolis, to Miss Margaret Benson of Center City, Minn., in May.

WARREN COONS CORWIN, University, Va., to Miss Ella Macha of Baltimore, June 22.

CONRAD S. BAKER, New Haven, Conn., to Miss Marjorie Wheeler at Easton, July 23.

ROBERT P. HUDSON, Utica, Miss., to Miss Ruth Fant of Birmingham, Ala., June 30.

PAUL B. BRUMBY, Lexington, Miss., to Miss Lynda Faye Patton of Oxford, June 25.

CORNELIUS F. DUNN, Milwaukee, to Miss Florence Spang of Racine, Wis., June 22.

JOSEPH GREENGARD to DR. DOROTHY HUTCHINSON WELKER, both of Chicago, July 17.

JAMES A. BROWN, Cleveland, N. C., to Miss Jeanette Caldwell at Raleigh, July 8.

ROBERT B. ELLISON to Miss Clarine Wickerham, both of Peebles, Ohio, June 19.

RUSSELL J. BASKETT, Jonesboro, Ind., to Miss Edna Bundy of Spiceland, June 30.

CHARLES ALLEN BORN, Pensacola, Fla., to Miss Vera Blume at Live Oak, June 29.

PAUL R. HINCHEY, Waltham, Mass., to Miss Bessie Hickey of Peabody, June 22.

ARTHUR FLETCHER BALDWIN to Miss Ivy Ludford, both of New York, July 13.

EUGENE C. HEIFETZ to Miss Selma Wahlberg, both of Milwaukee, June 23.

BEVERLY C. COMPTON, Baltimore, to Miss Cynthia Wilson in Chicago, July 6.

Deaths

John Jenks Thomas ♂ Boston, Harvard University Medical School, Boston, 1890, since 1916 professor of neurology, emeritus, Tufts College Medical School and instructor in neurology from 1902 to 1906, assistant professor from 1906 to 1912 and professor from 1912 to 1916, formerly associate in neurology at the graduate school of Harvard University, vice president of the American Neurological Association in 1908, in 1916 and in 1925, president of the Boston Society of Psychiatry and Neurology in 1911, served during the World War, district physician and physician to the Boston Dispensary, 1892-1897, on the staff of the Boston City Hospital since 1893, neurologist to the Children's Hospital, 1913-1919, and since 1919 consulting neurologist, pathologist to the Boston Insane Hospital, 1898-1903, consulting neurologist to the Infants' Hospital and the Quincy (Mass.) City Hospital aged 73, died July 17, in the Phillips House of the Massachusetts General Hospital of strangulated hernia

Frank Allport, Chicago Medical College, 1876, secretary, 1895-1896, and chairman, 1901-1902 of the Section on Ophthalmology of the American Medical Association, for several years chairman of the Committee on Conservation of Vision, and in 1903 member of the House of Delegates practiced for many years in Minneapolis and in Chicago formerly professor of clinical ophthalmology and otology, University of Minnesota Medical School Minneapolis, and at his alma mater, past president of the Minnesota State Medical Association the Chicago Ophthalmological Society and the Chicago Otolological Society, fellow of the American College of Surgeons at one time oculist and aurist to the board of education in Chicago, formerly on the staffs of the Wesley and St. Luke's hospitals, Chicago served in the medical reserve corps aged 78 died August 3, in Nice France, where he had been living for several years

Henry Rockwell Varney ♂ Grosse Pointe Park, Mich., University of Vermont College of Medicine Burlington 1893 in 1907 member of the House of Delegates of the American Medical Association, secretary of the Section on Dermatology, 1909-1912, and chairman, 1916-1917, formerly professor of dermatology and syphilology, Detroit College of Medicine and Surgery, member of the American Dermatological Association, formerly member of the International Congress of Dermatology, city physician, 1896-1899, served on a medical draft board during the World War, at various times on the staffs of the Charles Godwin Jennings Hospital, Harper Hospital and the Children's Hospital, aged 64, died, July 8, of angina pectoris, while on a train en route home from a vacation

Clarence Charles Rice, New York College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1877, member of the Medical Society of the State of New York and the American Clinical and Climatological Association, member and past president of the American Laryngological Association, emeritus professor of laryngology and rhinology, New York Post-Graduate Medical School of Columbia University, on the staffs of the Montefiore Home and Bellevue Hospital, aged 81 died, July 9

William Henry Dudley, Los Angeles, University of the City of New York Medical Department, 1882 University of Southern California College of Medicine, Los Angeles, 1906 member of the American Laryngological, Rhinological and Otolological Society, fellow of the American College of Surgeons, at one time instructor in diseases of the ear, nose and throat, University of California Medical School, aged 80 died, June 9, in Glendale, Calif., of cerebral hemorrhage and uremia

John Hathaway Long, Brooklyn Long Island College Hospital, Brooklyn, 1903 member of the Medical Society of the State of New York fellow of the American College of Surgeons, at one time instructor in surgery at his alma mater, served during the World War, on the staffs of the John Mather Hospital Port Jefferson, N. Y., House of St. Giles the Cripple and Brooklyn Hospital, and St. John's Hospital, Brooklyn, aged 57, died July 14, of cerebrospinal sclerosis

Arthur Hallam Ring ♂ Arlington Mass., Boston University School of Medicine 1897, assistant professor of neurology at his alma mater member of the American Psychiatric Association and the New England Society of Psychiatry, served during the World War served in the neurologic clinic of the Massachusetts Memorial Hospitals, medical superintendent of the Ring Sanatorium and Hospital aged 60 died, June 25, of coronary thrombosis

Levi Harvey Pelton, Waupaca, Wis., Bellevue Hospital Medical College, New York, 1873, member and in 1906 president of the State Medical Society of Wisconsin, past president of the Ninth District Medical Society and the Waupaca County Medical Society, in 1908 member of the House of Delegates of the American Medical Association, aged 86, died June 28, of Raynaud's disease

Harry C. Miller ♂ Omaha, John A. Creighton Medical College, Omaha, 1917, member of the Western Surgical Association, fellow of the American College of Surgeons, surgeon to the Immanuel Deaconess Hospital aged 47, died, June 19, of myocarditis and bacillary dysentery, while aboard the *President Adams* on the Atlantic Ocean

Luis Pablo Pereira y Leal, Rio Piedras, P. R., University of the South Medical Department, Sewanee, Tenn., 1909 member of the Medical Association of Puerto Rico, also member of the House of Representatives of the Insular Legislature, aged 48 died June 15 of cerebral hemorrhage, diabetes mellitus and arteriosclerosis

Arthur Thomas Leopold ♂ Moline, Ill., State University of Iowa College of Medicine Iowa City, 1907, past president of the Rock Island County Medical Society, medical director of the Rock Island County Tuberculosis Sanatorium, Rock Island on the staff of the Moline Public Hospital, aged 50, died July 4

Harry Lovejoy Loop, Saratoga Springs, N. Y. Albany (N. Y.) Medical College 1904 member of the Medical Society of the State of New York formerly secretary of the Medical Society of the County of Saratoga, on the staff of the Saratoga Hospital aged 53 died June 17 of hypertensive heart disease

Alfred Christoph Carl Wiebusch, Steeleville, Ill., Homeopathic Medical College of Missouri St. Louis 1906 member of the Illinois State Medical Society, past president of the Randolph County Medical Society served during the World War aged 54 died suddenly, June 24 of cerebral hemorrhage

William Ernest Hart ♂ Pittsburgh Johns Hopkins University School of Medicine, Baltimore 1909, fellow of the American College of Surgeons instructor in gynecology, University of Pittsburgh School of Medicine, on the staff of the Magee Hospital aged 53 died June 12 of angina pectoris

Cecil Dunmore Murray, New York Columbia University College of Physicians and Surgeons New York 1932 member of the Medical Society of the State of New York served during the World War aged 37 on the staff of the New York Hospital where he died July 4 of Hodgkin's disease

Thurston Hopkins Dexter ♂ Brooklyn Long Island College Hospital Brooklyn 1901, fellow of the American College of Physicians, served during the World War on the staffs of the Wyckoff Heights Hospital, Cumberland Hospital and Swedish Hospital aged 58 died, June 24

Anne Barrett Newton, South Orange N. J., Woman's Medical College of the New York Infirmary for Women and Children, New York 1899 for fifteen years school health inspector, aged 76 died June 17, in the Orange Memorial Hospital, of aneurysm of the aorta

Elmer Sherman Allen ♂ Arcola Ill. Rush Medical College, Chicago, 1895 formerly mayor and president of the school board aged 70 died, June 26 in the Memorial Hospital Mattoon, of meningitis following an injury of the head in an automobile accident

James M. Mattenlee, Sapulpa Okla. Beaumont Hospital Medical College, St. Louis, 1890 member of the Oklahoma State Medical Association, past president of the Creek County Medical Society aged 71, died suddenly, June 25, in Oklahoma City, of myocarditis

Max Sigmund Berk, Brooklyn Columbia University College of Physicians and Surgeons New York 1920, member of the Medical Society of the State of New York, on the staff of the Jewish Hospital aged 40 died, July 2, of rheumatic heart disease

Harry Dickson ♂ Memphis Tenn., Memphis Hospital Medical College, 1909 at one time assistant professor of surgery, University of Tennessee College of Medicine, aged 48, died, June 28, in the Gartly-Ramsay Hospital, of coronary thrombosis

Lowry N. Burchinal Point Marion Pa., University of Maryland School of Medicine Baltimore 1886 member of the Medical Society of the State of Pennsylvania member of the board of education, aged 72 died June 11, of arteriosclerosis

Frederick Elmarian Withee ♂ Newton, Mass., College of Physicians and Surgeons Baltimore, 1892 served during

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the World War, for many years school physician, on the staff of the Newton Hospital, aged 70 died, June 29, of heart disease.

George Leininger, Chicago, University of Wooster Medical Department, Cleveland, 1881, member of the Illinois State Medical Society formerly superintendent of the Chicago State Hospital, aged 79 died, July 17, of carcinoma of the intestine.

Charles H Girard, Willimantic, Conn., School of Medicine and Surgery of Montreal, Que., Canada 1890, member of the Connecticut State Medical Society aged 69, died, April 6, of uremia, diabetes mellitus, hypertension and cerebral hemorrhage.

Daniel John Townsend, Lohrville, Iowa Drake University Medical Department, Des Moines, 1887, member of the Iowa State Medical Society formerly member of the state legislature, aged 79, died suddenly, June 3, of heart disease.

William Sheriff Orth & Chicago Rush Medical College, Chicago, 1890, formerly on the staffs of the Alexian Brothers Hospital and the Grant Hospital, aged 70, died, July 16, in St. Luke's Hospital, of cardiovascular renal disease.

Raphael Hector Fabio Piperno, Los Angeles Regia Università di Firenze degli studi Facoltà di Medicina e Chirurgia Italy, 1885 aged 73 died, April 30, of arteriosclerosis, coronary thrombosis and diabetes mellitus.

Arthur Joseph Smith, Boonville, Mo Washington University School of Medicine St. Louis, 1901, aged 59 died, June 20, in the Veterans' Administration Facility, Dayton, Ohio, of arteriosclerosis and heart disease.

John Samuel Boggess & Medical Director U S Public Health Service, Grosse Pointe Park, Mich. Miami Medical College Cincinnati 1898, aged 62, died, June 24, in Detroit, of arteriosclerosis and aortitis.

Jorgen Waldemar Hansen, Manistee Mich., State University of Iowa College of Medicine Iowa City, 1897 aged 64, died, June 15, in the Blodgett Hospital, Grand Rapids, of adenocarcinoma of the rectum.

Augustus Godfrey Beam, Covington Ky Louisville National Medical College, Medical Department State University, 1906 aged 49 died, April 20 in St. Elizabeth Hospital, of cerebral hemorrhage.

Chester De Forest Barnes, Tecumseh, Neb (licensed in Nebraska in 1898) member of the Nebraska State Medical Association aged 68, died, May 25, of myocarditis and bronchopneumonia.

John A Winfrey, Handley, Texas Texas Medical College and Hospital Galveston 1891 aged 72 died, June 29, in the Harris Hospital, Fort Worth of peritonitis and carcinoma of the sigmoid colon.

Edwin Green Greer, Chattahoochee, Ga Atlanta College of Physicians and Surgeons 1912 served during the World War aged 52 died May 13, in Atlanta of bronchopneumonia and emphysema.

Henry Walter Tidmarsh, Whittier, N C North Carolina Medical College Charlotte, 1914 served during the World War aged 45 died, May 8 of insulin shock, diabetes mellitus and myocarditis.

John Silas Booher, Reedsburg Wis Keokuk (Iowa) Medical College, 1896 member of the State Medical Society of Wisconsin aged 71, died July 8 as the result of a cerebral hemorrhage.

Almond Alvah Pratt, Wayland N Y Pulte Medical College, Cincinnati, 1883 member of the Medical Society of the State of New York aged 75 died June 15 of cerebral hemorrhage.

Jacob L Mowery, Strasburg Pa Jefferson Medical College of Philadelphia 1878 member of the Medical Society of the State of Pennsylvania aged 80 died July 4 of cerebral thrombosis.

Frank Loomis Sabin, Newtonville, Mass Boston University School of Medicine 1884 member of the Massachusetts Medical Society aged 78 died May 26 of coronary thrombosis.

John William Lewis, Chicago Bennett College of Eclectic Medicine and Surgery Chicago 1902 aged 61 died, May 22 of septicemia, which developed from a cut on the palm of his right hand.

John Robert Gunne, Dauphin, Manit Canada Manitoba Medical College Winnipeg 1894 M.R.C.S England and L.R.C.P. London 1906 aged 63 died June 5 of coronary occlusion.

William Dyson Kennedy, Lansdowne, Pa Chicago Homoeopathic Medical College, 1884 for many years member and president of the board of health of Lansdowne aged 79 died May 21.

George Wilford McCrary, Seattle, Chicago College of Medicine and Surgery, 1917, served during the World War, aged 47, died, May 6, of heart disease and pulmonary tuberculosis.

John Milton Wells, Chelsea, Mass., University of Oregon Medical School Portland 1890, Bellevue Hospital Medical College, New York, 1893, aged 67, died, July 3, of heart disease.

Hardin Perkins Cochrane, Franklin Tenn., University of the City of New York Medical Department, 1874 Confederate veteran aged 91 died, June 11, of a hip fracture received in a fall.

Franklin Dill Simons, Hermosa Beach, Calif., University of Louisville (Ky) Medical Department 1893, aged 77 died, May 21 of chronic myocarditis arteriosclerosis and hemiplegia.

Harrie Elbridge Hard, Seville Ohio, Western Reserve University Medical Department, Cleveland, 1898, formerly county coroner, aged 64, died June 24, of pneumonia.

William Fuller Harrison, Plains, Pa., Baltimore University School of Medicine, 1904 served during the World War, aged 62 died, June 14, of progressive bulbar paralysis.

Frederick Hayes Sowers & Rochester N Y Trinity Medical College, Toronto, Ont., Canada, 1883, L.R.C.P., London, 1884, aged 76, died, May 27, of arteriosclerosis.

David Houston Chilton, Parrish, Ala Atlanta College of Physicians and Surgeons, 1902 member of the Medical Association of the State of Alabama aged 58 died, June 2.

Robert S Hambleton, Buffalo Hospital College of Medicine Louisville, Ky 1878 aged 82 died suddenly, June 17, of chronic myocarditis and angina pectoris.

Louis Henry Wagner & Cleveland, Cleveland Medical College, 1897, aged 63 died, July 2, in St. Luke's Hospital of hemorrhage due to duodenal ulcer.

August George Berchermann, San Antonio, Texas, St. Louis Medical College, 1875 aged 80, died, June 20, in Billings, Mont., of cerebral hemorrhage.

Clyde Winfield Mummert & Columbus, Ohio, Ohio Medical University, Columbus, 1903 aged 63, died, July 4, in the White Cross Hospital of uremia.

Sereno Marcellus Ferguson, Des Moines, Iowa, Barnes Medical College, St. Louis, 1902, served during the World War, aged 57, died, May 28.

Alphonso Taft Arbuckle, Danville, Ill., Rush Medical College, Chicago 1886 aged 80, died, July 10 in the Lake View Hospital of pneumonia.

James Augustus Bailey, Harrisburg Pa., College of Physicians and Surgeons, Baltimore 1895 aged 63, died July 12 of angina pectoris.

Esther Eleanor Sandus Saunders, Buckbee, Los Angeles, Jenner Medical College, Chicago, 1906, aged 60, died, June 17, of cerebral hemorrhage.

Frank Pierce McLaughlin, Austin, Texas Bellevue Hospital Medical College, New York 1884, aged 80, died, May 25, of myocarditis.

Adolph Arent, Callender, Iowa Rush Medical College Chicago, 1895, aged 62 died suddenly, July 10, of carcinoma of the trachea.

Hubert Miller, Mobridge, S D., Chicago College of Medicine and Surgery, 1909, aged 59, died, July 5, of cerebral hemorrhage.

Thomas J Callan, Detroit, Detroit College of Medicine 1904 aged 63, died, June 11, of carcinoma of the liver and myocarditis.

James Edgar Melton, Los Angeles St. Louis University School of Medicine, 1904 aged 63 died May 8 of bronchopneumonia.

Arthur Moberg, Pittsburg, Kan Marion-Sims College of Medicine, St. Louis 1897, aged 64, died in May, of heart disease.

E Herbert Bailey & Corunna Mich., Detroit Medical College 1884, aged 76 died, June 14, of arteriosclerosis.

Ernest L Dow, Rock Falls Ill Rush Medical College Chicago 1887 aged 73 died, June 29, of heart disease.

Benjamin F Grounds, Blue Ridge Texas Louisville (Ky) Medical College, 1893 aged 71 died, June 10.

Frank H Parker, Rutland Ohio, Columbus Medical College, 1880 aged 79 died suddenly, June 2.

Lewis D Hamilton, Marion Ohio Columbus (Ohio) Medical College, 1881, aged 78, died, May 27.

Alonzo F Christopher, Pearson, Ga., Atlanta Medical College, 1891, aged 82 died April 10.

Bureau of Investigation

DR. W O COFFEE COMPANY

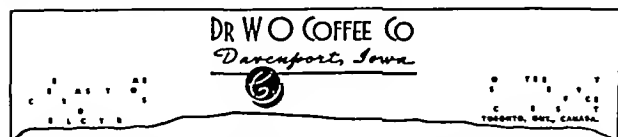
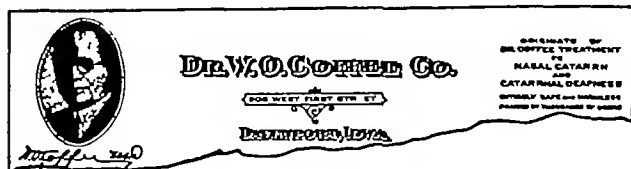
The Mails Are Finally Closed to a Fraudulent Deafness Cure

The Dr W O Coffee Company and its officers and agents as such on June 6, 1935, were debarred from the use of the United States mails because the postal authorities declared that their business was "a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises"

The history of the mail-order concern exploited under the name of Dr W O Coffee Co is an interesting example of contemporary and near-contemporary quackery * William O Coffee, the originator, has been dead nearly eight years, but for many years prior to his death he was a mail-order quack. He was born in 1859, claimed a diploma from the Missouri Medical College, 1881, and for a while practiced in Blandville and Louisville, Ky, Xenia, Ohio, Janesville, Wis, and Des Moines, Iowa While in Des Moines, he widely advertised a mail-order "eye-cure" business His activities were exposed by Samuel Hopkins Adams in *Collier's* "Great American Fraud" series (1905-1907) In 1915 Coffee filed a petition in voluntary bankruptcy, his heaviest creditor, according to the report, being Arthur Capper, owner of the *Topeka Capital*, which had an advertising claim aggregating many hundreds of dollars

Following his bankruptcy, Coffee for some time carried on an itinerant practice, visiting various towns a day or two at a time In 1918 he moved to Davenport, in which town he again went into mail-order quackery exploiting his mail-order deafness cure He carried full-page advertisements in such papers as were willing to share the profits of quackery Then, Coffee died—Oct 4, 1927 But the W O Coffee concern was much too profitable a business to be permitted to die with him, and it was carried on by Coffee's son P E Coffee, the head of the Dr W O Coffee Company

The records of the American Medical Association show that (1) Percy E Coffee holds a diploma issued more than thirty years ago by a homeopathic school, (2) he has never been licensed to practice medicine in any state in the Union, (3) he has, in fact, claimed to be "not in practice" Obviously, his experience in the treatment of deafness must have been confined to the selling on the mail-order plan of pills and potions to people he has never seen



Reproductions (greatly reduced) of letter heads used by P E Coffee The upper was used for some time following the death of W O Coffee and would lead the public to believe that he was still doing business


So much for past history From the memorandum of the Hon Karl A Crowley, Solicitor of the Post Office Department, to the Postmaster General, in which is embodied the finding of fact and the recommendation that a fraud order be issued, we learn that on March 12, 1935, a copy of the charges to be brought against the Dr W O Coffee Company was forwarded to the concern and it was called upon to show cause

* The Coffee quackery was the subject of a Query and Minor Note in *THE JOURNAL* Jan 26 1918 p 259 It was also dealt with in the article *Deafness Cure Quackery and Pseudo-Medicine* by Arthur J Cramp M D published in *Hygeia* in January 1926


on April 8 why a fraud order should not be issued against it. On April 8 Percy E Coffee, president of the Dr W O Coffee Company (a corporation organized under the laws of Delaware) appeared in Washington accompanied by his attorney, and the case was heard on April 8, 9, 10 and 11 The stenographic transcript of the testimony comprised over 450 typewritten pages, not including many documentary exhibits

Solicitor Crowley in his memorandum states that the Dr W O Coffee Company sold through the mails a treatment for catarrhal deafness, catarrh and head noises.

HARD OF HEARING?



**Send for This 30 Day
Trial Treatment**



Which has restored the hearing, removed head noises and eliminated catarrh of the head for so many people. This is not an internal remedy—but an ethical treatment originated by a prominent ear specialist for his office practice—now simplified for home use This treatment has been used by 1,157,000 sufferers in the past 34 years. Many report remarkably quick results. Write today for full information about our 30 day trial offer We will also send you copies of many letters of recommendation from people whose normal hearing has been restored.

DR. W O COFFEE CO
1356 St. James Bldg Davenport, Iowa

Reproduction of an advertisement sent to the Bureau of Investigation in January 1935 by the superintendent of a state school for the deaf He stated that it was taken from a religious publication, the *Christian Herald*

Mr Crowley brings out some of the facts already mentioned regarding the genesis of the business He brought out, too, the fact that the W O Coffee "treatments" had been changed at various times, and yet in spite of this, P E. Coffee, under the trade name Dr W O Coffee Company, continued to advertise to prospective purchasers that "over one million people have used these medicines" and that the "treatment" was "an absolute duplication (with improvements) of the treatment we used several years ago in our office when we were personally treating patients" Mr Crowley points out that such representations are false, for P E. Coffee during the hearing testified that he had never practiced medicine, but he did state that he had assisted his father for a short time in the latter's office practice by waiting on him as he treated patients

The memorandum brings out further that prospective purchasers were secured through extensive advertising and that P E Coffee spent about \$8,000 a year for such advertising Formerly the advertising had run as high as \$190,000 a year! The Dr W O Coffee Company also circularized lists of names of supposed sufferers from deafness and catarrh ("sucker lists") purchased from letter brokers Coffee sent out so-called diagnosis blanks and stated in his circular letters that if he thought the treatment would help the patient, he would send it, but that if he thought it wouldn't help the patient, he would tell him so Yet he admitted at the hearing that he could not diagnose any case from the answers on the diagnosis blank, and he admitted, also, that he is "incompetent to even make a personal diagnosis of a person suffering from catarrh"! It was brought out, further, that Coffee, in accordance with well established mail order methods, used a follow-up system, sending several letters to individuals who did not bite easily

THE TREATMENT

The Solicitor's memorandum also described in some detail the so-called thirty-day treatment sent out by P E. Coffee. It consisted of

Prescription No 1—This was a powder to be dissolved in a pint bottle of water to be used as a nasal douche a small glass douche accompanying the "treatment" The powder when analyzed by the government chemists

was found to contain principally salt and borax with a small amount of potassium iodide (about 2 1/2 per cent) and a small amount of ephedrine sulphate (about 0.6 per cent). P. E. Coffee claimed at the hearing that this powder also contained oil of eucalyptus, wintergreen, sodium salicylate and benzoate of soda. The government experts developed the fact that the amount of liquid to be used in the douche device was not sufficient to cleanse the nose properly and could not reach or cleanse the nasal pharynx.

Prescription No. 44—This was another powder also to be dissolved in a pint of water and used as a gargle. The powder consisted mainly of boric acid with a small amount of zinc sulphate and much smaller amounts of salicylic acid, carbolic acid, eucalyptol, menthol and thymol. The chief ingredient, boric acid, was present in such small amounts when dissolved in a pint of water that it made a solution of less than one per cent, while the next largest ingredient was present in solution in about one-tenth of one per cent.

Prescription No. 40—This came in a glass tube with a cork at each end to be used as an inhalant. Inside the tube was some cotton saturated with some peppermint oil of eucalyptus oil of mustard and mineral oil. The amount of oil of mustard in the inhalant was sufficient to make the preparation pungent and irritating.

Prescription No. 37—This was an oil, two or three drops of which were to be placed on absorbent cotton and the cotton pushed down into the external ear. The instructions were that the finger was to be held tightly in the ear until the oil made the ear feel warm. Thereafter the cotton was to be removed. The oil according to the government chemists was mineral oil containing some Haarlem oil, alcohol, wintergreen oil of mustard oil of eucalyptus and chloroform. Coffee admitted at the hearing that he had had reports of patients blistering their ears by the use of this preparation, and in such cases he would send **Prescription No. 3** to be used in the place of **37**. This apparently contained no mustard oil.

Prescription No. 48—This was a salve which came in a small tin box. The salve was essentially vaseline or petrolatum, with small quantities of eucalyptus, wintergreen and peppermint oil. The salve was to be inserted up the nose twice a day and at bedtime a small quantity was to be rubbed on the outside of the nose.

Prescription No. 4—This was another ointment also said to be essentially vaseline or petrolatum containing a small quantity of red pepper with some chlorophyll to give it color. This was to be applied behind in front and below the ears and rubbed into the skin until the red pepper began to get in its work.

Dr. Coffee's Veg Erbs—These were laxative tablets (about a dozen to the "treatment") to be used by the patient when he thought a laxative was needed. The government chemists reported that it contained aloin, cascara and podophyllin.

Mr. Crowley, the Solicitor, brings out in his memorandum to the Postmaster General a fact that is common to most mail-order quackery, namely that the representations of the quack begin to change after the victim has once been hooked. In Coffee's first letter soliciting the trial order, the prospective victim was led to believe that the "treatment" would remove the cause of his ear trouble and that about 75 per cent of all persons who use the treatment show improvement in the first month, while many were said to report that their "hearing has been completely restored with one month's treatment." The first letter also discusses the restoration of hearing. However, after the money had been sent to Coffee and the thirty-day trial treatment had been ordered, the victim was advised that he "may not receive any benefit so far as his hearing is concerned with this first month's treatment." This, of course, was to prepare the way for subsequent orders. In subsequent letters Coffee made the statement that "most people expect their hearing to improve with the first month's treatment. This is impossible in most cases." Yet in the sucker bait that Coffee had sent out to catch the victim, he gave the deafened every reason to believe that the first month's treatment would cure 75 per cent of the cases of deafness. Coffee's explanation of this duplicity, according to the Solicitor's memorandum, was that if he were to tell the victims the truth in the first letter and that it would take considerably longer than a month, they would not believe it!

After the victim had paid for his first month's treatment he was sent a second month's treatment together with several letters urging him to send in his "report blank" and to continue taking the treatment. In these letters the victim was advised that many persons required three months' treatment. With the second month's treatment a so-called "Ear Massage Instrument" was sent. This was a small pump equipped with a glass device to be held by the patient against the external opening of the auditory canal to force air against the ear drum. There was also sent in this second month's treatment in place of **Prescription No. 37** another "patent medicine" which was

another ear oil called **Prescription No. 38**. This differed from **No. 37** in that it contained more chloroform. The Solicitor's memorandum then continues:

"Following orders for third, fourth and other treatments, the patient is urged to continue using the treatment and is successively told that many persons require a longer treatment than he has already used.

"The evidence shows that this procedure has been followed even in cases where the patient described at the outset an incurable condition. Dr. Coffee testified with respect to one such case in evidence that the treatment should not have been sent at the outset and that, since no improvement was reported by the patient, he should not have been urged to continue the treatment. He explained that this was due to an error on the part of the girls in his office who examine application and report blanks and fill orders. Dr. Coffee testified that his cheapest inquiries from prospective patients cost him around seventy cents each and that inquiries have cost him as high as \$9 and \$10 each. His interest in urging all patients to continue the treatment is therefore apparent even when statements in letters and report blanks sent in by the patient indicate that his condition is hopeless.

"In one case in evidence where the patient indicated an incurable condition known as otosclerosis, this procedure was followed and four treatments, for which \$40 was collected, were sold. In other cases where patients indicated that they were deaf due to injuries received in football games and had running ears, they were urged to purchase the treatment.

"The representations made by the respondent are calculated to lead the prospective purchaser of this treatment to believe that his case will be diagnosed by a physician from the blanks furnished the company, and that the administration of the treatment will be under the personal supervision of Dr. P. E. Coffee, who the patient is led to believe has had long experience in the treatment of deafness, head noises and catarrh."

Mr. Crowley points out, further, in his memorandum that the evidence during the hearing showed that two women who had been with the W. O. Coffee Company many years were the ones who examined the "symptom blanks" and filled the orders and did not consult P. E. Coffee unless they were in doubt as to whether to send the treatment! In other words, the memorandum shows that P. E. Coffee admitted that it was impossible to diagnose the cases from the symptom blanks he admitted, also, that even if the patient were present, he wasn't competent to diagnose his case, and, finally, it was brought out that he didn't even try to diagnose most cases, but left it to a couple of women with no medical training, who furnished the various "treatments"!

It was also brought out that Coffee testified at the hearing that he declined to furnish any treatment in at least 25 per cent of the inquiries received from prospective victims, yet the evidence showed that when the Post Office inspectors investigated the case and Coffee was called on to furnish all of his advertising, all of his circulars and all of his form-letters, Coffee did not furnish any copy of the form-letter that he submitted at the hearing in which he declined to furnish the treatment. Furthermore, although the Post Office inspectors conducted seven series of test correspondence under assumed names with the W. O. Coffee Company over a period of several years, in which various conditions of apparently incurable deafness were set up in application blanks and letters addressed to the company, in no instance did the W. O. Coffee Company decline to furnish the treatment.

The record was not at all clear as to just what types of cases P. E. Coffee himself did decline to treat. At the hearing Coffee testified on direct examination that in some of the test cases conducted by the inspectors it was proper for him to fill the order, yet on cross-examination on these same cases he stated that the treatment should not have been sent.

Coffee submitted at the hearing fifty-one application blanks which he testified had been declined by sending his form-letter (the first copy of which form-letter was submitted, also, at the hearing). Solicitor Crowley brought out the fact that of these fifty-one applications twenty-two were received by the company about the time that the government took action

in the case, two were undated, and all the balance, with one exception, were received by the company subsequent to June, 1934, when the Post Office inspector who investigated the case interviewed Coffee.

In view of the obvious fraud involved in the Dr W O Coffee business as conducted by P E Coffee, Solicitor Crowley recommended the issuance of a fraud order, which was put into effect June 6, 1935.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

ASTHMA

To the Editor—I would appreciate any help that you can give me in the treatment of the most severe case of bronchial asthma I have ever seen. The patient is a woman aged 48 and the mother of two sons 18 and 25 respectively. When about 6 to 10 years of age she had light attacks of asthma which terminated without any special treatment and for a period of about forty years she never had any further asthmatic attacks. About July 1934 frontal sinus infection developed which was treated and did not respond to palliative measures pus developed in the left frontal sinus and was drained through an opening. Later an abscess of the frontal lobe of the brain developed an operation was done in the left temporal region and the abscess was drained with removal of about 1 ounce of pus one week later the pus was drained again from this pocket. The patient improved very much. Her mentality is now normal. The openings drained quite a bit of pus. The temporal drainage ceased after about five months there being very slight drainage from the operation over the frontal sinus at present. About two months after the operations asthma developed which has been most obstinate. The patient has asthma most of the day and night. Some days or nights it is necessary to give epinephrine every three hours and occasionally it does not have any effect on relieving the attacks and only a heavy dose of morphine will give any relief or rest. I have gone into the case as to allergy of foods feathers the dander of animals and so on. These things do not seem to make any difference in the attacks which are most constant unless she is under the influence of epinephrine or morphine. The focal infection of the frontal sinus is probably the cause of the trouble but what I am most interested in is the relief of these attacks. I have also administered hydrochloric acid 1:500 and also 1:1000 intravenously every other day for six doses without any relief whatever. Any treatment you may suggest for relief or cure would be greatly appreciated. I may state that the patient has had ephedrine locally to the nasal cavity and also internally without results. Please omit name and address.

M D Kentucky

ANSWER—The fact that the patient had asthma in childhood should make one suspicious that the symptoms are on an allergic basis in spite of the fact that the recurrence of the asthma was preceded by sinus infection and surgery. Infection of the nasal sinuses per se is rarely sufficient to cause asthma. In the presence of an allergic state or in the previous presence of asthma sinus infection may precipitate attacks of asthma or may aggravate the latter if it already exists. It is evident therefore, that the importance of a thorough investigation of the patient's allergic status cannot be overemphasized. In addition to the tests mentioned this patient should be tested with a number of miscellaneous substances such as house dust, cottonseed, flaxseed, orris root, Karaya gum, tobacco, wood smoke and a number of the common fungi. If an exhaustive attempt at cutaneous tests is of no avail, intracutaneous tests should be done. In the event of failure to elicit any positive response, she should be given a short trial of about ten days with elimination diets (Rowe A H Food Allergy, Philadelphia Lea & Febiger, 1931; Feinberg S M Allergy in General Practice, Philadelphia Lea & Febiger, 1934). If a trial diet does not point to food as an etiologic factor, the patient should be placed in a room as nearly allergen free as possible (directions are given in Feinberg's monograph) for a period of ten days or more.

If no relief is obtained by these methods, it may be at least temporarily presumed that the etiology of the asthma is intrinsic. In this patient, of course the most likely factor of this type would be the sinus infection. If the necessary surgical procedures are completed, the question of bacterial sensitization should be seriously considered. One should prepare a vaccine from the anaerobic and aerobic organisms obtained from the sinus drainage and give subcutaneous injections beginning with semi-weekly small doses and increasing the latter gradually. It is not to be expected that the infected sinuses will be cured in this manner but the sensitiveness to the bacterial proteins may be sufficiently reduced so that clinical improvement in the asthma may result. Other nonspecific means that may be considered

are the use of tuberculin, typhoid protein or B coli vaccine subcutaneously. Artificial fever, by the use of a high frequency current or by typhoid vaccine intravenously, may at times give very satisfactory results. Roentgen therapy to the chest has been successful at times.

From a palliative standpoint a number of procedures are worthy of consideration. The correspondent makes no mention of iodides. If this medication has not been tried, 0.65 Gm doses three times daily should be given. When the patient becomes epinephrine fast or when the frequent use of epinephrine becomes a strain on the nervous system, it is advisable to try sedatives or hypnotics. Practically all men having considerable experience in asthma agree that morphine is inadvisable and dangerous. Equal parts of ether and olive oil given rectally with a small rubber tube may break the habit spasm sufficiently. Usually 60 cc of the mixture is given at the first dose. More may be given later if the first instillation does not suffice. Chloral hydrate or chlorbutanol in hypnotic doses may work in a similar manner. Great care, however, must be used in the administration of these drugs. A simple remedy, but effective and rapid usually, is the inhalation of fumes from the burning of powders containing stramonium, lobelia and potassium nitrate. Several such mixtures are available on the market.

HERNIA OR TERATOID TUMOR

To the Editor—A girl aged 6 weeks with a swelling in the sacral region was operated on at the local hospital. The patient the second in the family was delivered normally. A tumor located between the anus and the coccyx was noticed. It was 11 cm in diameter was rather tense and felt lobulated to about 3 cm at its caudal end. When the child cries it appears more tense while the face and the lips become cyanotic. After ten or twelve days the tumor appeared considerably collapsed, soft and fluctuated like a rubber bag half filled with water. A roentgenogram revealed the fact that the tumor had no connection with the spinal canal and that gas presumably from a piece of intestine appeared in the neck of the sac. Operation showed the sac to be composed of skin and serous lining filled with straw colored fluid. The neck opened into the peritoneal cavity and thence protruded into the colon to just beyond the sac. The opening admitted two finger tips. The base of the sac was considerably thicker with muscle tissue extending to a little over half the height of the sac. The caudal end was lobulated into two 2 cm compartments separated by thin membranes and containing fluid of the same nature. Microscopic section of the sac showed skin on one surface and peritoneum on the other with connective tissue between while the cystic area showed the wall of the cyst to be composed of thin connective tissue lined by flat endothelial cells. I should be pleased to know in your opinion whether this is a congenital pelvis hernia or one of the postnatal intestinal tumors mentioned in Ewing's Neoplastic Disease in the chapter on teratology. I shall also be pleased if you will give a few references from literature relating to this condition.

Tai Wai Wong M D Tungshan Cantoo China.

ANSWER—The wide opening into the peritoneal cavity, the presence of bowel in the neck of the sac, the peritoneal lining, and the covering of skin and muscle suggest hernia. Hernia in this region is by no means frequent, the location in this case would place the hernia if it is one, in the sciatic or ischiatic category, which is one of the rarest of all hernias (Watson, L F Hernia Its Anatomy, Etiology, Symptoms Diagnosis, Differential Diagnosis, Prognosis and Operative Treatment, St. Louis C V Mosby Company 1924, p 475). Cystlike formations may develop in hernial sacs from inflammatory processes.

Another possibility is that it might concern a sacrococcygeal teratoid tumor. Such tumors push the anus forward and lie with their greatest bulk in front of the coccyx and sacrum. In some cases the mass may occupy the back of the sacrum. Teratoma may have fat and muscle, smooth as well as striated, in the wall cysts lined in some cases with flat endothelium in other cases with bowel like mucous membrane, also various vascular components and sometimes nervous structures. The mixture of structures in such tumors led Rindfleisch to speak of a histologic potpourri (Ewing, James Neoplastic Diseases, ed 3, Philadelphia W B Saunders Company, 1928, p 1036).

CALCIUM ACETYSALICYLIC ACID

To the Editor—I have seen several references lately about the use of calcium acetylsalicylic acid in the treatment of chorea. Please give me your opinion of this and also state where the drug can be obtained. I have written several houses but they claim there is no such product.

CARL J SNITKEY M D Belle Plaine Iowa

ANSWER—Recently, in a paper entitled "The Medicinal Treatment of Chorea" (*Brit M J* 2 246 [Aug 11] 1934, abstr *THE JOURNAL*, Oct 6 1934, p 1104), Mutch reported on the use of a product called "Calcium Aspirin." This preparation is stated to be prepared by precipitation from a concentrated aqueous solution of calcium chloride and to have the following approximate composition: $[\text{Ca}_2\text{H}_2\text{O}(\text{COCH}_2)_2\text{CO}_2]_2\text{Ca} + 4\text{H}_2\text{O} + \frac{1}{2}\text{CaCl}_2$. It is doubtful whether such a product is a single chemical entity.

Mutch's paper contains the claim that the drug "supplies an adequate amount of calcium, produces a useful sedative effect on the brain, and combats the rheumatic element if given in appropriate doses." There is no adequate scientific evidence to justify the claims.

Calcium acetylsalicylate, $C_{15}H_{11}O_5Ca \cdot 2H_2O$, has been known for more than twenty years. It has been sold under various proprietary names, at one time it was marketed in England as "Soluble Aspirin," in Holland as "Analutos." The latter preparation was considered by the Council on Pharmacy and Chemistry in 1915 (*THE JOURNAL*, Feb 20, 1915, p 684). While it was claimed to be superior to acetylsalicylic acid because it was more soluble and less liable to produce gastric disturbance, the Council found that the evidence did not uphold these claims. At present the drug is included in the British Pharmaceutical Codex with the statement that its action is "essentially that of acetylsalicylic acid." The chemical and pharmacologic properties of various brands of calcium acetylsalicylate are discussed in a paper by Thompson and Dragstedt of Northwestern University Medical School (*J Am Pharm A* November, 1933 p 1096). In general, calcium acetylsalicylate tablets are less stable than acetylsalicylic acid tablets.

TREATMENT OF MASTITIS BY MEANS OF X-RAYS

To the Editor—What is the present status of the treatment of chronic mastitis with x-rays? Also what is the present treatment of chronic mastitis of the breast and what are the eventualities to be expected in a woman who has had a bilateral excision of the nipples without removal of the parenchyma of the breast? Please do not publish name.

MD Texas

ANSWER—X-rays have been used by some radiologists in the treatment of so-called chronic mastitis and it has been asserted by some that exposure of the mammary gland to x-rays results in the relief of pain. Actually, the method has never been investigated comprehensively and is not generally used.

Owing to the fact that the so called chronic mastitis is probably caused by some dysfunction in ovarian and pituitary hormones treatment of the breasts alone for this condition does not correct the underlying cause. The condition commonly designated as chronic mastitis is actually not an inflammation but a hyperplasia of the epithelium and connective tissues of the breast.

To this condition Sir Lenthal Cheate of London has applied the term *mazoplasia*. Support of the breasts especially when they are pendulous, may be of assistance.

Concerning the question of the eventualities to be expected on one on whom bilateral excision of the nipples has been performed, much depends on the age of the patient and whether or not there is to be subsequent lactation. In the absence of subsequent pregnancy and lactation, there is no evidence that the excision of the nipples will lead to any complications. The reason for this is that dilatation of the ducts and acini is due primarily to an active epithelial hyperplasia rather than to mechanical obstruction, although the latter condition may play some part.

EFFECTS OF SULPHUR DIOXIDE ON THE SKIN

To the Editor—Can you furnish me with any data regarding lesions produced by sulphur dioxide solutions when the hands come in constant contact with the solution? In the problem in which I am interested the sulphur dioxide solution is used in bakery work in order to keep fresh apples from discoloration.

MD California

ANSWER—Sulphur dioxide in the presence of water becomes sulphurous acid H_2SO_3 . One part of water will combine with approximately fifty parts of sulphur dioxide. The strength ordinarily employed in the preservation of fruits is about 5 or 6 per cent. In spite of the avidity of water for sulphur dioxide some of the latter escapes into the air above vats, so that an irritating pungent odor characteristic of sulphur dioxide is commonly present above vats of sulphurous acid. Under conditions of common usage, the strength of the sulphurous acid may increase because of evaporation of water, while the sulphurous acid itself does not readily volatilize. As a result of skin contact an acid dermatitis may be produced. The probability of skin damage naturally increases with the increase in the strength of the acid solution. A dissimilar health problem arises in connection with the consumption of foods that have been treated with sulphur dioxide. For years a controversy has centered about the undesirable effect on dried fruits such as apricots and peaches that have been bleached or otherwise treated by sulphur dioxide gas. When the content of sulphur

compounds in food is below 1,000 parts per million, no injury to the consumer is recognized as likely. Quantities in excess of the amount specified may lead to gastro-intestinal disturbances, nephritis or other conditions. When the quantities exceed 3,500 parts per million, considerable damage is regarded as a reasonable expectancy, whenever the amount of food containing such quantities of sulphur is consumed in fairly large amounts, such as 500 or 600 Gm daily.

DEGENERATION OF SPINAL CORD

To the Editor—A man aged 42 a bank manager complains of numbness and pain in the lower extremities, principally in the back of the thighs the hips and the lower part of the back. The arms and hands are affected to a slight extent. The symptoms began five years ago. The patient had no childhood disease. He crashed as a pilot during the war but cannot remember any definite back injury. Ten years ago he suffered from indigestion and flatulence which lasted about one year. He has had no stomach trouble since. There has been no loss of weight. The tonsils which were definitely infected were removed two years ago. An associated nasopharyngeal catarrh cleared up some months later. The principal points elicited by examination were one large stone in the gallbladder and atrophy of the disk between the third and fourth lumbar vertebrae. Cisternal puncture and examination with iodized oil show some or partial obstruction at the level of the affected intervertebral disk. There is no tenderness on pressure over this area. The teeth are in good condition. The patient had gingivitis of mild type two years ago. The nasal sinuses are apparently normal. The feet are in good condition. The prostate shows evidence of nongonorrheal infection. The patient was treated with massage biweekly for three months with improvement. The Wassermann reaction is negative the hemoglobin 100 per cent. Red blood cells number 5,400,000 white blood cells 7,000. The urine is normal. The specific gravity tends to be high (between 1.025 and 1.027). Neurologic examination is negative. Is gallbladder and nasal sinus infection possible, despite the absence of symptoms? Is laminectomy indicated? The patient is of the introspective type. Kindly omit name.

MD, Canada

ANSWER—If this man has "some or partial obstruction" with iodized oil at the level of the affected intervertebral disk, together with an atrophy of the disk between the third and fourth lumbar vertebrae, two conditions suggest themselves. One is an old injury to the nucleus pulposus associated with an old fracture dislocation of the third or fourth lumbar vertebra. The other condition is a spinal cord lesion either extraspinal or intraspinal. The extraspinal lesion may be a neoplasm (osteochondroma) or arthritis. If there is certainty that there is a definite sign of partial block, the man should have a laminectomy at once. In this type of case one should also find some objective neurologic signs, such as hyperesthesia, hypesthesia, loss or diminution of deep sensibility (bone and joint, position and vibration sense), weakness in one or more parts of either lower extremity, changes in the ankle or knee reflexes, presence of pathologic reflexes (Babinski and others) or sphincteric disturbances. The intraspinal lesion that produces such a picture is subacute combined degeneration of the spinal cord in association with pernicious anemia. In 25 per cent of the cases of subacute combined degeneration of the spinal cord, one does not find a positive blood picture for anemia until later. It is suggested that the stomach contents be examined for free acid. The latter is always absent in combined degeneration of the spinal cord. Gallbladder or nasal sinus infection can produce arthritic changes. In arthritis one rarely, if ever finds a spinal fluid block. Laminectomy is indicated in this case.

GONOCOCCIC INFECTION AND KAHN TEST

To the Editor—On several occasions recently I have received serologic reports on the blood of patients in which the Kolmer reaction was reported as negative and the Kahn reaction as one or two plus. In each of these cases there was no history of syphilitic infection. The pathologist on being consulted raised the question of whether or not there was an active gonococcal infection present. Will you kindly inform me as to whether or not an acute or chronic gonococcal infection could influence the Kolmer or Kahn test as indicated.

L. A. ALESEN MD Los Angeles

ANSWER—Acute or chronic gonococcal infections are not known to affect the reliability of the Wassermann or the Kahn test. One or two plus Kahn reactions and negative Kolmer-Wassermann reactions are encountered occasionally in treated cases of syphilis and less frequently in untreated cases, owing to the somewhat increased sensitiveness of the former reaction. Weakly positive Kahn reactions should be looked on as worthy of careful search for the presence of syphilitic infection. If these reactions are reported by a laboratory with undue frequency, they are probably due to technical errors. Perhaps the antigen is not correctly standardized or the serums are not sufficiently centrifuged to render them thoroughly clear.

ALOPECIA AREATA AND ERYTHEMA AFTER
MOTOR ACCIDENT

To the Editor—Dec 3, 1934 an unmarried woman aged 19, was in an automobile accident. She was riding on the back seat of the car. Following the crash she was unconscious for thirty minutes, having received a blow on the right temporal region. Other than a sprained shoulder and generalized bruises there was no injury of any serious consequence. A week or ten days after the accident she noticed a generalized maculopapular rash. This itched moderately. At the same time her hair began to fall out in bunches. There was a generalized shedding of hair on the body and the inner angles of the eyebrows. The hair of her head is still shedding in fact she is nearly bald. A fine lanugo like hair is appearing. The girl is healthy and robust. She has suffered no illnesses other than those of childhood. She has been quite normal in all respects. Her family history is negative. Her sexual history is negative. A thorough physical examination shows nothing. Laboratory examinations are negative. Repeated Wassermann tests are negative. I still wonder if this condition is secondary syphilis. The rash is still very noticeable. Can psychic shock produce such a picture? Will the girl regain her hair? My treatment is hot oil massages heat and stimulating ointments. Would you suggest another Wassermann test? Any other suggestions will be appreciated. Please omit name.

M D New Jersey

ANSWER—The eruption noted a week or ten days after the accident was, no doubt, a toxic erythema, which could be on a toxic infectious basis or more probably was secondary to sedative drug ingestion administered to allay the pain and restlessness incidental to the accident. The hair loss is of the type seen following nervous shock or emotional stress (Pusey, W A Alopecia Areata and Emotional Stress, *Arch Dermat & Syph* 17 701 [May] 1928).

If the condition were secondary syphilis among other signs in addition to a positive blood serum reaction, there would be infiltration of the papules on the skin, generalized adenopathy, e. g., epitrochlear, posterior cervical and suboccipital, and mouth and anogenital lesions.

There is usually regrowth of hair in cases of alopecia areata, but the prognosis is often grave in the universal cases. The treatment should consist of stimulating medication, as indicated and the relief of the patient from all sources of anxiety. Since reflex irritation may be a contributory factor in some of these cases, attention should be paid to the correction of defective teeth and eyesight. Stimulation of the scalp by varied local treatment should be continued.

AMENORRHEA OF TUBERCULOSIS

To the Editor—In pulmonary tuberculosis one frequently observes amenorrhea. This is of course a true secondary amenorrhea and not specific of tuberculosis. However since the phenomenon of menstruation is undoubtedly a result of the action of hormones one could reason that such an amenorrhea could be the result of a depression of the glands in question by the bacterial toxin and further that titration of body fluids would show a diminution (or altered composition) of the hormones in question. Any enlightenment on this question will be appreciated. Please omit name.

M D Maryland

ANSWER.—The amenorrhea of tuberculosis appears to be identical with the amenorrhea seen in asthenia and malnutrition of nonspecific etiology. Gynecologists frequently see patients referred to them for amenorrhea. If they are alert, they will find the as yet unrecognized lung lesion in a tuberculous patient. On the other hand, innumerable cases of tuberculosis show a normal menstrual cycle and others show an increase of bleeding. Consequently there is no foundation for ascribing the amenorrhea in tuberculosis to a specific effect of the bacterial toxin. Bio assays of the blood and urine in these cases show that they fall into the three groups described by Frank and Goldberger, in which either a subthreshold blood cycle, an absent blood cycle but definite urine cycle, or completely acyclic conditions are noted.

AMINOACETIC ACID IN AMYOTONIA CONGENITA

To the Editor—Would you give your opinion as to whether or not the Boothby treatment is indicated for amyotonia congenita, notwithstanding the teaching that the lesion in myasthenia gravis is in the bulb and also a local lesion of lymphoid cell infiltration in the muscle while in amyotonia congenita the lesion is apparently a failure in the proper development of the lower motor neuron? Please omit name.

M D Montana

ANSWER.—Amyotonia congenita is a rare disease and no reports on the effect of aminoacetic acid in this condition are available. It is quite likely, however, that it might prove beneficial in aiding to overcome the fatigability and muscular weakness of this disease, although it would have no specific effect on the anterior horn cells, which are supposed to be involved in this disease. The fact that the disease has a tendency to spon-

taneous improvement would suggest that aminoacetic acid should be tried in the hope that this improvement might be accelerated.

At present the evidence is in favor of myasthenia gravis being primarily a disease of the muscular system and not of neurogenic origin. Because the bulbar group of muscles is early and characteristically affected in myasthenia gravis, this condition is often mistaken for a true bulbar palsy.

CYSTIC DISEASE OF TIBIA

To the Editor—Five years ago I was consulted in a case of benign bone cyst involving the lower end of the tibia. The cyst had just been operated on at the time, being apparently removed in its entirety. Since then the area of operation has continued to drain. Along with this, another smaller cyst has formed in the upper end of the same bone. This was removed and it also has continued to drain. Recent roentgenograms show what apparently are cystic areas surrounded by healthy bone tissue. The patient has had curettage, roentgenotherapy, chemotherapy, physical therapy, diathermy, bone inlays, wide excision of the area and packing. The blood Wassermann and Kahn tests are negative. Would electrocautery or radical excision of the entire area to include some healthy bone (by means of an electrical saw) help in this case? Maggot treatment has also been recommended. Suggestions as regards treatment are welcome. Please omit name.

M D, District of Columbia.

ANSWER.—Progressive cystic disease, particularly in the tibia, is not altogether rare and is difficult to treat. When an osteomyelitis is present, the problem becomes complicated. The most important element from the standpoint of treatment is the age of the patient, which in this case is presumably under 20, although it is not stated. In refractory cases the entire tibia may be resected subperiosteally. From the thin sliver of periosteal bone left behind, a serviceable tibia will regenerate in young patients. Such a radical operation should not be attempted in adults. The more conservative measure, which can be tried first, is that of maggot therapy. With such conservative measures there is no guaranty that small sequestration will not occur years later, with further sinus formation.

LOCAL ANESTHESIA FOR TOOTH EXTRACTION

To the Editor—Will you please describe for me the technique of giving a local anesthetic for a single tooth extraction? Please also advise how to perform extraction of the molars without breaking off some of the roots. What textbook describes these procedures? Please omit name and address.

M D China.

ANSWER.—There are two methods of giving local anesthesia infiltration and conduction.

To get anesthesia by the infiltration method, it ordinarily takes four injections: two on the lingual aspect of the tooth to be extracted and two on the buccal, the injections being made both mesial and distal to the tooth about 5 mm apically from the margin of the interproximal gum tissue.

Conductive anesthesia is a better method, also more complicated.

Textbooks on these subjects are as follows:

Winter G B Exodontia A Practical Treatise on the Technique of Extraction of Teeth with a Chapter on Anesthesia St. Louis, American Medical Book Company, 1913

Sterling V M Oral Surgery, St. Louis C V Mosby Company 1933

Nevin M and Puterbaugh P G Conduction Infiltration and General Anesthesia in Dentistry New York Items of Interest, 1924

SYPHILIS AND PROSTATIC HYPERTROPHY

To the Editor—A man aged 55 contracted a chancre and gonorrhea about thirty seven years ago. He received some treatment for the gonorrhea but little for the chancre. It was followed by a rash and buboes. Later on he did get a few arsenamine injections and some mercury. He was married and is the father of four healthy normal children. At present he complains of frequent and painful micturition mostly at night, a burning pain running from his head along the spine down to his toes, and forgetfulness especially of recent events. The Wassermann reaction has been positive several times. The last was negative and the spinal fluid was 2 plus. The pupils react to light and in accommodation the knee jerks are normal. The Romberg sign is negative. The prostatic secretion contains pus and gonococci. Kindly discuss treatment in this case. Please omit name.

M D New York.

ANSWER.—The fact that this patient has had little treatment and still has a positive spinal fluid indicates that his syphilitic infection has not been controlled. He should be given some rather intensive treatments beginning with one of the arsenamine preparations and followed up by bismuth and possibly mercury therapy. If the acute symptoms of the prostatic infection have entirely subsided the prostate should be massaged, followed by instillations of silver nitrate solution beginning with 0.5 per cent solution.

PNEUMOCONIOSIS AND LEAD DUST

To the Editor—One of my patients works in an industry that reduces melted lead and tin to fine dust by means of compressed air. The dust from these metals is collected in a large canvas sack. About every two weeks it is necessary for him to enter this large dust-containing sack to gather the lead and tin powder. It fills the air and enters his nostrils. Is this likely to produce pneumoconiosis?

EUGENE F. TRAUT, M.D., Chicago

ANSWER—From theoretical considerations, any damage to the lungs caused by any dust constitutes a pneumoconiosis. Thus, a householder who sifts the ashes from a furnace conceivably might develop a pneumoconiosis, from one day's work, owing to the trivial action of the dust from the ashes. Practically, however, the term pneumoconiosis is reserved for more direful conditions, such as silicosis and asbestosis. This being true, it is unlikely that exposure at intervals of two weeks to a mixed dust from lead and tin would give rise to true pneumoconiosis. It is conceivable that after many years of such exposure a workman might show a slight increase in the amount of fibrosis in his lungs, but the extent of such involvement would probably be unimportant. Lead poisoning is a more reasonable prospect.

ANGINA PECTORIS

To the Editor—I have a patient aged 61 years who was compelled to submit to amputation of his right leg at the middle of the thigh a year ago, following thrombo-angitis obliterans complicated by diabetes and angina pectoris or early coronary occlusion. Seven months after operation he was fitted with an artificial leg. Last November when he attempted to use the new leg his heart condition was aggravated by the exertion and he was obliged to remain in bed for three months. When he is about with crutches any overexertion brings on cardiac pain. He is anxious to attempt to use his limb. Would I be justified in giving my consent for him to do so? Please omit name. M.D., Maryland.

ANSWER.—One would not be justified in allowing the patient described to overexert to the point of inducing attacks of angina pectoris. He should be allowed to get up and gradually increase the amount of exertion, starting with little and increasing by slight increments, always keeping within the limits of what can be done without inducing attacks. He should be put on daily doses of one of the theobromine or theophylline preparations for their tendency to dilate the coronary arteries. Even if there is no immediate result, their use should be continued.

ALOPECIA AFTER ANESTHESIA AND HAIR WAVE

To the Editor—A beauty parlor operator states that hairdressers are taught not to give a permanent wave for at least six months after either as a general anesthetic has been given as the wave does not hold as good, the hair becomes brittle and is liable to cause falling of the hair. Please comment on this. M.D., California.

ANSWER.—The symptomatic form of premature alopecia is of toxic origin, occurring most often some months after childbirth, influenza, typhoid, malaria and such diseases. It is conceivable, though nothing has been found in recent literature on the subject, that an anesthetic or the anesthetic plus the shock of operation might have a similar effect on the scalp. This teaching, then, is an effort of the hairdresser to protect himself against unjust blame for a symptomatic alopecia. It would be wiser for him to refuse to give the so-called permanent wave for six months after childbirth or an attack of influenza, which are much more common causes of toxic alopecia. In fact, if all the possibilities of toxic alopecia are to be considered, few permanent waves would be given.

INTERSTITIAL KERATITIS

To the Editor—I am treating a case of interstitial keratitis due to congenital syphilis in a boy aged 6 years. I began treatment April 16 which consisted of alternating neosarsphenamine and a bismuth compound with 0.5 per cent solution of atropine for eye drops. Since that time there has not been any change in the eyes although the boy's general condition is improving. It seems that there should be more improvement and in the chance that I am overlooking some form of treatment that could give more satisfactory results I am writing to you. If there are any suggestions you can offer I shall be grateful.

GORDON LAWYER, M.D., Cambridge, Ohio

ANSWER.—No, the correspondent is not overlooking anything. The progress of these cases is invariably slow even in the face of vigorous antisyphilitic treatment. From three to six months usually elapses after the institution of treatment before definite results are noted. As a rule the younger the child, the slower are the results to be seen.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis Nov. 18. Application must be filed before Sept. 15. Sec. Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY Cincinnati Sept. 14. Sec. Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS Philadelphia, Oct. 10 and St. Louis, Nov. 20. Sec. Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY Detroit, Dec. 12. Sec. Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARIZONA Basic Science Tucson, Sept. 17. Sec. Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination Sept. 16-18. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE Concord Sept. 12-13. Sec. Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW YORK Albany Buffalo New York and Syracuse, Sept. 16-19. Chief Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OKLAHOMA Oklahoma City, Sept. 10-11. Sec. Dr. James D. Osborn, Jr., Frederick.

PUERTO RICO San Juan, Sept. 3. Sec. Dr. O. Costa Mandry, Box 536, San Juan.

WISCONSIN Basic Science Madison Sept. 21. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Arkansas May Examination

Dr. A. S. Buchanan, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held in Little Rock, May 14-15, 1935. The examination covered 12 subjects and included 140 questions. An average of 75 per cent was required to pass. Forty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine (1935)	81 5 81 6 83 83 5 83 8 84 4 84 6 84 7 84 8	(1934)	84 3
Univ. of Tennessee College of Medicine (1933)	80 9	(1935)	79 7*

Nine physicians were licensed by reciprocity from January 12 to May 15. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Loyola University School of Medicine	(1926)		Illinois
Northwestern University Medical School	(1929)		Iowa
University of Illinois College of Medicine	(1932)		Illinois
State University of Iowa College of Medicine	(1933)		Iowa
Emory Medical College, Missouri	(1908)		Oklahoma
University of Tennessee College of Medicine (1932)	(1933)		Tennessee
Baylor University College of Medicine (1931)	(1933)		Texas

* License withheld until degree is awarded in September

Minnesota April Report

Dr. E. J. Engberg, former secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, April 16-18, 1935. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Forty-five candidates were examined, all of whom passed. Two physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Stanford University School of Medicine	(1934)		87 3
University of Colorado School of Medicine	(1933)		84 5
George Washington University School of Medicine	(1933)		89 2
Northwestern University Medical School (1933)	82 4	(1934)	88 5
Rush Medical College	(1933)	87	(1934) 88 1
University of Kansas School of Medicine	(1933)	84 3	(1934) 87 2
University of Louisville School of Medicine	(1934)		86 1
Tulane University of Louisiana School of Medicine	(1930)		86 1
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933)		88 4
Detroit College of Medicine and Surgery (1931)	84 6	(1932)	87 6
University of Michigan Medical School (1930)	87 4	(1931)	84 6
University of Minnesota Medical School (1934)	82 2 * 83 2 * 83 3 * 84 * 84 5 * 85 3 86 3	(1933)	82 4

87 3 * 87 4 * 87 5 88 * 88 5 * 89 1 * 90 1 * 90 3 * 91 * 93 * 93 2 * (1935) 84 6 85 2 * 86, 86 6 * 87 * 87 1 * 87 3 88 1

University of Pennsylvania School of Medicine (1932) 86 2
University of Manitoba Faculty of Medicine (1934) 83 1

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship

Book Notices

Tuberculosis of the Lymphatic System By Richard H. Miller M.D.
F.A.C.S. Assistant Professor of Surgery Harvard Medical School. Cloth
Price \$4. Pp. 248 with 20 illustrations. New York: Macmillan Com-
pany 1934.

Dr. Miller, in an excellent volume, presents what is known concerning tuberculosis of the lymphatic system. An interesting history of the disease is given. Following this he discusses the bacteriology, pathology, immunity and chemistry of tuberculosis, as well as the modes of entrance and spread of bacilli in the human body. The anatomy of the lymphatic system is treated in detail. Three chapters are devoted to tuberculosis of the cervical lymph nodes, in which he presents the diagnosis and treatment ably and adequately. Tuberculosis of the tracheobronchial and abdominal lymph nodes, the axillary and inguinal lymph nodes and generalized lymph node tuberculosis is dealt with in the remainder of the book. The author places deserved emphasis on the tuberculin test in diagnosis. The immunizing effect of tuberculosis of the cervical lymph nodes has been much discussed by many writers. Miller says: "One must remember that while the tubercles in the lymph nodes in the neck may be conferring on the organism an added degree of resistance, they are at the same time harboring living bacilli which may be set free at any time to be carried to other parts of the body, there to grow in increased numbers. We must be guarded in accepting any such generalization as that tuberculous cervical adenitis may confer any practical immunity to tuberculosis elsewhere in the body. It will give rise to changed reaction and a heightened resistance, but this is probably of not enough actual potency to warrant our accepting it with complacency." He discusses attempts to produce immunity by artificial methods and, particularly, by BCG. Concerning this he says: "One must say that this procedure to obtain immunity is of questionable value and may prove to be distinctly unsafe. It is still sub judice." This book is well illustrated and will be found of much value to every physician interested in the subject of tuberculosis.

Recording of Local Health Work By W. F. Walker Dr. H. and Carolina R. Randolph Division of Health Studies The Commonwealth Fund. In cooperation with the Committee on Administrative Practice of the American Public Health Association. Cloth Price \$2. Pp. 275 with illustrations. New York: The Commonwealth Fund. London: Oxford University Press 1935.

The need for standardization in public health work has long been recognized. The public health field has been perhaps even more individualistic than the private practice of medicine. There have been almost as many administrative patterns for health department work as there have been individual health officers. A few of the more influential workers have developed followers, often through the promotion of those whom they have trained to independent executive positions. In due course of time there developed a multiplicity of administrative procedures and a diversity of records, which made comparison of achievements virtually impossible. Much was accomplished toward correction of this deplorable state of affairs through several agencies, notable among which was the survey of state health departments by Dr. Charles V. Chapin, carried out under the American Medical Association Council on Health and Public Instruction and published in *THE JOURNAL* in 1915; this is probably the pioneer effort at health appraisal. The American Child Health Association made a contribution through its survey of eighty-six cities in 1924 and the U. S. Public Health Service has contributed numerous surveys of public health work in cities and other health jurisdictions. Drawing all this work together and its crystallization into rural and urban appraisal forms for health department practice has been the achievement of the Committee on Administrative Practice of the American Public Health Association. As a logical corollary to the coordination of health practices, a study was made of recording devices and this is now published in the volume under review. Every executive health officer or division director in every health department should have access to this volume. The careful study that has been given to the problems of recording and of compiling usable figures from the records is evident in every page of the work. Full size facsimiles are given for every recommended form. Most health officers would

do well gradually to transform their own system into the standard system, and no health officer can fail to get valuable suggestions from the book. In view of the increasing interest manifested by medical societies in public health problems, the book is recommended also for their consideration.

The Book of a Life From Generation to Generation By J. C. Con-
nell M.A. M.D. LL.D. Cloth Price \$2. Pp. 152. Toronto: Ryerson
Press 1935.

A whimsical medical personage has evaluated critically and philosophically the incidents in the evolution of the individual and has organized them into a diary for life. From birth to 100 years there are blanks for the recording of the major facts including diet defects, disorders, diseases, dimensions, dentition, dental history, immunizations, school record, occupation, sport, travel, recreation, friends, family affairs and financial position. During the first years of childhood appear with surprising authoritative details concerning the height and weight by months and years, eruption of the teeth, and mental development and feeding. Then follow the record of immunizations, which seems thorough except for the omission of whooping cough prophylaxis, record of illness, school status, and posture. When youth is approached, data concerning occupation begin. After 21, account is taken of sports, travel, friends and financial position. Recreation replaces sports at 28, and family affairs loom up at 52. Except for weight, chest and waist measurements, all details are omitted after the 67th year, and the space merely calls for the incidents of the year. Weight continues from 78 to 80, and from this point to 100 only incidents of each year remain on the record.

At the beginning of each year the expectation of life and the mortality rate are announced. Interspersed between the record pages are brief but accurate texts pertinent to the period of life. For instance, in early infancy facts containing growth and development are outlined. A little later communicable diseases, seasonal growth posture and heredity are discussed. Puberty is recognized by data concerning its peculiar growth, and here circulation is first described. At 16, health and periodic examinations are emphasized. At 20 appear a few facts on mental hygiene and soon after data concerning muscular activity, blood pressure and general health. About 30 the question of weight and exercise is answered. At middle life rules of health, prevention of overweight, and dietary advice are elaborated concerning vitamins, food values, and specific diets with typical menus. At 54 the heart and mechanics of old age including exercise, are again recalled. At 64 the essentials of happiness and a common sense discussion of old age and senility appears.

Even if the details are never completed, the book represents a guide for the living without being cumbersome. The rational discussion of exercise begins with the evolution of the baby's effort, childhood games, the sports of youth, the exercise of manhood and womanhood, yielding to "the stage of the easy chair of accomplishment" giving evidence of the advance of age. Follows the couch of senescence and the final repose—the last long sleep.

Every one will be benefited by the hygiene of common sense the writer utters without argumentation. This is a choice book as a gift for all from infancy to "the couch of senescence."

Les colites chroniques. Étude clinique traitement médical et chirurgical. Par M. Chiray professeur agrégé à la Faculté de médecine et de Paris G. Lardennols professeur agrégé à la Faculté de médecine et J. Baumann médecin consultant à Châteauguay. Avec un Exposé de bactériothérapie colitique. Par M. Nicolas chef de laboratoire à la Faculté de médecine. Paper Price 65 francs. Pp. 429 with 47 illustrations. Paris: Masson & Co 1934.

This gives a detailed exposition of the various types of colitis. A classification into mucous colitis, parieto-intestinal colitis, tuberculous colitis, specific colitis and nonspecific colitis has been made. In addition, there are chapters on ileocolic intoxication and sclerosis of the colon. Each of these subjects is thoroughly discussed in individual chapters and treatment is described in separate chapters in the latter part of the book. Under specific colitis are considered those conditions due to parasites such as the ameba, and flagellates, such as *Giardia* and *Balantidium coli*. Colitis due to spirochetes and worms is also discussed. Under etiology of nonspecific chronic ulcerative

colitis, the dysenteries, intoxications and trauma are considered. The pathology of this condition is well described. The importance of orderly, detailed clinical study of cases of nonspecific ulcerative colitis and the importance of their differentiation from all other types of colitis is stressed. The serious complications apt to follow this disease are pointed out. "Mucous colitis" is designated as an inflammatory state of the colon limited to the mucosa and it is stated that this is due to reaction of the mucosa to intestinal content and to abnormal intestinal flora. Treatment is taken up under the headings of general management, evacuation of septic products, modifications of the mucus, vaccine and serum therapy, diet, aids to digestion drugs, nervous symptoms, detoxication, allergic manifestations and distant foci. In addition the management of chronic appendicitis, perityphlitis, chronic pericolicitis, sigmoid diverticulitis, simple sigmoiditis, arteriosclerosis of the intestine and tuberculous colitis and parasitic infestations are considered separately. The discussion of treatment in general is detailed, and many valuable suggestions are offered. Some of the measures of therapy suggested, however, have been abandoned in this country, having been replaced by others giving more satisfactory results. The suggestions for surgical handling of these cases vary greatly from those employed in this country. Questions about the advisability of ileosigmoidostomy, cecosigmoidostomy and the plication operations for redundant portions of bowel could well be raised. These are discussed in detail. It would be worth the while of any one interested in the field of gastro-enterology to read this book.

Clinical Management of Syphilis. By Alvin Russell Barnes M.D. Chief of Congenital Luetic Clinic New York Hospital. Cloth Price \$1.50. Pp 71 with 8 Illustrations. New York Macmillan Company 1935

It is seldom that one will find in a small volume as many misstatements, inaccurate deductions, unscientific and vague clinical impressions and therapeutic misinformation as are found in this volume in the clinical management of syphilis. A few examples are the following. "The primary lesion of syphilis in some instances gives the general appearance of a mild urticaria from which the surface epithelium has been removed." "Many patients in all stages of syphilitic infection complain of 'stomach trouble'." "Patients under treatment for syphilis should take a nap or siesta for an hour or two after their noon luncheon." "Individuals who are infected with *treponema pallidum* do much better when not exposed to the direct rays of the summer midday sun." In referring to diet and hygiene in syphilis the author's favorite dictum is "anything in moderation." Nothing is said about the harmful effects of alcohol and tobacco. Such inaccurate expressions as neosalvarsan hypodermics, Van der Burgh tests and nitroid reactions occur frequently. The discovery of *treponema pallidum* is credited to Schandinn and Hoffmann. The principal features of the book are the treatment tables for the different stages of syphilis in outline or tabloid form, which conform in general to the accepted principles of modern antisyphilitic therapy. The author's advice in nearly every stage of syphilis is to continue treatment uninterruptedly for one year after the blood and spinal fluid tests have become permanently negative. The use of neosarsphenamine as a routine in the management of cardiovascular syphilis is open to question. In discussing visual disturbances during trypanamide medication in neurosyphilis the author states that normal vision will return in practically all cases after trypanamide is discontinued. He states that syphilitic women in the last four or six weeks of their pregnancy should receive arsenicals and not heavy metal compounds. Both of these are dangerous misstatements and are unsupported by clinical experience. Fever therapy with high frequency oscillations is dismissed with the remark that the patient often comes to necropsy and the pathologist's report throws little light on the cause of death. The treatment of congenital syphilis is discussed at somewhat greater length, as the author seems to feel more at home in this department. Nothing is said throughout the book about the danger signs the reactions and sequelae of modern antisyphilitic drug therapy and how these can be prevented and treated. In view of these grave defects and omissions and the obvious fact that the author is not an experienced clinical syphilologist this book cannot be recommended as a reliable guide in the treatment of such a serious disease as syphilis.

Précis de phytothérapie. Essais de thérapeutique par les plantes françaises. Par Henri Leclerc. Third edition. Paper. Price 32 francs. Pp 308. Paris Masson & Co 1935

Apparently a renaissance of "galenism" is on the way, i.e., the use of vegetable rather than of mineral drugs, also a national development, each nation (India, Germany, France) attempting to be as independent of the international drug market as possible. The third edition of Leclerc's volume on the therapy of French plants is an attempt to meet all the exigencies of the healing art as far as possible (and even further) with French herbs. Here, preparations representing the plant in its entirety and in the natural state are to be preferred to active principles. The advocacy of "teas" and of complex mixtures are other manifestations of the swing to primitive methods to which chauvinistic reaction may carry apparently well meaning persons.

Science and the Public Mind. By Benjamin C. Gruenberg. With a foreword by John C. Merriam. President of the Carnegie Institution of Washington. Cloth. Price \$2. Pp 196. New York and London McGraw Hill Book Company Inc 1935

The author deals with the place of science in modern life, including its significance to the layman as a class, to the individual's civic or social interests, cultural interests, the need of education in science, adult interests in science and the content of science for the layman. He then proceeds to consider means and methods of bringing science to the public, with chapters devoted to the teacher the spoken word, including the lecture and the radio, the printing press and sensory and motor aids, such as talking pictures. Finally, he considers the spread of scientific knowledge, science education for adults the public's changing interests and the failure of science to reach the public. He gives four main groups of recommendations for the dissemination of knowledge about science through (a) schools, colleges, university extension departments and other agencies and institutions engaged in educational work in science for adults, (b) museums and similar institutions, (c) academies of science and similar organizations, and (d) research institutions and research units of other organizations. He considers that the needs of the public for science education may be summed up under the following headings: initiative, publicity, cooperation and coordination, stimulation and encouragement, and research. He stresses the importance of continuity and economy of effort by making the most effective use of existing facilities and organizations and he advocates the establishment of some kind of a joint committee for coordinating purposes. The book is a scholarly evaluation of the situation as it exists. The recommendations appear well considered and temperate. For the teacher and the serious student of contemporary problems, this is a stimulating, informative and useful piece of work. There is a satisfactory index.

Supplement to the Eleventh Scientific Report on the Investigations of the Imperial Cancer Research Fund. Under the direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. The Filtrable Tumours of Fowls. A Critical Review. By L. Foulds. Published by the authority of the Executive Committee Boards. Pp. 41. London Taylor & Francis 1934

This is a brilliant critical review on filtrable tumors from 1910, the time when Rous first succeeded in transplanting sarcomas of the domestic fowl, to date. The paper is not suitable for a brief review. An extensive bibliography is appended.

Mount Sinai Hospital Philadelphia Diet Manual. Boards. Price \$2. Pp 73. Philadelphia 1934

The pages are multigraphed and are bound in loose leaf form between paper covers. The volume contains a complete list of therapeutic diets such as are used in a modern hospital. Diets are given in actual food portions as well as in caloric units, and in most instances sample menus are included. Because of its attention to practical detail, this collection should be helpful to the private practitioner in the construction of diets for use in the home. It presupposes, however, a knowledge of the principles involved in the formulation and use of these diets. It is suggested that brief discussion of these considerations preceding each type of diet, as has been attempted in the case of the diabetic diets, would render the volume more suitable for wide distribution.

Injuries and Their Treatment. By W. Eldon Tucker M.A. D.Ch. FRCS Surgeon to St. John's Hospital, Lewisham, Cloth. Price 9/- Pp. 173 with 80 Illustrations. London: H. K. Lewis & Company, Ltd. 1935.

This little volume is not as inclusive in its subject matter as the title would indicate. It is, however, an excellent treatise on the management of acute and chronic sprains, joint injuries, fibrositis, and so on. The text is clearly written with an evident background of wide experience and gives a valuable exposition of the principles of care of these injuries. Particular emphasis is placed on the methods of physical therapy, especially electrotherapy.

Medicolegal

Workmen's Compensation Act Chronic Benzene (Benzol) Poisoning Compensable—Funk was employed by the defendant company in the production of rubber cement tape, in which benzene (benzol) was used as an ingredient. Eventually he contracted chronic benzene poisoning and was awarded compensation by the Minnesota industrial commission. The employer and his insurance carrier brought certiorari to the Supreme Court of Minnesota.

The sole question to be determined said the Supreme Court, is whether or not chronic benzene poisoning is compensable under the Minnesota workmen's compensation act. Section 4327, paragraph 7 subdivision 9 Mason's Minnesota Statutes, provides that "Poisoning by nitro and amido-derivatives of benzene (dinitro-benzol, anilin and others), or its sequelae" shall be deemed to be an occupational disease and compensable if acquired by any worker employed in 'any process involving the use of a nitro or amido-derivative of benzene or its preparations or compounds'. It is conceded said the court that the word 'benzene' was used by the legislature as meaning benzene or benzol, C_6H_6 , and not C_nH_{2n+2} the ordinary benzene. The effects of poisoning from the fumes of the benzene derivatives are usually acute, while those from benzene are characterized as chronic. Did the legislature intend to distinguish between benzene and its derivatives and include the derivatives and exclude benzene as a cause of occupational disease? It is further conceded that benzene poisoning is a typical occupational disease in the general sense and might well have been included in the coverage of subdivision 9. If the legislature intended to exclude benzene, there was no rational basis for the exclusion. The court thought the statutory language declaring compensable "poisoning by nitro and amido-derivatives of benzene (dinitro-benzol, anilin and others), or its sequelae" should be interpreted liberally in connection with the succeeding language, which provides that the poisoning must have been acquired in a "process involving the use of a nitro or amido-derivative of benzene or its preparations or compounds," because the court concluded that the word 'its' evidently refers to benzene and that the word 'preparations' covers mixtures such as caused the workman's disability in the present case.

The court accordingly affirmed the award in favor of the worker—*Funk v. Minnesota Mining & Mfg. Co. (Minn.)*, 256 N. W. 889.

Compensation of Physicians Malpractice Offset Against Value of Services Even Though Statute of Limitations Bars Affirmative Malpractice Action.—The physician-plaintiff sued Wyatt and his wife to recover money due for professional services rendered them over a period of ten years. He did not allege that the defendants had agreed to pay any stated sum but sued on 'an open account'. In their defense, the defendants claimed that the plaintiff had been guilty of negligence in diagnosis and treatment when he treated Wyatt, and they asked that any judgment that might be awarded against them be reduced because of this negligence. The physician-plaintiff demurred to their answers, contending that the defendants' claim of offset on account of alleged negligence was barred by the Colorado statute of limitations, which requires that actions for damages for malpractice be brought within two years of the happening of the malpractice (Session Laws, 1925 p. 342). The trial court sustained the plaintiff's demurrer and

entered judgment in his favor. The defendants then appealed to the Supreme Court of Colorado.

The defendants, said the Supreme Court, by their pleadings tendered an issue as to the reasonable value of the plaintiff's services. They had a right to do so in the absence of any allegation that they had agreed to pay the fixed amount claimed by the plaintiff. They were entitled to have the issue as to the value of the services rendered determined as an issue of fact. Judgment without trial was therefore prejudicial error.

The defendants tendered another issue, kindred to the first one, when they pleaded that in the performance of the services for which he sought compensation the plaintiff was negligent. This issue was not tendered as a counterclaim nor with a view to recovering an affirmative judgment for damages. It was tendered so that against the value of services such as those the defendants had received, rendered normally and in conformity with established standards, there might be offset the diminution in value that resulted from the plaintiff's negligence. In other words, the defendants sought, on account of the damage or loss that they had suffered by reason of the plaintiff's negligence, proportionate recoupment against his claim for compensation.

The Supreme Court called attention to the distinction between, on the one hand, a defense solely by way of recoupment, and, on the other, actions, either original actions for damages or claims for damages made by counterclaims, wherein affirmative judgments against the plaintiff are sought. The statute of limitations, said the Supreme Court, is aimed solely at the maintenance of such actions. Where, as in the present case, the defense presents the question of injury to the defendant in an immediate and vital connection with the services rendered by the plaintiff, whereby the value that the plaintiff seeks to recover for his services is alleged to have been diminished in the very rendition of the services, evidence to prove the alleged injury is admissible, such evidence directly bears on the value of the services, which is the point at issue. The allegations of negligence, like the issue of reasonable value, tender a proper issue of fact.

The judgment of the trial court was reversed and instructions issued as to procedure looking toward a new trial—*Walt v. Burnett (Colo.)*, 36 P. (2d) 768.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Cincinnati, Sept. 14-20. Dr. William P. Wherry 107 South 17th Street, Omaha Executive Secretary.
- American Association of Obstetricians Gynecologists and Abdominal Surgeons Sky Top Pa. Sept. 16-18. Dr. James R. Bloss 418 Eleventh Street Huntington W. Va. Acting Secretary.
- American Congress of Physical Therapy, Kansas City, Mo. Sept. 9-12. Dr. Nathan H. Palmer 921 Canal Street New Orleans Secretary.
- American Hospital Association, St. Louis Sept. 30 Oct. 4. Dr. Bert W. Caldwell 18 East Division Street Chicago Executive Secretary.
- American Roentgen Ray Society Atlantic City N. J. Sept. 24-27. Dr. E. P. Pendergrass 3400 Spruce Street Philadelphia Secretary.
- Association of Military Surgeons of the United States, New York, Oct. 3-5. Dr. H. L. Gilchrist Army Medical Museum Washington, D. C., Secretary.
- Colorado State Medical Society Estes Park, September 5-7. Mr. Harvey T. Sethman 537 Republic Building Denver Executive Secretary.
- Kentucky State Medical Association Louisville Sept. 30 Oct. 3. Dr. A. T. McCormack 532 West Main Street Louisville Secretary.
- Michigan State Medical Society Sault Ste. Marie, Sept. 23-25. Dr. Burton R. Corbus 313 Metz Building Grand Rapids Acting Secretary.
- Mississippi Valley Conference on Tuberculosis Madison Wis. Sept. 12-14. Mr. A. W. Jones 613 Locust Street St. Louis Secretary.
- National Medical Association, New Orleans, Aug. 11-17. Dr. C. A. Lanon 431 Green Street South Brownsville, Pennsylvania Secretary.
- Northern Minnesota Medical Association Duluth Aug. 12-13. Dr. Oscar O. Larsen Detroit Lakes Secretary.
- Ohio State Medical Association Cincinnati, Oct. 2-4. Mr. C. S. Nelson Hartman Theatre Building Columbus Acting Secretary.
- Oregon State Medical Society Gearhart Sept. 19-21. Dr. Blair Holcomb Stevens Building Portland Secretary.
- Pennsylvania Medical Society of the State of Harrisburg Sept. 30 Oct. 3. Dr. Walter F. Donaldson, 500 Penn. Avenue Pittsburgh Secretary.
- Utah State Medical Association Logan, September 5-7. Dr. George N. Curtis, Judge Building Salt Lake City Secretary.
- Washington State Medical Association Everett, Aug. 12-14. Dr. Curtis H. Thomson 1305 Fourth Avenue Seattle Secretary.
- Wisconsin State Medical Society of Milwaukee Sept. 17-20. Mr. J. G. Crownhart, 119 East Washington Avenue Madison, Secretary.
- Wyoming State Medical Society Lander, Aug. 12-13. Dr. Earl Whedon 50 North Main Street Sheridan Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

American J Obstetrics and Gynecology, St. Louis

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- *Treatment of Amenorrhea with Large Doses of Estrogenic Hormone. R. Kurzrok, L. Wilson and M. A. Cassidy, New York.—p. 771
- Rôle of Estrin and Progesterin in Experimental Menstruation with Especial Reference to Complete Ovulatory Cycle in Monkeys and Human Beings. E. T. Engle, P. E. Smith and M. C. Shelesnyak, New York.—p. 787
- Blood Lipids in the Puerperium. E. M. Boyd, Rochester, N. Y.—p. 797
- Effect of Theelin on Human Vaginal Mucosa. R. M. Lewis, New Haven, Conn.—p. 806
- *Relation of Vitamin B Deficiency to Metabolic Disturbances During Pregnancy and Lactation. E. M. Tarr and Olga McNeile, Los Angeles.—p. 811
- Study of Collagen of Placenta. B. Tenney Jr., Boston.—p. 819
- *Upper Urinary Tract Infections Complicating Pregnancy. H. F. Traut and Alberta Kuder, New York.—p. 826
- Pelvic Fascia. A Histologic Structure of Planes of Tissue Used in "Fascia Overlapping" Operation. B. Atty to Correlate Conflicting Views. N. P. Sears, Syracuse, N. Y.—p. 834
- *Chlorioneplithelioma with Long Latent Period. D. Feiner, Brooklyn.—p. 840
- Luteoma with Review of Literature. Report of Case. S. H. Wills and S. A. Romano, New Orleans.—p. 845
- Anemia of Pregnancy. Study of Six Cases of Hypochromatic Type. F. R. Irving, Syracuse, N. Y.—p. 850
- Dithery in Treatment of Pelvic Pathology. N. E. Titus, New York.—p. 855
- Transverse Cervical Cesarean Section. Critical Analysis of One Hundred and Fifty Consecutive Cases. R. J. Heffernan, Boston.—p. 860
- New Method for Measuring Blood Loss During Third Stage of Labor. J. B. Pastore, New York.—p. 866
- Analysis of One Thousand Seven Hundred and Seventy Two Abortions and Miscarriages with Consideration of Treatment and Prevention. R. E. Stewart, Boston.—p. 872
- Fetal Cephalometry in Utero and Determination of Fetal Maturity. H. Thoms, New Haven, Conn.—p. 876
- Tuberculosis and Pregnancy. D. S. Brachman, Detroit.—p. 880
- Tubal Endometriosis Simulating Ectopic Pregnancy. J. I. Kushner, New York.—p. 884
- Tuberculous Infection of Bartholinian Gland. Case. A. Bassler, New York.—p. 885
- Recurrent Hydrocephalus. H. R. Leland, Minneapolis.—p. 886
- Mucus Trap for Tracheal Insufflation in New Born Infants Modified for Administration of Oxygen and Carbon Dioxide. M. Berlind, Brooklyn.—p. 887
- Retractor Obstetric Forceps. M. N. Moss, St. Paul.—p. 888
- Recurrent Tubal Gravidity on Same Side. J. Dentsch and J. Clahr, New York.—p. 889
- Supernumerary Mammary Gland Tissue on Labia Minora. W. F. Mengert, Iowa City.—p. 891
- Prolonged Retention of Fetus from Extra Uterine Pregnancy. T. H. Aschman and F. C. Helwig, Kansas City, Mo.—p. 893
- Placenta Praevia Complicating Twin Pregnancy. M. W. Haws, Fulton, Ky.—p. 895
- Treatment of Amenorrhea with Large Doses of Estrogenic Substance.—Kurzrok and his associates treated twelve primary and thirteen secondary cases of amenorrhea with large doses of estrogenic substance. They confirm Kaufmann's observation that 40,000 rat units of estrogenic substance is required to produce cyclic bleeding and to build up the proliferative phase of the endometrium. Dosages of 100,000 rat units or more are usually required to bring on the first period in cases of primary amenorrhea, and about 50,000 rat units in secondary amenorrhea. Dosages of 50,000 rat units are necessary to imitate the growth of the breasts mainly the duct system. Dosages of more than 100,000 rat units are essential to produce growth of a hypoplastic myometrium. In some cases of primary amenorrhea the breasts, the cyclic bleeding and the myometrium regressed, in the order named, when treatment

was stopped. The uterine anlage that has failed to develop in the fetus may be brought to some stage of development in adult life by large doses of estrogenic substance. Spontaneous menstruation may follow the cyclic bleeding induced by estrogenic substance (as in secondary amenorrhea). The endometrium that has been built up to the proliferative phase by an external supply of estrogenic substance may be converted to the pregravid phase by the patient's own corpus luteum.

Relation of Vitamin B Deficiency to Metabolic Disturbances During Pregnancy and Lactation.—Tarr and McNeile believe that a deficiency of vitamin B in the diet of pregnant and lactating women usually produces definite symptoms. Signs of demineralization are more pronounced in those women who obtain less than 50 per cent of their total calories from protective foods. It was observed that test cases showed a much better blood picture than was true with the controls. Of the control group, 4.5 per cent were threatened with miscarriage. The test group escaped all such symptoms. More calm and better milk producers were found in the test group. Severe signs of gastric and intestinal atony were almost entirely absent in the test group whereas these signs were encountered in more than 20 per cent of the control group. Undoubtedly this was not purely coincidental. Previous views concerning some of the signs of vitamin B deficiency during pregnancy and lactation have been substantiated.

Infections of Urinary Tract Complicating Pregnancy.—Traut and Kuder deal with the normal changes in the urinary tract accompanying pregnancy and show how these alterations predispose the woman to disease. The uterus, ureters and large intestine undergo an atonic change, which commences during the early months of pregnancy and persists until the eighth month, when it slowly diminishes, so that at term the uterine musculature is not only irritable but contracts vigorously. They have observed much the same reaction in the ureter. As far as the uterus is concerned, this atony of the musculature is a beneficial physiologic phenomenon, being a safeguard against abortion, but in the ureter it constitutes a hazard. In the normal woman the amount of residual urine in the ureter and kidney pelvis varies from 10 to 60 cc., and occasionally in those who have had rapidly repeated pregnancies this may amount to much more, even 200 cc. Residual urine, whether it occurs in the bladder, ureter or kidney pelvis, is a source of danger, as it is prone to infection and, once contaminated, allows of such rapid growth of micro-organisms as to make cure difficult as long as the stagnation persists. *Bacillus coli* is the invading organism in more than 90 per cent of the persons suffering from pyelitis. The onset of the disease is usually after the fifth month of pregnancy and not infrequently in the puerperium, when it is likely to be mistaken for uterine infection. The pathologic picture of pyelo-ureteritis is one of peripheral inflammation of the walls of the ureter and renal pelvis in the earliest stages, with hyperemia and edema as the dominant features. As a more serious pathologic process in the acute phase, there may be extension of the inflammation from the pelvis of the kidney into the peripelvic tissues surrounding the large renal blood sinuses, with the added dangers of blood stream infection. The process may attack the medullary and even the cortical portions of the kidney, in which event these areas are rendered inactive as the result of edema and infiltration of inflammatory cellular elements.

Chlorioneplithelioma with Long Latent Period.—Feiner reports the case of a woman, aged 28, with a vaginal tumor possessing the histologic structure of a malignant chlorioneplithelioma two and one-half years after the last demonstrable pregnancy. In view of the number of well authenticated similar cases reported in the literature, he concludes that in exceptional instances fetal epithelium may remain dormant in the maternal host, either at the placental site or elsewhere, for months or years, then to be stimulated by some unknown agency to malignant proliferation. The fact that many of these cases have developed long after the menopause would effectually disprove the theory that in all such cases an intervening pregnancy has escaped detection. The author regrets that the Aschheim-Zondek test was not utilized earlier in the course of his case, in which event a prompt hysterectomy might have stayed the progress of the disease.

American Journal of Ophthalmology, St. Louis

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- *Influence of Exophthalmos on Function of Paretic Ocular Muscles A Bielschowsky Breslau, Germany—p 503
- Orthoptic Training and Surgery in Hyperphoria and Hypertropia Combined with Lateral Deviations C Berens, B F Payne and Dorothy Kern New York—p 508
- Goatophthalmography Photography of Angle of Anterior Chamber in Living Animals and Human Subjects R Castroviejo New York—p 524
- Reflex Effects from Critical Seeing M Luckiesh and F H Moss Cleveland—p 527
- *Oil Cyst of Orbit with Carcinomatosis A C Jones Boise Idaho—p 532
- Study of Ocular Infection Induced Experimentally with Bacterium Monocytogenes M C Morris and L A Julianelle, St. Louis—p 535
- Megalophthalmus Report of Case W S Davies Ann Arbor Mich.—p 542
- The Aging Lens R von der Heydt Chicago—p 545
- Conjunctival Myiasis Due to Sheep Gadfly Oestrus Ovis M W Lyon Jr South Bend Ind.—p 547
- Partial Detachment of Retina Treated Successfully with Shahan's Thermophore H M Langdon Philadelphia—p 550
- Primary Carcinoma of Meibomian Gland J E Lebensohn Chicago—p 552

Influence of Exophthalmos on Paretic Ocular Muscles—Bielschowsky states that the rectus muscles of the eyes have, in addition to their principal function, another though subordinate function as retractors, owing to which weakening muscle operations may cause a certain amount of exophthalmos, whereas strengthening operations, such as advancement and resection, leave behind them some exophthalmos. Two cases are reported in which paretic diplopia was combined with exophthalmos. Both anomalies were removed by the strengthening operations. One patient had a disfiguring exophthalmos combined with almost total right ophthalmoplegia due to an orbital operation. Advancement and resection of both the right internal and external recti diminished the exophthalmos considerably and restored binocular single vision in the greater part of the field of fixation. The other patient had exophthalmos and diplopia caused by total paralysis of one superior rectus muscle. Advancement and resection of that muscle, though not restoring its normal function, made diplopia disappear in the middle and lower parts of the field of fixation because the removal of the exophthalmos made it easier to maintain binocular fixation.

Oil Cyst of Orbit with Carcinomatosis—Jones's case of an orbital oil cyst of dermoid origin which had become malignant was found in a middle-aged woman whose left eye had been more prominent than the right for ten years or more, the prominence having noticeably increased during the previous three months. At operation the cyst was ruptured expressing a dark oily fluid. Pathologic examination proved it to contain squamous cell carcinomatous tissue. Heavy doses of radium failed to check the progress of the carcinoma and the patient died with a generalized carcinomatosis.

American Journal of Tropical Medicine, Baltimore

15 247 406 (May) 1935

- Immunity in Dengue Fever W B Sharp and E Hollar Galveston Texas—p 247
- How Many Species of Avian Malaria Parasites Are There? R D Manwell Syracuse N Y—p 265
- Cattle Reservoir for Equine Trypanosomiasis in Panama. Additional Notes on the Subject H C Clark and J Benavides Panama Republic of Panama—p 285
- Malaria Studies in Greece. Measurements of Malaria 1930 1933 M C Balfour Athens Greece—p 301
- *Endamoeba Histolytica and Other Intestinal Protozoa in One Thousand and Sixty College Freshmen D H Wenrich R M Stahler and J H Arnett, Philadelphia—p 331
- *Quantitative Studies of Virus and Immune Serum Used in Vaccination Against Yellow Fever M Theiler and L Whitman New York—p 347
- Review of Recent Work on Rate of Acquisition and Loss of Hookworms A C Chandler Houston Texas—p 357
- Studies on Dog Heartworm *Dirofilaria immitis* with Especial Reference to Filarial Periodicity E H Hinman New Orleans—p 371
- The Insectary Rearing of *Anopheles Quadrimaculatus* M F Boyd Tallahassee Fla T L Cain Jr and J A Mulrennan—p 385

Intestinal Protozoa in Students—Wenrich and his associates made a survey for the detection of intestinal protozoa in 1 060 students entering a professional school in Philadelphia. Only one stool, obtained without laxatives, was examined for

each of the freshmen, the examinations being made from 1931 to 1933. It was found that 34.5 per cent of these students harbored one or more kinds of protozoa and that 4.1 per cent harbored *Endamoeba histolytica*. The percentage incidence of *Endamoeba histolytica* was higher (5.2) for Philadelphia and its suburbs in Pennsylvania than for other parts of that state (3.4) and for New Jersey (2). Only one of thirty-nine carriers of *Endamoeba histolytica* had traveled "south" in the United States, but six of forty-one carriers had been to Europe. The incidence of *Endamoeba histolytica* in forty-six food handlers was 4.3 per cent. The students harboring *Endamoeba histolytica* appeared to be at least as healthy as those recorded as negative for protozoa, and no cases of amebic dysentery were detected at the institution during the three years of the study. More positives were detected by the study of permanent slides than by the examination of temporary wet preparations.

Studies of Virus and Immune Serum Used in Yellow Fever Vaccination—Theiler and Whitman state that living neurotropic virus, such as is used in human vaccination, multiplies when inoculated without immune serum into susceptible monkeys and is invariably present in considerable concentration in the circulation at some period following inoculation. These monkeys are subject to death from encephalitis. This danger cannot be removed by adjusting the amount of virus inoculated. Infinitesimal quantities are, if anything, more likely to result in encephalitis than larger doses even in the presence of small quantities of immune serum. The inoculation of immune serum shortly before the virus is administered prevents the circulation of virus and yet allows active immunization. It has been shown that the amount of serum necessary relates more to the size of the recipient than to the quantity of virus inoculated. By reducing the virus component 100,000 times, the volume of serum is reduced only five times. The advantages of "hyper-immune" serum have been demonstrated. Very small volumes of highly potent serum are as effective as larger volumes of average immune serum. When the optimal amount of immune serum has been ascertained, a wide range of virus concentration can be used with success. Minimal doses of virus, however, probably fail to produce immunity under these circumstances.

Archives of Ophthalmology, Chicago

13: 937 1134 (June) 1935

- Disciform Degeneration of the Macula A R Kahler and C S O'Brien Iowa City—p 937
- Juvenile Macular Exudative Retinitis (Junius) W T Davis and E Sheppard Washington D C—p 960
- Trauma and Retinal Detachment W P C Zeeman and H J Oltmanas Amsterdam the Netherlands—p 971
- Bilateral Congenital Deficiency of Abduction with Retraction (Duane Syndrome) Report of Case W G Mengel Camden N J—p 981
- Infra Red Photography of the Eye W A. Mann Jr Chicago—p 985
- Visual Allergy to Light and Intolerance to Light Treatment by Tinted Lenses L Lehrfeld Philadelphia—p 992
- Present State of Operative Treatment for Detachment of Retina in Europe A Knapp New York—p 1014
- *Filtrability of Trachoma Virus P Thygeson, Iowa City and F I Proctor Santa Fe N M—p 1018
- Chemistry of Vitreous Humor III Lipids A C Krause, Baltimore—p 1022
- Orthoptic Treatment of Squint A M Hicks and G N Hosford San Francisco—p 1026
- Acute Purulent Conjunctivitis Due to Meningococcus Report of Case S R Gifford and A A Day Chicago—p 1038
- Applicability of Kronlein Operation for Removal of Cysticercus of Posterior Half of the Eye A J Bruck Gornet U S S R, translated by E F Lyon—p 1042
- Ectopia Lentis Report of Twenty Two Cases in Five Successive Generations B N Pittenger Paris Ky—p 1051

Filtrability of Trachoma Virus—The four experiments of Thygeson and Proctor demonstrate that epithelial scrapings from patients with trachoma contain a virus which is capable of passing through collodion filters impervious to conjunctival bacteria. This virus produces the same type of follicular disease in baboons as that produced by direct inoculation with trachomatous material. The identity of this virus with the etiologic agent of the disease appears more than probable, but the results of animal experimentation in cases of trachoma

must be checked on the human conjunctiva because of the impossibility of accurate diagnosis of trachoma in monkeys or apes. The authors attribute the uniformly positive results in their experiments to the use of epithelial scrapings instead of expressed follicular material and to the use of collodion filters, with resultant minimal loss of virus in the filter due to adsorption. Both morphologic and experimental evidence indicate that the agent of trachoma is an epithelial parasite. The suggestion that the inclusion bodies of trachoma are the result of secondary infection with the agent of inclusion blennorrhea appears extremely improbable from what is known of the epidemiology of inclusion blennorrhea and inclusion conjunctivitis. The possibility of a nonepidemic disease secondarily infecting one half or more of the persons with trachoma seems extremely remote. Even such epidemic infections as conjunctivitis due to *Diplococcus pneumoniae* and *Haemophilus influenzae* complicate trachoma in a relatively small percentage of cases. Furthermore, inclusion conjunctivitis as an independent disease is self limited, having a total duration of from three months to one year. There is no reason to believe that as a secondary infection in trachoma it could increase its duration to coincide with the duration of the trachomatous disease. It appears improbable that the virus of inclusion blennorrhea could be present in all four groups of cases used in the reported filtration experiments.

Archives of Pathology, Chicago

19 769 920 (June) 1935

Experimental Studies on Human and Primate Species of *Strongyloides* IV Pathology of *Strongyloides* Infection E C Faust New Orleans—p 769

Renal Changes in Biliary Stasis and Decompression in Cats H L Stewart A Cantarow and D R Morgan Philadelphia—p 807

*Generalized Dissemination of Giant Cells in Lymphoid Tissue in Prodromal Stage of Measles B M Hathaway Akron Ohio—p 819

*Mechanical Production of Cavities in Isolated Lungs S E Moolten New York—p 825

Dissemination of Giant Cells in Lymphoid Tissue in Measles—Hathaway presents a case that came to necropsy in the prodromal stage of measles and in which the characteristic multinucleate giant cells were observed in the spleen and in scattered lymph nodes. The absence of giant cells in the appendical and intestinal lymphoid tissue and mesenteric nodes is further evidence that these cells are rarely seen in lymphoid tissue draining regions in which severe inflammatory changes are present. The giant cells, while numerous in the regions in which they were noted, were not as large and did not contain as many nuclei as some of those described by other observers in tissues removed three or four days before the eruption occurred. The patient was in the late prodromal stage at the time of death, and this fact may account for the stage of degeneration in which the giant cells were seen. The widespread dissemination observed in the patient shows the reaction to be generalized, as one would expect in a generalized infection. Thus far, this type of giant cell seems to be characteristic of measles before the stage of eruption. It is unlike other giant cells in appearance and location. In view of the fact that these cells were first described and their relation to the prodrome of measles pointed out by Warthin and Finkeldey independently, the author proposes that they be called the Warthin Finkeldey giant cells. The case serves to emphasize the point that in cases of the exanthems (measles at any rate) the abdominal symptoms so often present may have an organic basis with serious consequences if left undiagnosed.

Mechanical Production of Cavities in Isolated Lungs—By means of a bronchoscopic punch forceps introduced through the bronchi of isolated unopened human and calf lungs, Moolten produced mechanical laceration and rupture of the bronchial walls and surrounding lung tissue enabling him to remove various amounts of tissue so as to produce gross defects. The underlying principle is laceration of the fibro-elastic framework of the lung followed by inflation. The amount of pressure used for inflation was well within the limit necessary to distend the lung to its maximal physiologic size and in the case of the human lungs was generally a negative pressure of from 20 to 30 cm of water. The size of

the cavities is disproportionate to the degree of laceration or loss of lung substance but depends principally on the amount of pressure during inflation. Regardless of the direction or extent of laceration or the shape of the defect produced by the forcible mechanical removal of pulmonary tissue, inflation invariably results in the formation of one or more smooth-walled, rounded cavities. These experiments suggest that cystic disease, bullous emphysema, saccular bronchiectases and the cavities of tuberculosis or abscess of the lung are products of the same mechanical factors and differ only in degree and distribution.

Johns Hopkins Hospital Bulletin, Baltimore

58 247 304 (May) 1935

Studies on Virus Problems I Tissue and Cell Affinities of Viruses and Reactions of Host J C G Ledingham London England—p 247

*Hiccup Crisis in *Tabes Dorsalis* C M Byrnes Baltimore—p 264

Quantitative Spectrographic Estimation of Blood Lead and Its Value in Diagnosis of Lead Poisoning H Blumberg, Baltimore and T F M Scott, New York—p 276

Treatment of Intracranial Hemorrhage Resulting from Cisternal Puncture. W E Dandy Baltimore—p 294

Hiccup Crisis in *Tabes Dorsalis*—Byrnes believes that the apparent spontaneous onset of hiccup in certain cases of tabes, its periodic occurrence and prolonged duration, its complete cessation when once it is relieved and its not uncommon association with vomiting and epigastric pain supply the characteristics of a true tabetic crisis. Dauncie's suggestion that the hiccup crisis might also be an early, preataxic sign of tabes deserves some consideration. The gastric and hiccup crises have striking analogies, and a prolonged attack of hiccup, in the absence of any discoverable cause, warrants a thorough neurologic examination, and should this not disclose any of the earmarks of tabes, serologic tests of the blood and spinal fluid are indicated. Impulses originating in the last seven thoracic nerves might, either directly or reflexly by means of the phrenic, take part in diaphragmatic contractions. That the phrenic is not essential in the production of hiccup is found in the fact that bilateral phrenic section is not always successful in relieving the symptom. The irritation might be maintained through this lower spinal innervation. The tabetic process has a special predilection for the thoracic cord, and it seems probable that hiccup in this disease is due to abnormal impulses originating in the lower spinal segments. The author thinks that it is through this mechanism that the medicated serum most likely induced the initial and subsequent attacks in his patient by irritation of a system of fibers already partly implicated in the disease. On the other hand, persistent treatment as in the gastric crisis, finally leads to resolution of the original tabetic process. This lower spinal mechanism may take part in the production of postoperative hiccup, as the peritoneum offers a wide field for the origin of impulses that might reflexly initiate abnormal diaphragmatic contractions. Spinal anesthesia might be effectual in relieving this type of hiccup. The promptness with which the symptom ceased in the author's patient on the intradural administration of mercurialized serum suggests that the method is of therapeutic value in its treatment.

Journal of Bacteriology, Baltimore

29: 563 658 (June) 1935

Identification of *Asparagine* as Substance Stimulating Production of Biotin Alcohol by Certain Bacteria E L Tatum W H Peterson and E B Fred Madison Wis—p 563

Differentiation of *Bacillus Fallax* (Weinberg and Séguin) from *Bacillus Carnis* (Klein) N D Duffett, Denver—p 573

Studies in Microbic Dissociation II Changes in Biologic Characters of *Shigella Paradyzenterae* During Dissociation and Partial Reversion G M Mackenzie Helen Fitzgerald and V Irons, New York—p 583

Bacterial Growth with Automatic Hydrogen Ion Concentration Control (A) Apparatus (B) Some Tests on Acid Production of *Lactobacillus Acidophilus* L G Longworth and D A MacInnes New York—p 595

Application of Statistics to Problems in Bacteriology IV Experimental Comparison of Dilution Method, Plate Count and Direct Count for Determination of Bacterial Populations N R Ziegler and H O Halvorson Minneapolis—p 609

Journal of Biological Chemistry, Baltimore

110:1 262 (June) 1935

- Histochemistry of Adrenal Gland I Quantitative Distribution of Vitamin C D Glick and G R Biskind San Francisco—p 1
- Combination of Certain Fatty Acids with Lysine Arginine and Salmine. T H Jukes and C L A Schmidt Berkeley Calif—p 9
- Hemicelluloses Extracted from Mesquite Wood After Chlorination Lila Sands and Pauline Nutter Tucson Ariz.—p 17
- Metabolism of Sulphur III Cystine Content of Hair and Nails of Cystinurics H B Lewis and Lois Frayser, Ann Arbor, Mich—p 23
- Determination of Iodine in Biologic Material Virginia Trevorrow and Gladys J Fashena New York—p 29
- Blood Sugar of Fasting Gizzardeatomized Fowl (Gallus Domesticus) W H Burrows J C Fritz and H W Titus Beltsville, Md—p 39
- Physicochemical Effects Produced by Irradiation of Crystalline Egg Albumin Solutions with α Particles L E Arnow Minneapolis—p 43
- *Diurnal Variations in Plasma Lipids E M Boyd Kingston, Ont.—p 61
- Composition of Tissue Proteins I Estimation of Purines in Tissues S Graff and Ada Maculla, New York—p 71
- Concentration of Antidiuretic Factor of Anterior Lobe of Pituitary Note Helen R. Downes and Leah Richards New York—p 81
- Contribution to Chemistry of Pepper Pigments Red Pigment in Perfection Pimiento (Capsicum Annuum) W L Brown—p 91
- Micromethod for Determination of Sodium A P Weinbach Baltimore—p 95
- Synergistic Action of Milk and Muscle Oxidases D I Macht Baltimore and Hilah F Bryan New York—p 101
- Effect of Exercise on Excretion of Uric Acid Note on Influence of Benzoic Acid on Uric Acid Elimination in Liver Diseases A J Quick Milwaukee—p 107
- Reactions of Dyes with Cell Substances I Staining of Isolated Nuclear Substances E G Kelley and E G Miller Jr, New York—p 113
- Id II Differential Staining of Nucleoprotein and Mucin by Thionine and Similar Dyes E G Kelley and E G Miller Jr, New York—p 119
- Id III Apparatus for Definition of Color in Stained Histologic Sections E G Kelley, New York—p 141
- Bacterial Metabolism I Reduction of Propionaldehyde and of Propionic Acid by Clostridium Acetobutylicum H C Blanchard and J MacDonald New York—p 145
- Metabolism of Certain Monomethyl Tryptophanes W G Gordon New Haven, Conn and R W Jackson New York—p 151
- Oxidation of Certain Amino Acids by Resting Bacillus Proteus F Bernheim Mary L C Bernheim and M Dorothy Webster Durham N C.—p 165
- New Reactions of Lactulose and Cellobiose M Bergmann and K Grafe Dresden Germany—p 173
- Glyoxalase V Enzymatic Nature of Kidney Antiglyoxalase E F Schroeder, Marcell Platt Munro and L Weil Philadelphia—p 181
- Activation of Arginase L Weil Philadelphia—p 201
- Ascorbic Acid (Vitamin C) Oxidase H Tauber, I S Kleiner and D Mishkind New York—p 211
- *Preliminary Physicochemical Study of Reducing Action of Glucose W B Wood Jr Baltimore—p 219
- Effect of Type of Carbohydrate on Synthesis of B Vitamins in Digestive Tract of Rat N B Guerrant R A Dutcher and L F Toney State College Pa—p 233
- Presence of Creatinine in Blood Jeanette Allen Behre and S R Benedict, New York—p 245
- Pigments of Pink Grapefruits Citrus Grandis (L Osbeck) M B Matlack Washington D C—p 249
- Gastro Intestinal pu in Rats as Determined by Glass Electrode Irene M Eastman and E G Miller Jr New York—p 255

Diurnal Variations in Plasma Lipids—Boyd found that normal individuals under usual conditions of life and ingesting three normal meals a day exhibit but slight variations in the concentration of plasma lipids. Samples of blood were taken at intervals of from three to four hours from one morning to the next and analyzed by oxidative micromethods. The standard daily deviation of the results per person was found to comprise, on the average, the following percentages of the means for the day: free cholesterol, 6.5 per cent, ester cholesterol, 7.2 per cent, phospholipids, 9.6 per cent, neutral fats, 22.1 per cent. It was concluded that the concentration of plasma lipids is not consistently or markedly affected by such factors as time of day, intake of ordinary meals and sleep. Variations in the plasma lipids from one person to another were found to be from two to three times as great as the average daily variation per person.

Reducing Action of Dextrose—Wood describes a potentiometric method for studying the progress of an irreversible oxidation-reduction reaction, such as the oxidation of dextrose by ferricyanide. The oxidation of dextrose by an inorganic oxidizing agent, such as ferricyanide ion, is shown to be dependent on the pH of the solution, temperature, salt content of the solution, the concentration of dextrose and the concentration

of the oxidant. A striking similarity is pointed out in the data obtained with ferricyanide and with copper solutions. The reducing action of dextrose is shown to be greatly increased by the presence of sodium cyanide, a fact that offers an explanation of the low blood sugar values obtained with the Folin microcolorimetric method.

Journal of Nutrition, Philadelphia

6: 645 760 (June 10) 1935

- Use of Polarized Light in Study of Myelin Degeneration II Degeneration of Myelinated Nerves in Avitaminosis A in the White Rat. H E. Setterfield and T S Sutton, Columbus, Ohio—p 645
- Effect of Protein and Amino Acid Metabolism on Urea and Xylose Clearance R F Pitts New York—p 657
- Value of Chemical Titration Method in Determining Vitamin C Potency of Certain Food Substances N B Guerrant R A Rasmussen and R A Dutcher State College Pa—p 667
- Utilization of Meat by Human Subjects II Utilization of Nitrogen and Phosphorus of Round and Liver of Beef Zeldabeth Long and Martha S Pittman Manhattan Kan—p 677
- Id III Utilization of Nitrogen and Phosphorus of Beef Heart. Bernice L Kuerth, Ida M Chitwood and Martha S Pittman, Manhattan Kan—p 685
- Nutritive Value of Fungi II Vitamin B G and B₁₂ Content of Mycelium of Aspergillus Sydowi H J Gorcica, W H Peterson and H Steenbock, Madison, Wis—p 691
- Id III Growth of Rats on Supplemented and Unsupplemented Mold Proteins II J Gorcica, W H Peterson and H Steenbock, Madison, Wis—p 701
- *Nutritive Value of Lactose in Man A E. Koehler, Ione Rapp and Elsie Hill, Santa Barbara Calif—p 715
- Relation of Castration to Vitamin A Deficiency in Rat. K. E. Mason and J M Wolfe Nashville Tenn—p 725
- Changes in Vaginal Epithelium of Rat After Vitamin A Deficiency K E Mason and E. T. Ellison, Nashville Tenn—p 735

Nutritive Value of Lactose—According to Koehler and his associates, the average blood sugar values in sixteen normal young adults after the ingestion of 15 Gm. of lactose per kilogram of body weight showed no important changes, although considerable individual variations were observed. The secondary hypoglycemic effects were lacking. There was frequently a lactosuria present. The ingestion of 15 Gm. of starch per kilogram of body weight caused nearly as much of a peak rise in the blood sugar as obtained after the administration of dextrose. The total hyperglycemia after starch is greater than after dextrose. The average blood sugar values in sixteen obese subjects showed a slight but definite elevation after the ingestion of lactose. The blood sugar changes after the ingestion of lactose in the diabetic patients were marked and of nearly the same magnitude as after the ingestion of dextrose. In the diabetic cases studied, lactosuria was not observed. The average recovery in the urine of intravenously injected lactose was approximately the same (from 89.3 to 93.2 per cent) in normal, obese and diabetic subjects. Ingested lactose caused a small fall in the inorganic phosphate content of whole blood.

Journal of Pediatrics, St. Louis

6: 743 888 (June) 1935

- Whooping Cough II Experimental Study C. S. Culotta D F Harvey and E F Gordon New Haven, Conn—p 743
- *Enteritis in Infants Prevention of Its Spread Dick Diet Kitchen and Aseptic Nursery Technique L Sauer Evanston Ill.—p 753
- Meningococcal Infections Analysis of One Hundred and Twenty Cases in Children E. L. Glasscock St. Louis—p 763
- *Streptococcus Meningitis in Scarlet Fever J E Gordon New York, and F H Top Detroit—p 770
- Constipation in Children Its Effects on Body Mechanisms I A. Frisch New York—p 784
- Masked Hypothyroidism in Children Osseous Development as an Aid in Diagnosis G B Dorff Brooklyn—p 788
- *Antirachitic Value of Irradiated Evaporated Milk in Infants M Rapoport J Stokes Jr and Dorothy V Whipple Philadelphia—p 799
- Observations on Postural Treatment of Upper Respiratory Infection. S N Parkinson Oakland Calif—p 809
- Congenital Rhabdomyoma of the Heart Associated with Arrhythmia. M E Wegman and D S Egbert New Haven Conn—p 818
- Study of Seasonal Incidence in Morbidity and Mortality of Twenty Thousand Breast and Artificially Fed Infants for First Nine Months of Life. C G Grulee, H N Sanford and Jennie Kantor Antman Chicago—p 825

Enteritis in Infants—Sauer says that the aseptic, individual nursery technique perfected by Gladys Dick has made it possible to care for 1,620 homeless infants without the occurrence of any cross infection. It is sound economy because it reduces morbidity and prevents unnecessary deaths. A trial of

six years of the Dick diet kitchen and individual, aseptic nursery technic at the Cradle, without cross infection enteritis, proves the technic flawless. The cost is not excessive. The daily per capita cost is less than with the precautionary technic formerly used.

Streptococcus Meningitis in Scarlet Fever—Gordon and Top observe that purulent leptomeningitis is one of the more common intracranial complications, which are particularly rare in scarlet fever. Of 17,311 consecutive hospital patients with scarlet fever, nineteen had generalized streptococcal meningitis. Most instances of streptococcal meningitis originated from primary infection of the middle ear (thirteen), infected paranasal sinuses were a less common source (four), and two originated from localized suppurative infection of a joint with subsequent hematogenic dissemination to the meninges. The case fatality rate for scarlet fever meningitis is high. Only one of the nineteen patients in the series survived. Among the many patients reported by others in the course of years, only six are known to have recovered. No known therapeutic measure offers much promise. The principles of management include removal of the original source of infection, attempted sterilization of the blood stream because general sepsis is often associated, and finally attempted sterilization of the infected meninges. Repeated drainage of the cerebrospinal fluid is a procedure worthy of adoption. Intrathecal administration of antistreptococcus serums and various chemotherapeutic agents has been disappointing.

Antirachitic Value of Irradiated Evaporated Milk—From the study of twenty-three male Negro infants, Rapoport and his associates found that irradiated evaporated milk containing 125 U S P units of vitamin D to a 14½ ounce can appear to be an adequate agent for the prevention of rickets in infants. In two of the infants, who showed no roentgen evidence of rickets at the time they were put on irradiated milk, mild roentgen evidence of rickets developed after the change. These signs disappeared rapidly while they continued to receive the same irradiated milk. The study also indicated that the irradiated evaporated milk appears to be unreliable for the cure of rickets in infants. Although there were two infants who showed complete healing, three infants slight healing, and two infants an advance in the rachitic process followed by slight healing, nevertheless there were four infants who showed no healing and two infants in whom the rachitic process actually advanced without healing. It is possible that the last two infants fall in that group which is refractory to antirachitic therapy, since one of them gave no evidence of healing even after ten days of therapy with 15 cc. of cod liver oil daily. The data do not warrant any conclusions concerning the relationship between the severity of the rachitic process, the rate of growth in length and weight and the amount of antirachitic agent administered, as noted by Wilson. No conclusions could be drawn as to the variation in antirachitic value for infants of different antirachitic agents containing an equivalent number of vitamin D units by rat assay.

Journal of Pharmacology & Exper Therap, Baltimore 64 137 258 (June) 1935

- Pharmacologic Action of Pukateine. W S Fogg Dnnedin New Zealand—p 167
Relative Anesthetic Effects of Various Ureas J S Buck A M Hjort and E J deBeer Tuckahoe, N Y—p 188
Cardiac Automallicity Effects of Caffeine and Nicotine I Caffeine Influence on Response of Sino-Auricular Strip R H Cheney Brooklyn—p 213
Id. II Nicotine Influence on Response of Sino-Auricular Strip R H Cheney Brooklyn—p 222
Id. III Caffeine Nicotine Antagonism in Sino-Auricular Strip Response R H Cheney Brooklyn—p 230
*Experimental Studies in Alcoholism. IV Attempts to Modify Concentration of Alcohol in Blood After Intravenous Administration of Alcohol R Fleming and Dorothy Reynolds Boston—p 236
*Relation Between Quantity of Thyroid Stimulating Hormone of Anterior Pituitary Gland Administered and Proliferative Activity and Hypertrophy of Thyroid Acini in Guinea Pigs A A Kippen and L Loeb St Louis—p 246

Experimental Studies in Alcoholism.—Fleming and Reynolds tested the influence of various substances and procedures (diathermy epinephrine insulin caffeine, carbon dioxide oxygen olive oil physiologic solution of sodium

chloride and magnesium sulphate) on the concentration of alcohol in the human blood stream after intravenous administration of alcohol. The maintenance of an elevated body temperature by diathermy apparently caused an increased rate of disappearance of alcohol from the blood, none of the other procedures tried had any effect that could be considered significant.

Thyroid-Stimulating Hormone of Anterior Pituitary Gland.—The experiments of Kippen and Loeb indicate that the greater the doses of extract of anterior pituitary given to guinea-pigs, the greater the changes produced in the size of the acinus cells, in the consistency and absorption of the colloid in the irregularities in the shape of the acini and, particularly, in the number and size of the papillas formed and in the number of slits which appear. The maximal changes reached a greater intensity in the animals injected with larger amounts of extract. These changes are more marked at an earlier date than in animals receiving smaller doses, and the period during which there is an increase in the effects of the extract has a greater duration and the maximum of the changes is therefore reached somewhat later in these guinea-pigs than in the ones receiving smaller doses. Further, a higher level of hypertrophy is maintained for a longer time and the gland returns to its normal condition later in these animals. The curves representing the mitotic proliferation differ in some respects from the curves representing the other signs of thyroid hyperactivity. Irrespective of the doses given, the proliferative activity reaches a maximum after two injections and then falls, in all instances, more steeply in the animals receiving smaller doses. The fall in mitotic proliferative activity takes place at an earlier date and is much more precipitate than is the case of the other structural changes indicative of hyperactivity of the thyroid, the curves representing the latter are flatter than those representing the proliferative activity. It is impossible to prevent the retrogressive changes or to diminish them by using smaller doses for injection. The smaller doses lead to a more rapid return to a normal state of the thyroid. The latter behaves as though there were a natural tendency for it to return to the normal state, and larger amounts of extract are necessary in order to delay this return. After smaller doses the return to the normal state is more rapid and more complete. As far as the number of mitoses is concerned, the decrease is not due to the production of antibodies, and even in regard to the other structural features it is very improbable that these are entirely due to such a factor, considering the negative results that were obtained several years ago. The studies show that it is possible, by means of two injections of 2 cc. of extract of anterior pituitary gland, to raise the proliferative index of the thyroid of the guinea-pig about a thousand times, namely, from an average of 150 mitoses to a maximum of about 190,000, within as short a time as two days.

Medical Bull. of Veterans' Adm., Washington, D C

12 1110 (July) 1935

- Treatment of Cancer at Edward Hines Jr Facility, Hines Ill H Scott—p 1
Sulphur (Colloidal) Therapy in Treatment of Arthritis S C Wolden berg—p 10
Tuberculosis as Causative Factor in Addison's Disease Report of Cases W A Colton—p 27
Nephroschindylis Study in Diagnosis J H Hurst and F H Clark—p 35
Routine Caudal Block in Cystoscope Examination A D Munger and S M Wrenn—p 41
Injection Treatment of Varicose Veins J M Dishman—p 44
Comparative Results in Treatment of Neurosyphilis E R Johnson and R S Hubbs—p 46
Ophthalmoscopic Diagnosis B S Cane—p 55
The Podiatric Clinic in Veterans Administration Facility Lyons N J W W Hedlund—p 57
Auricular Flatter M B Marcellus—p 59
*Differential Diagnosis of Gastric and Duodenal Ulcer and Carcinoma of Stomach H H Howze—p 62
Theory and Practice of Full Denture Construction H S Neal—p 67

Diagnosis of Ulcer and Carcinoma of Stomach.—The comparisons between gastric and duodenal ulcer and gastric cancer given by Howze entail the following. 1 Gastric ulcer ceases to grow after attaining a size of about 2.5 cm in diameter. 2 Duodenal ulcer is more easily diagnosed than gastric ulcer.

3 Bleeding duodenal ulcers are usually situated on the posterior wall of the first portion of the duodenum 4 Hunger pains are usually characteristic of duodenal ulcer 5 Hemorrhage is more frequent in duodenal than in gastric ulcer 6 Obstruction is more frequent in gastric than in duodenal ulcer 7 Hour-glass contraction occurs in about 7 per cent of gastric ulcers 8 Cancer develops on gastric ulcer in about 10 per cent of all cases 9 The most frequent type of cancer found in the stomach is adenocarcinoma 10 Gastric symptoms are not infrequent in the early forms of cancer There is a familial tendency to develop peptic ulcer Pain is the chief symptom found in peptic ulcer, vomiting, loss of weight and appetite in cancer The history of symptoms in peptic ulcer is usually less than one year before hospital admission, in cancer the symptoms have been present for two years or more. Nearly all cases of ulcer give a history of attacks with remissions, the majority of cancer cases give a history of more or less constant distress The pain in cases of ulcer is usually described as being in the epigastrium cramplike, burning or gnawing in type, whereas cancer patients usually describe their symptoms as being a dull, vague or heavy feeling associated with a sense of fulness The symptoms in the ulcer group come on much earlier after meals than those of the cancer group Relief of pain by alkalis or food is characteristic of the ulcer group, vomiting or belching are the common methods of relief in cancer cases The roentgenogram is the chief means of diagnosis and differential diagnosis of the three types of lesions

Military Surgeon, Washington, D C

76 289 340 (June) 1935

The Unity of Preventive Dentistry and the Newer Preventive Medicine C H Mayo—p 289

The Medical Tent C J Kraissl—p 293

Maintaining Asepsis in CCC Dispensaries A L Jenks Jr—p 295

Upper Respiratory Catarrh (Common Cold) as Seen in a CCC Camp

During the First Four Months of 1934 B M Randolph—p 298

Atahrine and Plasmochin in Treatment of Malaria W A Carlson—p 314

New England Journal of Medicine, Boston

212 1069 1110 (June 6) 1935

Postgraduate Medical Education B W Paddock Pittsfield Mass—p 1069

Chronic Arthritis in Hyperthyroidism and Myxedema R T Monroe Boston—p 1074

Auricular Fibrillation and Auricular Flutter in the Course of Subacute Bacterial Endocarditis Report of Series of Cases M S Segal Boston—p 1077

Tilted Pelvis and Scoliosis Treatment Preventive and Operative S M Fitchet Boston—p 1082

Surgical Problems of Fungus Origin Report of Case of Sporotrichosis in Massachusetts J G Downing Boston—p 1085

Study of Heart Disease Among Veterans V Syphilitic Heart Disease P B Matz Washington D C—p 1087

New Jersey Medical Society Journal, Trenton

32: 341 396 (June) 1935

Consideration of Goiter J F Hagerty Newark—p 347

Resection of Intestine Through Femoral Opening J A Visconti Hoboken—p 355

Pancreas as Blood Pressure Regulator H Halprin Caldwell—p 357

Osteomyelitis of Small Bones of Hands and Feet Following Frost Bite M Scott and A W Pigott Skillman—p 361

Rheumatoid (Atrophic) Arthritis and Its Treatment by Gold Salts French View of Question J Forestier Aix les Bains France—p 364

Adrenal Sympathetic System and Its Diseases G W Crile Cleveland—p 367

Medical Practice Under State Medicine in the United States F A Faught Philadelphia—p 368

Mental Health and Tuberculosis J B Gordon Marlboro—p 372

*Intravenous Manganese in Treatment of Psoriasis Preliminary Report of Successful Cases J Barr Paterson—p 376

Continuing Program of the Medical Society of New Jersey L A Wilkes Trenton—p 380

Intravenous Manganese in Treatment of Psoriasis—Barr has used a preparation of manganese that may be given intravenously without ill effects This preparation contains a combination of manganese chloride 0.029 Gm and calcium chloride 0.0095 Gm in 5 cc. of physiologic solution of sodium chloride The author has given 100 intravenous injections of manganese without any serious reaction The only systemic reactions noted were a slight rise in pulse rate, about 10 per minute, a mild suffusion of the face, and in some cases a slight

lightheadedness, all of which passed off in a few seconds. These reactions are not limited to manganese but may result from any colloidal preparation given intravenously In no case was there any rise in temperature, vomiting, or any sign of toxicity following the injections In several cases, when improvement was not rapid enough, a decrease of the dosage and an increase of the interval between injections gave rise to a more marked improvement Seven cases are reported, five of which showed complete improvement and two partial improvement Particularly advantageous for therapy with manganese are the highly dispersive colloidal manganese compounds The minute quantity of manganese present combined with calcium chloride makes manganese chloride an ideal preparation for the intravenous treatment of psoriasis Its freedom from toxicity and ease of administration and the rapidity of disappearance of the lesions without any local therapy make manganese chloride the preparation of choice in the treatment of psoriasis While this series is small, the results obtained are so satisfactory that continuation of this method of treatment appears justifiable

New York State Journal of Medicine, New York

35 613 656 (June 15) 1935

The Sterility Problem Study of Two Hundred and Fifty Cases. G. Weitzner New York—p 613

Glomus Tumor Brief Clinical Study of Glomus Angiomyoneuroma Arteriel of Barre and Masson M S Burman and A M Gold, New York—p 618

Dermatitis Venenata Due to Ephedrine M Kornberg New York—p 620

Clinical Spectroscopy Quantitative Distribution of Lead in Body or Its Physiological Retention as Reciprocal of Capillary System L E Gaul and A H Staud New York—p 621

35: 657 704 (July 1) 1935

Unusual Occurrence of Thallium Poisoning Seven Members of Family Affected with Five Fatalities with Diagnosis Established by Means of Spectroscopic Analysis Josephine B Neal, E. Appelbaum, L E Gaul and R J Masschink New York—p 657

Some Psychiatric Aspects of Physical Diseases G R. Jameison, White Plains—p 660

The Language of Psychiatry L J Bragman Binghamton—p 668

Purulent Otitis Media in the New Born D J Dolan and M J H Grand New York—p 669

Pleural Accidents in Pneumothorax E J Grace and A L Lofy New York—p 671

Appendicitis Challenge E G Ramsdell New York—p 673

Sodium Formaldehyde Sulphoxylate in Mercuric Chloride Poisoning Case Report T F V LaPorte New York—p 677

Public Health Reports, Washington, D C

50 765 810 (June 7) 1935

Protection of Mice Against Meningococcus Infection by Polyvalent Antimeningococcal Serum Sara E Branham—p 768

Report on an Epidemic of Typhoid Fever in a Circus K. E. Miller and H E. Miller—p 778

50 811 830 (June 14) 1935

*Irritants in Adhesive Plaster L Schwartz and S M Peck—p 811

Irritants in Adhesive Plaster—Schwartz and Peck tested twenty-one subjects showing various degrees of adhesive plaster reaction with eleven ingredients of adhesive plaster One of these developed a generalized reaction so that individual tests could not be evaluated Seven of the remaining twenty were negative to the patch tests Of the thirteen remaining, eight showed positive reactions to wood rosin extracted from the stumps of pine trees eight to so called Burgundy pitch, six to I-rosin five to South American Para rubber, which had been milled washed and dried two to beeswax two to olibanum, and one each to hydrous wool fat, orris root and gutta serena. All the subjects who showed marked reactions at the first removal of the adhesive tape with continued intensification at the second inspection showed positive reactions to one or more of the rosins and 50 per cent were sensitive to rubber Seven of the subjects tested who showed a negative or only a slight erythema at the first inspection but who later developed delayed reactions were sensitive to one or more of the rosins, and two were sensitive to rubber The tests seemed to indicate that there are two types of reactions to adhesive tape one is purely chemical and due to resultant maceration and mechanical trauma from the application and the removal of the plaster and the other is due to hypersensitivity to one or more of the ingredients of the plaster The results indicate that the chief irritants in the adhesive plasters that were tested are the rosins,

in which can be included the so called Burgundy pitch and the smoke-cured wild rubber, of which South American Para is an example. An attempt was made to determine whether complexions or previous diseases of the skin or an allergic diathesis had a predisposing effect on sensitivity to adhesive plaster. All the subjects patch tested with adhesive plaster were questioned as to these facts. No such correlation could be established.

Review of Gastroenterology, New York

2: 97 186 (June) 1935

- Diverticulosis and Diverticulitis J Friedenwald and M Feldman, Baltimore—p 97
Advanced Carcinoma of Gastro-Intestinal Tract F C Yeomans New York—p 111
Study of Effects of Long Continued Basic and Acid Diet J C Doane Philadelphia—p 119
Atraumatic Method for Study of Gallbladder Secretion B S Walker and L R Whitaker Boston—p 129
*Changes in Muscular Activity of Stomach as Major Source of Abdominal Distress P B Welch Miami Fla—p 133
Relationship of Gastro Enterologic Lesions to Nephrosis A S Price New York—p 139
Few Observations Regarding the Skin and Nutrition W Van V Hayes New York—p 144
Kuentzler Duodenal Tube J Gerendasy Elizabeth, N J—p 147

Muscular Activity of Stomach and Abdominal Distress—Welch shows that on the first taste of food the musculature of the stomach normally relaxes. This is a taste reflex and not a gastric reflex. In the presence of intragastric or extragastric visceral disease, either abdominal or pelvic, there is frequently associated a distortion of this normal reflex, consisting usually of marked changes in the muscular tonicity of the stomach with or without increase in gastric peristalsis. This inversion of the normal feeding reflex is usually associated with so-called symptoms of indigestion and dyspepsia centering round the epigastrium. The degree of distortion of the normal feeding reflex apparently is not influenced by the character of gastric secretion. Manifestly, the clinical problem presented by this type of case is the discovery of the source of irritation which is causing distortion of the normal taste reflex. Certainly, these perhaps inadequate glimpses at the actual changes in the muscular activity of the stomach associated with varying types of disease have greatly simplified the diagnostic and the therapeutic problem connected with that large group of gastro-enterologic patients complaining of dyspepsia.

Southern Surgeon, Atlanta, Ga

4: 149 226 (June) 1935

- Some Remarks on Chronic Subdural Hematoma J G Lyerly, Jacksonville Fla—p 149
*Hints for Recognizing the Patient Who Will Probably Not Be Helped by Abdominal Operation W C Alvarez Rochester Minn—p 156
Chronic Obstruction of Duodenum Due to Pressure from Mesentery J C Patterson Cuthbert, Ga—p 175
Common Duct Injuries and Reconstruction J F Erdmann New York—p 180
Postoperative Treatment Based on Physiologic Principles A Ochsner New Orleans—p 197
The Relief of Pelvic Pain P G Flothow Seattle—p 207

Recognizing the Patient Who Will Probably Not Be Helped by Abdominal Operations—Alvarez points out that the diagnosis of functional disease should not be made mainly by exclusion but mainly on the basis of a careful history and on the recognition of a well known syndrome. Experience indicates that many 'emergency' operations should have been deferred until a careful study was made of the patient. A large proportion of interval appendectomies should have been 'explorations'. It is an exploration of the abdomen that the patient needs whenever the abdomen is opened and the diagnosis is not clear. It is not advisable to operate on persons with conditions of doubtful pathogenicity such as ptosis or on persons who are psychopathic, hypersensitive, constitutionally inadequate, highly allergic or migrainous or on persons who are on the verge of a nervous breakdown. It is often unwise even to explore the abdomen of a person with a severe crisis-like type of pain that is not related in its comings and goings to any function of the digestive, urinary or genital tract. It is usually unwise to operate on persons who have already been operated on several times without success. The author describes three syndromes of pseudo-ulcer, pseudocholecystitis and pseudo-

appendicitis that are seldom cured by operation. Judging by the results obtained, it is rarely advisable to operate for adhesions.

Pelvic Pain—Flothow is of the opinion that the majority of cases of pelvic pain that do not respond to ordinary gynecologic treatment may be relieved by interruption of the afferent pain fibers coursing through the superior hypogastric plexus. This interruption of afferent fibers may be accomplished by surgical removal or by alcohol injection of the plexus. Cases of functional dysmenorrhea having no associated pelvic disease are particularly adapted to treatment by alcohol injection. Diagnostic injection of the pelvic sympathetic nerves should always precede any surgical procedure directed toward the relief of pain by denervation of the superior hypogastric plexus. If properly selected by means of diagnostic injections, and those in which the pain is of psychogenic origin are excluded, practically all cases of pelvic pain can be relieved by one of the two methods.

Tennessee State Medical Assn. Journal, Nashville

28 217 270 (June) 1935

- Acute Abdomen in Children P Barbour Louisville Ky—p 217
Study of Maternity Care in Gibson County M E Lapham University Va—p 223
Lobar Pneumonia Report of Cases S J Fentress Goodlettsville—p 239
Paralytic Ileus W A Bryan Nashville—p 245
Intestinal Obstruction with Unusual Complication J H Francis Memphis—p 250
Some Diseases Resulting from Obscure Sinusitis and Mastoiditis Which Are Usually Treated by Family Physician or Pediatrician N E Hartsook, Johnson City—p 252

Western J Surg, Obst. & Gynecology, Portland, Ore

42 295 360 (June) 1935

- *Cervical Ribs S Robinson, C S Stone Jr and A H Elliot, Santa Barbara Calif—p 295
Perforating Jejunal Ulcer with Spontaneous Jejunocolic Fistula Report of Case A S Lobinger Los Angeles—p 305
Retroperitoneal Tumors Rea Smith and E L Armstrong Los Angeles—p 312
The Acute Abdomen J H Woolsey Woodland Calif—p 322
Tumor of Subcutaneous Glomus W K Livingston Portland Ore—p 329
The Pigmented Mole H G Bell, San Francisco—p 339

Cervical Ribs—Robinson and his associates list the two indications for surgery in cervical ribs (1) interference with blood flow through the subclavian artery and (2) interference with the brachial plexus manifested by pain, paresthesias, tingling, numbness, sensory changes and so on. Operation should be avoided when the symptomatology is mild and when there is an underlying neurotic tendency, especially if the symptoms depend only on irritation of the brachial plexus. The surgical procedure in dealing with cervical ribs for the most part has been complete removal of the rib. Adson found that, in cases in which the subclavian artery and at times a trunk of the plexus was caught between the anterior end of a rib and the lateral border of the anterior scalenus muscle, section of the muscle at its insertion resulted in relief of symptoms. A case of this type is presented in which section of the scalenus muscle released the subclavian artery from pressure and gave complete relief. It is the authors' belief that in similar cases when the symptomatology can be definitely traced to disturbed blood flow and when involvement of the plexus cannot be demonstrated at operation, this procedure is entirely adequate. However, in those cases in which interference with the brachial plexus can be demonstrated both before and at operation they believe that excision of the rib in most cases remains the operation of choice. A midclavicular incision can be extended anteriorly to the border of the sternocleidomastoid muscle or posteriorly to the trapezius and is then adequate for either procedure.

West Virginia Medical Journal, Charleston

31: 241 292 (June) 1935

- Some Personal Observations on Medical Practice in West Virginia Annual Presidential Address R H Walker Charleston—p 241
Chronic Maxillary Sinus Disease in the Adult Its Treatment and Prognosis Solmisa S Hall and H V Thomas Fairmont—p 249
Ablatio Placentae H G Steele Bluefield—p 260
Pylorospasm Only a Symptom Study of the Hypertonic Infant. A A Shawkey Charleston—p 264
Hypoglycemia P L Dent Point Pleasant—p 268

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

47 223 276 (June) 1935

Diabetes Insipidus as Symptom of Schaumann's Disease J Tillgren —p 223

*Further Note on Relapsing Febrile Nodular Nonsuppurative Panniculitis F P Weber —p 230

Relapsing Febrile Nodular Nonsuppurative Panniculitis—Weber suggests that iodides (or bromides?) may, in certain rare, idiosyncratic persons, give rise to a syndrome resembling "relapsing febrile nodular nonsuppurative panniculitis," and that in one or two of the nodules the panniculitis may proceed to suppuration, it seems, therefore, that the nodules represent local phlegmonous areas—tense with inflammatory edema—which may actually suppurate. He does not mean that cases of relapsing febrile nodular panniculitis are necessarily due to either of these drugs

British Journal of Ophthalmology, London

10 305 368 (June) 1935

New Radiation Lamp for Local Therapy F W Law —p 305

The Trachoma Problem R E Wright —p 309

Campaign Against Trachoma Presidential Address E de Grósz —p 318

Social and Administrative Measures Against Trachoma Zachert —p 321

Legal and Social Measures Against Trachoma in Japan Miyashita —p 323

Trachoma in Glasgow S S Meighan —p 326

Calcium Content of the Sclerotic and Its Variation with Age A. Sorby Kathleen Wilcox and Dora Ham —p 327

Classification of Causes of Blindness A F MacCallan —p 338

Corneal Grafting Reparatative and Optical R E Wright —p 341

British Medical Journal, London

1 1109 1156 (June 1) 1935

Symptomatology of Cardiac Pain G Bourne —p 1109

Paroxysmal Neuralgic Tic as Sequel of Trigeminal Neuritis W Harris —p 1112

Retention of Urine F M Loughnane —p 1115

Acetylcholine in Embolism of Retinal Artery H C Orr and J H Young —p 1119

*Avertin as Complete Anesthetic in Children Survey of Seven Hundred Cases J Boyd —p 1120

Rupture of Normal Spleen in Pregnancy E C Burnett and W H McMenemy —p 1122

Tribrom-Ethanol as Complete Anesthetic in Children—Boyd used tribrom ethanol in the production of complete surgical anesthesia in 700 children from the age of 3 months to 13 years. He found that tribrom ethanol can be given to children as a complete anesthetic with safety, provided a careful watch is kept for danger signals and the patient is treated accordingly. Complete tribrom-ethanol anesthesia in children is better and more suitable than basal anesthesia followed by an inhalation anesthetic. Complete tribrom-ethanol anesthesia in children approaches more nearly the ideal anesthetic. It is much safer in children than in adults, as in the former there is better detoxication and elimination. The best method of administration to produce complete anesthesia is to combine 0.175 Gm. of tribrom-ethanol per kilogram of body weight with morphine and atropine according to age, and from 20 to 30 cc. of procaine hydrochloride as a field block. A 3 per cent solution of tribrom-ethanol is better retained than a 2.5 per cent solution. The depth of anesthesia is best assessed by nipping the skin of the neck and watching the arm for movements. The fall in blood pressure is not of serious moment. Complete tribrom-ethanol anesthesia is contraindicated in extremely young and cachectic children.

Edinburgh Medical Journal

42: 293 336 (June) 1935

*Pernicious Anemia Some Considerations in Regard to Its Nature and Pathogenesis. J P McGowan —p 293

Alexander Hughes Bennett and the First Recorded Case in Which an Intracranial Tumor was Removed by Operation E Bramwell —p 312

Pernicious Anemia—McGowan divides large red blood cell anemias into the megalocytic and the macrocytic. The appearance of the former depends essentially on organic changes

in the bone marrow and is associated with a return to the early embryo form of erythropoiesis, in the latter the bone marrow is healthy and the phenomena in the blood and the general condition are brought about by a deficiency of the antianemic factor, whether due to an absence of intrinsic or extrinsic factor, nonabsorption of the product of their interaction or failure of the liver to elaborate this to the fully formed liver agent. Erythropoiesis as it occurs in the healthy marrow is discussed, and this is followed by a consideration of the process as it takes place in pernicious anemia. The bearing of constitutional predisposition or diathesis together with the factors implicated in the onset of subacute combined degeneration is also discussed, while evidence is adduced to show that pernicious anemia, once it is firmly established, is never recovered from, in the sense that the bone marrow never again returns to normal.

International Journal of Psycho-Analysis, London

10 131 262 (April) 1935

Developmental Study of Obsessional Neuroses E. Glover —p 131
Contribution to Psychogenesis of Manic Depressive States. M. Klein —p 145

Antecedents of Oedipus Complex H. Behn Eschenburg —p 175
Similar and Divergent Unconscious Determinants Underlying Sublimations of Pure Art and Pure Science Ella Freeman Sharpe —p 186.
Enquiry into Material Phenomenon E. Bergler —p 203

Journal of Hygiene, London

35: 161 302 (May) 1935

Scarlatina Immunity in Hongkong L. J. Davis J. S. Guzdar and F. S. Fernando —p 161

Precipitation Reaction Experiments on Multiple Zones G. L. Taylor and Muriel E. Adair —p 169

Demonstration of Increase of Globulin in Diphtheria Antitoxins by Precipitation Reaction G. L. Taylor —p 174

*Variation in Chemotherapeutic Susceptibility Associated with Change in Virulence of Strain of Trypanosoma Brucei C. H. Browning and R. Gulbransen —p 180

Infra Red Radiation and Nasal Obstruction. H. A. E. van Disbeek —p 185

*Human Foot Perspiration, Its Nature and Interactions with Footwear A. Colin Russ —p 199

Modern Views on Silicosis W. E. Cooke —p 207

Testing of Disinfectants in Presence of Organic Matter L. P. Garrod —p 219

Study of Streptococci from Fifty Cases of Bovine Mastitis. H. J. Gibson and R. O. Muir —p 238

Errors Involved in Determination of Cooling Powers and Air Velocities with Katathermometer O. J. Cockerell —p 255

Antigens of Cholera Group of Vibrios A. D. Gardner and K. V. Venkatraman —p 262

*Carriers and Return Cases in Scarlet Fever W. A. Brown and V. D. Allison —p 283

Tuberculin Reactions of the Hongkong Chinese with Especial Reference to Use of Tuberculinoprotein L. J. Davis and J. S. Guzdar —p 300

Change in Virulence of Strain of Trypanosoma Brucei—Browning and Gulbransen perceived that a strain of Trypanosoma brucei, when recently introduced into mice and imperfectly accommodated to this species of host, produced infections relatively resistant to various trypanocidal drugs. When the strain had become highly accommodated and its pathogenicity increased to a maximum as the result of repeated passages, infected animals were readily cured. The mechanism on which this difference in resistance may depend has not been investigated. However, the drugs acted poorly when the strain was in an attenuated state, as shown by the prolonged course of infection and the occurrence of marked fluctuations in the number of parasites present in the blood. Thus the chemotherapeutic response was weak at the time when the host itself was able to exercise an effective resistance. Later, when the host's resistance had become negligible, the curative action of the drugs was pronounced.

Foot Perspiration—Colin-Russ states that perspiration of the human foot is essentially an organic dispersion in sodium chloride solution. Judging from its effects on footwear, it is fairly active chemically and physically. The physical action would be more noticeable in the case of profuse perspiration from a healthy subject, while the chemical character would be markedly evident in abnormal perspiration arising from a pathologic cause. In an average manner, normal perspiration functions chiefly as an aqueous solvent with hydroxy acid characteristics of an initially small extent. In the cumulative action of perspiration the total solids of the emulsion bear

some significance. The clothing of the foot may be of unsuitable material, e. g., as an extreme case patent leather for advanced gouty subjects, or the solvent or chemical interaction with external agents may aggravate trouble following on mere absorption alone through the skin, e. g., aniline or nitrobenzene from wrong shoe dyes has been known frequently, in Holland, France and America, to cause toxic symptoms, through successive solubilization by perspiration. Further work is desirable to establish the presence of enzymes. Failure so far to detect them may probably be the result of limitations of method and conditions.

Carriers and Return Cases in Scarlet Fever—In view of the high carrier rate on discharge from the hospital, Brown and Allison believe that the bacteriologic examination of swabs from scarlet fever patients is of no value in the detection of probable infecting cases. There is a definite relation between the degree of infection, as measured by the profusion of hemolytic streptococci in cultures on discharge, and the likelihood of the patient infecting others. The causal connection between the "infecting" case and the return case is strongly supported by finding the same serologic type of *Streptococcus pyogenes* in the two. A patient who has had complications in the hospital is slightly more liable to become an infecting case than one whose course has been uncomplicated. The age group in infecting cases is from 5 to 10 years. The majority (70 per cent) of the return cases occurred within fourteen days of the arrival home of the infecting case. Overcrowding in the home and the number of the susceptible persons exposed do not appear to be important factors in the production of return cases. A history of tonsillectomy does not appear to bear any important relationship to the occurrence of infecting cases, but the desirability of further investigation of this question and the relation of the condition of the tonsils to their infectivity is indicated. Discharge from the hospital as early as is consistent with a satisfactory clinical condition is shown to be advantageous from the point of view both of the patient and of the hospital administration. The administration of scarlatinal antitoxin is likely to render a patient less liable to convey infection on discharge.

Journal of Tropical Medicine and Hygiene, London

38: 133-144 (June 1) 1935

*Leprosy. Report of Twenty Seven Cases Treated with Anthrax Vaccine J. N. Roussel—p. 133
Definition of Renal Glycosuria S. Vatcher and M. Douglas—p. 137

Leprosy Treated with Anthrax Vaccine—Roussel used anthrax vaccine in the treatment of leprosy, giving more than 700 injections without having had any bad results. He used 0.125 cc. as the initial dose. The doses were spaced five days apart, and the quantity was doubled each time until a dose of 2.5 cc. was reached. A total of 30 cc. was given. It required about ninety days in which to give it. In the average case there is a slight elevation of temperature in the evening of the day of the injection. It rarely reaches 100 F. Only after the vaccine has been stopped for two or three months does anything of interest happen, and this usually manifests itself in two ways. In about two thirds of the cases the lesions gradually fade away, the anesthesia being last to disappear. In the others a multiform erythema develops sometimes of the bulbous type but more often of the nodular type, which is not distinguishable from an ordinary case of erythema nodosum. There are more lesions on the extremities, and the leprosy lesions become much inflamed and painful—so much so that one patient described them as being more painful than a boil or a corn. The temperature range is high (from 103 to 104 F. for about three weeks). Antipyretics seem to have little effect on the temperature, and analgesics seem not to relieve the pain. When the fever subsides the nodules disappear, and in the course of a comparatively short time the lesions of leprosy also disappear together with the anesthesia which latter however takes place more slowly. On careful investigation the author finds that there has been no spread of the disease in the families of those whom he has treated. Of twenty-seven cases in which he is able to say with any degree of certainty what happened to them seventeen were of the maculo-anesthetic,

nine of the tubercular and one of the mixed type. Of the patients with the maculo-anesthetic type, fifteen are apparently well. The patient with the mixed type is apparently well, but the nine patients with the tubercular type have not been benefited. Acid-fast bacilli were found in six of the maculo-anesthetic cases, the nine tubercular cases and the one mixed case. Two of the patients with the maculo-anesthetic type are still under observation. They have made remarkable progress.

Lancet, London

1 1257-1312 (June 1) 1935

*Observations on Abdominal and Circulatory Phenomena of Allergy J. A. Ryle—p. 1257
Biochemical Basis of Thyroid Function C. R. Harington—p. 1261
Phosphatase in Fractures E. H. Botterell and E. J. King—p. 1267
Obliterative Arterial Disease Treated with Muscle Extract M. Schwartzman—p. 1270
*Imu Malady of the Ainu Y. Uchimura—p. 1272

Abdominal and Circulatory Phenomena of Allergy—Ryle defines certain abdominal syndromes and circulatory disturbances that may be reasonably regarded as expressions of the allergic state and, on a purely clinical basis, suggests criteria without which one should be unwilling to accept them as genuinely allergic. He believes that no abdominal or circulatory disturbance should be labeled "allergic" unless two or preferably more of the following postulates are fulfilled. 1 The symptoms should bear close comparison with those observed in human anaphylaxis or serum sickness. 2 There should be a history of idiosyncrasy to some food, beverage, tobacco, drug or other extraneous substance. 3 There should be either in conjunction or alternating with the abdominal or circulatory episodes other accepted allergic phenomena, such as asthma, hay fever, urticaria or angioneurotic edema. 4 There should be a family history of these disorders. 5 The disturbances should show some such intermittence or periodicity as obtains with other allergic disorders. 6 Every care should have been taken to exclude organic disease. There is little to distinguish the circulatory phenomena and subjective sensations of some vasovagal attacks (Gower's syndrome) from those of anaphylactic shock, and cases of Gower's syndrome may create, at the time of the attack, an equivalent degree of alarm. A case of Gower's syndrome following a second inoculation of tetanus antitoxin is described.

Medical Journal of Australia, Sydney

1 607-638 (May 18) 1935

Behavior of Infectious Diseases in Greater Melbourne During Past Twenty Five Years F. V. Scholes—p. 607

1 639-670 (May 25) 1935

Mortality of Appendicitis J. C. Storey—p. 639
Cause of Death in Hospital Practice. Review of Three Hundred and Eighty Hospital Autopsies J. V. Dubig—p. 647

Practitioner, London

134 705-820 (June) 1935

The Management of Normal Labor C. Berkeley—p. 705
The Expectant Mother. Diet and Regimen L. Williams—p. 721
Use and Abuse of Forceps in Midwifery C. S. Lane-Roberts—p. 731
Treatment of Puerperal Sepsis G. F. Gibberd—p. 738
Obstetrics in Uganda A. Cook—p. 748
The Neurotic's Physical Symptoms. Their Early Recognition H. Wilson—p. 762
Depression E. Snowden—p. 772
Ear Disease as Menace to Life with Particular Reference to Life Insurance T. Guthrie—p. 780
Therapeutic Uses of Gold G. Slot—p. 788
Favorite Prescriptions VI. National Formulary for National Health Insurance Purposes E. L. Lilley—p. 798

South African Medical Journal, Cape Town

3: 329-364 (May 25) 1935

Drainage of Abdominal Abscesses M. A. Laurie—p. 331
Radiation Therapy for Uterine Conditions H. N. Krige—p. 333
The Royal Australasian College of Surgeons C. F. Saint—p. 337
Prevention and Treatment of Abortion A. S. Wells—p. 340

Tubercle, London

16 385-432 (June) 1935

Bovine Pulmonary Tuberculosis in Man. Twenty Six Cases from Copenhagen F. Tobiesen K. A. Jensen and H. C. A. Lassen—p. 385
What Is Silicosis? P. Heffernan—p. 397
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Results of Artificial Pneumothorax in American Sanatoriums A. Peters

CURRENT MEDICAL LITERATURE

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Paris Médical

- 1: 553 576 (June 15) 1935
 Infant and Orthopedic Surgery in 1935 (Annual Review) A Mouchet
 and C Roederer—p 553
 *Volkmann's Paralysis E Sorrel—p 569
 Neurogenic Arthropathy Wrongly Diagnosed Three Cases C
 Roederer—p 573

Volkmann's Paralysis—Sorrel describes a method of treating Volkmann's paralysis by means of shortening the antibrachial skeleton. He makes an osteotomy in chevron form of the two bones of the forearm using an electrical saw. The shortening is made sufficient to allow complete extension of the fingers. At a previous or subsequent operation the arterial bifurcation is explored and in cases in which the arterial segment is definitely altered resection is practiced.

Presse Médicale, Paris

- 43: 873 896 (June 1) 1935
 Bronchiectasis and Thrombosis of Bronchial Artery P Anicault and J M Lemoine—p 873
 *Serotherapy of Gangrenous Appendicitis and Peritonitis M Weinberg and M Laquière—p 877

Serotherapy in Appendicitis and Peritonitis—Weinberg and Laquière discuss the use of serums active against the dominant microbes of gangrenous appendicitis and peritonitis. For the last three years they have used a mixture of their antgangrenous serum and an anticolon bacillus serum and a complementary one. The latter is designed to combat the secondary microbes, aerobic and anaerobic which are generally slightly pathogenic but which in certain cases play an important part in the evolution of grave appendicitis. These are the enterococci streptococci Bacillus ramosus Staphylococcus parvulus Bacillus fusiformis B funduliformis and so on. Forty patients have been treated by this mixture with one fatality. From 60 to 80 cc has been injected intraperitoneally and an equal amount intramuscularly before the end of the operation. In the majority of cases the disease is relieved the day after the operation. When this method is employed by others the authors advise that the mixture be used only in the presence of grave complications of appendicitis viz toxemia or peritonitis. The mixture should consist of 30 cc of polyvalent antgangrenous serum 40 cc of anticolon bacillus serum and 10 cc of complementary serum. Equal amounts should be injected intraperitoneally and intramuscularly. If the patient is in an especially serious condition the injection should be intravenous. To avoid anaphylactic phenomena the injection should be made at the end of the operation while the patient is still under the influence of narcosis. The authors believe that treatment with this mixture should form an obligatory part of the surgeon's therapeutic arsenal.

- 43: 913 936 (June 8) 1935
 Permanent Arterial Hypertension and Endocrine Glands P Hallbron and H P Klotz—p 913
 *Transformation of Osteogenic Disease into Chondrosarcoma Robert Didier—p 915

Transformation of Osteogenic Disease into Chondrosarcoma—Robert-Dider reports a case of transformation of a thoracic exostosis into a chondrosarcoma in a woman aged 31, who had a massive exostosis of the anterior thoracic wall which had grown extensively for three months. Roentgen examination revealed an osseous tumor at the lower chondrocostal border of the left anterior side and the lower portion of the sternum. The roentgenogram had a characteristic nonhomogeneous appearance alternately clear and opaque and of irregular contours which is the usual one observed in chondrosarcomas. The tumor was excised. Histologic examination showed a chondro osteosarcoma with marked predominance of cartilage formation. The zones showing malignant changes were rare but entirely characteristic where they were encountered. There was a later recurrence and the tumor was removed again. Histologic examination at this time showed a fibrochondrosarcoma with polymorphous cells. The author concludes that early surgical ablation of exostoses is to be advised in order to avoid possible transformation into a malignant tumor.

Polichinico, Rome

- 42 1179 1234 (June 17) 1935 Practical Section
 Syphilis F Corelli—p 1179
 Roentgen Treatment of Polyneuritis Following Arspenamine Treatment of Posttraumatic Intracranial Abscess Compressing Cerebellum Emptying by Perforating Aspirating Needle Case G Egidi—p 1192

Liver Therapy in Polyneuritis—Corelli reports the case of a syphilitic woman, aged 23, who developed diffuse polyneuritis with motor paralysis after receiving arspenamine amounting to 315 Gm. Further injections of arspenamine caused an aggravation of the symptoms. The liberal administration of liver after the discontinuance of arspenamine resulted in the cure of the patient within six weeks. She was given 200 Gm by mouth daily and large doses of liver extract parenterally. As a complementary treatment the patient was given strychnine sodium salicylate and sodium iodide in daily doses of 0.003 Gm 3 Gm and 4 Gm respectively. The author advises the liberal administration of liver in early treatment of herpes zoster polyneuritis radiculitis myelitis and encephalitis following the arspenamine treatment of syphilis. He proved in his experiments that liver extracts have antitoxic properties. Of two lots of rabbits intoxicated with arspenamine those in the first lot which were given injections of liver extract, recovered sooner than the controls and those in the second lot, which received liver extract simultaneously with arspenamine, were able to stand larger doses of arspenamine (even larger than the fatal doses) than the controls. He also obtained satisfactory results from injections of liver extract in a clinical case of agranulocytosis and one of dermatitis, following the treatment with arspenamine. He believes that an early and intense liver treatment is indicated in the pathologic conditions that complicate the gold treatment as well as in toxic polyneuritis (lead and alcohol polyneuritis) and in the general toxic symptoms of the complications. His belief, although not as verified is based on the clinical and probably pathogenic analogy that exists between the complications of arspenamine treatment and those of other forms of chemotherapy especially those of gold treatment. The liver treatment acts by an antitoxic mechanism in these complications.

Semana Médica, Buenos Aires

- 42 1689 1764 (June 13) 1935 Partial Index
 Pelvic Presentation in Labor in Mature Primiparas Study Based on Five Hundred and Seventy Eight Cases J A Beruti—p 1689
 Primary Tuberculous Infection in Children J C Navarro and O J Marchilli—p 1696
 Coexistence of Gastroduodenal Ulcer and Biliary Lithiasis A Robbians and C A Tanturi—p 1702
 Retrovesical Hydatid Cyst in Men Cases G Iacapraro—p. 1720
 Gold Therapy in Pulmonary Tuberculosis in Adults Results E. A Paz—p 1737

Gastroduodenal Ulcer and Biliary Lithiasis—Robbians and Tanturi advise that a careful gastroduodenobiliary examination be made during cholecystectomy in order to determine whether there is a coexisting gastroduodenal ulcer with biliary lithiasis. They found this to be the case in twelve of 1,400 patients on whom the operation was performed. The authors believe that there is a pathogenic relation between biliary lithiasis and the type of gastroduodenal ulcer described by Judd as ulcerogenic duodenitis. The pathogenic mechanism of ulcers of this type is as follows. The modifications in the nature and mechanism of regulation of the bile in biliary lithiasis produces duodenitis in which pyloric spasm originates. The lack or insufficiency of the physiologic duodenal reflux impeded by the pyloric spasm disturbs the acid-base balance of the gastric secretion. The gastroduodenal reflux impeded by the sensitivity to the action of the gastric secretions and not being protected by alkaline secretions is acted on by the gastric secretions resulting in the formation of ulcers. The pathogenic theory of the authors is based on the results of experimental gastroduodenal ulcer after derivation of the bile in which the presence of duodenitis was constant, and also on the results of Judd's histologic studies of ulcerogenic duodenitis which seem to be superimposed on those obtained in experimental gastroduodenal ulcer by derivation of the bile.

Beitrage zur klinischen Chirurgie, Berlin

101 513-672 (June 5) 1935 Partial Index

- Significance of Cholecystostomy for Surgery of Biliary Tract H. Floerken and D. Kretsch —p 513
- *Disturbances in Internal and External Secretion in Injuries of Pancreas G. Jorns —p 520
- Roentgenologic Visualization of Fossa Intercondyloidea and Its Significance in Diagnosis of Knee Joint R. Kaiser —p 528
- Treatment of Protruding Intermaxillary Bone in Case of Cleft Palate K. Luhmann —p 539
- Masked Fractures of Neck of Femur V. Aalkjaer —p 548
- *Experimental Studies on Relations Between Vitamins and Healing of Wounds H. J. Lauber —p 565

Disturbances in Secretions of Pancreas—Jorns names three tests that have gained importance in the diagnosis of acute disorders of the pancreas (1) the dextrose tolerance test, (2) the determination of the diastase content of the blood and urine and (3) the demonstration of atoxyl-resistant lipase. Then he gives his attention to disturbances in the internal and external secretion of the pancreas in injuries of that organ, describing the injuries caused by a blunt force. He discusses isolated subcutaneous transverse rupture of the pancreas, posttraumatic necrosis of the pancreas, pancreatitis and the lesions resulting from contusions of the pancreas. He thinks that every injury of the pancreas leads to a temporary functional impairment of the organ. It has been proved by experimental and clinical observations that such functional disturbances not only develop in cases in which ruptures of the organ result but are even more pronounced in cases of crushing and contusion. A stasis of short duration and circulatory disturbances in the organ may produce a temporary impairment of the islands and hyperglycemia. Aberration of the diastase may be produced by passive congestion of the secretion within a few lobes of the gland. Lipase is liberated and resorbed if glandular cells are destroyed. The determination of the lipase is considered one of the most sensitive tests. The author emphasizes that, if in case of a trauma produced by the action of a blunt force on the upper part of the abdomen one or all three of the aforementioned functional tests are positive, the pancreas is involved, but the tests do not indicate the extent of the involvement. The advisability of an operation cannot be determined on the basis of an existing hyperglycemia or an aberration of the ferments. However, if a surgical intervention is done in case of demonstrated functional disorders of the pancreas, the organ should receive especial attention during the operation. The author thinks that an involvement of the pancreas alone or together with other organs is more frequent in case of blunt injuries of the abdomen than is commonly assumed or detected in the course of the clinical examination. However, injuries of the pancreas exclude by no means the existence of injuries of the spleen, the liver or other organs. Moreover, although the positive outcome of the functional tests indicates the involvement of the pancreas the negative outcome does not exclude the possibility of an impairment. But, although the diagnostic value of the functional tests is limited in injuries of the pancreas, they may be of great help in the further course of abdominal injuries produced by a blunt force, in that they indicate the retrogression of the organic changes. Moreover, the development of a posttraumatic pancreatitis will be more readily recognized with their aid.

Relations Between Vitamins and Healing of Wounds

—Lauber observed in animal experiments that the local application of vitamin A as a rule produces no acceleration in the process of wound healing. In the case of concentrated application of the vitamin he even noticed a slight retardation in the process of wound healing. Vitamin B₁ and vitamin C produce a slight retardation in wound healing when given in comparatively large doses. Vitamin D produces a slight acceleration of the healing process when administered in a low concentration when it is given in moderate doses vitamin D has no effect on the healing of wounds and when given in concentrated doses it even retards the healing process. The acceleration of the healing process is, however never as convincing as following the oral administration of small doses of vitamin A. The oral administration of vitamin D has no effect whatever on the wound healing process. The author evaluates the use of vitamin ointments in the treatment of wounds. He deprecates the lack of definite statements regarding their vitamin content and

considers inadvisable the use of ointments with numerous components, because it is never certain whether the one or the other of the various components may not be harmful for the wound. He stresses the importance of determining the cause of a poor healing tendency of a wound and shows that the treatment must be adapted to this cause. For instance, if diabetes mellitus or another metabolic disorder exists, it is necessary to treat this condition. If, on the other hand, a vitamin deficiency exists, the administration of vitamins will doubtless be helpful.

Deutsche medizinische Wochenschrift, Leipzig

81:941-984 (June 14) 1935 Partial Index

- *Therapeutic Action of Methylene Blue in Dyspnea Resulting from Infiltrative Pulmonary Processes. H. Schlunghaus —p 945
- Treatment of Asthma with Ephedrine Preparation H. W. Bansi —p 947
- *Indications for Treatment with Hematoporphyrin Hühnerfeld —p 949
- Histidine in Treatment of Gastric Ulcer M. Ratschow —p 953
- Pentnucleotide in Agranulocytic Blood Reaction. E. von Wichert —p 965
- *Experiences with Cod Liver Oil Ointment H. Lucke —p 967

Therapeutic Action of Methylene Blue in Dyspnea Resulting from Pulmonary Processes—Schlunghaus, after pointing out that Ehrlich used methylene blue in 1885 for studies on the oxygen requirements of the organism, and that a number of American authors in recent years obtained favorable results with methylene blue in carbon monoxide and cyanide poisoning, reports that he used intravenous injections of 10 cc of a 1 per cent solution of methylene blue (methylthionine chloride) in conditions in which there was oxygen deficiency, particularly pneumonia. He administered the substance during the stage of severe cyanosis and dyspnea. The injection was made slowly. Shortly after the injection, or during it, a considerable improvement became noticeable. The cyanosis was lessened, the respiration was improved and the patients stated that they felt better. The author employed this treatment in fifteen cases, some of which he describes in detail. The action of one injection generally lasted for about twenty-four hours. After that, an increase in the cyanosis made another injection necessary. In some of the patients, however, a single injection was sufficient to tide them over the critical period. In one patient, with severe bronchopneumonia, the treatment failed and in several others the improvement did not immediately follow the administration of the methylthionine chloride and therefore cannot be definitely ascribed to it. The author concedes that its mode of action is not fully understood as yet, but he thinks that, even though it may not influence the disease process as such, it will serve its purpose if it frees the patient from an extremely painful condition.

Treatment with Hematoporphyrin.—Hühnerfeld states that his first therapeutic experiments with hematoporphyrin were based on the assumption that, because of its photodynamic properties, it might influence the sympathetic centers by way of the sensitization of the skin and perhaps exert a favorable influence on the melancholic and the endogenous depressive syndromes. These expectations were realized to a considerable extent. The author's clinical observations indicate that small doses of hematoporphyrin exert a favorable influence on the melancholic and endogenous depressive syndromes without causing undesirable secondary effects. He cites reports from the literature which indicate that his favorable results with hematoporphyrin have been investigated by a number of workers, among them Italian, American and French authors, who corroborate his observation that hematoporphyrin produces excellent results, and the majority agree with him that the treatment is superior to the treatments ordinarily employed in melancholia and depression. The treatment proved ineffective in only about 20 per cent of the cases. The author recommends the intramuscular administration of hematoporphyrin for the severest cases and oral medication for the others. The hematoporphyrin treatment makes it possible to restrict during the day the administration of morphine and barbituric acid preparations even in the severest cases, in cases of moderate severity, these sedatives may become entirely unnecessary.

Experiences with Cod Liver Oil Ointment.—Lücke employed cod liver oil ointment in numerous cases of paronychia, furuncle, carbuncle, abscesses and infected wounds and found

the treatment highly effective. He cites several cases, such as a second degree burn of the entire forearm, a trophic ulcer and an old fistula, in which the favorable effect of the cod liver oil ointment was especially noticeable. As a rule, the bandages were changed after forty-eight hours. This proved necessary especially in the suppurating processes. The author recommends cod liver oil ointment for the minor surgery that is done by the general practitioner.

Klinische Wochenschrift, Berlin

14 881 912 (June 22) 1935 Partial Index

Mechanism and Site of Action of Thyroxine G Mansfeld—p 884
Successful Method for Vaccination Against Poliomyelitis J A Kolmer—p 889

*Intensity of Action of Insulin in Healthy and Sick Persons F Meythaler and G Schroff—p 893

Pathologic Granulations of Finely Granulated Leukocytes H A Kurz—p 894

Secondary Thorium Storage in Bone Marrow G Barkon and F Kienast—p 896

*Vitamin C in Treatment of Gynecologic Hemorrhages E Junghans—p 899

Efficacy of Insulin—Meythaler and Schroff examined the efficacy of insulin in persons without metabolic disturbances and in patients having hepatic disturbances, pernicious anemia, cachexia of unknown origin, acromegaly, Cushing's disease and Addison's disease. They administered 1 unit of insulin per kilogram of body weight. In the patients with normal metabolism, the action was constant with regard to duration and intensity. The blood sugar content approached hypoglycemic values, but there were no symptoms of hypoglycemia. The insulin action subsided again in from sixty to ninety minutes. The action of the insulin in the patients differed greatly from that in normal persons. In patients with hepatic disturbances the blood sugar reducing action of the insulin is much greater than in normal persons and the return to normal blood sugar values is extremely slow. The intensity of the insulin action depends on the severity of the hepatic disturbance. The insulin action was strongest in parenchymal impairments of the liver. In pernicious anemia the insulin action was likewise prolonged and intensified. In acromegaly the action of insulin proved subnormal, the blood sugar returning to normal a short time after the injection. The action of insulin was extremely intense in a patient with the symptoms of Simmonds' cachexia. In Cushing's disease and in Addison's disease the insulin action was likewise far above the normal. In evaluating their observations, the authors point out that the injection of insulin produces a disturbance in the carbohydrate metabolism, the duration and intensity of which indicate the efficacy of insulin action. To overcome this disturbance it is necessary that all organs which exert a regulatory influence on the sugar metabolism function normally. The authors differentiate between organs, such as the hypophysis, the pancreas and the adrenals, which exert a superordinated regulatory action on the carbohydrate metabolism, and the organ in which the regulatory and counterregulatory processes take place, the liver. Their studies revealed that disturbances in both types of organs produce changes in the intensity of insulin action.

Vitamin C in Treatment of Gynecologic Hemorrhages—Junghans points out that the parenteral administration of vitamin C (cevitamic acid) arrests capillary hemorrhages. It has been observed that the intravenous injection of cevitamic acid checks the hemorrhages in hemorrhagic diathesis and in hemophilia as well as the suffusions in scurvy. The fact that cevitamic acid arrests hemorrhages of various origins induced the author to try it in gynecologic hemorrhages. The women were given in the morning and in the evening an intravenous or an intramuscular injection of 50 mg of cevitamic acid. The author treated a total of thirty-five women, the majority of whom had menopausal metrorrhagia. In thirty-three of these women the hemorrhages ceased on the fourth or, at the latest, on the sixth day of treatment. In two patients the cevitamic acid injections remained ineffective. The mode of action of the cevitamic acid is still unknown, but the author believes that a vascular action is the chief factor. He emphasizes the harmlessness of the cevitamic acid.

Monatsschrift f Geburtshilfe u. Gynäkologie, Berlin

DD 257 320 (June) 1935

Occurrence of Corpus Luteum Hormone K. Ehrhardt—p 257

*Estimation of Highest Number of Uterine Contractions H Presser—p 260

*Evolution of Finger Prints of Twins M Bak—p 271

*Influence of Anesthesia and of Surgical Interventions on Number and Function of Leukocytes H Eufinger and W Kiltz—p 279

Postmenopausal Hemorrhages P N Logwinsky—p 286

Further Observations on Therapy of Eclampsia J N Volkow—p 290

*Problem of Enucleation of Myomas During Gestation F Rhemann—p 298

Estimation of Number of Uterine Contractions—Presser calls attention to Frey's suggestion, according to which the counting of the uterine contractions is of vital importance for the prognosis of the delivery. Frey gives his attention chiefly to the total number of uterine contractions and not to the strength of the individual contractions. He has computed so-called highest numbers of labor pains for the various stages of the process of parturition, and he thinks that, after these highest numbers have been exceeded, the spontaneous delivery of a living child can no longer be expected. Frey also puts great stress on the importance of the time of rupture of the bag of waters. The author decided to reexamine Frey's results. He made careful observations on 400 parturient women, 100 primiparas and 100 multiparas without premature rupture of the bag of waters and on 100 primiparas and 100 multiparas with premature rupture of the bag of waters. The pelvic measurements were normal in all these women. The author found that the highest numbers of uterine contraction were exceeded thirty-six times. During the period of dilatation the highest number was exceeded fourteen times without a necessity arising of terminating the delivery by an operative intervention. Moreover, the author's expectant attitude did not result in the death of any infant, and the mothers likewise sustained no injury. Forceps delivery was resorted to in only six of the remaining twenty-two cases in which the highest number of uterine contractions was exceeded. If Frey's rule regarding the highest number of uterine contractions had been followed, forceps delivery would have been resorted to unnecessarily in thirty cases. The author concludes that the counting of labor pains is not more reliable as an indicator for the prognosis of delivery than is the duration of the process of parturition, the latter factor being also of some significance for the outcome. He considers it unjustified to make the number of uterine contractions the only basis of the prognosis and to disregard the duration and the frequency of the labor pains. He considers Frey's results a numerical corroboration of the well known fact that a long duration of the delivery makes the prospects for the child more unfavorable. He rejects the possibility of a definite rule that applies to every case of delivery.

Finger Prints of Twins—Following a brief review of the history of dactyloscopy, Bak reports the results of his studies on sixty-two pairs of twins. He observed certain similarities but never complete identity between the finger prints of twins. The similarity was greatest and most frequent in uniovular and equisexual twins. The similarity was less marked and applied to a smaller number of fingers in the binovular equisexual twins and still less in the binovular twins of opposite sexes. The author emphasizes that differentiation of the dactylograms is always possible in the binovular as well as in the uniovular twins.

Influence of Anesthesia and of Operation on Leukocytes—Eufinger and Kiltz found that ether inhalation anesthesia always produces a leukocytosis, which reaches its maximum from three to four hours after the anesthesia and completely disappears within twenty-four hours. If an aseptic operation is performed under ether anesthesia there likewise follows a leukocytosis, which reaches its maximum in from three to four hours and subsides after five days. Ether inhalation narcosis does not influence the adhesiveness of the leukocytes. The adhesiveness fails to change in spite of the leukocytosis. An operation is usually followed by a reduction in the adhesiveness, increasing and reaching its maximal value on the third or fourth day after the operation. This greater functional activity of the leukocytes is thus at its height at

the time when the preceding leukocytosis has just subsided. Beginning with the fifth day the functional increase subsides again, and it reaches its initial value on the ninth or tenth day. The occurrence of the maximal adhesiveness of the leukocytes at a time when postoperative thromboses are most frequent indicates a causal connection between the two phenomena. The change in the adhesiveness seems to be of greater diagnostic significance than the number of leukocytes.

Enucleation of Myomas During Gestation.—Rbemann points out that the advisability of an intervention in case a pregnancy is complicated by a myoma is still in dispute. Some recommend interruption of the pregnancy, others advise enucleation of the myoma with preservation of the pregnancy and still others await the delivery and after that consider an intervention. The author reaches the conclusion that the small, chiefly subserous myoma nodules, which cause no trouble, do not require an intervention during or outside of pregnancy. However, in case of a larger unfavorably located myoma that produces symptoms, enucleation is advisable during pregnancy, particularly in younger women, who should not be exposed to the eventuality of an extensive, sterility producing operation during pregnancy, delivery or the puerperium under much less favorable conditions. Enucleation during pregnancy is better for these patients even if the enucleation is followed by an abortion, but it may be hoped that the pregnancy continues or that the woman may become pregnant again and carry the pregnancy to term. The author thinks that particularly in the case of cervical, subperitoneal myomas the protrusion during delivery should not be left to accident, since these especially threaten the further course of the pregnancy and often necessitate later the removal of the uterus. In case of necrosis and infection of the tumor during the puerperium, it is inadvisable to await the spontaneous evacuation of the softened focus, for, even in case of a favorable outcome, the woman is exposed to weeks or months of illness, even if the acute danger to life, connected with the disintegration, has passed. At any rate the author advises that a woman who has undergone enucleation of a myoma be kept under careful observation during pregnancy and that, because there is danger of rupture of the uterus, the delivery be done in an institution.

Münchener medizinische Wochenschrift, Munich

82 939 978 (June 14) 1935 Partial Index

- *Umbilical Colic, Lymphangitic Form of Appendicitis and Mesenteric Lymphangitis. B. O. Pribram—p. 942
- Epidemiologic Estimation of Diphtheria Bacilli Carriers from Standpoint of Types of Bacilli. K. W. Claiberg—p. 944
- Problem of Sterilization of Patients with Mental Disease. H. Salm—p. 947
- Frequent Mistakes in Feeding of Nurslings. E. Moro—p. 949
- Electrophoresis with Bee Venom. H. Rutenbeck—p. 957

Lymphangitic Form of Appendicitis.—Pribram calls attention to cases that are diagnosed as acute appendicitis which present the following symptomatology. The disorder begins suddenly with fever, general debility and pains chiefly around the umbilicus which occasionally have the character of umbilical colic and in other cases spread in the direction of MacBurney's point. The leukocytes are increased. If a thorough history is taken in such cases, a high incidence of throat inflammations is frequently detected. In some cases the abdominal symptoms following the operation progress and may terminate fatally. The operation discloses slight changes in the appendix but hyperemia of the cecum and of the last loop of the ileum and hyperemia and swelling of the mesenteric lymph nodes. Inflammation of the mesenteric layers and of the mesenteric lymph nodes with subsequent hyperemia of the serosa of the lower portion of the ileum predominates in the pathologic aspects of this disorder. The author applies to this disorder the name lymphangitic form of appendicitis. The patients who recover after the operation return later with complaints about renewed pains in the region of the umbilicus and fever. The leukocyte values are again increased and this relapse begins probably with a throat infection. These attacks may recur often, and, if a new operation is decided on, it discloses adhesions and scars in the mesenteric layers of the ileocecum, that is a mesenteritis. These so-called adhesion

operations are rarely successful. A removal of the tonsils, however, often results in the prompt disappearance of the symptoms. The author advances the following theory regarding the etiology. First there is an infection of the tonsils, usually with a streptococcus strain that has a lymphotropic tendency. During the acute angina the saliva with its bacterial content is swallowed, reaches the appendix and causes an inflammation of the appendix, which spreads to the mesenteric lymph channels, producing mesenteric lymphadenitis. The swollen lymph nodes in the root of the mesentery cause the pains around the umbilicus. Thus the umbilical colics are really pains in the lymph nodes. The author considers the umbilical pains a guiding symptom in the diagnosis of lymphangitic appendicitis and of mesenteric lymphangitis. If the condition has been definitely identified, the appendectomy may be postponed and a tonsillectomy may be done as soon as the anginal symptoms have subsided. If after that the abdominal symptoms persist, the appendix should be removed.

Zeitschrift für Kinderheilkunde, Berlin

57 185 288 (May 21) 1935 Partial Index

- *Determination of Inorganic Phosphates in Smallest Quantities of Serum. E. Müller—p. 243
- *Determination of Skin Resistance in Healthy Children of Various Age Groups. R. Ackmann—p. 251
- Increase in Milk Production Effected by Addition of Protein to Food. G. Pfeiffer—p. 261
- Action of Malaria on Amount and Constituents of Circulating Blood. G. von Petranyi and Ilona Fischer—p. 269
- Relapse of Measles. B. de Rudder—p. 274
- *Prevention of Scarlet Fever Nephritis. Y. Hiro—p. 278

Determination of Inorganic Phosphate in Serum.—Müller stresses the importance of the inorganic serum phosphates for the diagnosis of rickets and for the estimation of its cure but points out that it has the disadvantage that comparatively large quantities of serum are required so that sinus or venous puncture is necessary. The methods of Bell-Doisy-Briggs and of Tisdall, although devised for small amounts of serum, have not found general application because of difficulties in the method. The introduction of rapid and intensively acting reducing agents and the use of the step photometer have eliminated many of the difficulties. After enumerating the requirements of a reagent, the author evaluates several and shows that eikonogen (aminonaphthol sulphonate) and amidol (diaminophenol hydrochloride) are most suitable but shows that, if certain factors are given proper attention, metol (methylpara-aminometacresol sulphate) may also be used. He gives a detailed description of the technic and a tabular report of some of the results he obtained with the three aforementioned substances.

Skin Resistance in Children.—Ackmann points out that the firmness, elasticity, tension and turgor of the skin permit conclusions regarding the general condition, the circulation and the renal function. Moreover, the age of a person causes changes in the skin, which become manifest in the factors mentioned. The skin of children reacts to changes in the organism more noticeably than that of adults. The author reports studies he made on the skin by means of the skin resistance meter devised by Jochims. The instrument measures the thickness of the skin fold, the total resistance and the retractility or the elastic resistance of the skin. The author made his tests on seventy-five children, including young infants and children ranging in age up to 14 years. He found that Jochims' skin resistance meter is suitable only for children up to 12 years of age. In older children the thickness of the skin fold and its tension exceed the capacity of the apparatus. Measurements made on different parts of the body differ considerably and, in order to obtain results that can be used for comparisons the tests should be made at the same site, preferably on the abdomen below the umbilicus. The author observed that the normal values change with the advancing age of the child. This is especially noticeable in young nurslings. During the first two months of life, the thickness of the skin fold changes from 4 to 5 mm., the total resistance of the skin fold from 150 to 180 Gm. and its retractility from 65 to 90 Gm. During the succeeding months the values

remain largely the same, thickness averaging between 5 and 85 mm, total resistance between 190 and 220 Gm and retractility between 90 and 110 Gm. Up to the twelfth year the values are approximately the following: thickness about 5 mm, total resistance from 200 to 230 Gm and retractility from 90 to 110 Gm. The thickness has a tendency to decrease, particularly during the periods of the growth in length, the increase in the total resistance is hardly noticeable, and the retractility increases slightly more. In children who are ill all values are reduced (reduction in the tension of the tissue, in the water content and in the fat layer). In convalescent children the gradual improvement is clearly noticeable in the values that are determined with the skin resistance meter. The total resistance reaches normal values sooner than the retractility. The author thinks that measurements with the skin resistance meter are valuable in determining the progress of convalescence and may eventually have a diagnostic value.

Prevention of Scarlet Fever Nephritis—Hiro emphasizes that the behavior of the liver plays a part in the pathogenesis of scarlet fever nephritis and that measures which protect the hepatic function are helpful in the prevention of scarlet fever. The opinion of some investigators that scarlet fever nephritis is more frequent in children who are kept on a milk diet probably arises from the fact that the milk diet with its high fat content exerts an unfavorable influence on the impaired liver and reduces its detoxicating capacity on the endotoxins and thus favors the development of nephritis. The author found that of the children with scarlet fever who were treated with a liver preparation 3 per cent developed nephritis, while of those who were not treated with it 13 per cent developed nephritis.

Acta Radiologica, Stockholm

10: 429-528 (June 15) 1935 Partial Index

- *Roentgenologic Observations Regarding Pulmonary Silicosis in Porcelain Workers G. Jonsson—p. 431
- Roentgenologic Aspects of Pneumalosis Cystoides Intestinalium Gosta Cråberger—p. 439
- Behavior of Liver and Spleen to Roentgen Irradiation Following Intravenous Injection of Colloidal Thorium R. Gilbert R. Junet and S. Kadrnika—p. 445
- Contribution to Roentgen Diagnosis of Gallstone Ileus Å. Schele—p. 456
- *Experiments on Combined Heat (Diathermy) and Roentgen Therapy of Malignant Tumors K. Overgaard—p. 461
- Studies on Possible Biologic Action of Cosmic Radiation R. B. Engstrand and N. H. Moxnes—p. 485

Silicosis in Porcelain Workers—Jonsson's report is based on roentgenologic studies on 236 porcelain workers. In the mildest cases there is only a diffuse increase in the perivascular connective tissue, but later on there appear nodules consisting of "dust cells" and hyaline connective tissue. To begin with these nodules are the size of a pin head, but they gradually become larger and attain a diameter of from 4 to 5 mm. They increase in number, and finally large indurated areas develop, which have a strong tendency to contract. In the later stages of silicosis emphysema develops between the fibrotic areas. A common condition following these pulmonary changes is hypertrophy and dilatation of the heart, especially of the right ventricle. The silicotic changes occur most abundantly in the middle parts of the lungs, i. e., in the inferior part of the superior lobe and the superior part of the inferior lobe. The roentgenogram in silicosis reflects rather clearly the pathologic anatomic changes. From the roentgenologic point of view it is usual to classify the cases of silicosis into three stages. Stage I is characterized by lesions which give a roentgenogram that shows delicate finely flecked shadows in the center of the lung fields and an increase in the fine shadows from the hilus. To stage II are assigned cases with larger nodular shadows and to stage III cases exhibiting large fibrotic areas and advanced contraction. The author's material is distributed over the different groups as follows: no signs of silicosis eighty-eight cases, suspected silicosis, eleven cases silicosis, stage I eighty-one cases silicosis, stage II, thirty-seven cases and silicosis stage III nineteen cases. In stage III the hilus shadows are usually no longer visible or else they are light

and vague. Various explanations have been given of this phenomenon. The author thinks that the disappearance of the hilus shadows in stage III is due to the fact that the silicotic dust gives rise to the same changes in the hilus as in the parenchyma, namely, extreme contraction. That this could contribute to a reduction in the hilus shadows seems probable. Moreover, owing to the extreme shrinkage in the pulmonary parenchyma, strong traction is exerted on all parts of the lungs in the direction of the center of contraction, which is generally situated in the posterior lateral parts of the lungs on a level with, or perhaps above, the hilus. The contraction causes extreme deformation of the lungs and of the mediastinum, and thus the pulmonary hilus is likewise changed in form and position. In all the severe cases of silicosis observed by the author, the elements which produce the normal hilus shadows are displaced. Under such circumstances the normal configuration of the hilus is entirely changed and is consequently difficult to recognize in the roentgenogram. The lateral picture is especially characteristic in silicosis. The changes are chiefly situated in the posterior parts of the lungs, corresponding to the areas of distribution of two specific bronchi.

Combined Diathermy and Roentgen Therapy of Malignant Tumors—Overgaard, after citing an earlier report in which it has been proved that transplantable tumors in mice can be influenced by diathermy, points out that it might be advisable to combine the action of diathermy with ray therapy. He made experiments on five groups of white mice. The animals were inoculated with mouse sarcoma. After the inoculated tumors had reached a suitable size (approximately 1 by 0.3 by 0.4 cm) the animals were divided into five groups. One group, the controls, were left without treatment, another group was treated with a moderate amount of roentgen rays, a third group was exposed to heat treatment in the form of diathermy, a fourth group was first treated with diathermy and on the following day with roentgen rays, and in the last group the order of the two treatments was reversed. The doses were relatively small and subtherapeutic, for these experiments were made only to determine the possible value of such a combination therapy and did not aim at the determination of the doses necessary for therapeutic action. The author discusses the results obtained in the different groups of animals. He gained the impression that the combination therapy provided essential advantages in that it combines a strong tumor destroying action with a relatively slight impairment of the surrounding tissues, that is, its selective action on the tumor is greater than if each treatment is employed separately. The order in which the two types of treatment are applied seems to be insignificant. This makes it appear unlikely that the first treatment merely effects a sensitization of the tumor cells but seems to indicate that the combination therapy exerts an inhibiting or damaging influence on two aspects of the vital functions of the cells.

Finska Läkarsällskapet's Handlingar, Helsingfors

77: 275-330 (May) 1935

- Remarks on Organized Care of Sick R. Falin—p. 275
- Reflex Phenomena in Appendicitis with Especial Regard to Head Zones H. Björk—p. 283
- *Hereditary Hemorrhagic Angiomatosis (Osler) Case R. Wilenius—p. 291
- Iron Content in Liver in Pernicious Anemia After Return to Almost Normal Blood Picture Following Treatment with Liver C. A. Herberg—p. 297
- Occurrence of Supernumerary Muscle Parts in Biceps Muscle of Arm in Population of Finland Together with Contribution to Knowledge of More Unusual Varieties of Muscle J. Forsell—p. 302

Hereditary Hemorrhagic Angiomatosis (Osler)—Wilenius reports a case of recurring nosebleed with multiple telangiectases and hemangiomas in a woman, aged 58. In spite of the tendency to bleeding, no changes in the blood were demonstrable other than a secondary anemia due to the hemorrhages. A hereditary disposition to hemorrhages of simple dominant was established in three generations. The epigastric pains with melena in this case are ascribed to angiomatosis in the pyloric region. In early adult life cauterization of the telangiectases in the nose was ineffective, but recent cauterization together with general building-up treatment resulted in marked improvement.

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ATHEROSCLEROSIS, THE IMPORTANT FORM OF ARTERIOSCLEROSIS, A METABOLIC DISEASE

ELEVENTH LUDVIG HEKTOEN LECTURE OF THE
FRANK BILLINGS FOUNDATION OF THE
INSTITUTE OF MEDICINE OF CHICAGO

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BOSTON

Though printed records of the lesions of arteriosclerosis first appear in the works of the anatomists of the sixteenth century, proof that the disease has existed from early times was disclosed by Shattock's¹ study of the mummy of Amenhotep II and by Ruffer's² observations in mummies dating from the eighteenth dynasty (about 1576 B C) to the twenty-seventh dynasty (about 525 A D). This has significance, since any agency brought forward as a cause of arteriosclerosis must meet the test of possible availability during a period of at least thirty-five centuries. From the records of early anatomists it is evident that the arterial changes were looked on as wholly incidental to age and therefore natural and not disease processes. Though specific descriptions of the lesions are found in seventeenth century publications, appreciation of the pathologic character of the process did not manifest itself until the eighteenth century. Morgagni in his *De sedibus et causis morborum* in 1761 included studies of the disease in smaller arteries, as well as the aorta, and associated chest pain with coronary hardening, which Crell had described in 1740. However, the disease was looked on as of purely pathologic interest, in spite of Heberden's concept of angina and Jenner's redemonstration of its relation to coronary hardening. With Virchow's studies of arteriosclerosis, which included recognition of the association of fatty substances with the lesions, clinicians began to consider seriously for the first time the clinical implications of the disease. Indeed, the clinical study of coronary sclerosis in America had its beginning only within the last twenty years, largely through the pioneer work of Herrick.

With reference to the cause of the disease, MacCallum³ said in 1922

Arteriosclerosis is one of those diseases difficult to explain because it develops so slowly through long years of life during which a great many possible causes have had an opportunity to affect the tissues. Our brilliant discoveries as to the etiology of disease come most readily when the transition from health to a pathological state is sudden and easily recognized by symp-

toms. Hence every conceivable idea has been expressed and tenaciously maintained with regard to this condition and many of them are so vague and ill-supported that it is wearisome to discuss them. None, however, is clearly demonstrated to have a definite bearing on the etiology of arteriosclerosis and we are quite as ignorant of the underlying cause as were our forefathers in the days of Morgagni.

In his textbook in 1932 MacCallum⁴ further said "We are at present, in spite of numerous theories, practically ignorant of the cause of arteriosclerosis." This reflects in general the opinion of pathologists here and abroad.

The title of this paper includes two propositions

1 That arteriosclerosis is the important form of arteriosclerosis. 2 That arteriosclerosis is a metabolic disease. Extensive discussion of the literature is rendered unnecessary by the review of the subject published by the Josiah Macy Jr Foundation.⁵

The human material for this study has been obtained from postmortem examinations of subjects in the medical examiner service of Suffolk County, supplemented by specimens of aortic and coronary lesions from the department of pathology of the Boston City Hospital, through the courtesy of Dr Frederic Parker Jr, and specimens of aortic lesions in children from the Children's Hospital, through the courtesy of Dr Sidney Farber.

The experimental material has been produced in cholesterol fed rabbits.⁶

ATHEROSCLEROSIS IS THE IMPORTANT FORM OF ARTERIOSCLEROSIS

What is arteriosclerosis? Virchow's studies drew attention to the fatty substances that are found so often in the lesions of the disease. Marchand named the condition atherosclerosis, from the Greek *αθηρη*, mush or porridge, because of the consistence of some of the fatty matter found in the disease. Aschoff⁷ extended and modified the observations of Virchow and divided the fatty processes into (1) the more or less physiologic and temporary deposit of fat in the intima of the young and (2) the definite disease process arteriosclerosis. The lesions arise constantly in the intima, though late extension to the media may occur.

In this discussion of arteriosclerosis, in agreement with other writers on the subject, the inflammatory forms of arteritis including those due to syphilis, tuberculosis, rheumatism, typhoid and other mycotic agents, periarteritis nodosa, thrombo-angitis obliterans and

⁴ MacCallum W G. A Textbook of Pathology, Philadelphia W B Saunders Company, 1932.

⁵ Cowdry E V. Arteriosclerosis. A Survey of the Problem. New York Macmillan Company, 1933.

⁶ This part of the work was aided by grants from the Committee on Scientific Research of the American Medical Association.

⁷ Aschoff Ludwig. Lectures on Pathology. New York Paul B Hoeber, 1924.

¹ Shattock, S G. Proc Roy Soc Med 1908 1909 Path Sect., p 122.

² Ruffer, M A. On Arterial Lesions Found in Egyptian Mummies. J Path & Bact 15 453 1911.

³ MacCallum W G. Physiol Rev 2 70 (Jan) 1922.

other forms of obliterating endarteritis and repairing thrombosis are excluded. Hypertension per se is a distinct entity. It is of importance, probably through pressure, in favoring the initiation and progress of arteriosclerotic lesions. Only in this relation is its association included.

There remain only two forms of arteriosclerosis. Atherosclerosis, with the foregoing exclusions, is practically the only form of the disease arising in the aorta and its visceral branches. It is in particular the exclusive form encountered in coronary sclerosis and is the lesion occurring in the cerebral vessels and in the larger renal vessels.

In the peripheral arteries it is not rare to find in elderly persons, and particularly in elderly persons with diabetes, the form of medial sclerosis described by Mönckeberg.⁸ This lesion is marked by necrosis of muscle fibers in the media followed by calcification and often by bone formation. The process is essentially limited to the peripheral vessels, occasional examples being found in tumors and in the cerebellum. In Mönckeberg's sclerosis the calcification of the media with or without bone formation may produce complete ringing of the vessel and its conversion into a rigid tube. Though the calcification may occasionally extend into the intima and though the bony nodules may rarely narrow the lumen, the general effect of this form of sclerosis is to fix the caliber of the vessel in its largest capacity, perhaps because of loss of tonicity of the muscle layer. In the unmixed form the vessels are usually found dilated and with free lumens. When the lumen is considerably narrowed it is usually because of a superimposed atherosclerosis, arising independently in the intima. Disturbances of the circulation, almost without exception, are due to the engrafted atherosclerosis.

From all of the foregoing it may be concluded that atherosclerosis is the important form of arteriosclerosis.

ATHEROSCLEROSIS IS A METABOLIC DISEASE

With the growth of experimental methods, efforts were made to reproduce the lesions of arteriosclerosis in animals. Since stresses appeared to be factors in its production, various physical methods, destined to provoke stress conditions, were practiced but without definite results. Epinephrine was known to increase the blood pressure, and series of experiments with this agent were carried out. The resulting lesions were medial, with necrosis and calcification, resembling the Mönckeberg type of sclerosis. Recent work with viosterol produced similar results.

The constant association of fats with atherosclerosis led to dietary efforts to reproduce the lesions. To the Russian school belongs most of the credit for the production of intimal lesions in the arteries, first by the feeding of fatty foods and later by the feeding of rabbits with cholesterol.⁹ This work was not accepted by pathologists generally. Criticisms were made that the rabbit was not a suitable animal for experimentation in arteriosclerosis, that the results were due to the use of perverted diets, that the lesions described did not correspond exactly to the lesions of human atherosclerosis. The condition produced in the animal was referred to, often contemptuously, as the "cholesterol disease of rabbits."

My interest in arteriosclerosis arose out of observations that as a class persons suffering from alcoholism appeared to show a lesser degree of atherosclerosis than their ages would justify. A study of the lesions of coronary sclerosis, fatal examples of which disease are common in my material, led to the following conclusions:¹⁰

- 1 Atherosclerosis is a disease and not the inevitable consequence of age, since it appears in the young and may be highly selective in its localization.
- 2 The characteristic lesion in youth is a fibrosis associated with the presence of lipid cells, which do not accumulate in large aggregations, because of the growth of the fibrous tissue.
- 3 The characteristic lesion at older ages is the accumulation of large collections of lipid cells with minimal connective tissue support. As a result of poor nutrition massive necrosis occurs, giving rise to so-called atheromatous "abscesses."
- 4 The standard cause of death in the young is thrombosis following subendothelial necrosis which extends to the endothelium.
- 5 The standard cause of death in the older group is the rupture of an atheromatous "abscess" into the lumen, usually followed by thrombosis.
- 6 The process is primary in the intima, stresses favor the localization of the lesions, morphologic lesions in the elastica and media occur secondarily.
- 7 The disease is not inflammatory in origin.

A comparative study of the lesions of human coronary sclerosis and experimental coronary sclerosis in the rabbit led to the following conclusions:¹⁰

- 1 The lesions of human atherosclerosis can be reproduced in the rabbit by the feeding of cholesterol.
- 2 The fibrosis which is characteristic of human coronary lesions in the young is the characteristic lesion in cholesterol atherosclerosis in young rabbits. Fibrosis is therefore a reaction of youth and not of species.
- 3 The evolution of the lesions through lipodosis, lipid cell formation and fibrosis, more rapidly produced in experimental animals, can be followed in greater detail in these animals than in human lesions, in which progress is so slow that the stages in the progression are distinguished with difficulty.

The results of this work did not clearly explain why in the young the response to the presence of cholesterol was fibrosis, while in the old little or no fibrosis appeared.

Attention was then centered on the lesions of the human aorta. The average physician mentally pictures atherosclerosis from his memory of the gross lesions he has seen in the aorta. Moreover, the aortic lesions are so varied that it is difficult to believe that a single agent should produce so kaleidoscopic a series of processes. Exhaustive detailed studies of the histology of these lesions had been carried out, but the reason for their variety had not been disclosed.

The Inhibition of Lipoid—All investigators agreed that the picture begins with the appearance beneath the aortic endothelium of phagocytic cells containing fatty material. The first question suggesting itself was the method by which this lipid, probably imbibed, reached the standard sites in the aorta. Edema of the intima occurs not rarely with swelling and stretching of the endothelium. This could well favor the introduction of foreign material. Whether it is the actual forerunner of lipid deposit is debatable. The massive forms of edema, covering large areas of the aortic surface, can hardly be associated with the beginnings of lipid infiltration, since no fatty lesions extending over such great areas are found. Moreover, this edema has the appearance of a terminal process arising shortly before death and usually in toxic cases. Minor degrees of

⁸ Mönckeberg J G. Virchows Arch f path Anat. 171:141 1903

⁹ Anitschkow N and Chalutov S. Centralbl f allg Path u path Anat 24:1 1913. See also Anitschkow's review in Cowdry.

¹⁰ Leary Timothy. Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis Arch Path 17:455 (April) 1934

the process might account for the imbibition. Warren¹¹ suggests that the high sugar concentration and the great fluctuation in sugar concentration in the blood of persons with diabetes could possibly lead to swelling of the intimal ground substance through changes in osmotic pressure and thus favor lipid imbibition. Nuzum and his associates¹² stressed the possible importance of high protein diets in favoring intimal damage. The most striking evidence indicates that high blood cholesterol is the standard factor from the dietary standpoint in the causation of atherosclerosis.

The importance of stresses in leading to the selective localization of atherosclerotic lesions in the aorta has been much discussed. The favorite site of the process over the posterior wall about the lines of the intercostal orifices is in the most firmly anchored portion of the vessel. The selection of sites about the orifices of aortic branches can be explained as the result of variation of stresses as the contracting and dilating waves of the free wall come up against the obstructions that arise at the orifices. The relative freedom of the ascending arch from lesions is discussed later in the paper. In general the close relation between hypertension and arteriosclerosis emphasizes the importance of stresses. Based on this connection and the deduction that unusual stresses must occur in the coronary arteries in congenital heart disease, an examination was made of the left coronary arteries in eight such hearts, which disclosed atherosclerotic lesions in five of them.

The Phagocytic Cells—The next question is the source of the phagocytic cells that take up the lipid. They may be monocytes from the blood. They are not histiocytes that wander in from neighboring tissues, because evidence of such invasion is lacking. I am inclined to believe with Klotz and Manning¹³ that they originate from the subendothelial connective tissue. In experimental cholesterol lesions a marked proliferation of this tissue sometimes occurs at sites where lipid infiltration is beginning.

The phagocytic cells found in atherosclerosis show in the human being little tendency to wander beyond the limits of the vessel. In the experimental rabbit under acute massive dosage, extension through the wall is common in the smaller vessels. The perivascular lymphatics may be crowded with the cells, and the regional lymph nodes may contain them. Blood distribution probably also occurs, since the cells are found in numbers in blood vessels, notably in the spleen, in the experimental animal.

The studies of Opie¹⁴ and others have demonstrated the presence in the mononuclear exudative cells of a proteolytic enzyme, which is most efficient in an acid medium, unlike the enzyme of polymorphonuclear leukocytes, the greatest activity of which is shown in a neutral or slightly alkaline medium. In addition, an erepsin-like enzyme is found in leukocytic exudates, which splits proteoses and peptone into amino acids and tryptophan. Mudd¹⁵ and others in a review of phagocytosis deplore the lack of studies on intracellular lipid activities. The extensive studies on the Niemann-Pick, Gaucher and Hand-Christian diseases are unsatisfactory in this respect.

The occurrence of cholesterase widely in the organs, tissues and fluids of man and animals and the finding of cholesterol crystals in relation to necrotic tissues and exudates bespeak the activity of such an ester splitting enzyme. Its function is limited to the hydrolysis of cholesterol esters in digestion and perhaps to their resynthesis.

Physical Characteristics of Cholesterol—Cholesterol and certain of its compounds have physical characteristics that permit of tracing the substance to a degree in the tissues. In the ester form seen in the arteries, cholesterol occurs in drops which stain like fats with the sudans and which are anisotropic, the so-called fluid crystals of Lehmann. Under the polariscope they exhibit dark Maltese crosses, producing a tetrad-like appearance. The solid crystals, whether in the typical oblong plates with a notched corner or in needle forms of the esters are doubly refractive.

The cholesterol esters in the surface lipid cells of aortic lesions are evidently in very unstable equilibrium, since in tissues fixed in solution of formaldehyde they precipitate, the crystalline masses distending and frequently rupturing the cells containing them. The precipitation of cholesterol in formaldehyde fixed tissue permits of a visualization of the massive content of the lipid within these cells, particularly with polarized light. Freezing of fresh tissues may have the same effect as fixation in solution of formaldehyde, while heating of the sections may cause the crystals to disappear. On refreezing, however, the solid crystals again manifest themselves, though the total crystal deposit may not be reproduced except by freezing at very low temperatures. Staining with sudan tends to overcome anisotropism to a certain extent. Unstained sections should be studied for complete evidence of anisotropism.

Aortic Lesions—(a) *Youth*. Whether the cholesterol is in solid or fluid crystal form, the globular cells showing marked anisotropism are limited to the surface subendothelial layer in the aortas of younger persons. Below this layer appear ameboid fat-containing cells, with branching processes, in a loose textured connective tissue arising from stimulation of the subendothelial layer. The fat in these deeper cells is present in drops, which are not in general anisotropic. Under the polariscope in unstained specimens some of these cells are seen to contain small anisotropic solid crystals, which tend to be smallest in the deepest cells. Many of the cells show no anisotropic substance even in the unstained section. This loss of anisotropism is associated with division of the enclosed fatty material into smaller and smaller droplets. In regions where the process shows further progression, cells occur in which the droplets are few in number and certain of them appear to have freed themselves completely from the engulfed lipid. Finally, in adjacent areas where the cells have freed themselves of cholesterol the only material staining with sudan is in the finest conceivable form (Bloor's fat dust) in the wavy bundles of the intercellular fibrillae.

The amount of connective tissue produced may be small and no gross scarring results. However, I have never seen a lesion in which cholesterol esters were contained within lipid cells in the young in which some connective tissue was not produced.

This is at variance with Aschoff's thesis that in youth lipid deposits in the aorta are harmless and merely mechanical, the process being reversible and the lipid

11 Warren Shields. *The Pathology of Diabetes Mellitus*. Philadelphia: Lea & Febiger, 1930, p. 139.

12 Nuzum, F. R., Seegal, Beatrice, Garland, Ruth, and Osborne, Margaret. *Arteriosclerosis and Increased Blood Pressure*. Experimental Production. *Arch. Int. Med.* 37: 733 (June) 1926.

13 Klotz, O. and Manning, M. F. *J. Path. & Bact.* 16: 211 1911.

14 Opie, E. L. *The Enzymes and Antienzymes of Inflammatory Exudate*. *J. Exper. Med.* 7: 316 1905.

15 Mudd, S., McCutcheon, M. and Lucke, Baldwin. *Physiol. Rev.* 14: 210 (April) 1934.

disappearing without trace (atheromatosis) In the experimental animal, lipoid is deposited in the early stages in free form beneath the endothelium before phagocytosis occurs In this state it is a bland substance awakening no activity in neighboring cells In human lesions a similar deposit may occur not only beneath the endothelium but in deeper layers, even in the media My observations, however, indicate that visible yellow lesions in the aorta at any young age are constantly associated with phagocytosis and stimulation of connective tissue growth

In young persons a rather diffuse infiltration of the intima over large areas is often found in the form of a pale yellow deposit with pinpoint deeper yellow foci Microscopically such a lesion shows focal collections of globular lipoid cells just beneath the endothelium forming the bright yellow points, and ameboid cells carrying lipoid distributed more widely through a loose textured connective tissue responsible for the diffuse pale yellow coloring

(b) *Adult Life* As one grows out of the period of youth, the metabolism of cholesterol within lipoid cells tends to grow less efficient Though connective tissue growth is stimulated, the metabolism is often slowed, the connective tissue secretes collagen, and the lipoid cells are frequently hedged in by scar tissue They lose their branching processes and become globular or flattened ovoid masses, retaining marked anisotropism, in the interstices of the scar tissue The cells that have migrated most deeply, i. e., farthest away from the nutritive supply from the intima, tend to undergo necrosis, and the lipoid from many cells together with tissue fluids gives rise to one form of atheromatous "abscess" in which no living cells are found These lie in the deep layers of the intima directly above the media

Sections of atherosclerotic lesions in middle life reveal processes in which the color and consistence are dependent on the relative amounts of lipoid and scar tissue The newest processes are bright yellow and rich in lipoid cells, largely at the surface, the older are paler yellow or white, depending on the amount of scarring Evident lateral spreading from small unit lesions has produced large pale yellow raised foci, the long diameter of which corresponds to the long diameter of the vessel The paler yellow lesions are relatively rich in lipoid cells with anisotropic contents, globular but fewer near or at the surface, with some evidence of the tendency to branching processes in the next deeper layer, and definite formation of older connective tissue, together with necrosis and mixed lipoids and fluid in the deepest layer The whiter scarred foci show usually, even on gross section, a deeply placed yellow layer, which the surface scar tissue has obscured Microscopically the scar tissue may still contain isolated ovoid or flattened lipoid cells in varying numbers The deepest intimal layer, yellow as seen on gross section, is made up of a pasty mixture of lipoids and fluid or is a mass of necrotic tissue permeated with fat dust

Rarely a pure healed scar is found, usually a survival from a more youthful period Many of the grossly pale scars show on microscopic examination varying amounts of material staining with sudan IV in the depths

(c) *Old Age* In older persons the ability of the phagocytic cells to metabolize cholesterol grows less or disappears As a result, lipoid cells the contents of which are strongly anisotropic become massed in the

intima, with minimal reticular strands separating groups or single cells New vessels are formed rarely if at all Massive necrosis may occur associated with freeing of the cholesterol in crystalline form The more soluble lipoids that assist in holding it in solution are presumably absorbed Rupture of such atheromatous "abscesses" through the thin covering, made up of endothelium alone or with a small amount of connective tissue, is common The cavity becomes filled with blood, the disintegration of which gives rise to pigment deposits The delivery of the softened contents of an atheromatous "abscess" into the aortic blood stream occasions no serious consequences The mass becomes finely divided and mixed with the blood The persistence of the semifluid contents as a more or less coherent mass, capable of obstructing, is possible only in smaller vessels, such as the coronary arteries

The Nutritive Factor—There appears to be a close association between local nutrition and metabolic activity of lipoid cells Even in individuals in the thirties, and sometimes at younger ages, a delay in freeing the tissues of cholesterol and the formation of surface scar tissue in the lesion will result in evidence of failing metabolism in the deep layers In many advanced lesions with almost complete scarring the dense connective tissue in the depths of the lesion undergoes necrobiosis, becoming permeated with fat dust and larger fat globules It is recognized that except when associated with syphilitic aortitis the arch of the aorta, particularly the ascending arch above the ring, tends to be much freer from atherosclerotic scars than the rest of the vessel Yet early lipoid deposits in the form of small yellow mounds often occur in the arch, frequently in large groups These lesions are cared for apparently by relatively rapid removal of the lipoid and minimal scarring even in older individuals Spreading of the lesion from these small yellow mounds to form larger foci, a common picture in the aorta elsewhere, is exceptional in the arch

Calcification—In atherosclerotic lesions calcification is always a late, one may say a terminal, process It appears earlier in aortic than in coronary lesions in general Unlike the calcification in Mönckeberg's sclerosis, which occurs without evidence of visible fat, atherosclerotic calcification tends to be intimately associated with lipoid In some lesions with slow necrobiosis the deposit of lime salts appears to arise in relation to the breaking down of the nuclear protein of dying cells In some of these cells, lipoid droplets and globules of calcium and fat can be found within the same cell body In the deposit of calcium in regions of massive coagulation necrosis, usually in irregular "geographic" areas, globules with an affinity for acid dyes are found along the border of the lesion in the still living tissue, while in the necrotic region the similar globules have an affinity for basic dyes Plaques and solid masses of calcic deposit appear to arise from the fusion of these globules into larger masses The calcified plaques in the aorta tend to develop toward the surface and ultimately in many cases are separated from the lumen by a layer of endothelium with little or no connective tissue

Vasa Vasorum—The influence of the vasa vasorum in connection with the lesions of atherosclerosis is relatively unimportant Even in comparatively large foci the nutrition seems to depend on imbibition through the endothelial layer This probably in part accounts for the diminished efficiency of the handling of cholesterol

as the thickness of the lesion increases. In some of the older scarred lesions, notably about orifices of vessels, such as the intercostals, evidence of activity of the vasa vasorum is found, but always as a late phenomenon.

To recapitulate, the early lesions of arteriosclerosis are marked by (1) the phagocytosis of imbibed cholesterol esters by cells probably of local origin, (2) invasion of the deeper layers of the intima through ameoboid activities of these cells, accompanied by (3) a loss of anisotropism of the contained cholesterol and (4) dividing of the lipid into fine droplets, (5) stimulation of connective tissue growth and (6) disappearance of the lipid with minimal scarring.

The close resemblance between this process, as seen in the young, i. e., the division of fatty material into finer and finer droplets followed by its disappearance, to the system of fat absorption in the intestine, and of fat injected into the transparent tadpole's tail, as observed by the Clarks,¹⁰ is manifest.

A definite progression in the loss of anisotropism from the large globular surface cell, surcharged with anisotropic lipid, can be followed through the upper layers of ameoboid cells still containing anisotropic crystals to cells the contents of which reveal no anisotropism. The combined loss of anisotropism, division of the lipid and its local disappearance furnish morphologic evidence of a cellular cholesterol metabolism that has been lacking up to now.

In the very old this process of cell metabolism is lost, lipid cells do not become ameoboid, and their contents do not lose their anisotropism and are not divided into fine droplets. Lipoid cells tend to occur in large masses, which undergo necrosis, freeing cholesterol crystals and forming atheromatous "abscesses."

In the middle period of life, lesions are found representing imperfect metabolism of the contained lipid in recent lesions, with some formation of connective tissue, which tends to become scar tissue near the surface. There is less evident loss of anisotropism of the lipid contained in the cells. In the depths of the lesion there is a marked tendency to form atheromatous "abscesses." In this and the older period, scarred and intermediate processes that have persisted through years are an important part of the picture, as are calcified plaques.

As we grow old our aortic linings come to be beset with scars, pits, mounds and calcified monuments marking the sites of unsuccessful local battles with cholesterol.

The aortic picture described is of course only a reflection of a general disturbance in cholesterol metabolism.

GENERAL DISTURBANCES IN CHOLESTEROL METABOLISM

The rabbit must possess a metabolic system to synthesize the cholesterol needed by its cells, since it ingests only plant sterols, which are not absorbable in most animals. This metabolic system is, however, evidently weak, just adequate to care for the animal's needs for the substance.

Atherosclerosis can be produced readily in the rabbit by overwhelming this weak metabolic system through feeding cholesterol. The same procedure, i. e., the overwhelming of the cholesterol metabolic system, was unintentionally carried out in human beings by the use of high fat diets in diabetes in the decade 1920-1930, and the results were just as definite as those obtained

in the experimental rabbit. It was reasoned that fat could be substituted for carbohydrates and thus spare the inefficient carbohydrate metabolism in diabetic patients. The reasoning was good. Unfortunately the simplest method of increasing fat was to add cream, butter and eggs, all wholesome foods but potent sources of cholesterol, to the dietary. The effects of the excessive cholesterol diet manifested themselves in an increase of arteriosclerosis, even in children, and xanthomas were more common in the skin. Shields Warren¹¹ said:

Whether the increased prevalence of arteriosclerosis in diabetes is due to the disease itself or to methods of treatment of the disease, the importance of the problem is such that it cannot be disregarded. I have yet to see at autopsy a diabetic or to read the autopsy of a diabetic whose disease has lasted five years or more, free from arteriosclerosis, regardless of age.

The diabetic has not only more than his share of arteriosclerosis, but it falls to his lot ten or twelve years earlier than to the non-diabetic.

White¹² records roentgen evidence of calcification of vessels of the legs in nineteen of 106 children, one at 4 years of age, two at 6, three at 7, one at 8, four at 9, two at 10, two at 11, two at 12, one at 13 and one at 14. Among these the daily diet included more than 100 Gm of fat in all but two, and two received 150 Gm daily.

The reverse of this picture under low fat diets, is indicated by recent reports from the same clinic (Jos' n) in which Warren's and White's observations were made. Roentgen shadows of calcified leg arteries in children are no longer obtainable, and xanthomas do not occur. Rabinowitch reports that already there is evidence of less atherosclerosis in adult diabetic patients in Montreal.

On all the evidence presented there can be little reasonable doubt that arteriosclerosis is a disease arising out of inadequacy of the cholesterol metabolism. Stresses are factors in the localization and progression of lesions. Other secondary factors may play a minor part.

CHOLESTEROL

As its name indicates, cholesterol is an alcohol, a hydro-aromatic secondary alcohol, but it possesses the power of uniting with fatty acids to form esters. It is one of the most complex substances occurring in the animal body. It is relatively insoluble, its best solvents being the fat solvents. It is highly resistant to the action of enzymes, whether of animal, vegetable or bacterial origin. Cholesterol is found in every animal cell. It and ergosterol (which is associated with it in minute amounts) are the only sterols found in animal bodies. It is isomeric with or closely allied to the plant sterols, some of which differ from it only in molecular arrangement. This difference appears to be the factor preventing the absorption of plant sterols, cholesterol (with ergosterol) being the only sterol which is absorbable.¹³ In the animal body it is closely associated with the fats, being found in the unsaponifiable residue following extraction by fat solvents.

Recently much attention has been paid to the functions of cholesterol. Starling's¹⁴ concept of its functions within the cell is as follows:

In view of the great stability of this substance when exposed to the ordinary mechanisms of chemical change in the body, it seems probable that the part played by cholesterol is that of

¹⁷ White, Priscilla. Diabetes in Childhood and Adolescence, Philadelphia, Lea & Febiger, 1932, p. 178.

¹⁸ Schoenheimer, Rudolf. Science, 74, 580, 1931.

¹⁹ Starling, E. H. Principles of Physiology, Philadelphia, Lea & Febiger, 1930, p. 42.

a framework or skeleton, in the interstices of which the more labile constituents of the protoplasm undergo the cycle of changes which make up the phenomena of life

Bills,²⁰ in a review of the physiology of the sterols, says

There are groups of physiologically important substances which are fundamentally sterols in structure, although they are generally classified according to their function. Among these are the bile acids and certain cardiac poisons, sex hormones, venoms and vitamins

In digestion, cholesterol is believed to function as a conveyor in the absorption of fats. The white matter of the brain is rich in cholesterol, the organ containing about one ounce of the substance. Its function appears to be to serve as an insulating medium in the myelin sheaths. It forms 19 per cent of human skin fat. Cell membranes are believed to be rich in cholesterol and phosphatides, which control cellular permeability and membrane equilibrium. In this relation it is known that cholesterol is an active antihemolytic agent. It opposes the hemolytic action of saponin, solanin, cobra venom and tetanus toxin.²¹ Sterols are present in seeds, pollen, spores, ova and sperms, suggesting some peculiar need for sterol by the developing embryo. The formation of cholesterol ester from free cholesterol in the third week of incubation of chick embryos, associated with calcification of the bones, has suggested that the phosphorus for calcification comes from the breaking down of lecithin, and the fatty acids thus liberated combine with the cholesterol. Cholesterol has been shown to oppose flocculation within the blood stream, which, according to Lumiere's theory, is the cause of anaphylactic shock.

A large part of the adrenal lipoids is made up of cholesterol compounds. When the adrenal cortex is robbed of its fats in fatal toxic or septic conditions, the anisotropic lipoids seem to be lost to a greater extent than the isotropic fats. Cholesterol, independently of ergosterol, contains provitamin D, susceptible of irradiation. The sex hormones, according to the formulas of Butenandt and others,²² are related to and probably derived from sterols. Ruzicka and others²³ have succeeded in producing androsteron, the testis hormone of Butenandt, from cholesterol. Recent work by Dodds and Cook²⁴ indicates the close relationship chemically between the sex hormones and certain carcinogenic hydrocarbons, which are also degradation products of sterols. Campbell,²⁵ discussing the apparent immunity to cancer in mice produced by placental and embryonic skin extracts, said

If oestrin (the female sex hormone) is responsible, directly or indirectly, for production of natural immunity, we should expect cancer to be most prevalent when the production of oestrin ceases. This is the case, at any rate, in the female, since cancer is most prevalent after the menopause.

Though knowledge of the sterols is still limited, it is rapidly growing under the stimulation of new evidence of the relation of these substances to human life and disease. From every point of view, cholesterol is one of the most important substances present in the body.

Knowledge of cholesterol metabolism within the human body is limited. Because the material tends to be stored, doubt has been thrown on the results of dietary studies of human ingestion and excretion of the substance, the possible stored cholesterol being an unknown quantity. Schoenheimer and Breusch²⁶ ingeniously overcame this difficulty in estimating the powers of mammals to metabolize cholesterol, by using mice, whose whole bodies could be analyzed. Their results indicate that the mouse can synthesize cholesterol on a cholesterol free diet. On a diet containing moderate amounts of cholesterol, less was synthesized. When large amounts of cholesterol were fed, a considerable part was destroyed. The disappearance of intimal deposits of cholesterol from the aorta of young adults during the period of fat famine in Germany following the war suggests that the human cholesterol metabolism may have reserve powers in times of need.

That man can synthesize cholesterol is probable. The indications are that he does not, all of the cholesterol which he needs being ingested. Milk, eggs and pork fats are the important sources in human diet. The presence of cholesterol in large amounts in seeds, pollen, ova and spores has been referred to as indicating special needs of the embryo for this substance. Egg yolk, which is rich in cholesterol, is intended for the embryo. Milk is intended for the infant. Man is the only animal that ingests eggs and milk during a lifetime. Man is also the only animal that dies in early life from coronary sclerosis and acquires atherosclerosis almost universally in advanced life. It is interesting to note that man's closest rivals in this respect are the birds, as shown in Fox's²⁷ valuable studies of the disease in lower animals and birds. Birds, particularly domestic fowls, must possess remarkable powers to metabolize and presumably to synthesize cholesterol. The amount contained in the yolk of hen's eggs almost daily produced, is very great. Perversions of this metabolic system might well account for this rather deadly form of rivalry of the bird with man.

ATHEROSCLEROSIS A METABOLIC DISEASE

As one studies atherosclerosis, one is impressed by its general resemblance to the other metabolic diseases, and particularly to diabetes. As in diabetes, marked variations in susceptibility are evident in the experimental animal and seem to exist in man. As in diabetes, the inheritance of a weak cholesterol metabolism appears to lead to early death from coronary sclerosis. There are families in which coronary disease is the standard form of death. As in diabetes, advancing age with growing inefficiency of the cholesterol metabolism is associated with more frequent manifestations of the disease. The ability to prevent cholesterol deposit or to diminish the amount of atherosclerosis produced in cholesterol fed rabbits by the use of thyroid extracts²⁸ suggests the relation of cholesterol metabolism to this internal secretion. Finally, a familial inheritance which seems to be dependent on a general inferiority of the metabolic systems may manifest itself in individuals of such a family in the form of diabetes, obesity, arteriosclerosis, gout or combinations of these.

This discussion of atherosclerosis, dealing as it does with the harmful effects of cholesterol overdosage, can

²⁰ Bills, C. E. *Physiol. Rev.* 15: 1 1935.

²¹ Abderhalden, Emil and LeCount, E. R. *Ztschr. f. exper. Path. u. Therap.* 2: 199 1906.

²² Butenandt, A. and Tscherning, K. *Ztschr. f. physiol. Chem.* 229: 167 and 185 1934. Butenandt, A. and Dannenbaum, H. *ibid.* 229: 192 1934.

²³ Ruzicka, Goldberg, Meyer, Brungger and Eichenberger. *Helvet. chim. acta* 17: 1389 and 1395 1934.

²⁴ Dodds, E. C., and Cook, J. W. *Ann. Rep. Brit. Emp. Cancer Campaign* 11: 12 1934.

²⁵ Campbell, J. A. *Nature* 135: 395 1935.

²⁶ Schoenheimer, R. and Breusch, F. *J. Biol. Chem.* 103: 439 (Dec.) 1933.

²⁷ Fox, H. in Cowdry, J.

²⁸ Turner, K. B. *J. Exper. Med.* 58: 115 (July) 1933.

not be closed without calling to attention the fact that cholesterol is an important food substance, as necessary as the carbohydrates, fats, proteins and mineral elements of the dietary. All the cholesterol needed by the cells of the human body is ingested. Milk and eggs are wholesome foods to which the human race is accustomed and which are necessary sources of cholesterol. As one advances in years, the needs for this substance appear to grow less. In general, apart from susceptibles, it is the abuse, the overeating of these foods, as is true in the case of other food substances, that is likely to produce disease.

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ALLERGY AND CATARACTS

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The term "allergy" means a condition of unusual or exaggerated specific hypersensitivity to a substance which, under like conditions and in similar amounts, is harmless for the large majority of members of the same species. Allergic diseases are divided by Coca¹ into these four classifications: "(1) atopy (hay fever, asthma, eczema group), (2) contact dermatitis, (3) serum allergy, and (4) drug allergy." More than one type may be present in the same individual as well as among members of his family.

Bray² has diagramed the integral factors producing the allergic state and listed the methods of entry of the specific antigens, allergens or causative agents by the following routes: "(1) inhalation, (2) ingestion, (3) injection, (4) infection and (5) contact." Catalyzing nonspecific factors, he stated further, are "(1) dietary, (2) environmental, (3) nasal, (4) toxic, (5) psychic, (6) endocrine, (7) physical, (8) chemical and (9) mechanical." Hereditary predisposition or damage to tissue or both are the rule, although occasionally an acquired predisposition must be admitted. If both parents happen to be allergic, the majority of the offspring will show some manifestations of hypersensitivity, and it is likely to appear at an earlier age than in the parents.

From 1 to 5 per cent of human beings are spontaneously allergic in some way, and their reaction largely occurs in the skin and in the conjunctival, respiratory and gastro-intestinal tissues, which of course are the principal coverings of the exposed surface of the body. This hypersensitiveness ranges from a mild reaction, which may go unnoticed for a long time, to such a severe reaction that it threatens life. Fortunately the vital centers are rarely influenced to extreme degrees. However, further studies have indicated a much wider involvement than was first recognized. Allergic migraine is only one instance of such deduction with evidence for its substantiation.

The endocrine system frequently plays a definite role in the symptomatology, and epinephrine, thyroid, parathyroid and pituitary extracts have been of value in the treatment in special cases. The sympathetic nervous system largely activates this group of glands, and hence

it is difficult to know whether these glands influence the nerves or the nerves alter the secretion of the glands in this particular link of the chain. Perhaps the answer to the problem of allergy is to be found in physiobiochemical equilibrium.

It has long been observed that conjunctival hypersensitivity is not an uncommon finding among patients who have the allergic manifestation of asthma, hay fever or vasomotor rhinitis. Vernal catarrh is classed in the allergic group of reactions and has a high incidence of accompanying allergic phenomena.

Wesseley in 1911 called attention to the fact that keratitis in certain forms can be an allergic manifestation. Episcleral, scleral and uveal changes have been reported to be allergic. The crystalline lens is not exempt from the influence of allergens, which may be causing changes in other tissues of ectodermal origin. The ectodermal epithelium of the ciliary body is responsible for the formation of the aqueous fluid, which in turn nourishes the lens and carries away the waste products. A fine change in the function of these epithelial cells of the ciliary body, in the content of the aqueous fluid or in the level of permeability and selectivity of the capsule of the lens can readily be reasoned to interfere with the efficient metabolism of the lens and its transparency, thereby producing a cataract in an otherwise normal eye.

In 1868 Rothmund³ reported the occurrence of cataracts in connection with changes in the skin. Andogsky,³ a Russian ophthalmologist, used the term "cataracta dermatogenes" to classify a case in which a youth had bilateral cataracts and a simultaneous skin eruption, he felt that these conditions had a common underlying factor. Löwenstein,⁴ Gault⁴ and others found a number of cases of bilateral cataract associated with neurodermatitis. Kurz⁵ reported a case in which opacities of both lenses, associated with eczema, occurred in a person aged 21. Davis⁶ reported the case of a girl, aged 15 years, who had eczema and bilateral cataract. These as well as the other opacities reported occurred in previously normal eyes. The form of opacification largely resembled the anterior stellate cataract, proceeding from the capsule of the lens without further changes in the eye. These cataracts were always bilateral and occurred principally in the young adult as a rather significant accompaniment of changes in the lens and skin. The common origin of the epithelium of the skin and the epithelium of the lens was thought by Davis to correlate the phenomena, and attempts were made to explain the changes on a basis of the endocrine glands, sympathetic nervous system and calcium level, and in numerous other ways. That there is an element of endocrine function involved is often obvious, but as to the evaluation of each particular gland as a causative factor or catalyzing agent, much remains to be proved.

REPORT OF CASES

CASE 1—A girl, aged 17 years, admitted to the Mayo Clinic Nov 9, 1934, complained of extensive atopic eczema and marked decrease in vision due to rapidly developing cataracts. The family history was significant from an allergic standpoint. The mother had suffered from hay fever, the father had had vasomotor rhinitis, a maternal uncle had had fever, and a grandmother had had eczema of the skin of the hands.

Involvement of the patient's skin had first occurred in the form of a mild flexural eczema at the age of 18 months. When

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¹ Coca A F Hypersensitiveness in Tice Frederick Practice of Medicine Hagerstown Md W F Prior Company Inc 1 107 171 1923
² Bray G W Recent Advances in Allergy ed 2 Philadelphia P Blakiston & Son & Co 1934

³ Cited by Ollendorff Hans, and Levy Georg Neurodermatitis und Katarakt, Arch. f. Dermat. u. Syph 164 683 688, 1932
⁴ Gault Nancy Cataracta névrodémitique, Bull. Soc. d'opt. de Paris March 1933 pp 280 284

she was 4 years old she had handled a dyed Easter egg, and immediately following this she had had marked dermatitis and a "gelatinous-appearing" edema of the bulbar conjunctiva of both eyes. From the age of 1 to 7 years treatment had been necessary for recurring bronchitis, and from the age of 6 to 13 years she had had frequent though mild attacks of urticaria.

At the onset of menstruation, when the patient was 13 years of age, there had been an extensive exacerbation of the lichenified eruption over a much greater area than had previously been involved. Eighteen months later she had observed dimness of the vision of the left eye, and four months later she had noted a gradual but similar decrease in the vision of the right eye. Examinations had revealed bilateral immature cataract. In a year these cataracts had developed, and vision had been reduced to such an extent that she was only able to count fingers with her right eye and to distinguish movements of objects with her left eye. Extensive skin manifestations and allergic rhinitis had continued with brief remissions and longer exacerbations depending largely on the exposure to the many articles of food and environmental factors to which she was sensitive. Eggs, milk, house dust, ragweed, corn pollen, cottonwood, silks and dyes seemed to cause the most marked reactions. Basal metabolism at one time had been recorded as -18 . Thyroid extract had been given, without benefit, and it had been discontinued when it had seemed to increase her "nervousness."

On examination at the clinic the patient appeared well nourished and was of normal physical development. She had bilateral mature cataracts, allergic rhinitis, and extensive hyperpigmented red, lichenified, atopic eczema over the body, face and arms. Vision was limited to ability to see moving objects with the right eye and to see light with the left. The skin of the lids, which corresponded closely to that of the face, was thick and leathery and was bordered by broken stubby cilia. The palpebral conjunctiva appeared thickened but otherwise normal. The corneas were clear, the anterior chambers were normal, and the pupils were round and equal and reacted well to light. The irises were normal. Both lenses had a homogeneous grayish white appearance that obstructed all view of the fundi. Transillumination of the globes was uniform.

CASE 2—A girl, aged 17 years, admitted to the clinic Feb. 25, 1935, complained of marked recurrent eczema. She said that her mother had had hives and had been subject to a migrainous type of headache. Since the age of 2 months the patient had suffered from a mild flexural recurrent eczema. At the age of 11 years the first marked exacerbation had occurred and asthma had developed. One and a half years prior to her admission to the clinic the eczema had become generalized and the eyelashes and eyebrows had broken off, leaving them stubby. Exposure to silk, animal hair or eggs seemed to cause the most severe reactions.

Physical examination revealed an extensive, hyperpigmented, red, lichenified eczema on the arms and legs, body and face. This case was recognized as closely resembling case 1, both as to the age, sex and history of the patient and as to the manifestations. The patient was sent for a slit lamp study of the lenses, although there were no eye complaints. Previous examinations of the fundi and retinas had been negative, with the exception of a slight astigmatic error. Vision was 6/6 in each eye. The broken-off cilia and brows were noted as well as the thick leathery scaling skin of the lids, which corresponded to that of the rest of the face. The conjunctiva appeared normal. Examination of the globes externally and of the fundi gave entirely negative results except for a faint, grayish, veil-like, anterior, central and cortical opacity in the right lens.

Two and a half months later during which time, incidentally, the patient had suffered acute exacerbations of the allergic manifestations, there was observed a slight but definite increase in the opacity, and a faint brownish tint appeared instead of the grayish tint that had first been noted. The margins of the opacity were changed in shape and the points extended out as limbs or dendrites, showing an actual progression.

Skin reactions of both this patient and of patient 1 were markedly positive to their respective known allergens, as were also the reactions in normal individuals used for passive transfers.

CASE 3—A man, aged 35, admitted to the clinic Oct. 27, 1934, complained of recurrent eczema of the face and hands and gradually decreasing vision in each eye.

Five years previously the patient had noticed for the first time a small, localized skin eruption in the right temporal region. This patch of scaling, redness and itching had been intermittent. Approximately two years later a symmetrical and similar eczema-like patch had been present intermittently in the left temporal region. One year prior to his admission to the clinic and following a change of residence a severe flare up of this same type of dermatitis had recurred after he had eaten shrimps, and on this occasion it had involved the entire skin of the face. This eruption had been characterized by blisters, small fissures, excoriation and a moist watery exudation and had lasted over a period of two months. Following this a slight but definite decrease in vision had been noticed in each eye. The patient had consulted an ophthalmologist, who had made a diagnosis of bilateral cataract. Examinations of the eyes prior to this time had been entirely negative.

On examination at the clinic the patient appeared well nourished. Eczematous dermatitis was present on the face and neck, and there were small patches of excoriations over the trunk, back and buttocks. The skin of the hands and face, including the eyelids, was excoriated, dry and scaling, thickened and leathery. Skin tests confirmed the allergic reactions to shrimp and nickel. The eyelashes and brows were broken off and stubby.

Vision in the right eye was 6/20 and in the left eye 6/15. With refractive correction the vision in each eye was improved to 6/12. The palpebral conjunctiva appeared thickened but otherwise normal. The bulbar conjunctiva was normal and the cornea clear. The anterior chambers were normal and the irises normal. The pupils did not react well to light (the patient had been instilling a 2 per cent solution of homatropine once daily to facilitate vision). Each lens showed a small, gray, central, oval, elevated plaque in the capsular region, measuring 3.25 by 2 mm in the right eye and 1.15 by 2 mm in the left eye. With the slit lamp the cortex and nucleus appeared clear. The posterior capsular region appeared to have a similar process. The fundi were normal.

CONCLUSIONS

The three cases here reported not only fall into the group "opacification of the lens in young adults accompanied by skin manifestations" but further, by virtue of the history and the positive allergic reactions observed, could also justify the term "allergic cataracts," or, perhaps more correctly speaking, they should be called "cataracts associated with allergy."

ABSTRACT OF DISCUSSION

DR. ALAN C. WOODS, Baltimore. The cases presented by Dr. Daniel bring up in a somewhat different light the question of the relationship of the permeability of the lens capsule to cataract. While this syndrome of allergic cutaneous disorders with cataract has been reported previously, and three cases have been presented by Dr. Daniel, I myself have never seen patients with this particular syndrome. The report on these three patients is barren of laboratory investigations other than the evidence of skin hypersensitivity, and there is no positive evidence on which even a fragile theory may be based. Nevertheless, these cases are highly suggestive. Dr. Daniel's theory appears to be that a fine change in the function of the epithelial cells of the ciliary body in the content of the aqueous fluid or in the level of permeability and selectivity of the capsule of the lens can readily be reasoned to interfere with the efficient metabolism of the lens and its transparency, thereby producing a cataract in the otherwise normal individual. The first two suggestions are meaningless to me in relation to allergy. While it is quite possible that allergic reactions in the ectodermal tissues as a whole might readily produce changes in the ciliary epithelium and the contents of the aqueous, I am unaware of any evidence that such changes do occur, and I find it difficult to construct any theory explain-

ing cataracts on such speculative changes. As regards changes in the capsule of the lens, however, one may be more hopeful of building up some theory of causal relationship between the existing allergy and the cataracts. Primarily, the capsule of the lens has been shown to be impermeable to the globulin fraction of the serum or aqueous—the portion that probably contains antibodies. Even if one presupposes the presence of specific cytotoxins in the aqueous, there is no reason to believe that such cytotoxins could pass the capsule barrier and attack the lens substance. If one regards the situation somewhat differently and assumes that the capsule of the lens, an ectodermal structure, participates in the general cutaneous allergic reaction, it might readily follow that the permeability of the reacting capsule may be altered. Thus the capsule might become permeable to the normal aqueous and this aqueous filtering through the altered capsule might produce precipitation of the lens protein and cataract formation. Such a mechanism would really be that of a traumatic cataract, allergy to the lens capsule being the traumatizing factor. However, there are obvious difficulties to even such a theory. While it may reasonably be assumed that the capsule of the lens may participate in a general hypersensitivity of the ectodermal tissues to a specific allergin, it is difficult to explain how the intoxicating allergin obtains access to the capsule. Allergy is after all, the local reaction of sensitized tissues to the specific allergin and may be produced by any of the various methods which Dr. Daniel has enumerated. In this instance the most obvious explanation would be that the aqueous contains the specific allergin. It would be most interesting to obtain the aqueous from the eyes of the patients seen by Dr. Daniel and to use this aqueous in a skin test on the same patients.

DR. DERRICK T. VAIL, JR., Cincinnati. Dr. Daniel's paper appears to be the second discussion in the English language of a peculiar form of cataract (and one which appears to be pathognomonic) associated with atopic eczema or neurodermatitis. The first was by Dr. W. T. Davis in 1921. The disease association has been well established by several observers and I suppose, could be called a syndrome. In bringing this condition to notice it would have been better and less spectacular if Dr. Daniel had used the term "eczema cataract" or "neurodermatitis cataract," since the dermatologists themselves have not agreed entirely, as yet, on the allergic basis of eczema. The role of the endocrine glands has not been eliminated from the picture of neurodermatitis. Ollendorf and Levy found from an analysis of the literature that a disturbance of the endocrine glands was present in 20 per cent of the cases of neurodermatitis. They differentiate late exudative eczematoid, disseminate neurodermatitis or atopic dermatitis from contact dermatitis or eczema. Lowenstein, Kraus, Kurz, Bothmund, Andogsky and Vogt found definite endocrine disturbances in their cases of neurodermatitis and cataract. Dermatologists are at variance with one another regarding the allergic etiology of neurodermatitis. Taub and Zakon, for example, state that nearly all patients give a positive allergic history. On the other hand, Wise and Sultzberger while finding forty-two positive urticarial reactions in eighty-six cases, concluded that there are nevertheless grounds for doubting the importance of allergens for the etiology of neurodermatitis and of eczema in children. The definite thing known then, is that there is a rare, peculiar form of cataract associated with a skin disease called neurodermatitis. Therefore, in the present rather chaotic state of knowledge regarding neurodermatitis it seems best not to put the blame for the cataract on "overworked" allergy. Since neurodermatitis is such a complex disease, one could assume that the cataract was of metabolic origin because of endocrine dysfunction, or avitaminotic because of faulty absorption, or chemical because of blood calcium disturbance, as easily as of allergic origin. Finally, the enormous number of allergic people, especially the eczematous young adults may be considered and these few case reports of cataract compared with them. The "missing link" is still missing in this disease.

DR. W. R. BUFFINGTON, New Orleans. Delicate tissues are often profoundly influenced by all forms of intensive light therapy. During the past year I saw lenticular changes known as irradiating cataract in two cases result from intensive ultraviolet radiation given over a period of time for external ocular

lesions. One of the patients in Dr. Daniel's series—a Mr. F. A. R. of Baton Rouge, La., was examined by me in October 1934. This was some time before he came under Dr. Daniel's observation. His history shows that for at least two years previous to January 1934 he had suffered from a severe dermatitis, which affected the face and neck. The diagnosis was an allergic manifestation of unknown origin. The lesion had resisted all medication. Finally during the months of January and February 1934, the history continues, he was given intensive ultraviolet treatment about the face and neck, in the hope to relieve his discomfort. Although the disease had existed for a long time no disturbance of vision was ever experienced previous to this treatment. A few weeks subsequent thereto the patient's vision commenced to blur, so that by August 1934 it became necessary to dilate his pupils to improve vision in order that he might continue in his occupation. It was found that his poor vision was due to lenticular changes confined for the most part to the central area of the anterior capsule of each lens. Slit light examination showed them to be dense elevated opaque plaques, most likely a result of proliferating anterior epithelial cells. Careful observers have noted that this type of cataract often follows various forms of intensive light therapy, hence the term irradiation cataract. In this case the history and the observed facts cast a shadow of doubt on the theory that the lenticular changes are an allergic manifestation.

DR. C. ULYSSES MOORE, Portland, Ore. From 1918 to 1928, recurring attacks of corneal ulcers in my right eye were treated by some of the best known American ophthalmologists. Some searched diligently for syphilis and tuberculosis. Being disappointed there two recommended the removal of the offending eye. None of these learned men ever mentioned allergy as a possible cause of my trouble. An allergic minded pediatrician, however, solved the riddle through the making of scratch tests for some 200 foods. But for those tests I might now or soon be a candidate for a cataract operation, as my father was at 60. My family history shows none of the classic signs of allergy, such as asthma, hay fever, urticaria, eczema, headaches or colitis. But the food tests proved me mildly sensitive to more than a score of foods. I liked and still do tuna fish and beef steak, but a serving of either will make me prematurely tired and irritable. The following day I am likely to have a conjunctivitis. If I continue to eat offending foods for three days, a new corneal ulcer will probably develop. During the ten years from 1918 to 1928 more than 20 per cent of my time was lost because of an undiagnosed allergic eye. During the past seven years only a few days have been lost. These were primarily to demonstrate to doubting Thomases four different times that in my case tuna fish produces conjunctivitis, while halibut brings a speedy cure. If a committee of this group wishes to use me for additional clinical proof I shall, for the sake of other sufferers, consent.

DR. RUBY KATHRYN DANIEL, Rochester, Minn. I have tried to use terms as simple as possible because, in the study of the literature on allergy, many terms encountered are confusing, and some are used with a wide variety of meanings. I believe that this fact accounts for much conflict of opinion. One should appreciate fully and accurately the interpretation of such basic terms as allergy and immunity, these words cannot correctly be used interchangeably. This study does not propose to include laboratory work on the intra-ocular tissues of these allergic individuals; it is based on clinical deductions. However, laboratory animals have given evidence that the eye does participate in a general hypersensitivity. Burky observed that anaphylactic antibodies in the aqueous were increased apparently somewhat proportionally to the hypersensitivity of the skin in his allergic animals. Furthermore, one should not use the words atopic eczema and neurodermatitis interchangeably. For instance, in case 1 the first flare up at the age of 4, after handling a dyed Easter egg can be explained on a basis of atopic eczema, a reaction markedly allergic in nature, but this would not fall into the classification of neurodermatitis in the strict sense of the word. In this paper I simply intended to report the cases of three young adults who have marked allergic reactions, who further, have cataracts which seemingly have a significant onset and progress, and to suggest a possibility that in these patients these two may be related.

HYPERGLYCEMIA

EVALUATION IN THE TREATMENT OF DIABETES
MELLITUSHERMAN O. MOSENTHAL, M.D.
NEW YORK

The control of the blood sugar level in diabetes has been largely influenced by the impression that, since the so-called normal blood sugar concentration in healthy human beings is between 100 and 140 mg per hundred cubic centimeters, this is the optimal blood sugar level and should be striven for in the management of diabetes. The significance of hyperglycemia in the treatment of diabetes may be considered under four headings:

- 1 The renal threshold to dextrose
- 2 The normal blood sugar level
- 3 A high blood sugar level without glycosuria
- 4 A high blood sugar level with glycosuria

RENAL THRESHOLD TO DEXTROSE

The researches of A. N. Richards and his collaborators have established that urine originates by filtration from the blood through the glomerular membrane of the kidney, that this filtrate contains dextrose in the same concentration as the blood and that the dextrose in the glomerular filtrate is reabsorbed in the renal tubules, resulting in a bladder urine free from sugar in the clinical sense (fig. 1). When the blood sugar rises as high as 170 mg per hundred cubic centimeters, the dextrose is not all taken up in the tubules and glycosuria results (fig. 1).

Renal Glycosuria—The occurrence of glycosuria while the blood sugar concentration is normal—that is, 140 mg or less—is known as renal glycosuria. It is evident that this condition is not the same as diabetes, since in diabetes there is a diminished ability to utilize sugar within the body, while in renal glycosuria this does not hold true. The small amounts of sugar eliminated in the urine in renal glycosuria, even over a period of many years, do no harm and do not result in the complications seen in diabetes with the urinary excretion of large amounts of sugar. The importance of this fact will become clear further on when the control of hyperglycemia and glycosuria will be considered.

High Renal Threshold to Dextrose—The failure of sugar to appear in the urine when the blood sugar rises above 170 mg is regarded as due to a high renal threshold. This is mentioned here because in accounting for hyperglycemia in the absence of glycosuria it is frequently stated that this is an indication of decreased kidney permeability pointing to nephritis; this is incorrect, since a high renal threshold to dextrose is not due to diminished renal function but rather to hyperactivity on the part of the tubules. In fact there are many cases of acute and chronic nephritis in which there is renal glycosuria, that is, a lowered kidney threshold to dextrose, which might well be considered an impairment of tubular function.

NORMAL BLOOD SUGAR LEVEL

A normal blood sugar level is indicative of a perfect control in diabetes. If it is achieved by undernutrition, it is obvious that it is unwarranted. Malnutrition in diabetes may be justly regarded as one of the contribut-

ing causes for the development of diabetic arteriosclerosis and is a factor in the production of the complex syndrome of diabetic coma as shown by Peters, Kydd and Eisenman.¹

With the aid of insulin, malnutrition can readily be prevented but the possibility of partial starvation in diabetes is often overlooked both by the physician and by the patient, in an effort to avoid insulin, while conforming to the other standards of ideal therapy, that is, a normal blood sugar level and a urine free from sugar.

HIGH BLOOD SUGAR WITHOUT GLYCOSURIA

A high blood sugar without glycosuria is often observed in diabetic patients and others, especially in older persons. While sugar usually appears in the urine when the blood sugar reaches a level of 170 mg per hundred cubic centimeters, there are very many exceptions to this rule, blood sugars of 200 and 300 mg and sometimes higher are frequently found without demonstrable glycosuria. From what has been said in the section on renal threshold to dextrose, it is evident that the reason for this is not a lowering of the kidney's excretory power but an acceleration of the

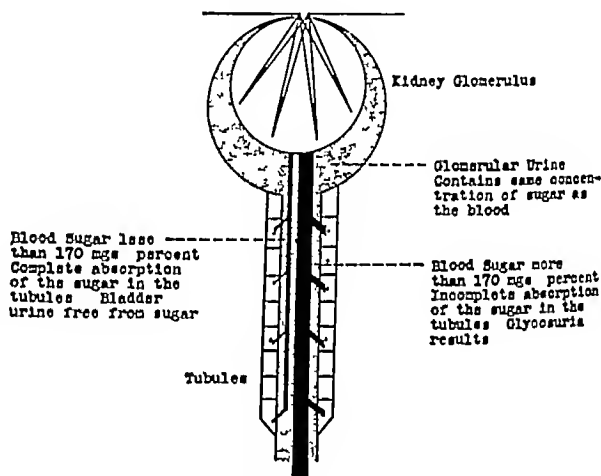


Fig. 1—Renal threshold to dextrose. The production of renal glycosuria or a high renal threshold may be readily visualized from this diagram.

process of reabsorption from the glomerular filtrate by the tubular membranes.

Hyperglycemia, according to the available evidence, does not damage the tissues. In a study of the effect of changes in medium on lens epithelium cultures, Kirby, Estey and Wiener² noted no real difference in growth with dextrose concentration as high as 478 mg of dextrose per hundred cubic centimeters of medium, and it was only when the concentration was 578 mg that there was a slight inhibition of growth. Dr. Alexis Carrel³ fails to find any interference with tissue growth in mediums containing 300 mg of dextrose per hundred cubic centimeters and has not tried higher concentrations. Warren⁴ says "A high blood sugar level is not in itself injurious to the heart muscle."

In regard to the relation of bacterial growth to the concentration of sugar as it occurs in the blood of diabetic patients without complicating acidosis or glyco-

1 Peters J. P., Kydd D. M. and Eisenman Anna J. Serum Proteins in Diabetic Acidosis. J. Clin. Investigation 12: 355 (March) 1933.
2 Kirby D. B., Estey Keith and Wiener R. von E. A Study of the Effect of Changes in Medium on Lens Epithelium Cultures. Tr. Am. Acad. Ophth. 37: 196 1932.
3 Carrel Alexis. Personal communication to the author.
4 Warren Shields. The Pathology of Diabetes Mellitus. Philadelphia Lea & Febiger 1930 p. 153.

suria, all the observations point to the conclusion that concentrations of sugar in the hyperglycemic range do not favor bacterial growth. Hirsch-Kauffmann and Heimann-Trosien⁵ failed to demonstrate an acceleration of bacterial growth in the blood of diabetic patients containing as high as 410 mg of dextrose per hundred cubic centimeters, or when the blood sugar previous to the use of the blood as a culture medium was raised by infusion from 70 to 239 mg per hundred cubic centimeters, or when dextrose was added to normal blood, raising the sugar to 600 mg per hundred cubic centimeters, on the other hand, blood from children in diabetic coma did promote bacterial growth, but after recovery from coma the blood of these patients did not favor bacterial growth. Handsmann⁶ found that blood with dextrose concentration as high as 1 per cent was no better as a nutrient medium *in vitro* for staphylococci than normal blood, and also that the addition of dextrose to blood does not diminish its bactericidal power against the staphylococcus. In the preinsulin period some of us were systematically giving diabetic patients suffering with infections, usually skin abscesses or carbuncles, as much nourishment as possible, especially proteins, with the idea that, if the urine was sugar free and dehydration compensated for, the hyperglycemia was of no great importance, such diabetic patients recovered very well from their infections.

Hyperglycemia apparently furnishes a stimulus for the effective assimilation of sugar. Cori,⁷ in a review on carbohydrate metabolism, makes it clear that a high blood sugar promotes the formation of glycogen in the liver and he comments on the possible beneficial effects of a high blood sugar in diabetes as follows: "Lesser, puzzling over the fact that hypoglycemic symptoms appear at such a high blood sugar level in diabetic dogs, offered the interesting suggestion that in diabetes a high blood sugar level is necessary for any sugar to be utilized in the tissue."

Hyperglycemia is necessary for the utilization of dextrose in many diabetic patients. The conclusions of Soskin, Katz, Strouse and Rubinfeld⁸ are particularly interesting in this regard, as they showed that in elderly diabetic patients with cardiovascular disease the same symptoms that occur after insulin administration could be induced with a low carbohydrate diet. They found that serious cardiac manifestations such as paroxysmal auricular fibrillation, intraventricular block and angina pectoris, besides the usual symptoms of hypoglycemic shock, will in some persons follow the lowering of the blood sugar below their accustomed hyperglycemia to concentrations accepted as normal.

A high blood sugar is evidently necessary for an initiation of the processes of carbohydrate utilization in many individuals who do not have diabetes. This has been noted in the interpretation of sugar tolerance tests. The highest normal blood sugar that usually occurs after the taking of 100 Gm of dextrose is accepted as 160 mg per hundred cubic centimeters, there are many instances in which the only abnormality in the curve is the height to which it rises, frequently

above 200. These persons who exhibited "lag curves" or "high curves" subsequently did not develop diabetes.⁹

It is well known that in many nondiabetic patients, especially in elderly persons with arteriosclerosis and hypertensive disease, hyperglycemia is often found. Their sugar metabolism with the aid of a high blood sugar is normal and most of these persons do not develop diabetes in the clinical sense, although they have commonly been put in the vague, possibly unwarranted, classification of prediabetes. Here again is an example of the satisfactory utilization of sugar under the stimulus of hyperglycemia, which, in itself, produces no untoward effects.

In 1928 a report was made that an excess of sugar in the blood does not result in an increase of blood pressure in cases followed for a period of seven years.¹⁰ One of these patients is still under observation and has not developed hypertension or other complications characteristic of diabetes in the course of thirteen years, while a persistent hyperglycemia without more than transient glycosuria prevailed, as shown in the accompanying table. This man has a tendency to have hypoglycemic reactions at a high blood sugar level.

Relation Between Blood Sugar and Blood Pressure *

Year	Number of Blood Sugar Determinations			Blood Pressure Determinations			
	200 Mg or Over	150 to 200 Mg	Less Than 150 Mg	Lowest		Highest	
				Sys tole	Diast tole	Sys tole	Diast tole
1921			7	98	64	116	72
1922	10	5	11	92	58	114	78
1923	15	4	4	92	58	108	76
1924	8	4	4	82	53	110	66
1925	5	4	2	85	52	104	70
1926	8	5	0	86	58	104	78
1927	6	1	0	86		112	67
1928	8	0	0	97	61	128	84
1929	7	1	0	98	64	116	68
1930	5	0	0	90	64	128	60
1931	6	3	0	98	66	112	72
1932	4	2	1	94	65	128	78
1933	8	3	1	96	64	128	78
1934	2	4	2	102	66	122	64

* A man aged 61 has had diabetes mellitus since 1921 the disease being mild originally but now severe. A fairly constant hyperglycemia without more than transient glycosuria did not elevate the blood pressure or bring about other complications of diabetes in thirteen years. These blood sugar values are low for this patient since no determinations were made when the urine showed sugar.

The rapid circulation of the blood furnishes constantly repeated stimuli to all the agencies in the body capable of utilizing dextrose, and the advantages of hyperglycemia in promoting the storage and oxidation of dextrose thus becomes apparent. The carbohydrates are absorbed from the intestinal canal, enter the blood as monosaccharides, principally dextrose, and then the various tissues and organs are repeatedly influenced by the blood dextrose because of the rapidly recurring circulation (fig 2). The blood makes a complete circuit, being propelled from the heart and returning to the heart every three to five minutes, so that the opportunities for the normal disposal of dextrose when hyperglycemia exists are very great. The usual conception of carbohydrate metabolism disregards these multiple chances for the liver, voluntary and heart muscles, and other tissues to store and oxidize dextrose. The fact that this series of events does occur explains the transient character and harmlessness of hyperglycemia following on the ingestion of dextrose in some persons and also points to the benefits that may result from hyperglycemia in stimulating the utilization of dextrose.

5 Hirsch-Kauffmann H and Heimann-Trosien A. Bakterien Wachstum auf dem Blut Diabetischer Kinder. Klin. Wochenschr. 6: 1922 (Oct 8) 1926.

6 Handsmann E. Ueber die Ursache der verminderten Resistenz des Diabetikers gegen Infektionen. Deutsches Arch f. klin. Med. 102: 1: 1911.

7 Cori C. F. Mammalian Carbohydrate Metabolism, Physiol. Rev. 11: 143 (April) 1931.

8 Soskin Samuel, Katz L. N., Strouse Solomon and Rubinfeld S. H. Treatment of Elderly Diabetic Patients with Cardiovascular Disease. Arch. Int. Med. 51: 122 (Jan) 1933.

9 Mosenthal H. O. The Interpretation of Sugar Tolerance Tests. M. Clin. North America 8: 549 (Nov) 1925.

10 Mosenthal H. O. The Relation of Blood Sugar to Blood Pressure, Am. J. M. Sc. 176: 761 (Dec) 1928.

HIGH BLOOD SUGAR WITH GLYCOSURIA

Small amounts of sugar may be constantly eliminated in the urine without any noticeable disturbance, as has been noted in cases of renal glycosuria, but a persistent glycosuria of sizable proportions representing a loss of 20 Gm or more of sugar in the urine per day entails a number of sequelae for which the body can compensate during a considerable period, but not indefinitely.

Weir Mitchell¹¹ made some interesting observations on this subject as long ago as 1860. He found that neither large doses of sugar administered to frogs, nor water deprivation alone, resulted in cataract, however, if the frogs were saturated with sugar and at the same time taken out of water, cataract developed within a few hours, but when the animals were again immersed in water, the cataract that had begun to form cleared up rapidly and completely. Transferring these observations to diabetes, it can be concluded that hyperglycemia without glycosuria is harmless but that hyperglycemia

Harrop and Schaub,¹² Lande,¹³ Atchley and his associates,¹⁴ Peters, Kydd and Eisenman,¹ and Himwich and his associates¹⁵) When these effects of sugar and water loss have become manifest, all these authors agree that the blood sugar may be reduced to normal and yet the condition may be far from controlled, thus indicating that blood sugar is not the pivotal point in the treatment of diabetes.

Moen and Reimann¹⁶ found that in "controlled" diabetes agglutinins for typhoid bacilli after vaccination developed as in normal persons, but in moderately controlled or uncontrolled diabetes the agglutinin response was weaker or poor. Philorhizin diabetes (in which there is only glycosuria and no hyperglycemia) in rats and mice diminishes their resistance to infection.¹⁷ These experiments indicate that loss of large amounts of sugar in the urine diminishes resistance to infection even in the absence of hyperglycemia. It is the opinion of Aschoff¹⁸ that arteriosclerosis is brought about by the dehydration of both intracellular and extracellular materials. Thus, whatever serious complication of diabetes is considered—malnutrition, acidosis, coma, liability to infections or arteriosclerosis—the cause for it does not appear to be hyperglycemia without glycosuria, but glycosuria and polyuria, that is, an extraordinary and long continued loss of sugar and water in the urine.

SUMMARY

1 High blood sugar in the absence of glycosuria is not due to diminished excretory activity of the kidney, nor is it significant of nephritis, but it is a harmless anomaly resulting from an unusually active reabsorption of sugar from the urine in the renal tubules.

2 While a normal blood sugar level and freedom from glycosuria are among the ideal objectives of therapy in diabetes, there are certain circumstances in which hyperglycemia and glycosuria should not be completely corrected.

(a) A normal blood sugar level and freedom from glycosuria should not be gained by underfeeding, since malnutrition favors the development of arteriosclerosis and is one of the contributory factors in producing diabetic coma.

(b) Small amounts of sugar may be eliminated in the urine without detrimental results, as shown in renal glycosuria. It is important to recognize this because, in cases of diabetes with a comparatively low renal threshold, there is with rigorous insulin control the possibility of repeated hypoglycemic reactions, which in all probability are injurious in both their immediate and their remote effects and, consequently, should be avoided even at the sacrifice of intermittent glycosuria.

(c) Hyperglycemia without glycosuria, according to the available evidence, not only has no damaging effect on the heart and other tissues but is a necessary stimulus for the proper assimilation and oxidation of dextrose in many persons, both diabetic and nondiabetic.

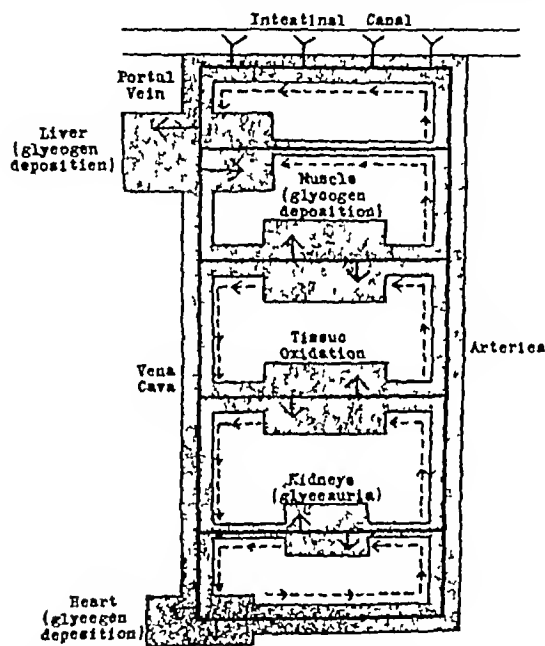


Fig. 2—The disposal of absorbed dextrose. It is desired to emphasize the fact that the various tissues and organs repeatedly exert their effect on the blood dextrose because of the rapidly recurring circulation.

associated with glycosuria, polyuria and dehydration is responsible for most of the serious complications in diabetes.

In our experience, diabetic arteriosclerosis resulting in gangrene and angina pectoris and cataract occur almost solely in those patients who have been extremely careless about their diet and insulin control for a period of five years or longer. Glycosuria and polyuria entail a most devastating series of events that cause untold damage—dehydration, desiccation of the tissues, hemoconcentration, undernutrition through loss of sugar in the beginning and subsequently through increased protein destruction and hypoproteinemia, acidosis, loss of electrolytes of the intracellular and extracellular fluids, diminished oxygen capacity of the blood, and decreased blood supply to the skin, heart and muscles. The idea that these changes, detected by painstaking laboratory determinations, are due entirely to polyuria and glycosuria and are not brought about by uncomplicated hyperglycemia alone, is generally acknowledged (Chang,

12 Chang, H. C. Harrop, G. A. Jr. and Schaub, B. M. The Circulating Blood Volume in Diabetic Acidosis. *J. Clin. Investigation* 5: 407 (April) 1928.

13 Lande, Herman. Uncontrollable Causes of Death in Diabetic Coma. *J. A. M. A.* 101: 9 (July 1) 1933.

14 Atchley, D. W., Loeb, R. F., Dickinson, W. R., Jr., Benedict, Ethel M. and Driscoll, Mary E. On Diabetic Acidosis. A Detailed Study of Electrolyte Balances Following with Withdrawal and Reestablishment of Insulin Therapy. *J. Clin. Investigation* 12: 297 (March) 1933.

15 Himwich, H. E., Fazikas, J. F., Nahum, L. H., Du Bois, Delafeld, Greenburg, Leonard and Gilman, A. Z. Diabetic Hyperpyrexia. *Am. J. Physiol.* 110: 19 (Nov.) 1934.

16 Moen, J. K. and Reimann, H. A. Immune Reactions in Diabetes. *Arch. Int. Med.* 51: 789 (May) 1933.

17 Leo, H. Beitrage zur Immunitätslehre. *Ztschr. f. Hyg. u. Infek. tionskr.* 7: 505 1889.

18 Aschoff, Ludwig in Cowdry, E. V. *Arteriosclerosis*. New York, Macmillan Company 1933.

11 Mitchell, S. W. On the Production of Cataract in Frogs by the Administration of Sugar. *Am. J. M. Sc.* 39: 106 1860.

3 A prolonged, marked glycosuria with its attendant polyuria and dehydration is responsible for the diminished resistance to infectious processes, arteriosclerosis, formation of cataract, malnutrition, acidosis and coma, which are so characteristic of diabetes. Hyperglycemia without glycosuria is not a cause for these complications in diabetes.

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ABSTRACT OF DISCUSSION

DR ELLIOTT P JOSLIN, Boston. Hyperglycemia is a warning signal. Dr Mosenthal has distinguished between the cause of harmless and of harmful hyperglycemia. What puzzles me about the theoretical side of the question is that the diabetic patients who show hyperglycemia without glycosuria are old, have arteriosclerosis cannot see or have gangrene, and yet these are the very ones whose tubules are spry and functioning better than ever in their previous lives. It seems like an anachronism that the older the diabetic patient is, the better his tubules work. The charts that Dr Mosenthal showed present more blood sugars of 200 mg or more in 1922 and 1923 than in 1933 and still less in 1934. Dr Mosenthal is an exponent of sound treatment and this may be one of the reasons why his patient has done well. Faithful honest treatment in the course of time will lower many a queer high blood sugar.

DR EDWIN J KEPLER, Rochester, Minn. Should the medical practitioner be satisfied merely if diabetic patients do not excrete sugar in the urine, or should he demand further that the blood sugar be reduced to a level that approximates normal? At present there is no dogmatic answer to this question. The problem can be simplified if the objectives of treatment in diabetes are kept in mind. These objectives can be summarized briefly as follows: 1 The cardinal and incidental symptoms of diabetes should be controlled. This objective has been attained. 2 The development of degenerative lesions (chiefly arterial) incidental to diabetes should be prevented. Here the results obtained leave much to be desired. One of the chief reasons for failure lies in the fact that the cause of the high incidence of atherosclerosis in cases of diabetes is not known, and consequently to a certain extent treatment is on a theoretical basis. Various theories, incriminating a high level of the blood sugar, protein salt, calcium vitamins and, more recently, cholesterol have been propounded. These theories are reflected in the confusing multiplicity of diets that are advocated. Dr Mosenthal has presented additional evidence that the high level of blood sugar without glycosuria is not responsible for these arterial changes. In this respect I am in accord with him. It is useful for the purpose of treatment to classify cases of diabetes as: 1 Juvenile and adolescent, in these it probably would be beneficial to keep the blood sugar normal at all times; however, many of these are "brittle cases" and the blood sugar fluctuates violently and suddenly. 2 Early and adult, in which I prefer to keep the blood sugar normal, in a considerable number of these cases this can be done satisfactorily, and, if the blood sugar is normal one knows that the disease is being controlled. 3 Senile and senescent, in which I am satisfied to keep the urine free from sugar and let the blood sugar seek its own level. There are a number of plausible scientific reasons dealing chiefly with the behavior of the heart afflicted with coronary disease when the blood sugar is suddenly lowered to support this view. There is another less scientific reason however namely that elderly individuals do not tolerate sudden shifts in their intrinsic or extrinsic environment and many of them have become habituated to a high level of the blood sugar. If overenthusiastic attempts are made to lower the blood sugar to 'normal' by insulin or a too rigid diet, many of these patients are made miserable.

DR W S COLLENS, Brooklyn. The usual procedure in following the progress of a diabetic patient whether in practice or in recording in the literature, consists in the observation of the patient's urinary excretion of sugar in twenty-four hours and the determination of the fasting blood sugar. I should like to ask Dr Mosenthal whether he followed that procedure in his report and whether the blood sugars that he reported were obtained under fasting conditions. We carried out some

investigations at the Greenpoint Hospital to attempt a clinical interpretation of the fasting blood sugar. We performed twenty-one blood sugar studies on this patient over a thirty-hour period, at intervals varying between one and two hours. At 6 o'clock in the morning the patient's fasting blood sugar was 275 mg, at 7 o'clock it was 350. He then received his insulin and his breakfast, and for the next hour his blood sugar continued to rise to 400. At the end of an hour it proceeded to drop at a very rapid and precipitate rate of 17 mg per minute, so that by noon it reached 50 mg. He received his insulin and his lunch at 11:30. His blood sugar then continued at this level, and at 4:30 he received his insulin and his supper. At 10 o'clock at night his blood sugar was still under 100. At 3 o'clock in the morning it showed its first rise to 125 mg and from then on it continued to rise progressively, indicating that the insulin effect had worn off. The next morning he was not given any breakfast or any insulin, for we wished to determine the character of the fasting blood sugar at different hours of the morning. At 6 o'clock it was back to 340 at 8 to 375, at 10 to 415, and at 12 to 454. We repeated this experiment eight days later on the same patient, and instead of giving insulin and supper at 4:30 we gave them at 7. The result was that everything was delayed exactly two and a half hours, so that at 6 o'clock in the morning, instead of a blood sugar of 340 it was 110, and at 8, when it was 375 originally, he had 224. This does not mean that at the time the second experiment was performed his diabetes was less severe. It merely means that the recovery phase following the insulin effect was delayed because the insulin given with his supper was administered at a later hour. The fasting blood sugar depends first on the totality of the patient's diabetes, secondly on the amount of food that the patient receives in the previous meal, thirdly, on the amount of insulin he receives with the previous meal, and fourthly, on the time the intern gets up to take the blood. It simply means that the content of sugar in the blood is not a static phenomenon, that a patient receiving insulin as part of his treatment and adequately controlled possesses a normal blood sugar for more than eighteen hours of the twenty-four hour cycle, and that the blood sugar rises only in the early morning hours when there is no effect from insulin.

DR CHARLES T MAXWELL, Sioux City, Iowa. Hyperglycemia probably exists at times in all patients with diabetes of any severity. The normal individual weighing 150 pounds (68 Kg) with a blood sugar of 100 has approximately 5 Gm of sugar circulating in his total blood volume. With an increase of blood sugar to 140 he adds but 2 Gm to his total blood sugar. That is a pretty close regulation to ask the diabetic patient to follow. My interest is based on the care of patients and a number of years' personal experience as a diabetic patient. I believe that the blood sugar in younger individuals, who haven't become tolerant of high blood sugar, should be kept as near normal as possible. In all cases the sugar curve should be kept as regular and smooth as possible. The time element in the use of insulin is not sufficiently emphasized and it must be worked out in the individual patient. Insulin should be given long enough before food especially breakfast, to cause a falling sugar curve when the food is given. This will give a less pronounced rise after food a smoother curve throughout and less liability of an insulin reaction later in the day.

DR A A HEROLD, Shreveport, La. I would like to ask Dr Mosenthal two questions. First has he made the observation that the long-continued use of insulin seems to raise the renal threshold? It has been my experience that a patient who has been taking insulin for a long period of time has a higher blood sugar when he begins to show glycosuria than he had previous to using insulin. Second, has he ever observed symptoms of severe diabetes, including dehydration, in patients without glycosuria? I recall one patient who showed no glycosuria, with a blood sugar of more than 600 mg. In these extreme cases, I believe that more attention should be paid to the hyperglycemia.

DR HERMAN O MOSENTHAL, New York. The objectives in the treatment of diabetes are decidedly different now than they were some years ago. Beginning with the first day a patient with diabetes is seen, the aim is to prevent arteriosclerosis which through coronary disease, gangrene and cere-

bral accidents, is largely responsible for the present day diabetes mortality. This is the crucial problem in diabetes therapy at the moment. The maintenance of nutrition and the prevention of acidosis and coma, which loomed so ominously before the introduction of insulin, have been robbed of their threat, when diet and insulin are conscientiously and intelligently used. It is my contention that a blood sugar concentration above the accepted level of normal is not harmful, provided there is no glycosuria and dehydration. A high blood sugar will favor the assimilation and utilization of dextrose by the tissues and is not a factor in reducing the bodily resistance to infections or in promoting the development of arteriosclerosis. In many cases of diabetes, the burden and hazards of treatment are increased a great deal when a normal blood sugar level is insisted on. The case demonstrated, it is true, shows fewer blood sugar determinations above 200 in later years than at first, but it is obvious that the total number of blood sugar determinations has diminished since this patient has gained confidence and does not visit me as often now as formerly. The blood sugars in this patient are at low levels for him, since blood sugar determinations were made only on the days on which the urine specimens were sugar free when there is glycosuria, it may be taken for granted that the blood sugar is too high. Dr. Collens has called attention to the extreme variability of the blood sugar level. I have found this to be true. For many years I have taken the blood specimens for sugar determinations some hours after breakfast and after the first dose of insulin, believing that in specimens of blood taken at that time a more representative blood sugar value is obtained. In patients who are under insulin therapy the blood sugar is prone to be high before breakfast and in those who do not receive insulin the blood sugar is usually at its maximum two hours after breakfast or later in the day.

A STUDY OF ACTIVE IMMUNIZATION AGAINST SCARLET FEVER

IN CHARITABLE INSTITUTIONS AND PUBLIC
SCHOOLS OF PHILADELPHIA

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This paper, as its title indicates, is an account of experiences of the Department of Public Health of Philadelphia with active immunization against scarlet fever. It is not in any sense a bacteriologic or biologic discussion of the specific nature of the streptococcus of scarlet fever or of the biology of the toxin. It is, however, a record of a sufficient number of cases to give weight to the conclusions that in this method of immunizing, as laid down by the Dicks, there is a sure means for the prevention of the disease and its after-effects.

It seems strange that reiteration of experience already so great and of figures should be necessary to convince the medical men at large of the efficacy of the proceeding, particularly in the light of their attitude toward diphtheria prevention in its struggle for general adoption. Almost ten years of accumulated facts was needed before final and complete acceptance was obtained, in spite of indisputable scientific proofs. Just so today is the same obstructive conservatism holding back the general adoption of scarlet fever prevention in private practice and public health work, at an enormous cost of suffering and death, not to mention the lesser question of cost in money and time.

The objectors bring up the threadbare question—again and again has it been answered—Does not the

toxin conquer only some symptoms of the disease, such as the rash, and thus make a more dangerous situation than was existent prior to its administration?

Another objection, and this a more real one, is on the ground of the reactions. The answer to the first question is emphatically no, if proper doses as laid down by the Dicks are used. The proof of the truth of the statement lies in the fact that there have been no cases of sickness in those who have been declared immune or who have been immunized which are in any degree suggestive of scarlet fever without rash or of any other group of symptoms or complications of the disease. The reactions are at times marked, but never sufficiently so as to have weight to overcome the value of the immunity conferred.

In Philadelphia we have been fortunate in having two experiences which we, at least, would not have sought voluntarily but which served as a valuable example to us in the very beginning of our work.

In 1926 scarlet fever immunization was introduced among the nurses and physicians at the Philadelphia Hospital for Contagious Diseases. Formerly there had been the usual heavy incidence of contagion common in such institutions. For several years after its introduction no case of scarlet fever developed in physicians or nurses fully immunized. When, however, in 1929 a former director of public health was persuaded to abandon the compulsory immunization, the disease again appeared in physicians and nurses, again to be eliminated ever since on the reintroduction (fourteen months later) of the use of the toxin. Twelve cases developed in the fourteen months of suspension of immunizations.

A second occurrence was an object lesson of equal or greater value to us, and again we were the innocent gainers in experience because of a situation that neither party concerned in would willingly have produced in the light of our convictions. Our work on any considerable scale began with the examination and immunization of children, nurses and attendants in a large private charity home and of a health center, under the jurisdiction of the Department of Public Health of Philadelphia, by Dr. Gladys Dick, who had kindly consented to inaugurate the work in Philadelphia.

In the case of the home, a year later a number of new children were admitted and scarlet fever broke out among them, but not one child (with one exception¹) or adult, declared immune or injected by Dr. Dick, took the disease, and the small epidemic was immediately arrested when the new children were tested and immunized. There was some misunderstanding that led to this interesting human experiment, the physician at the home and the department of public health were each awaiting a call from the other, which did not come until the fire alarm of scarlet fever.

The work of Dick testing and immunization against scarlet fever, as a public health measure, was begun in the latter part of 1932, and from that time until March 1, 1935, 10,057 children have been tested and those found susceptible treated. Of these, 4,053 were children living in institutions and 6,004 came from private homes. Most of the institutions seeking the treatment had recently experienced infection of scarlet fever, and the immunologists of the department of public health visited the homes and orphanages to make the test and administer the treatment at the request of the institution. Six thousand and four children came

from private homes and sought the treatment by the immunologists in the ten health centers conducted by the department of public health. Of these, 58 per cent were found positive and were immunized. Of the 4,053 children living in institutions, 1,052 (26 per cent) were found positive to the Dick test. The ages of the

TABLE 1—Results of Dick Test Given by the Department of Public Health of Philadelphia

Reactions to Dick Test Administered to Children in Institutions for 1933-1934 up to March 1 1935				
	Positive	Negative	Percentage Positive	Percentage Negative
Under 1 year	14	69	17	83
1 to 2 years	69	38	64	36
2 to 3 years	57	53	49	51
3 to 4 years	47	105	31	69*
4 to 5 years	48	49	49	51
5 to 6 years	49	52	49	51
6 to 7 years	81	108	43	57
7 to 8 years	64	161	29	70
8 to 9 years	77	180	30	70
9 to 10 years	61	182	25	75
10 to 11 years	59	164	26	74
11 to 12 years	64	179	26	74
12 to 13 years	46	161	22	78
13 to 14 years	81	162	33	67
14 to 15 years	30	148	17	83
15 to 16 years	35	143	20	80
Over 16 years	290	1 020	18	82
Total number of Dick tests (4 053)†	1 052	3 000	26	74

Reactions to Dick Test Administered to Children Not Living in Institutions for 1933-1934 up to March 1 1935†				
	Positive	Negative	Percentage Positive	Percentage Negative
Under 1 year	30	17	70	30
1 to 2 years	703	157	82	18
2 to 3 years	712	210	77	23
3 to 4 years	562	276	67	33
4 to 5 years	385	234	62	38
5 to 6 years	246	214	53	47
6 to 7 years	232	220	51	49
7 to 8 years	190	290	41	59
8 to 9 years	164	287	35	65
9 to 10 years	75	157	32	68
10 to 11 years	42	111	27	73
11 to 12 years	8	79	9	91
12 to 13 years	13	65	17	83
13 to 14 years	6	40	13	87
14 to 15 years	6	13	32	68
15 to 16 years	7	16	30	70
Over 16 years	13	108	11	89
Total number of Dick tests (6 004)‡	3 404	2 499	58	42

* St. Vincent's Hospital contributed most of the cases in the 3 to 4 year group and many of the children had recently been injected with toxin antitoxin for diphtheria immunizations.

† Tested in institutions.

‡ Other than institutions.

Sum total

† Positive

Negative

Not read

Total Dick tests

† This includes a group of 651 children Dick tested in public schools in the fourth ward 447 of these children were positive and 44 were negative or an average of 50 per cent positive and 50 per cent negative. Fifty nine children were Dick tested and not read.

‡ Positive

Negative

Did not return for Dick test reading

Total Dick tests

children tested in institutions ranged from under 1 year to 16 years. This is a low percentage of susceptibility but is above that usually found in children who have lived in institutions for some years.

Table 1 shows, according to age, the percentage of positive reactions to the Dick test among children living in institutions and those outside.

REACTIONS AFTER ADMINISTRATION OF SCARLET FEVER TOXIN

Of the first 790 cases, 65.7 per cent showed no reactions to any of the injections of the toxin, 30.1 per cent showed slight reactions after one or another of the various doses. The reactions may occur after any one of the injections but were found most common after the third and fourth. Thirty-three cases (4.2 per

cent) showed marked reactions consisting of nausea, vomiting, fever, sometimes as high as 103 F, sometimes scarlatinal rash, sore throat, and pain in the joints and abdomen. Usually not all this rather formidable array of symptoms appeared in any one child, and it must be borne in mind that the toxin is a specific emetic and that the vomiting has less significance than if it were an evidence of systemic disturbance. The symptoms of reaction always appeared within six hours after the administration of the toxin and usually disappeared in a few hours. The most severe seldom were present for more than twenty-four hours. Causes other than toxin should be sought if illness is present for forty-eight hours or more after the treatment. Interestingly enough, the reactions were in these early cases less severe in the children in institutions than in those who were treated in health centers.

It was apparent that the after-care of the child is of great importance in modifying the severity of the reactions, and those who were given rest in bed and light diet after each treatment seldom had any but the mildest of reactions. Conversely, those who were allowed to exercise actively and to eat more or less heavy meals were more prone to marked reactions.

It is of importance in public health work to obtain the cooperation of the parent and clearly inform him

TABLE 2—Report on Re-Dick Tests (March 1935) to Determine Any Change in Immunity After Negative Primary Dick Test

Age at Primary Dick Test	Date and Number of Primary Tests	Positive	Negative	Total Number of Re-Dick Tests
Under 1 year	Oct. 1933 5	0	5	5
1 to 2 years	Oct. 1933 9	0	9	9
2 to 3 years	June 1932 6 March 1933 1	0 0	0 1	7
3 to 4 years	June 1932 7	0	7	7
4 to 5 years	June 1932 4 March 1933 1	0 0	4 1	5
5 to 6 years	June 1932 1 March 1933 2	0 0	1 2	3
6 to 7 years	June 1932 2 March 1933 3	0 0	2 3	5
7 to 8 years	March 1933 4	0	4	4
8 to 9 years	June 1932 1 Feb. 1933 1 March 1933 12	0 0 0	1 1 12	14
9 to 10 years	Feb. 1933 5 March 1933 10	0 0	5 10	15
10 to 11 years	Feb. 1933 1 March 1933 14	0 0	1 14	15*
11 to 12 years	Feb. 1933 3 March 1933 15	0 0	3 15	18
12 to 13 years	Feb. 1933 6 March 1933 6	0 0	6 6	12
13 to 14 years	Feb. 1933 4 March 1933 6	0 0	4 6	10
14 to 15 years	Feb. 1933 3 March 1933 4	0 1	3 3	7
15 to 16 years	Feb. 1933 2 March 1933 2	0 0	2 2	4
Over 16 years	June 1932 2 Feb. 1933 1 March 1933 1 Oct. 1933 10	0 0 0 0	2 1 1 10	14
Percentage positive 0.6	Total	1	154	155

* One child in the 10 to 11 year group had a doubtful reaction possibly a protein reaction.

or her what to expect after any or all treatments, also, to instruct all concerned in the necessity of reasonable care of the child. In Philadelphia the department of public health issues a notice to the parent explaining the situation and emphasizing the need of after-care. Of course this is not necessary in private work, but at all times warning should be given of possibilities of unpleasant after-effects and particularly of the possibility of the appearance of a rash.

An analysis of our more recent 1,035 cases showed a much smaller percentage of reactions than was present in our earlier cases, and but 0.2 per cent were severe. Practically all of these cases were of school children, therefore ambulatory cases, and it is difficult to explain our favorable result unless it is that the instructions for after-care were given more attention than before. In the judgment of all concerned in the work in Phila-

TABLE 3—Report on Re-Dick Tests (March 1935) to Determine Any Change in Immunity After Re-Dick Test Was Negative Following Treatment

Age at Primary Dick Test	Date and Number of Negative Re-Dick		Positive	Negative	Total No. of Present Re-Dick Tests
	After 5 Doses	After 6 Doses			
1-2 yrs	June 1932 3	July 1933 1 Aug 1933 1 Sept 1933 2	0 0 0 0 0	3 1 1 0 1	10
	Sept 1933 4 Oct 1933 1 Nov 1933 1 Jan 1934 1 April 1934 2		0 0 0 0 0	2 1 1 1 2	
2-3 yrs	June 1932 0	Sept 1933 1	0 0	0 1	15
	Oct 1933 4 Nov 1933 1 Dec 1933 1 Feb 1934 1 April 1934 1		1 0 0 1 0	3 1 1 0 1	
3-4 yrs	June 1932 4	March 1933 1 April 1933 2 July 1933 1	0 0 0	4 1 2	
	July 1933 1 Aug 1933 2 Oct 1933 2 Nov 1933 1 Jan 1934 1 April 1934 1		0 0 0 0 0 0	1 2 2 1 1 1	
4-5 yrs	June 1932 2 March 1933 1 Dec 1933 2		0 0 0	2 1 2	14
5-6 yrs	June 1932 1 Feb 1933 1 Sept 1933 2 Oct 1933 4 Jan 1934 2 March 1934 8	June 1932 1	0 0 0 0 1* 0	2 1 2 4 1 3	
6-7 yrs	June 1932 1 Feb 1933 2 March 1933 4 Aug 1933 1 Sept 1933 2 Nov 1933 1	March 1933 1	0 0 0 0 0 0	1 2 5 1 2 1	12
7-8 yrs	Feb 1933 3 March 1933 7	Aug 1933 1	0 0 0	3 7 1	
8-9 yrs	Sept 1933 1 Feb 1933 3 March 1933 8 Sept 1933 1		1 0 0 0	2 8 1 1	
9-10 yrs	Feb 1933 8 March 1933 8		0 0	8 8	10
10-11 yrs	Feb 1933 1 March 1933 0		0 0	1 0	
11-12 yrs	Feb 1933 6 March 1933 0 April 1933 1 Sept 1933 1		1 0 0 0	4 0 1 1	13
12-13 yrs	March 1933 2		0	2	
13-14 yrs	Feb 1933 2 March 1933 7		0 0	2 7	
14-15 yrs	March 1933 2		0	2	4
15-16 yrs	Feb 1933 1		0	1	
Over 16 yrs	June 1932 1 Feb 1933 1 March 1933 2		0 0 0	1 1 2	
Percentage positive 3.1			5	164	150
Total number					

* The positive case in the 5-6 year group was exposed to scarlet fever January 1935 but did not contract the disease.

delphia there is an overemphasis laid on the reactions. Local reactions were in no case severe, and no abscesses or ulceration occurred in any of the cases treated.

RESULTS OF RE-DICK TESTING AFTER FIVE DOSES OF SCARLET FEVER TOXIN

In a study of the first 790 cases found positive to the Dick test and subsequently treated with the scarlet fever toxin, 98.5 per cent showed negative reactions

to the Dick test after five consecutive injections of the scarlet fever toxin. In 1.25 per cent a sixth dose of the toxin was required before a negative reaction was obtained and only 0.25 per cent, or two cases, remained positive after a repetition of the fifth dose.

OCCURRENCE OF SCARLET FEVER AFTER A NEGATIVE DICK TEST

In a group of 159 cases treated in 1932, 1933 and 1934 and read negative to the Dick retest at that time, we found on retesting in March 1935 that only 3.1 per cent varied in reaction from the finding of a year or two before.

No case of scarlet fever has developed in any institution in which the patient was tested by one of the city immunologists.

In the 3,404 children treated in the health centers, scarlet fever developed in three cases after a series of doses of the scarlet fever toxin.

Two children, aged respectively 3 and 4 years, after five doses of the toxin were found positive on re-Dick testing, and when the fifth dose was repeated two weeks later a second retest gave negative results. In these children scarlet fever developed a year after the administration of the treatment. Whether the immunity wore off or the reading of the last re-Dick test was inaccurate is difficult to state.

TABLE 4—School Age Group Dick Tested in Fortieth Ward, January 1935

Ages	Positive	Negative	Percentage Positive	Percentage Negative
5 to 6 years	2	10	61	39
6 to 7 years	116	78	60	40
7 to 8 years	114	119	49	51
8 to 9 years	111	119	48	52
9 to 10 years	61	74	45	55
10 to 11 years and over	20	20	50	50
1151, when children were Dick tested and readings were not made				

One child, aged 15 months, treated in 1933 with five doses of scarlet fever toxin, was re-Dick tested two weeks later, gave a negative reading and developed scarlet fever one year later.

In one patient with Little's disease, giving a negative reading (by Dr. Dick) on the primary Dick test in July 1932 and a history of having had scarlet fever, the second attack of scarlet fever developed in the fall of 1932. This child has been subjected to subsequent Dick testing and on each occasion has been negative to the test.

DURATION OF IMMUNITY

The experience in the Philadelphia work in respect to the duration of immunity as evidenced by the Dick test has been eminently satisfactory as far as our history goes.

Thus in a large orphanage, where the ages of the children ranged between 6 and 16 years, with the major portion in the older group, there were found early in 1933 only 9 per cent susceptible, as shown by the positive primary Dick test. Three months after the initial testing ninety of the group under 10 years of age, previously found negative to the test, were retested, and there was no variation from the original finding. In the fall of 1934, twenty of these children were again tested and there was no variation from the original finding.

In a foundling asylum where more than 400 children were Dick tested in 1933, eighty children in the 3 to 4 year age group in one dormitory showed a very low percentage of positive reactions after primary Dick testing. This group had recently received a third dose of toxin.

antitoxin for diphtheria immunization Six months after the initial test, the group showing negative reactions was retested and one child showed a very slight positive reaction

In the group re-Dick tested after treatment with the scarlet fever toxin in 1933, we found that 31 per cent showed a change from a negative to a positive reaction when re-Dick tested in March 1935

TABLE 5—Analysis of First Seven Hundred and Ninety Cases

Re-Dick	Negative After 5 Doses	Negative After 8 Doses	Still Positive	Local Reaction			General Reaction		
				Bright Red	Medium	Faint	None	Severe	Mild
Under 1 year	13 100%	0 0	0 0	1 7 ¹ / ₁₁ %	9 69 ³ / ₁₁ %	8 23 ¹ / ₁₁ %	8 46 1%	1 7.5%	6 46 1%
1 year	152 98.7%	2 1.3%	0 0	18 11.7%	63 60.4%	43 27.9%	64 41.5%	18 10.4%	74 46 1%
2 years	134 98 ³ / ₁₁ %	2 1 ⁴ / ₁₁ %	0 0	20 14.7%	73 53.7%	43 31.0%	66 48.5%	5 3.7%	65 47.8%
3 years	107 98.2%	1 0.9%	1 0.9%	17 15.6%	51 46.8%	41 37.6%	83 76.1%	2 1.8%	24 22.1%
4 years	94 97%	2 2%	1 1%	10 10.3%	40 46.4%	42 43.3%	72 74%	2 2%	23 24%
5 years	80 99%	1 1%	0 0	7 8.1%	48 50%	36 41.9%	68 79.1%	3 3.5%	16 17.4%
6 years	83 98.8%	1 1.2%	0 0	8 9.6%	43 51.2%	33 39.8%	63 75%	3 3.6%	15 21.4%
7 years	29 100%	0 0	0 0	4 13.6%	18 44.8%	12 41.4%	26 89.7%	0 0	3 10.3%
8 years	31 100%	0 0	0 0	3 9.6%	14 45.2%	14 45.2%	27 87.1%	0 0	4 12.9%
9 years	11 91 ¹ / ₁₁ %	1 8 ¹ / ₁₁ %	0 0	0 0	9 75%	3 2.5%	10 83 ¹ / ₁₁ %	0 0	2 16 ¹ / ₁₁ %
10 years	14 100%	0 0	0 0	1 7 ¹ / ₁₁ %	6 42 ³ / ₁₁ %	7 50%	12 85 ¹ / ₁₁ %	0 0	2 14 ¹ / ₁₁ %
11 years	0 100%	0 0	0 0	0 0	4 66 ² / ₁₁ %	2 38 ¹ / ₁₁ %	0 100%	0 0	0 0
12 years	6 100%	0 0	0 0	1 16 ² / ₁₁ %	2 33 ¹ / ₁₁ %	3 50%	6 100%	0 0	0 0
13 years	1 100%	0 0	0 0	0 0	1 100%	0 0	1 100%	0 0	0 0
14 years	1 100%	0 0	0 0	1 100%	0 0	0 0	0 0	1 100%	0 0
15 years	2 100%	0 0	0 0	0 0	1 50%	1 50%	2 100%	0 0	0 0
16 years	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Adults	0 100%	0 0	0 0	1 11 ¹ / ₁₁ %	1 11 ¹ / ₁₁ %	7 77 ¹ / ₁₁ %	7 77 ¹ / ₁₁ %	0 0	2 22 ¹ / ₁₁ %
Total children or cases (790)	773 98.6%	10 1.2%	2 0.25%	92 11.6%	408 51.7%	290 36.7%	519 65.7%	33 4.2%	233 29.1%

TABLE 6—Study of Last One Thousand and Thirty-Five Cases

Re-Dick	Negative After 5 Doses	Negative After 8 Doses	Still Positive	Local Reaction			General Reaction		
				Bright Red	Medium	Faint	None	Severe	Mild
1 year	72 90%	3 4%	0 0	18 24%	83 50.7%	19 25.3%	41 54.7%	0 0	34 45.3%
2 years	90 98.9%	1 1.1%	0 0	13 14.3%	50 51.6%	22 24.2%	62 68.4%	1 1%	23 30.8%
3 years	79 96.4%	1 1.2%	2 2.4%	13 15.9%	45 54.9%	24 29.2%	53 70.7%	0 0	24 29.3%
4 years	70 96.3%	1 1.3%	2 2.5%	18 22.8%	39 49.4%	22 27.8%	56 70.9%	0 0	23 29.1%
5 years	111 99.1%	1 0.9%	0 0	21 18.7%	61 54.5%	30 26.8%	78 69.6%	0 0	34 30.4%
6 years	150 99.8%	0 0	1 0.7%	27 17.9%	90 59.6%	34 22.5%	126 83.4%	0 0	21 18.6%
7 years	115 100%	0 0	0 0	42 36.5%	57 49.6%	18 13.9%	101 87.8%	0 0	14 12.2%
8 years	106 97.2%	3 2.8%	0 0	32 29.4%	62 47.7%	23 22.9%	88 89.9%	1 0.9%	10 9.2%
9 years	77 100%	0 0	0 0	16 23.4%	28 49.4%	21 27.2%	69 89.6%	0 0	8 10.4%
10 years	31 100%	0 0	0 0	5 16.1%	19 61.3%	7 22.6%	26 83.9%	0 0	5 16.1%
11 years	23 100%	0 0	0 0	4 17.4%	10 43.6%	9 39.1%	19 82.6%	0 0	4 17.4%
12 years	22 100%	0 0	0 0	4 18.2%	10 45.5%	8 36.3%	18 81.8%	0 0	4 18.2%
13 years	15 100%	0 0	0 0	5 33.3%	10 66.7%	0 0	14 93.3%	0 0	1 6.7%
14 years	11 100%	0 0	0 0	1 9.1%	9 81.9%	1 9.0%	11 100%	0 0	0 0
15 years	10 100%	0 0	0 0	2 20%	8 80%	0 0	8 85.7%	0 0	1 14.3%
16 years	10 100%	0 0	0 0	3 30%	6 60%	1 10%	9 90%	0 0	1 10%
Adults	2 100%	0 0	0 0	5 25%	12 60%	5 25%	16 80%	0 0	7 35%
Total	1 030 98.6%	10 1%	5 0.5%	232 22.4%	554 53.5%	249 24.1%	810 78.3%	2 0.2%	223 21.6%

Table 2 surveys a group of children to whom the Dick test was primarily administered in 1932, 1933 or 1934 and found negative. These children were again tested in March 1935. In this group the change from a negative reaction to a primary Dick test in 1933 to a positive one in 1935 is 0.6 per cent.

Table 4 shows the results found in Dick testing 951 children in five public schools of the fortieth ward of the city of Philadelphia. The percentage of susceptibles in the different age groups ran very true to the accepted theory as to the susceptibility decreasing as the child grows older.

Our experience leads us to the following point of view. That the immunization against scarlet fever should be much more widely adopted and much more vigorously advocated by physicians than is done at present. That the proper administration and reading of the test most carefully within the specified time (from twenty to twenty-four hours) is fundamental. That the education of the parent is of importance in obtaining cooperation, and that the proper care of the child for a period of six hours after each injection will greatly lessen both the incidence and the severity of the reactions. That in my judgment the procedure should be adopted as a general measure alike in private practice and in public work. That scarlet fever can be eliminated as a serious private and public health problem.

Tables 5 and 6 show the detailed studies of re-Dick tests to determine changes of immunity over a period of three years, and a detailed analysis of the first 790 cases treated, and the last 1,035.

City Hall Square

ABSTRACT OF DISCUSSION

DR. JOHN A. TOOMEY, Cleveland. Between 1921 and 1926, sixty-six nurses contracted scarlet fever at a time when the nursing population was small and there were few affiliates. Between 1926 and 1935, 1,049 susceptible students have been protected. Eight developed scarlet fever, two after the first immunizing dose, both had positive Dick tests on admission to the hospital. One came down after the second dose, although she had a negative test on admission, five had the complete series of five doses, four having been immunized to a negative Dick test, and these four were still negative reactors when later admitted to the hospital with scarlet fever. One student received seven injections but remained a positive reactor and was still so when she developed scarlet fever two years later. I have seen eight nurses who contracted scarlet fever in other hospitals. Two of these had two doses of toxin, one still had a positive test when she developed the disease, and the other was not tested. Six had had the complete series of five doses of toxin, four had been immunized to a negative Dick test and were negative reactors when they later contracted scarlet fever, one had been still positive after immunization and on later admission to the hospital. Discounting the incomplete immunizations, I had five failures of protection among my students, although four were immunized to a negative Dick test. One should not feel too bad about the failure of complete immunization in these few nurses. There are always immunization failures with any procedure. Even an attack of the natural disease does not immunize any better.

A committee of the American Academy of Pediatrics in a recent report to the members on the subject of active immunization in scarlet fever adopted the conservative attitude Dr. Henry speaks of. It did not condemn the use of scarlet fever toxin or deny its efficacy but felt that the reactions were severe enough to prevent general adoption of the procedure. Perhaps the use of a toxoid would help in avoiding these unpleasant reactions. Few nurses have not had some reaction from a local inflammatory response, minor in character and such as is seen with any immunizing procedure to the individual presenting all the signs of scarlet fever. Occasionally the reactions were so severe that I have had to stop the program of immunization, particularly in cases in which swollen joints developed. The type of scarlet fever present in the United States will have to be more severe for me to agree with Dr. Henry that this program should be made a public health measure. How long do these injections immunize the individual? Dr. Henry's observation extends in some instances to about three years. Our own nurses are protected for at least three years. I feel that this question will have to be answered before active immunization can be pushed as a public health measure.

DR. PASCAL F. LUCCHESI, Philadelphia. I am especially interested in the 6,004 children who were recruited from private

homes, because they represent the average strata of life in the districts in which they reside and are therefore the type of patients with which the family physician is familiar. Of these children, 3,304 were found susceptible and were given weekly injections of scarlet fever toxin. The majority of them required five doses, but a sixth dose was necessary for a few. The faithfulness with which the parents brought their children to the nearby health centers week after week for these inoculations is the best recommendation that can be accorded this treatment, it is reasonable to assume that parents would not allow their children to return for injections if any serious reactions had been experienced. The much feared severe reactions were not experienced in this study. The reactions are in proportion to the cooperation between the physician and the parents, and also to the knowledge of the physician on this subject. This is demonstrated by the small number of severe reactions experienced by the department of public health in their study. In a group of 790 children, 301 per cent had very mild reactions and 4.2 per cent severe reactions, while in a group of 1,035 only 0.2 per cent had severe reactions. At the Philadelphia Hospital for Contagious Diseases this method of prevention has been in use since 1926. Up till now, 695 doctors and nurses have been given the Dick test, of whom 185, or 26.6 per cent, were found susceptible and immunized. No serious reactions have been experienced. The production of immunity by this method of prevention is even more startling. As high as from 98.5 to 99.6 per cent were immunized with five and six injections respectively. In one institution where I myself immunized twenty-nine children ranging in age from 18 months to 12 years a 100 per cent immunity was produced. An objection sometimes raised with reference to this method of immunization against scarlet fever as a public health measure is the length of time required for the completion of the treatment. The treatment can be completed in most cases in about six weeks, which includes the re-Dick test. However, when a sixth injection is required, in the event of a positive re-Dick test, eight weeks would be necessary. If one compares this with immunization against diphtheria, either by the injection of toxin-antitoxin or the one or two dose toxoid it will be found that from six weeks to six months or longer may be required for the completion of the treatment, whereas in this form of treatment against scarlet fever within six or eight weeks one will know very definitely whether a patient has acquired immunity. The favorable response of Philadelphia parents to this treatment is most encouraging.

DR. THEODORE MELNICK, Philadelphia. It is a matter for regret that physicians in certain vicinities have been reluctant in accepting this preventive measure. This hesitancy can be attributed to the fact that the persons receiving the immunizing treatment may often experience after one or more of the toxin injections some unpleasant reactions such as headache, fever, nausea, vomiting, abdominal pain, scarlatiniform rashes and sore throat. While these reactions in themselves are not dangerous to life, they are of sufficient moment to make the clinician reluctant to use the toxin and more often cause the parents to refuse further treatment. Because of similar experiences, a series of experiments were undertaken with the hope of eliminating as much as possible both the severity and duration of the reactions. The following procedure was decided on: 1. A mild laxative the night before the day of the injection. 2. Restriction of food on the day of the injection both before and after the injection. 3. Restriction of activities after the injection. 4. Injection during the latter part of the day so that the individual will retire soon after the treatment. Drs. Dick, Kiefer, Smythe and Nesbit, Rhoades, Lees and today Drs. Henry and Toomey have reported reactions in from 10 to 30 per cent of individuals after receiving this immunizing treatment, which reactions lasted from twenty-four to forty-eight hours. Following the procedure I have just outlined, the reactions were milder and did not last as long as those reported by others. Only 4 per cent of individuals reacted, and fourteen hours later, or the morning following the injection, 98 per cent of those injected were up and about attending to their usual activities. Sore throat or eruptions were never encountered. As to the efficacy of this preparation, the value of scarlet fever immunization in the personnel of the contagious

disease hospitals has already been mentioned. My experience, both in private practice and otherwise, has been very encouraging. In one orphanage in which the children attended public schools in the neighborhood, not one case of scarlet fever has appeared since immunization three years ago, whereas, prior to this, cases cropped up every year. In another very large orphanage, no cases of scarlet fever appeared for two years after immunization. One case did appear in an inmate, recently admitted, who had never been Dick tested or immunized. No children in contact with the patient developed the disease. Scarlet fever immunization is advocated, but measures to lessen reactions should be instituted until the toxin preparation is improved so that it will not cause any reactions.

DR. J. NORMAN HENRY, Philadelphia. I have been interested in Dr. Toomey's remarks, with which, incidentally, I do not agree. The object of my paper is to prove from actual experience that immunization against scarlet fever by the method described should be introduced generally as a public health measure. Because of this, I spoke in the rather strong way I did concerning obstructive conservatism. I submit that, when one has had a rather large experience for more than three years and a smaller one going back to 1926 with the results described in the paper, it is but natural that one should be convinced. Particularly is the experience in the Philadelphia Hospital for Contagious Diseases convincing when the compulsory immunization was stopped twelve cases of scarlet fever developed in fourteen months in nurses and interns, and no case has occurred since its reintroduction. If for three years we are able to immunize children of preschool and school age and if it is granted that the immunization will hold in most cases for several years longer, then we are performing a big public health measure. We are tiding these children over the susceptible period. I consider it an insistent public health measure.

TREATMENT, MODIFICATION AND PREVENTION OF MEASLES BY USE OF IMMUNE GLOBULIN (HUMAN)

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The use of Immune Globulin (Human) in the modification of measles has been known for a considerable period. McKhann and Chu¹ gave doses of from 5 to 6 cc to forty-two children who were exposed to the disease. Of this number, thirty-seven were completely protected and in five mild modified measles developed. Whether the child was protected or modified measles developed depended on the number of days of incubation that had elapsed prior to injection of the extract. These cases were all in an institution. There has been little in the literature concerning the treatment of fully developed measles through the use of Immune Globulin (Human). It is part of my purpose in this paper to show the very definite therapeutic value of Immune Globulin (Human) in treatment of well developed cases of measles.

MODE OF PREPARATION AND STANDARDIZATION OF IMMUNE GLOBULIN (HUMAN)

The preparation used in these cases was Lederle's product known as Immune Globulin (Human). It is prepared and standardized in the following manner. Under the regulation of the National Institute, placentas are selected from healthy white women with negative Wassermann and Kahn tests. The cord blood must show a negative Wassermann reaction on test. The

placentas are ground in a meat chopper and extracted with saline solution. The saline extract, free from tissue and blood cells, is mixed with ammonium sulphate in half saturated solution, which precipitates the globulins that contain the protective antibodies. This precipitate is collected and dissolved in water, and the salts are removed by dialysis. The final filtrate is concentrated so that it contains about 12 mg of protein nitrogen per cubic centimeter. The final fluid, containing phenol as a preservative, is filtered for sterilization through a Berkefeld filter and represents the product known as Immune Globulin (Human).²

IMMUNE GLOBULIN (HUMAN) IN THE ACTUAL TREATMENT OF MEASLES

There are in this series twenty-eight cases of measles treated with Immune Globulin (Human). As they were all in private practice, and not just an experimental group, only about one fourth of the total number of patients who were observed during the epidemic of December 1934 to April 1935 were given the extract. The cases were selected mainly for two conditions: (1) cough and (2) toxicity. The first symptom was one that was easy to evaluate as to intensity, while the second presented a difficult problem as to measurement. It was in the cases of a severe, dry, irritating, racking cough that the results were very satisfactory. The dose was arbitrarily placed at from 1 to 2 cc. Of the twenty-eight cases treated, twenty-five responded favorably. Three cases showed no particular effect, but the extract in these cases was given at an earlier time than in those in which relief was gained through its use. All injections were given intramuscularly in the buttocks.

CASE 2—A girl, aged 6 years, with an oral temperature of 104 F and a rash present on the face, had been coughing incessantly for twenty-four hours and had been unable to sleep because of it. The cough was unproductive, brassy and very racking. One cubic centimeter of the preparation was given about 2 p. m. During the evening the mother noticed that the temperature was high, but the cough became easier and less frequent. The next morning the rash was out fully and the temperature was normal. The cough had changed in character to a slight, nonirritating, loose cough and was not especially frequent.

CASE 7—A boy, aged 12 years, when first seen had a rash on the face and an oral temperature of 104 F. The child was very miserable, mainly because of the severe, dry, hacking cough. The mother stated that he had been coughing almost incessantly for the past four days and had had but little sleep. The patient complained of soreness of the abdominal muscles as a result of it. One cubic centimeter of the preparation was given. That evening, about three hours following its use, the mother stated that the temperature seemed very high but that the cough subsided and the patient slept the whole night. The next morning the temperature was 102 F., the rash was out heavily on the body, but the cough was loose and nonirritating and the child was comfortable. The following day the temperature was normal.

CASE 20—A girl aged 6 years, when seen in the afternoon, had a rash on the face and body, and the oral temperature was 103 F. The child had a dry irritating, hacking cough and had slept poorly for the past three nights. One cubic centimeter of the preparation was given. Five hours later the temperature was 104.5 orally. This was easily controlled with acetylsalicylic acid, 5 grains (0.3 Gm.). The child slept the entire night with the exception of occasional requests for a drink of water. The next day the cough was loose and nonirritating, the patient was comfortable in spite of a fever of 102.5 F. The appetite was fair and she was much less toxic. The following day the temperature was normal.

CASE 21—A boy, aged 9 years, had a rash on the face and an oral temperature of 103 F. There was a severe, dry cough

From the Department of Pediatrics, Hackensack Hospital, Hackensack, N. J.
A preliminary report of the Council on Pharmacy and Chemistry on Immune Globulin (Human) appears in this issue of THE JOURNAL.—Ed.
¹ McKhann, C. H. and Chu, T. F. Use of Placental Extract in Prevention and Modification of Measles. *Am J Dis Child* 45: 475 (March) 1933.

² Coca, A. F. Personal communication to the author.

that had been present for three days. I had seen the patient the day before, but the mother had refused to allow the use of the preparation. However, she called the next day because the child was still coughing severely, and as a result he had not slept during the night and he had vomited frequently as well. Cough syrups were of no avail. Two cubic centimeters of the preparation was given and five hours later the temperature was 105 F orally. This was easily controlled with acetylsalicylic acid and an alcohol sponge. The cough had already decreased and the child was more comfortable. The next day the cough had almost ceased and the mother expressed the wish that she had permitted its use earlier.

CASE 5—A boy, aged 8 years, had a rash on the face and a very severe cough. Two cubic centimeters of the extract was given and the next day the cough had practically ceased. This case was especially interesting because the patient had been brought to my office the night before with the complaint of having had a dry, hacking cough for three days. The child had an oral temperature of 101 F, and there was considerable nasal and pharyngeal congestion. No Koplik spots were noted and, as it was early in the epidemic, measles was not suspected. A tentative diagnosis of acute sinusitis was made and treatment given accordingly. The next day the mother called and stated that a slight measles-like eruption had appeared on the face, the cough was still bad, and the child had hardly slept during the night. Two cubic centimeters of the preparation gave relief from the cough in three or four hours.

CASE 25—A boy, aged 9 years, had been sick for about eight days with what appeared to be a scarlet fever-like eruption. This case was probably one of dual infection. *Streptococcus haemolyticus* was obtained in cultures from the throat. For the last four days he had been very toxic and there was a scarlatiniform eruption on the body and arms. Angina was not severe. A severe dry cough then developed, which was unresponsive to all types of medication, including cough syrups and throat lozenges. Koplik spots were then noted and the next day a typical measles rash appeared on the face. In view of these facts, the dual nature of the infection was taken into consideration and 2 cc of Immune Globulin (Human) was given. The cough turned within a few hours to a tolerable one and solved a very difficult problem. The next day the rash progressed, and the patient had a typical measles course superimposed on the streptococcal infection.

There were three cases in which no particular benefit was observed. These patients were all given 2 cc of the preparation on the first day of the prodromal symptoms. There was only a slight temperature rise, and respiratory symptoms were practically nil. They continued on their regular course apparently unaffected. It is probable that there are few or no immune bodies during the early course of the disease and that the anti-

it was not possible to do so satisfactorily. However, there were no reactions that gave any undue alarm, and the temperature when too high was easily controlled with antipyretics and sponging, after which there was no return to the high point. It was only in those cases in which the mothers used thermometers frequently that any mention was made to the physician of hyperpyrexia. It is better from a practical standpoint not to have the mothers take the temperatures, as they do not notice any great change if they do not do so. The highest febrile point usually occurred from four

TABLE 2—Results of Inoculation After Intimate and Moderate Contact

Day of Exposure When Injected	Degree of Contact	Number of Cases	Results
1 2	Intimate	13	Modified measles
1 2	Moderate	2	Complete protection

to five hours following the administration of the immunizing agent.

Local Reactions—About two hours following the injection a local soreness began, which was characterized by tenderness to touch and spasticity of the muscles over the site of the injection. No local treatment was needed, and after twenty-four hours no complaints were heard from this source. Mothers were advised as to what to expect and further warned against making an important issue out of this, as none of the children complained more than a short time.

Allergic Phenomena—No allergic manifestations were noticed following the use of the preparation.

Summary—1 Immune Globulin (Human) was used in the treatment of twenty-eight cases of measles in which the disease had reached the prodromal stage or the rash had appeared.

2 Results in twenty-five cases were excellent.

3 The cough was markedly influenced through the use of this agent.

4 Febrile reactions were moderate and easily controlled.

5 Local reactions were not marked, and no allergic phenomena were observed.

USE OF IMMUNE GLOBULIN (HUMAN) TO MODIFY MEASLES

There is a very definite difference between the procedure in the hospital and that in private practice in the problem of measles prevention and modification. In institutions it is more practical to attempt to stop disease because of the required quarantine and the possibility of spread to other patients and nurses. In private practice, when the children are at home, it is better to modify all cases when the children are in a good state of health. If this is done the patients will develop active immunity and therefore have protection against future attacks, whereas if the disease is prevented entirely they would probably at some later date contract measles. The reason for this is that Immune Globulin (Human) merely confers a passive immunity for from a few weeks to months. If a preventive dose is given, the next time the child has been exposed to the disease the physician may not be called until the patient has reached the stage at which it is impossible to modify the attack. The great majority of calls to patients, especially at the beginning of an epidemic, are either late in the prodromal symptoms or at the time the eruption has appeared.

TABLE 1—Results with Immune Globulin (Human) in Eighteen Cases

Developed mild modified measles	13
Uninfluenced developed regular measles	3
Completely protected	2

bodies given at this stage through the use of this agent are not sufficient to influence the symptoms. Later in the course of the disease, at the end of the prodromal symptoms, enough immune reaction has occurred so that, with the added benefit of Immune Globulin (Human), enough antibodies are present to aid in the subsidence of symptoms. In this series of cases doses of from 1 to 2 cc were used, and it is probable that larger doses given at this stage would help materially.

Febrile Reaction in Treatment—The febrile reaction following the use of the preparation in treatment usually reached a peak of from 104 to 105 F rectally. This was not accurately measured, since in private cases

In the present group, eighteen patients were given a dose of the immunizing agent in order to modify the course of the disease. The results are given in table 1.

Dosage—In all cases the dose was 2 cc except in the case of one infant, aged 11 months, in which 1 cc was given with satisfactory result.

Time of Injection—Fifteen patients were given the injection from one to two days following exposure. All cases were successfully modified with the exception of two, in which the disease did not develop at all. The extract was given at a time, except for the latter two cases, when another child was being treated in the same house for measles, and on the first visit the unaffected person was injected. The two patients in whom measles did not develop had had a moderate amount of contact through playing outdoors with a child who subsequently developed measles, but the exposure was not as severe as with those who lived intimately in the same house with a measles patient. Table 2 gives the results in those who were inoculated from one to two days following exposure.

There were three cases in which 2 cc of extract was injected five days after exposure, and in these the results were unsatisfactory, as the course in all three was the usual, typical measles course. Another factor was that all three of these patients were in the same family and lived in cramped quarters. Karelitz and Schick³ have shown that the degree of exposure decid-

TABLE 3—Result in Late Inoculation

Day of Exposure When Injected	Degree of Contact	Number of Cases	Results
5	Severe	3*	Usual measles course

* All cases in the same family.

edly influenced the amount of immune serum needed to gain modification. Apparently in these three cases the overwhelming amount of exposure, along with the fact that the injection was given late in the incubation period, contributed to the poor results. Therefore it is logical to conclude that under similar circumstances a larger dose of the preparation would be needed to acquire modification of the disease (table 3).

All thirteen cases that were successfully modified had the same characteristics. These are:

1 **Incubation Period**—This averaged about thirteen days, which was slightly longer than in the uninoculated, which ranged from about ten to eleven days. The reason for this is that the first sign of measles in these cases was the rash, and there were no prodromal symptoms as in the unprotected, shown in the accompanying chart.

2 **Prodromal Symptoms**—These were practically nonexistent. A few cases showed a slight catarrhal condition and occasionally slight headache. The first sign of the disease in practically all cases was a slight rash, usually accompanied by a mild febrile reaction. In many cases the child was apparently normal in the morning, and the mother would suddenly notice the rash in the afternoon. This would be the first indication of the illness.

3 **Rash**—The rash in all but two infants, aged 11 and 14 months was slightly less than in the unmodified case. In these infants the rash was very mild, macules were widely scattered and the color was light rose. In the older children the rash was somewhat less than

in the unmodified and did not appear in the same sequence. It was generalized almost immediately and reached its height by the second day from the time of appearance instead of the third or fourth day, as in those who did not receive the extract.

4 **Febrile Course**—In the modified cases the course of the fever averaged two days and with the uninoculated patients it was approximately from four to seven

TABLE 4—The Febrile Reaction in Thirteen Cases

Patient*	Age	Days of Fever	Highest Fever		
			First Day	Second Day	Third Day
1	11 months	2	102.5	100.3	Normal
2	21 months	2	103.4	104.6	Normal
3	14 months	3	102.0	101.0	100.0
4	5 years	2	102.3	101.0	Normal
5	7 years	2	102.0	101.0	Normal
6	2½ years	2	102.0	101.3	Normal
7	5 years	1	104.0	Normal	Normal
8	5 years	1	103.0	Normal	Normal
9	5 years	2	101.0	103.0	Normal
10	2 years	2	101.0	101.0	Normal
11	2 years	2	101.0	101.0	Normal
12	3 years	2	101.0	103.0	Normal
13	6 years	2	100.2	101.5	Normal

* Patients 7 and 8 and patients 10 and 11 are similar twins. All temperatures recorded were rectal.

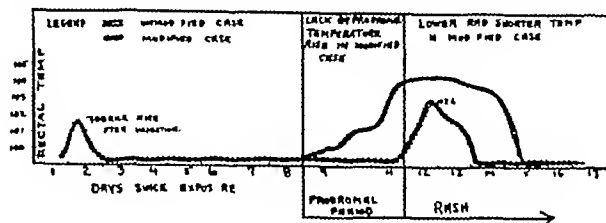
days. The highest temperature in this modified group was 104.6 F by rectum. In no case was it necessary to give antipyretics or sponging because of fever. Table 4 shows the highest febrile reaction for each day in the thirteen cases.

5 **Coryzal Symptoms**—Coryzal symptoms were all mild with varying intensity in each case. The cough, which in this epidemic was particularly distressing, was in these cases nonirritating and loose and did not require medication. Conjunctival and nasal symptoms were inconsequential.

6 **Toxicity**—There was practically no degree of toxicity. All the children were lively and difficult to keep in bed or at rest, and their appetites were good throughout, in fact, they were no more uncomfortable than they would have been with an infection of the upper respiratory tract of mild intensity.

7 **Allergic Phenomena**—There was no evidence of any allergic manifestations at any time.

8 **Complications**—In case 2 left otitis media developed three days following a normal temperature. The



Course of disease after exposure in unmodified and modified cases

measles course had been very mild. In case 12 slight cervical adenitis developed on the left side, with which there was no febrile reaction.

9 **Febrile Reaction Following Injection**—A series of twelve patients under observation in a hospital ward were given 2 cc of Immune Globulin (Human). Temperatures taken every four hours rectally showed an average maximum temperature rise to 103 F, which took place about six hours after injection. Therefore, on the average, the febrile reaction occurred on the day of injection and was gone the next morning. There was a moderate degree of malaise, anorexia and occa-

sionally slight nausea. These symptoms disappeared with the subsidence of fever.

10 Local Reaction—There was considerable soreness the first day at the site of injection. By the next day it had decreased and was not a factor for complaint, the children being up and playing about without any especial discomfort. At present, considerable work is being done to attempt to alleviate both the local and the febrile reactions. However, in doses of from 1 to 2 cc. the reaction was hardly more than annoying, and as long as the parents were advised of it beforehand there was no undue alarm on their part.

Summary—1 Injections of 2 cc caused modified measles in thirteen out of eighteen cases.

2 Three cases were not successful and ran the usual measles course, as in these the inoculation was made the fifth day following exposure and the contact was extremely severe.

3 Two cases were completely protected by 2 cc of extract. Exposure was only moderate.

4 In all patients who lived in the same household with another child who had measles, the disease subsequently developed.

5 All symptoms were extremely mild in the modified cases.

USE OF IMMUNE GLOBULIN (HUMAN) FOR PREVENTION OF MEASLES

There were twelve patients in the ward of Hackensack Hospital when a case of measles broke out in a child after having been in the ward for two days. Each child was given 3 cc of Immune Globulin (Human) to prevent the disease. No children came down with measles. The intimacy of contact was the usual ward type, as none of the children were ambulatory. The nearest bed to the affected child was about 3 feet distant. It is logical to assume that the three or four children nearest the infected child would be most likely to develop the disease, and the ones farthest away would not be as likely to do so. Because of this factor, reports of protection of numbers of children in hospitals are not reliable, as the degree of contact is at times very slight and children far removed from the sick child are probably not exposed. More reliable work of this type can be done in homes, where the actual contact is definite and intimate. The value of complete protection in the hospital wards is great, and here Immune Globulin (Human) may be advantageously used. As 2 cc causes modified measles, the dose for protection is probably from 3 to 4 cc, depending on the degree of contact and the age of the child.

Summary—1 Twelve cases exposed to measles in a hospital ward were totally protected through the use of 3 cc of Immune Globulin (Human).

2 More exact work of this type is possible in the home than in institutions, because in the latter only a few children near the patient are probably exposed. Therefore, case reports of large numbers protected in institutions are probably unreliable.

CONCLUSIONS

1 Immune Globulin (Human) is of definite value in treatment, modification and protection against measles.

2 It is easily given, the stock is standard, and the dose is small.

3 It is of especial value in young infants, in whom the disease carries high morbidity and mortality.

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UVEOPAROTITIS

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We have reviewed the recorded cases of the combination of uveitis and parotitis, either with or without the presence of nerve palsies or skin eruptions, and have found that about sixty-five such cases have been reported. Five such reports appeared in the American literature and the rest were described in the journals of foreign countries, particularly the Scandinavian. The rarity of the subject justifies the report of an additional case as well as the attempt to describe and discuss briefly the course and manifestations of such an entity. We have noted also that the majority of these cases have been reported by ophthalmologists in their special journals, but, since this type of case is often encountered by the internist, a discussion of the syndrome from the medical clinician's point of view is warranted.

REPORT OF CASE

A Jewish housewife, aged 34, was referred to the medical ward of the hospital by the ophthalmologist Dr. Isaac D. Kruskal, Jan. 31, 1934. Three months prior to admission she came to the outpatient clinic because of tiredness, nervousness, pains in the legs and weakness of about one year's duration. Two or three months before, "blotches" appeared on both lower extremities. At that time both lower extremities were found to be covered with a rash, which was blotchy, reticulated, red and slightly elevated, but not tender or painful. Early in December 1933 the rash started to fade. In November 1933 she had a sensation of having "gray threads" before the eyes, misty vision, difficulty in discerning distant objects and swelling of the upper eyelids. Soon the left side of the face swelled and in a few days similar swelling of the other side of the face developed. These swellings began to subside about the middle of December.

As a child the patient had whooping cough, chickenpox and measles. She was always subject to head colds, lacrimation and sneezing and for the past fifteen years had taken rhinitis tablets. Her habits were normal. She had never had a chronic cough, hemoptysis or night sweats. The family history was devoid of any taint of chronic or infectious ailments, except that her mother was suffering from diabetes and a sister was subject to repeated attacks of urticaria. The patient married at the age of 23 and had two healthy children. Her husband was well.

On examination it was noted that she was well developed but slightly pale. The eyelids were somewhat reddened and swollen. The pupils reacted very sluggishly. There was a faint ciliary injection, many spots were noted on the posterior surface of the corneas, the vitreous was hazy. Both parotid glands were enlarged and small shotty lumps could be felt therein. In the right supraclavicular region, near the median insertion of the sternocleidomastoid muscle, there was a gland the size of a hazelnut, not adherent and not tender. The heart and lungs showed no gross abnormalities. The spleen was felt just below the costal margin. Over the anterior aspects of the arms and legs there was noted a fading blotchy erythema not tender or elevated.

The urine examination showed no abnormal elements. The fasting blood sugar value was 120 mg. per hundred cubic centimeters and following a dextrose tolerance test of 100 Gm. the value rose to 230 mg. at the end of one-half hour, 188 mg. at the end of one hour and 145 mg. at the end of two hours. The urine contained sugar in the half-hour and the hour specimens. Examination of the blood showed hemoglobin, 75 per cent (Dare), erythrocytes, 4,200,000, leukocytes, 7,100, polymorphonuclears, 67 per cent, lymphocytes, 24 per cent, eosinophils, 6 per cent, and basophils, 3 per cent. The sedimentation rate of the erythrocytes was ninety minutes for 18 mm. The Was

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Sermann and Kahn reactions of the blood were negative. The tuberculin intradermal skin reaction was negative with 0.1 and 5 mg. A roentgenogram of the chest showed tumefaction of the nodes at both lung roots. The pulmonary structure itself was clear except for an area of productive pleuritis on the right side, where there was an annular shadow opposite the level of the third rib anteriorly. The interpretation of the roentgenologist (Dr M. G. Wasch) read as follows: "I do not believe an active pulmonary Koch process is present, the condition impresses me as most likely that of a lymphoid tumefaction."

The gland from the right supraclavicular area was excised, and on section it showed a homogeneous grayish appearance with a smooth firm surface. Microscopically it showed the lymph follicles to have been replaced by large masses of epithelioid tissue, there remaining but a narrow rim of lymphocytes. Many of these tubercles contained horseshoe giant cells. Tubercle bacilli were not found.

The temperature ranged between 99.2 and 100.8 F. After a stay of three weeks in the hospital there was no appreciable improvement in any of the signs or symptoms, and the patient was discharged.

Heerfordt¹ is to be credited with the recognition and the naming of the syndrome, although such cases were described prior to his publication. Subsequent writers have attempted to augment or change the nomenclature by attaching to it an anatomic or an etiologic term, but since the causative agent is as yet not established beyond a doubt, we suggest that the original nomenclature be used until the real etiologic agent is discovered. This illness affects females more frequently than males and is more commonly encountered in the third decade, but children and older adults are not exempt.

Signs and Symptoms.—Preceding the appearance of the signs and symptoms which typify this disease, the patient often experiences dryness of the mouth, malaise, lassitude, drowsiness, weakness, night sweats, anorexia, nausea and vomiting. Of course, such prodromal symptoms do not characterize this syndrome alone, as they often precede many other ailments. Such symptoms may last several weeks or months before the systems characterizing this syndrome become involved. There is a lack of regularity in the order of the appearance of the signs and symptoms which go to make up this disease entity, not all the systems are necessarily always involved. The facial palsy, neuritis and the skin rash are not found in every case, but the parotitis and uveitis are encountered in all the instances and therefore characterize this syndrome.

Parotid Involvement. The parotid glands are usually the first to become involved. At first one gland swells, and this is soon followed by a swelling of the opposite gland. Both parotid glands are always affected. We take exception to the statement of Garland and Thomson² that in two of the recorded cases there was unilateral enlargement, Müller's³ case and the case of Critchley and Phillips.⁴ The former case can hardly be placed in the category of this syndrome, and in the latter case the patient did in fact present a bilateral parotid swelling. The parotid gland is hard, not painful or tender, shotty and not adherent. It never suppurates, although the swelling may last several months

or years before it subsides. Long after the disappearance of any visible swelling, small shotty-like nodules persist for a long time.

Lymphoid Tissue Involvement. The submaxillary, cervical, sublingual and very often the supraclavicular glands are found to be enlarged but not tender. They do not suppurate but ultimately resolve.

Ocular Involvement. Without exception the eyes are always involved in this disease, although in the majority of cases this follows the parotid involvement. Here, too, one eye is involved first, but both are ultimately affected. The patient at first complains of misty vision, as if specks of dust or threads were in front of the eyes. Pain in the eyeballs is an early symptom, and there is an inability to discern distant objects. The pupils become irregular and dilated and often do not react to light. Keratitis, ciliary congestion and nodules in the iris appear, and the vitreous shows opacities. Synechiae, optic neuritis and atrophy often result in permanent visual defects even though some of the other eye signs may subside. The palpebral fissures are narrowed and pseudoptosis may be present.

Nerve Involvement. Facial palsies are the most common nerve disturbances encountered, and they are found in about one third of the cases reported, in less than half of them it is bilateral. One side of the face is involved at a time, as the affected side subsides, the opposite side becomes paralyzed. The palsy may precede, follow or appear simultaneously with the swelling of the parotid glands. It usually lasts several weeks but may endure as long as a year. It subsides, leaving no trace of muscle weakness. Occasionally the paralysis will recur. Milder involvements of the nervous system, such as polyneuritis, paresthesias, intercostal neuralgias, ptosis of the lids, dysphagia and paralysis of the soft palate and vocal cords, are occasionally seen.

Skin Involvement. A rash may appear on the anterior surface of the body, arms or legs before or during systemic involvement. It is an erythema resembling a toxic erythema or an erythema nodosum, flat or slightly elevated. It is not painful to touch, does not itch and lasts but a few weeks.

Fever. The temperature may or may not be elevated and when it is, there is only a low fever. In some cases it may reach 103 F. The fever may also continue throughout the course of the illness, but it does not cause the patient any great degree of discomfort.

Laboratory Data.—The urine shows no abnormality. A slight anemia may be present, though it is not characteristic of this disease. An eosinophilia of from 3 to 20 per cent is usually found, but the total number of leukocytes is not necessarily increased or diminished. The bacteriologic examination of the parotid secretion and the conjunctiva shows no specific organism, but the usual flora. The histopathology of this disease is as yet not definite, because too few biopsy examinations of the involved tissues have been made. There were three deaths in this series and they were due to miliary tuberculosis. The excised lymph glands showed epithelioid and giant cells, but no caseation or tubercle bacilli. The lacrimal gland tissue resembled a lymphoma. The parotid gland showed no tubercle bacilli, giant cells or caseation. Further and more detailed studies are necessary to establish the specific tissue reaction of this disease as well as the identity of its exciting agent.

Etiology.—There are many controversial opinions regarding the etiology of uveoparotitis. Some authors state that the syndrome is produced by the tubercle

1. Heerfordt, C. F. Ueber eine 'Febris Uveoparotidea subchronica an der Glandula parotis und der Uvea des Auges lokalisiert und häufig mit Parösen cerebraspinaler Nerven kompliziert', *Arch. f. Ophth.* 70: 254, 1909.

2. Garland, H. G., and Thomson, J. G. Uveoparotid Tuberculosis. *Quart. J. Med.* 2:157 (April) 1933.

3. Müller, M. Bemerkungen zu der Arbeit von H. Rieth über Indozyklitis bei Parotitis epidemica und anderen Speicheldrüsenschwellungen und über ihre Beziehungen zur Tuberkulose, *Klin. Monatsbl. f. Augenhe.* 64:387, 1920.

4. Critchley, M., and Phillips, P. A Case of Uveoparotitic Paralysis. *Lancet* 2:906 (Nov. 1) 1924.

bacillus Thus, in one of Bang's⁵ cases, the case of Souter⁶ and the case of Garland and Thomson² miliary tuberculosis was found at postmortem examination Uhthoff⁷ felt that his patient's ailment was due to tuberculosis because he found positive physical signs at the left apex of the lung Lehmann⁸ reviewed twelve cases of uveoparotitis and in only three cases did she find signs suggestive of tuberculosis Gjessing⁹ thought that this disease is a peculiar reaction form of tuberculosis Schall¹⁰ maintained that the etiology is tuberculous, basing his opinion on the fact that his patient recovered following tuberculin therapy, but his patient showed no evidence of a tuberculous infection anywhere Reimers¹¹ reasoned likewise and Roenne¹² stated that the etiology is undoubtedly tuberculous Cavara¹³ concluded that the disease is a special form of tuberculosis, although inoculations of parotid tissue into the rabbit and guinea-pig were negative to tuberculosis Reimers¹¹ examined the parotid gland in his case and it showed no giant cells or caseation Lehmann's⁸ patient showed epithelioid and giant cells but no caseation or tubercle bacilli Weve¹⁴ injected parotid gland tissue from his patient into the anterior chamber of the rabbit's eye, but the microscopic examination showed no evidence of tuberculosis Van der Hoeve discussed Weve's paper and expressed the belief that the disease might be due to a healed form of tuberculosis One year later Weve¹⁵ expressed the opinion that this might be a form of paratuberculosis Tanner and McCurry¹⁶ recently reported three cases of uveoparotitis, one patient had suffered from pulmonary tuberculosis, but the two others were completely free from such an infection Leeksa¹⁷ felt that this disease is but a complication of mumps, although Heerfordt¹ and McKaig and Woltman¹⁸ showed the lack of a relationship between the two Hamburger and Schaffer¹⁹ thought that this is a variety of the Mikulicz syndrome Mackay²⁰ felt that this is an infection secondary to a mouth infection MacBride²¹ was of the opinion that the nature of this disease is toxic or toxin-infective Parker²² considered this to be an infective multiple

neuritis Ramsay²³ considered it to be a form of deficiency disease Altland,²⁴ however, believed that the etiology is as yet unknown

Prognosis—While the mortality is low, there being recorded but three deaths, the morbidity is high The involvement of the uveal tract often results in permanent visual defects The other systems involved clear up completely

Treatment—Many methods of treatment have been employed, the results being as good with one form as they are with another The tuberculin treatment is particularly advocated by the ophthalmologist Cutler²⁵ used inorganic arsenic, Jackson,²⁶ Lerner²⁷ and Hamburger and Schaffer¹⁹ used radiotherapy, and Ramsay²³ administered thyroid extract It is apparent that there is no specific form of treatment, and since the greater number of cases cleared up, it is reasonable to assume that this disease is self limited Treatment should therefore be directed toward maintaining the nutrition and resistance of the patient General hygienic measures are in order Foreign protein therapy, we believe, is indicated

COMMENT

That this syndrome constitutes a well defined clinical entity is now beyond any doubt, its etiology, however, is still in controversy The promulgators of the tuberculosis theory failed to supply sufficient solid proof to justify their conclusions It is true that pulmonary tuberculosis was found in one case and miliary tuberculosis in three others, yet in the majority of the recorded cases no indisputable clinical or pathologic evidences of tuberculosis were shown A diagnosis of uveal tuberculosis requires proof of the presence of a primary focus,²⁸ yet no such positive proof is available Tubercle formation with a central giant cell and surrounding mononuclear phagocytes is a tissue reaction that can be caused by organisms other than the tubercle bacillus The tuberculous patient is tuberculin sensitive except under conditions of massive tuberculous infection, but it must be conceded that the patients in this series had no massive infection, if at all infected, it was mildly, and yet the tuberculin reactions were negative in the majority of instances, in the cases in which the tubercle bacillus was demonstrated, the reaction was positive. Furthermore, microscopic evidence of tuberculosis in either a biopsy or an animal inoculation was never proved This condition is also readily differentiated from mumps not alone because of the chronicity of the former and the acute course of the latter, but because this disease occurred in persons who had had mumps before It is difficult to conceive that this entity even resembles the Mikulicz syndrome or that it is a deficiency disease, but we are confronted with the frequent finding of eosinophilia and a skin rash, which are likely to be evidences of an allergic state This allergic state is not caused by the tubercle bacillus, because the tuberculin reactions in these cases were negative Therefore,

5 Bang, S. quoted by Garland H G and Thomson J G Quart J Med 2: 157 (April) 1933

6 Souter W C A Case of Uveoparotid Fever with Autopsy Findings Tr Ophth Soc U Kingdom 40: 113 1929

7 Uhthoff W Ein Fall von geheilter tuberkulöser Meningitis mit doppelseitiger Iridochoroiditis tuberculosa, Klin Monatsbl f Augen 50: 474 1912

8 Lehmann K Chronic Bilateral Febrile Uveitis and Parotitis With or Without Facial Paralysis, Hospitalstid 54: 137 (Feb) 1916, abstr J A M A 66: 1066 (April) 1916

9 Gjessing H Ueber Tuberkulose als Aetologie bei der sog Febris uveoparotidea (Heerfordt) Klin Monatsbl f Augen 60: 249, 1918

10 Schall E Beitrag zur Aetologie der Uveoparotitis subchronica Klin Monatsbl f Augen 70: 350 1923

11 Reimers O Ueber einen Fall von Febris uveoparotidea und über die Beziehungen zur Tuberkulose Ztschr f Augen 60 30 1926

12 Roenne H Ueber Febris uveoparotidea Klin Monatsbl f Augen 81: 524 1928

13 Cavara V quoted by Garland H G and Thomson J G Quart J Med 2 157 (April) 1933

14 Weve H J M Familiäre pseudotuberkulöse symmetrische Entzündung der Speichel und Tränendrüsen und der Uvea Ztschr f Augen 60 68 1926

15 Weve H J M Familiäre Uveoparotitis unbekannten Ursprungs Klin Monatsbl f Augen 78 83 1927

16 Tanner S E and McCurry A L Uveoparotid Tuberculosis Brit J 2 1041 (Dec 8) 1934

17 Leeksa H W Uveoparotid Fever Nederl tijdschr v geneesk 2: 1126 1916 abstr Lancet 1: 28 (Jan 6) 1917

18 McKaig, C B and Woltman H W Neurologic Complications of Epidemic Parotitis Arch Neurol & Psychiat 31: 794 (April) 1934

19 Hamburger L P, and Schaffer A J Uveoparotid Fever as a Manifestation of Mikulicz's Syndrome Am J Dis. Child 30: 434 (Sept) 1928

20 Mackay G A Case of Uveoparotitis with Iridocycloplegia Tr Ophth Soc U Kingdom 37 208 1917

21 MacBride, H J Uveoparotitic Paralysis J Neurol & Psychopath 4: 242 (Nov) 1923

22 Parker, G Uveoparotitic Paralysis Bristol Med. Chir J 43: 73 1926

23 Ramsay A M Diseases of the Uveal Tract Tr Ophth Soc U Kingdom 41: 194 1921

24 Altland Dunshurg Febris Uveoparotidea Ztschr f Augen. 53: 113 1924

25 Cutler C W Symmetrical Enlargement of the Parotid and Lacrymal Glands, Nodular Iritis Tr Am Ophth Soc. 10: 390 1904

26 Jackson B H Use of X Ray in Uveoparotitis Am J Ophth. 8 361 (May) 1925

27 Lerner M L Uveitis Ideology Pathogenesis Its Relation to Other Parts of the Body, Varieties of Uveitis Clinical Subdivisions and Pathological and Anatomic Classifications New York State J Med. 24: 597 (April 18) 1924

28 Lagrange, H The Diagnosis of Iridochoriary Tuberculosis Brit J Ophth 17: 679 (Nov) 1933

it is quite likely that this syndrome is produced by an organism as yet not isolated, which produces a low grade infection in a sensitized individual and runs a slow course with a spontaneous termination

SUMMARY AND CONCLUSION

- 1 No definite etiologic factor appears to be responsible for uveoparotitis and its syndrome
 - 2 Further search for the causative agent or agents is necessary
 - 3 The disease is chronic and self limiting
 - 4 The only permanent morbidity of this illness is visual impairment
 - 5 Since this disease is chronic and possibly infectious, foreign protein therapy is suggested
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THE SIGNIFICANCE OF PYURIA IN CHILDREN

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Within recent years there has been a growing recognition of the importance of a complete urologic examination in infants and children when there is presumptive evidence of urinary tract disease. This increasing application of modern diagnostic methods to urologic conditions in children has established a number of facts, the most important of which are that (1) congenital narrowings of the caliber of the urinary tract, chiefly at the points of normal anatomic narrowing, are very common, and congenital obstruction is an important factor in urinary diseases both in children and in adults, (2) chronic infections are usually secondary to or are perpetuated by these obstructions, and a chronic or recurrent pyuria almost invariably indicates some anatomic defect, and (3) urinary tract diseases in children are often obscured by symptoms pointing to other conditions, frequently gastro-intestinal, and the examiner must be on the alert for presumptive evidence of urinary disease or it will be missed.

Infants and children do not localize their subjective symptoms, and many of the lesions are "silent," in that they do not give symptoms. Attention is usually called to the urinary tract by the presence of pus in the urine. Pyuria is the most important sign of urogenital disease in children.

The question then arises: What constitutes a pyuria of clinical importance and what is its significance when it is encountered in an ordinary routine examination? These questions are instigated by the fact that there is a tendency among pediatricians to evaluate its importance on the quantitative basis and to conclude that a few pus cells are normal or indicate contamination and that a large amount points to infection of the urinary tract.

One frequently hears the remark that there is a small amount of pus in the urine but not enough to mean anything. The general standard of a normal limit seems to be from 6 to 8 pus cells per high dry field. No qualifications are made as to the method of collection or examination. Since pus cells are never a normal constituent of the urine, it is to be inferred that

pus in this amount is taken to be contamination and if over this to indicate disease. The fallacy of such an assumption is obvious.

However, a review of the literature gives the same impression. Eisendrath¹ says that "one finds five to seven leukocytes to the high dry field in the urine of normal children." The method of examination is not mentioned or the basis for this conclusion. Jarrell,² in an article on pyelitis in infancy, says that, "if there are as many as ten leukocytes to the field, a diagnosis of pyelitis may be made." The method of collection or examination is not mentioned. Smith³ concludes that the diagnosis of pyuria is justified only when the number of white blood corpuscles is considerable, at least 8 to 10 per high dry field, but does not say whether in the catheterized or voided specimen, nor does he give any reason for this arbitrary limit of 10 cells. Ramsey⁴ gives as a standard to warrant a diagnosis of pyelitis or pyelocystitis "colon bacilli in numbers and pus cells to exceed ten to the field" in the catheterized, uncentrifuged specimen. Helmholtz⁵ feels that the presence of a small amount of pus in the urine has been overemphasized in the diagnosis of pyelitis. He gives as a normal "in the uncentrifuged urine from boys obtained with ordinary precaution, two or three pus cells per low power field, and in the urine from girls, not more than six or eight cells." He does not state the basis for these figures.

METHOD OF EXAMINATION

There has been no systematic study reported either to confirm or to refute these assumptions. To find out whether there was any basis for them and to throw some light on this subject, we studied all the patients admitted to the Children's Orthopedic Hospital for a period of nine months, March 1931 to January 1932, in the manner outlined in table 1.

On admission, a voided specimen of urine centrifuged and uncentrifuged was examined. If there was pus in any amount the patient was catheterized, and centrifuged and uncentrifuged specimens were examined. If pus was found, the patient's history was checked carefully for urinary symptoms, a plain roentgenogram taken, a combined phenolsulphonthalein function determined and a complete cystoscopic examination done, including pyelo-ureterograms or excretory urograms. Even though no pus was found in the catheterized specimen, the patient's history was carefully checked for urinary symptoms either past or present, and if positive the child was observed or a complete renal study made. This was not done with the idea of establishing or recommending a routine method of examination but simply to find out what pyuria in children means under all conditions.

VARIATIONS IN THE VOIDED AND THE CATHETERIZED SPECIMENS

In this manner the urines of 694 children (400 males, 294 females) were examined during the nine months from March 1931 to January 1932. The oldest child was 16 years of age and the youngest 24 hours, with an average age incidence of 7.2 years. Pus was found in the voided centrifuged specimens of 687 children, or 99 per cent, in the amounts noted in table 2, in the

1 Eisendrath D A J Indiana M A 20:287 (Aug 15) 1927

2 Jarrell K M West Virginia M Monthly 26:550 (Sept.) 1930

3 Smith R M New England J Med 205:181 (July 23) 1931

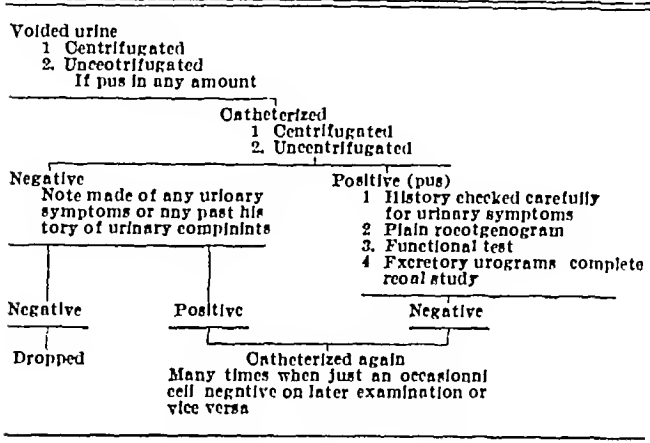
4 Ramsey W R Acute Infections of the Urinary Tract in Infants and Children Subsidizing Without the Appearance of Pus in the Urine Am J Dis Child 24:218 (Aug.) 1922

5 Helmholtz, H F Journal Lancet 50:131 (March 15) 1930

voided uncentrifugated in 246, or 36 per cent, in the catheterized centrifugated in ninety-nine, or 13 per cent, and in the catheterized uncentrifugated in sixty-four, or 9 per cent

It is obvious from this that the term pyuria may vary considerably in its meaning if it is used in the sense of pus in the urine in any amount, regardless of the method of obtaining and examining the specimen

TABLE 1—Method of Examination



While there were 687 children with pus in the voided urine, only ninety-nine had it in the catheterized specimen. Therefore, catheterization is imperative in urinary diagnosis in children. Contamination is possible in males as well as in females (400 of the group were boys). Even if the glans and prepuce are cleansed, there may be contamination from a low grade urethritis secondary to a previous balanitis. A two glass test would eliminate this, but it is a simple matter to pass a small catheter.

So many variable factors are introduced by centrifugation, such as time and rate of spinning and method of collecting the sediment, that it is of no value in a quantitative estimation of pus.

TABLE 2—Quantitative Estimation of Pus Cells in the Urine of Six Hundred and Ninety-Four Children*

	Voided		Catheterized	
	Centrifugated	Uncentrifugated	Centrifugated	Uncentrifugated
Occasional (less than 1 per high dry field)	272	148	34	27
1 to 5 per high dry field	324	73	29	18
5 to 10 per high dry field	52	12	11	10
10 to 20 per high dry field	26	10	8	7
Over 20 per high dry field	13	3	7	2
Totals	687	246	89	64
	(90%)	(30%)	(18%)	(9%)

* These included 400 boys and 294 girls (oldest 16 years, youngest 24 hours, with an average age of 7.2 years) who were admitted to the Children's Orthopedic Hospital during a period of nine months from March 1, 1931, to Jan. 1, 1932.

INCIDENCE OF URINARY TRACT DISEASE IN THE PRESENCE OF PYURIA

Following the plan of examination outlined, we found that a complete renal study was indicated in sixty-six cases. Of these, sixty-four children had pus in the catheterized uncentrifugated urine and two had none, but the histories in the latter were suggestive. Of these sixty-six children, twenty-six had demonstrable urinary tract disease, as shown in table 3.

From this it is obvious that the amount of pus in a urine properly collected is no indication either of the

kind or of the severity of urinary tract disease. There were three patients with advanced infected hydronephrosis with less than 1 pus cell per high dry field, and in one with an osteovesical fistula from sclerosing osteomyelitis of the ilium there was a rare pus cell, while in another with a similar condition there were many pus cells. Fifty per cent of the twenty-six children with demonstrable urinary tract disease had pus in the urine in amounts well under what is quoted in the literature as a normal pus content.

Forty of the sixty-four patients (table 4) with pus in the catheterized uncentrifugated specimen had no demonstrable urinary tract disease, but most of them had some active extra-urinary infection. In only six of the forty was the count over 5 cells per high dry field, and three of these had acute appendicitis and two

TABLE 3—Incidence of Urinary Tract Disease in Sixty-Four Children with Pus in the Catheterized Specimen

Children with Pus in the Catheterized Specimen Uncentrifugated	Number of Pus Cells per High Dry Field	Children with Demonstrable Urinary Tract Disease	Diagnosis
	0	2	1 neuromuscular dysfunction of the bladder (encephalitis) 1 hydronephrosis
27	Occasional (less than 1)	4	1 unilateral hydronephrosis 1 bilateral hydronephrosis 1 suppurative bhp disease with sinus to the bladder 1 urethral cysts
18	1 to 5	7	2 neuromuscular dysfunction of the bladder (spina bifida) 1 hydronephrosis 1 acute pyelonephritis 1 urethrotigonitis (chronic mastoiditis) 1 congenital stricture of external meatus 1 metastatic abscess of kidney with perinephric extension
10	5 to 10	4	1 acute pyelonephritis 1 chronic pyelonephritis (tuberculous spine) 1 hydronephrosis 1 congenital valves of posterior urethra (double kidney)
7	10 to 20	7	5 acute pyelonephritis 1 neuromuscular dysfunction of the bladder (spina bifida) 1 congenital cysts of posterior urethra
2	Over 20	2	1 congenital strictures ureterovesical junctions (bilateral pyonephrosis) 1 suppurative bhp disease with sinus into the bladder
Total 64		26	

severe mastoiditis. It might be contended that these should be included in the cases of pyelonephritis, but the clinical evidences of pyelonephritis were absent, such as lumbar tenderness, fever and dysuria. The pyuria rapidly cleared up with the subsidence of the primary infection.

There were forty-one patients with bone or joint tuberculosis and, realizing the possible association of renal tuberculosis with these lesions, we observed them carefully during the period of this study. In none of the forty-one were we able to demonstrate tubercle bacilli after careful examination on various occasions. Only seven had pus in the urine and in none of these was there demonstrable evidence of urinary tract disease.

A large number of these children were treated by prolonged immobilization on frames and in casts. This study does not confirm the generally accepted opinion that prolonged immobilization tends to urinary stasis, infection and stone formation.

It is evident that, of sixty-four children with pus in the catheterized urine, only 37 per cent had demonstrable urinary tract disease. It might be contended that the others were unnecessarily subjected to a complete renal study. However, it is also evident from the observations recorded in table 3 that the number of pus cells is no indication either of the kind or of the degree of urinary tract disease. The necessity for a complete study is not determined by a quantitative estimation of pus. It is undoubtedly "a greater error to miss making an early diagnosis through neglect of a proper examination than to mistake the indications and unnecessarily subject the child to examination."

It must be remembered that the study included all children in the hospital during the comparatively short period of nine months. Of the twenty-six with demonstrable urinary tract disease only ten were admitted for diagnosis and treatment of a urologic condition, and

TABLE 4—Pyuria (Catheterized Uncentrifugated) in Forty Children with no Demonstrable Urinary Tract Disease

Number of Pus Cells per High Dry Field	Number of Cases	Diagnosis
Occasional (less than 1)	23	4 tuberculosis spondylitis* 4 no diagnosis 3 osteomyelitis 2 tuberculous hip disease* 2 congenital dislocation of hip 2 scoliosis 1 congenital syphilis 1 fracture 1 appendiceal abscess 1 mastoiditis 1 mitral disease 1 infantile paralysis
1 to 5	11	2 scoliosis 2 Perthes disease 1 osteomyelitis 1 strabismus 1 encephalitis 1 genu varum 1 tuberculosis spondylitis* 1 congenital dislocation of hip 1 cleft palate
5 to 10	6	3 acute appendicitis 2 mastoiditis 1 congenital dislocation of hip
Total	40	

* In the forty-one cases of bone or joint tuberculosis in this series, the urine was examined very carefully for tubercle bacilli three different times with negative results. In seven there was pyuria (see above) but none presented any urinary symptoms nor any demonstrable urinary tract disease.

only nine had subjective symptoms directly referable to the urinary tract.

BACTERIA

The necessity for negative cultures as a criterion of cure in urinary infections in children has been emphasized by Helmholz. A study was made of the comparative value of fresh smears and cultures in determining the type of infection. One hundred and eighty-three catheterized urines were examined both by smear and by culture (table 6). Positive smears were obtained in fifty-five and positive cultures in sixty-two. There were four positive smears with negative cultures and nine positive cultures with negative smears, a total difference of thirteen. Thus, in 183 examinations the smear and culture agreed in 170, or 92 per cent. The stained smear is as valuable as the culture in routine examinations of the urine and should be used as a routine. Of the sixty-two positive cultures, there were found staphylococci alone in twenty-seven, staphylococci and B. coli in seventeen, B. coli alone in thirteen, staphylococci and streptococci in two, B. subtilis in two, staphylococci, streptococci and B. coli in one.

SUMMARY AND CONCLUSIONS

There is a tendency among pediatricians to evaluate the importance of pyuria in children on a quantitative basis and to assume that a few pus cells are normal or indicate contamination and that a large number point to urinary tract infection or disease.

Various arbitrary limits of normal are given without qualification as to the method of collection or exami-

TABLE 5—Subjective Symptoms Directly Referable to the Urinary Tract

Of the 26 Children with Urinary Tract Disease
10 were admitted to the hospital for diagnosis and treatment of a urologic condition
9 presented subjective symptoms directly referable to the urinary tract
16 were discovered because of investigation of the pyuria
Of the 40 Cases with Pyuria (Catheterized Centrifugated) Without Demonstrable Urinary Tract Disease
None had subjective symptoms referable to the urinary tract

nation. No systematic study of a large number of children has been reported that would definitely confirm or refute many of the assumptions that appear in the literature on this subject.

To this end 694 infants and children were examined during a period of nine months in the Children's Orthopedic Hospital, from which study we conclude that:

1 Catheterization is imperative in urinary diagnosis in children. Ninety-nine per cent of 692 children had pus in the voided urine and only 13 per cent in the catheterized.

2 The amount of pus in a urine properly collected is no indication either of the kind or of the severity of urinary tract disease. In the twenty-four children in this group with demonstrable urinary tract disease, exactly similar lesions existed with pus counts that varied from less than 1 per high dry field to more than 20 per high dry field. Fifty per cent of the children with demonstrable urinary tract disease and a number with advanced lesions and severe infections had

TABLE 6—Comparative Value of Fresh Smears and Cultures in Determining Type of Bacteria

183 Catheterized Specimens Examined Both by Smear and by Culture	
Positive cultures	62
Positive smears	55
Positive smears with negative cultures	4
Positive culture with negative smears	9
In 183 examinations the smear and cultures agreed in 170 or 92%	
Organisms on Culture	
Staphylococci alone	27
Staphylococci and B. coli	17
B. coli alone	13
Staphylococci and streptococci	2
Bacillus subtilis	2
Staphylococci, streptococci and B. coli	1
Total	62

pus in amounts well under what is frequently set forth as a normal count.

3 If a persistent or recurrent pyuria, no matter what the cell count, is taken as a criterion for a complete renal study, a number of children will be subjected to what is apparently an unnecessary examination, for only 37 per cent of the sixty-four with pus in the catheterized specimen had demonstrable urinary tract disease. However, as can be noted in table 3, the amount of pus is no guide as to the necessity for cystoscopy. Many of the obstructive lesions are

"silent" and a few pus cells the only indication of a pathologic process, so that it is undoubtedly a "greater error to miss making an early diagnosis through neglect of proper examination than to mistake the indication and subject the child to what is apparently an unnecessary examination"

4 Many urologic lesions in children are "silent" or have misleading symptoms. Only nine of the twenty-six children in the study who were found to have urinary tract disease had subjective symptoms that were in any way referable to the urinary tract. In only ten was there any presumption of a urinary lesion. The remaining sixteen were discovered through the routine study of pyuria.

5 Urinary complications in children with bone and joint tuberculosis are not common, and prolonged immobilization on frames or in casts does not tend to urinary stasis, infection and stone formation. Forty-one of the children examined had bone or joint tuberculosis. In none were tubercle bacilli found in the urine after repeated and careful examination. Only seven had pus in the urine, and none of these had any demonstrable urinary tract disease.

6 In determining the type of organisms in 183 urines, the fresh smear and cultures agreed in 170, or 92 per cent.

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THE ANTIDOTAL ACTION OF POTASSIUM PERMANGANATE

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Potassium permanganate was recommended as an antidote for certain poisons by Moor,¹ whose papers embrace a curious mixture of truth and error. Potassium permanganate is commonly recommended as an antidote for organic poisons in the stomach, but there is a striking divergence of opinion concerning the amount to be administered and the concentration of the solution to be used. One hesitates to cite the names of persons with reference to a common error, but a few concrete examples are desirable. Fantus² says

The nearly always fatal dose of barbitol is about 10 Gm., of phenobarbital about 4 Gm. and of dial about 24 Gm. The stomach should be washed thoroughly with diluted (pink) permanganate solution.

The color of solutions of potassium permanganate varies from lilac to deep purple, depending on the volume and the concentration, and whether viewed by transmitted or reflected light. A physician was once asked to select from among several flasks the one that contained the solution corresponding to the description "pink" just mentioned. The concentration of the solution he selected was 1 1,000,000, and the flask contained a total of 1 mg. in 1,000 cc. of water. Potassium permanganate does not destroy barbitol, and, if it were active, 1 mg. would not oxidize more than 3 mg., less than a thirtieth of 1 per cent of a fatal dose of barbitol.

From the Department of Pharmacology, Cornell University Medical College.

With the technical assistance of Miss Josephine St. Mary and Miss Jeanne Ossent.

1 Moor, W. O. *Potassium Permanganate as an Antidote for Morphine*. M. Rec. 45:200 1894. *The New Antidote for Opium Poisoning*, Brit. M. J. 1:1369 1895. *Ueber die Behandlung der akuten Opium- und Morphinumvergiftungen mit Kaliumpermanganat*, Therap. Monatsheft 17:562 1903.
2 Fantus, Bernard. *Therapy of Barbiturate Poisoning*. J. A. M. A. 103:749 (Sept. 8) 1934.

In contrast with that useless dose, dangerous amounts are sometimes recommended. Sydney Smith³ said

Hydrocyanic Acid. Potassium permanganate has been shown to inhibit the action of the poison and half a liter of 3 to 5 per cent solution should be immediately administered.

The larger dose (25 Gm.) of potassium permanganate recommended by Smith (500 cc. of a 5 per cent solution) is about 25,000 times as much as that recommended by Fantus for washing the stomach in a case of barbitol poisoning. Smith⁴ says

In strong solution or in the solid state it acts as a corrosive or strong irritant, while after absorption it appears to cause paralysis of the heart. In one case about half an ounce caused death in five hours with corrosion of the mouth and pharynx. In small doses, such as 3 grains (0.2 Gm.), alarming symptoms of gastric irritation and collapse have been caused.

According to Smith, death has resulted from a little more than half of the dose that he recommended in hydrocyanic acid poisoning, and alarming symptoms of gastric irritation and collapse have resulted from less than a hundredth part of that dose. DeBusscher⁵ found that an oral dose of only 100 mg. of potassium permanganate per kilogram sometimes proved fatal in dogs. This corresponds to about 6.5 Gm. (100 grains) for man, or about one fourth of the dose recommended by Smith.

Moor observed that potassium permanganate destroys an equal weight of morphine instantly, even in the presence of blood. In fact, he maintained that with blood or egg albumin it forms a compound which destroys morphine even more actively than does potassium permanganate itself. He injected morphine sulphate intravenously into a rabbit, causing a slowing of the respiration, he then injected subcutaneously into another rabbit a similar amount of morphine sulphate, followed by intravenous injections of potassium permanganate and failed to observe any essential change in the respiration. He concluded that potassium permanganate is capable of destroying morphine in the circulation.

Moor failed to understand the difference between the effects of an intravenous and a subcutaneous injection of a given dose of morphine and the reaction that occurs in the blood. It is true that potassium permanganate destroys morphine in the blood in vitro, but morphine leaves the circulation rapidly and is fixed in the tissues, and there is no evidence that the subcutaneous injection of potassium permanganate causes the destruction of poison in the circulating blood. Moor stated correctly, however, that potassium permanganate decomposes protein slowly and that it is useful for the destruction of those poisons which it decomposes rapidly in the stomach—not for those which it decomposes more slowly than it does protein.

It is beyond the scope of this paper to give details concerning the use of potassium permanganate under varying conditions, but the following factors have been considered with reference to several poisons:

- 1 The rate of decomposition in acid, neutral and alkaline solutions.
- 2 The amount of potassium permanganate required to decompose a given weight of a substance, and conversely, the

3 Smith, Sydney. *Forensic Medicine*, ed. 2. London: J. & A. Churchill, 1928, p. 418.

4 Smith, Sydney. *Forensic Medicine*, p. 449.

5 DeBusscher, L. *Encore sur la prétendue désintoxication de la morphine à l'aide du permanganate de potassium*. Arch. internat. de pharmacodyn. et de thérap. 13:309 1904.

total amount of potassium permanganate that is decomposed by a given weight of a substance.

3 The effective concentration of the reagent.

4 The influence of protein, caffeine and tannin (tea and coffee) on the rate of destruction of poisons

Potassium permanganate in tenth-normal (3.1606 Gm to the liter) or hundredth-normal solution was used in nearly all the quantitative experiments. The disappearance of purple was the end-point for the determination of the reduction of potassium permanganate. This was fairly sharp in those experiments in which there was little interference by the color of the products of decomposition, but it was unsatisfactory in those in which turbid mixtures resulted. Some of the experiments were performed at room temperature (about 25 C, or 77 F) some at body temperature (about 37 C, or 98.6 F), but the rate of reaction was essentially the same.

When an excess of potassium permanganate was added to an alkaloid, the products of decomposition sometimes continued to reduce the potassium permanganate at a much slower rate, and the weight of potassium permanganate reduced was six times that of the alkaloid in some cases.

The rate of destruction of each of several alkaloids and the approximate amount of potassium permanganate required to destroy a given amount were determined by adding measured amounts of a solution of potassium permanganate to a solution of the poison, and after intervals varying from two minutes to half an hour extracting any undecomposed alkaloid by shaking the solution with chloroform after the addition of sodium bicarbonate, distilling the chloroform and testing the residue by means of Valser's reagent for the presence of unchanged alkaloid. In a few cases the amount was estimated biologically.

Codeine sulphate is decomposed promptly by an excess of potassium permanganate in acid, alkaline or neutral solutions, but codeine ultimately reduces from three to six times its weight of potassium permanganate, the behavior being much like that of morphine. It has been suggested that morphine is oxidized with the formation of pseudomorphine, however, pseudomorphine is also decomposed instantly by potassium permanganate.

Moor said that potassium permanganate decomposes strychnine so slowly that it is of no value as an antidote in the presence of organic matter. That statement is misleading. Strychnine sulphate in an alkaline, neutral or acid solution is decomposed rapidly by a great excess of potassium permanganate, but with only a slight excess of the latter the reaction requires several minutes. In one of our experiments, after 50 mg of strychnine sulphate in a slightly acid solution had been treated with six times its weight of potassium permanganate for three minutes, only a trace of strychnine remained. The result was confirmed by the biologic test on frogs. In another experiment strychnine sulphate was treated with its own weight of potassium permanganate in alkaline solution for two minutes, about 90 per cent of the alkaloid being destroyed. In one experiment strychnine sulphate with eight times its weight of blood albumin was treated with eight times its weight of potassium permanganate, that is an amount equal to that of the weight of the albumin, in alkaline solution for two minutes. All but traces of the alkaloid were destroyed. In this case it is plain that the potassium

permanganate acted on the strychnine much more rapidly than on the blood albumin, but it must be emphasized that this was in an alkaline solution, because, while strychnine is decomposed rapidly in an alkaline solution, blood albumin is decomposed more slowly in an alkaline solution. With an acid reaction the conditions would be reversed, albumin being decomposed more rapidly in an acid solution, and strychnine more slowly.

The average fatal oral dose of strychnine is about 2 grains (0.13 Gm) and a solution of an excess of potassium permanganate with sodium bicarbonate will insure the destruction of a large part of the strychnine that may be present in the stomach. Brucine behaves much like strychnine.

Moor stated that potassium permanganate has no oxidizing effect on aconitine or on veratrine. It seems probable that he used impure specimens. An old specimen of aconitine labeled "Aconitine Pure" was found to be but slightly soluble in water, and, when this powder was dusted on a solution of potassium permanganate, decomposition occurred slowly. Some of this powder dissolved in hydrochloric acid was gradually decomposed by potassium permanganate in the course of two minutes. Another specimen labeled "Aconitine Sulphuric Merck, Crystalline" when dissolved in water was decomposed instantly by potassium permanganate. The progress of poisoning by aconitine is so rapid that the physician seldom has an opportunity to apply antidotal measures. Veratrine alkaloid was also decomposed slowly when dusted on a solution of potassium permanganate, whereas veratrine sulphate in solution was decomposed rapidly by an acid, neutral or alkaline solution of that salt.

Phenol reduces potassium permanganate at once in an acid, neutral or alkaline solution. Beechwood creosote is almost insoluble in water, nevertheless, when shaken with a solution of potassium permanganate it is decomposed almost instantly. This is of little importance, however, because the fatal dose of either is about 30 Gm, and each reduces from six to seven times its weight of potassium permanganate. Trinitrophenol is decomposed in either aqueous or alkaline solution. Nitrobenzene is slightly soluble in water and, unlike creosote, only that portion which goes into solution is decomposed rapidly.

Salicylic acid and acetylsalicylic acid are decomposed by potassium permanganate more slowly in alkaline than in acid solutions. Amidopyrine is decomposed almost instantly in an acid, neutral or alkaline solution, and the closely related antipyrine is decomposed promptly by three times its weight of the reagent in an acid solution and much more slowly in an alkaline solution. Acetanilid is decomposed slowly in acid, alkaline and neutral solutions.

Picrotoxin seldom causes fatal poisoning in man, but the closely related wild parsnip frequently causes death. Picrotoxin in an alkaline solution is decomposed by about twice its weight of potassium permanganate in a few minutes, more slowly in acid.

Poisoning of varying degrees by the hypnotics is not uncommon, and, since they are usually taken by mouth, such cases would seem to offer a field for the use of this antidote. The fatal dose of the hypnotics varies from about 2.5 to 10 Gm, and, without definite knowledge of the amount remaining in the stomach, one has no satisfactory guide for the dosage of potassium per-

manganate even in those cases in which it decomposes the hypnotic. Dial and alurate are decomposed immediately in acid, neutral and alkaline solutions. Barbitol, phenobarbital, amytal, neonal, sulphonal and hydrated chloral are either unaffected or decomposed so slowly as to preclude the effective use of potassium permanganate. In the case of dial and alurate poisoning a solution of 1:5,000 may be used to wash the stomach.

Poisoning seldom occurs from the oral administration of a local anesthetic, but our experiments confirm the statement of Moor that cocaine or cocaine hydrochloride is decomposed slowly and, it may be added, whether in acid, alkaline or neutral solutions. Procaine or the hydrochloride is decomposed almost immediately by an excess of potassium permanganate.

Atropine and pilocarpine are also very slowly decomposed in acid, alkaline and neutral solutions. This is in harmony with Moor's results. The greater part of quinine sulphate in a neutral or acid solution is decomposed almost instantly by about twice its weight of potassium permanganate, more slowly in an alkaline solution.

Moor stated correctly that the oral administration of potassium permanganate is useless in atropine, pilocarpine, caffeine, hydrocyanic acid or phosphorus poisoning. Nevertheless, many recent authorities continue to recommend it, especially for the destruction of hydrocyanic acid and phosphorus. However, while hydrocyanic acid is not decomposed rapidly by it in an acid or neutral solution, the addition of sodium bicarbonate insures its instantaneous destruction, but neither acid nor alkali promotes the oxidation of the insoluble yellow phosphorus in substance.

Tea and coffee contain tannin as well as caffeine, and their presence in the stomach is of some importance. Caffeine is decomposed by about its own weight of potassium permanganate, the rate of reaction increasing with the acidity. It begins instantly and is nearly complete in fifteen minutes with 0.4 per cent of hydrochloric acid, but it is not complete in a neutral solution even after several hours when a barely sufficient amount of the reagent is added to caffeine. Tannin is decomposed by potassium permanganate almost instantly.

An attempt was made to determine whether morphine added to an infusion of tea or coffee is decomposed by an amount of the reagent that is insufficient to decompose all the morphine, caffeine and tannin. One hundred and fifty cubic centimeters of an infusion representing 5 Gm. of tea reduced about 2 Gm. of potassium permanganate within a few minutes, and an infusion of coffee was equally active. Hence the presence of tea or coffee in the stomach may exert a greater influence on the decomposition of slowly reacting poisons than a considerable amount of protein. In one experiment, in which morphine sulphate was added to an infusion of tea and the mixture was treated with potassium permanganate for a few minutes, nearly half the morphine escaped destruction in an acid and in a neutral solution. Hence, when morphine is present in the stomach with tea or coffee the amount of potassium permanganate administered should be sufficient at least to decompose the tannin and the morphine. The caffeine is negligible in such cases. Cane sugar is decomposed so slowly that its presence in the stomach may be disregarded. Alcohol interferes with the destruction of some poisons.

CONCENTRATION

The concentration of a solution of potassium permanganate has comparatively little influence on the rate of destruction of certain poisons. A neutral solution containing one part of potassium permanganate to 2,500,000 was decolorized instantly by an excess of morphine, and by amidopyrine, alkaline solutions containing one part of potassium permanganate to 1,000,000 were decolorized almost instantly by a large excess of any of the following: sodium cyanide, hydrocyanic acid, brucine and sparteine, in a neutral solution by pseudomorphine, and in an acid solution by quinine. Three milligrams of strychnine sulphate added to 100 cc. of a 1:100,000 solution of potassium permanganate decolorized an alkaline solution in about three minutes, a neutral solution in six minutes and an acid solution in about half an hour.

SUMMARY

1 Potassium permanganate has a distinct but limited field of usefulness in the treatment of cases of poisoning. Fairly dilute solutions are irritant and concentrated solutions are caustic, while a large dose may cause death.

2 Among the more common alkaloids that give rise to fatal poisoning after their oral administration and for which potassium permanganate may be useful are aconitine, amidopyrine, antipyrine, morphine and strychnine. To these may be added picrotoxin and probably picrotoxin-like substances (wild parsnip). Potassium permanganate may be used for the destruction of hydrocyanic acid and of potassium or sodium cyanide in the stomach, but only in an alkaline solution.

3 The reaction of potassium permanganate with different poisons varies widely, depending on whether they are present in acid, neutral or alkaline solutions.

4 Potassium permanganate should not be depended on to destroy all the poison, and its use should be followed by evacuation of the stomach.

5 Potassium permanganate may be administered orally in concentrations varying from 1:2,000 to 1:5,000, depending on the dose required, and 1:5,000 may be used for washing the stomach.

6 Potassium permanganate is useless in cases of poisoning by atropine, cocaine or yellow phosphorus in substance, or by any one of the greater number of the hypnotics; it may be useful in washing the stomach after poisoning by alurate, dial and possibly some others, not after barbitol, phenobarbital, amytal, neonal, sulphonal or hydrated chloral poisoning. It may be used for washing the stomach in cases of poisoning by phenol or creosote, but it cannot be administered safely in sufficient amounts to decompose an otherwise fatal dose of either.

7 The dose of potassium permanganate and the concentration of the solution should be governed by the nature and the quantity of the substance which it is designed to decompose, and with reference to the other contents of the stomach. Potassium permanganate decomposes protein much less rapidly than it decomposes certain poisons, tannin (from tea and coffee) almost instantly, diluted alcohol within a few minutes and sugar (sucrose) very slowly.

8 There is no justification for the intravenous, subcutaneous or intramuscular injection of potassium permanganate for the destruction of any poison in the circulation.

1300 York Avenue

Clinical Notes, Suggestions and New Instruments

KARAYA GUM ASTHMA

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It has been known for a long time that cosmetic preparations frequently cause allergic symptoms, particularly in the respiratory tract. Most of the instances reported and figures cited pertain to facial cosmetics and their orris content. Now it is becoming more and more evident that many other types of preparations, such as are used on the hair for wave-setting purposes, may contain ingredients that give rise to allergic reactions. Among the materials that have been incriminated are lycopodium and linseed. One case of vasomotor rhinitis due to Karaya gum in the hair-waving fluid has been reported.¹ According to the United States Department of Agriculture,² the following ingredients are used in the manufacture of hair fixers: acacia, gum tragacanth, linseed gum, quince seed gum, Karaya gum, boric acid, sodium potassium and ammonium carbonates, alcoholic keratin, coloe, petrolatum, cera-flux, glyco wax A and paraflax.

In this connection the following case is of interest

Mrs F S, a married woman, aged 31, consulted me, Nov 8, 1934, for an asthma of two years' duration. Her attacks would usually last two days, and not a week passed without such symptoms. The longest period that she had ever been free from asthma was one month—during which time she was on a visit in Iowa. Her occupation in the past had been hair-dressing, but in the last year she worked only occasionally because of the debilitating effect of the asthma. She was accustomed to dress her own hair with her favorite waving fluid, and since she could not work regularly she frequently would do hair waving at her home for the convenience of some of her friends. The patient suspected that flour, hair-dressing fluid, face powder, and tobacco might be factors in the causation of the attacks. There was a distinct familial history of allergy: a grandmother and an uncle had asthma and both of the patient's parents suffered from eczema.

Complete skin tests (including linseed) by the cutaneous method revealed a two-plus reaction to wheat, sweet potato and tobacco and a one-plus reaction to orris root. A drop of the hair-waving fluid that the patient used on the site of a small scratch produced a wheal about 2 cm. in diameter. The chemist who prepared the fluid was interviewed and it was learned that the material was a solution of Karaya gum and sodium benzoate in water. The patient was instructed to obtain some of the powdered Karaya gum from the chemist. She was curious to know about the appearance of the powder. At home she opened the box and in two or three minutes an attack of asthma ensued that lasted two days. Subsequently scratch tests were made with the powdered Karaya gum, sodium benzoate, tragacanth, acacia and another brand of hair-waving fluid. All were negative, with the exception of the Karaya gum. The latter gave an enormous reaction.

The patient was instructed to eliminate wheat and sweet potatoes from her diet, to change to orris-free cosmetics and to avoid tobacco smoke. After a test period the asthma still persisted. She was then instructed to remove the hair-waving fluid from her home and never to use it on herself or any one else. In addition she was advised to give her home a thorough cleaning. Following this procedure the asthma disappeared and after a period of six months the asthma has not recurred, in spite of the addition of the wheat and sweet potatoes in her diet and the use of cosmetics containing orris.

This is the second case of allergy and the first of asthma reported as due to Karaya gum in hair-waving fluid. By inquiry it has been ascertained that this material is a common ingredient of many brands of fluids. Karaya gum, or Indian

gum, is a white or gray powder obtained from the sap of a tree, *Angoecus Latifolia* Wall, grown chiefly in India. It can be readily understood that these fluids, after drying on the hair and becoming pulverized, may serve as a prolific source of allergic irritation to the individual herself or to her friends. Occupational exposure must also be kept in mind. No doubt many more undiagnosed cases exist. Karaya gum, because of its property of absorbing water and increasing markedly in bulk, has been used for constipation with similar effects as with the use of linseed, agar and the like. The product known as "Kaba" is made from Karaya gum. This material is also used as an emulsifying agent, as an ingredient of hand lotions and in the process of calico printing. In India it is used in the preparation of sweetmeats.

Attention is called to the importance of giving serious consideration to Karaya gum and similar hair-setting fluids as a possible cause of vasomotor rhinitis, asthma and other forms of allergy.

185 North Wabash Avenue

STUDIES ON CAPILLARY FRAGILITY: A DEVICE FOR THE STUDY OF CAPILLARY HEMORRHAGE

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For a number of years one of us has been interested in studies on the capillaries with particular reference to capillary fragility and capillary leakage by diapedesis. It is felt that both these processes might occur as a result of an acute injury to the capillary vessels, as in scarlet fever, from long standing cardiovascular disease, or as a result of a constitutional weakness of the vessels such as occurs in certain of the blood dyscrasias.

Two types of instruments have been used to obtain an objective index of the capillary injury.

1 The positive pressure method in which a cuff is placed around the upper arm and pressure applied. In certain dis-

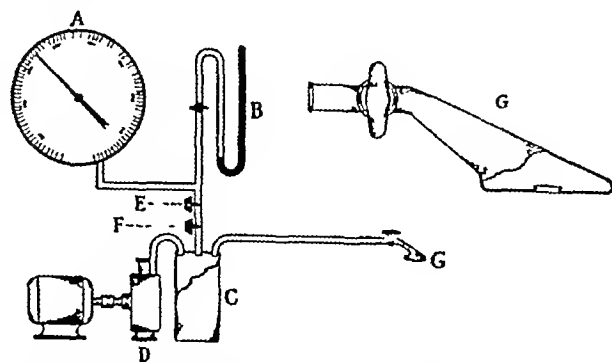


Fig 1.—Diagram of the instrument. A is a special mechanical gage graduated from 0, or vacuum to 760 mm of mercury and from 760 to 0 (not shown in the diagram), B is a mercury gage, C is a 300 cc reservoir, D a vacuum pump, E and F are "by pass" needle valves and G is a suction chamber. G is drawn larger in the upper diagram so as to show more accurately its construction.

eases such as scarlet fever, petechiae occur below the cuff, this is known as the Rumpel-Leede phenomenon.

2 The suction method by which negative pressure is applied to a small area and the amount of suction in a given time necessary to produce hemorrhage is measured.

The first of these was devised by Hecht,¹ but for our purpose it was not satisfactory because it is difficult to handle, it is not portable, and accurate measurements cannot easily be made. In 1931 Cutter and Marquardt² described a suction instrument by means of which rupture of capillaries was

From the Allergy Department of Northwestern University Medical School.

1 Bullen, S. S. Perennial Hay Fever from Indian Gum (Karaya Gum). *J. Allergy* 5: 484 (July) 1934.

2 United States Department of Agriculture Food and Drug Administration. Personal communication to the author.

From the Department of Medicine of Northwestern University Medical School.

1 Hecht, A. F. Experimentell klinische Untersuchungen über Haulblutungen im Kindesalter, *Jahrb. f. Kinderh. Ergänzungsheft* 85: 113 1907.

2 Cutter, I. S. and Marquardt, G. H. Studies on Capillary Fragility. *Proc. Soc. Exper. Biol. & Med.* 28: 113 (Nov) 1930.

observed directly with the capillary microscope, but this was not readily adaptable to clinical use.

The instrument here described embodies certain principles that are essential for rapid and accurate work and lends itself with ease to clinical studies.

Figure 1 is a diagrammatic illustration of the instrument. It consists of *A*, a gage graduated from 0 to 760 (mm of mercury negative pressure) and from 760 to 0 (barometric pressure). This gage is connected to *B*, a mercury gage, by which the accuracy of the mechanical gage can be checked when desired. The gage system is connected to *C*, a reservoir with a capacity of 500 cc. and this in turn is connected to *D*, a small rotary vacuum pump, capable of producing a (partial) vacuum down to within 0.25 mm of mercury. There are two 'by pass' needle valves *E* and *F* by which air can be admitted into the system and any degree of vacuum obtained and maintained. The reservoir is also connected by means of a heavy rubber tube to the suction chamber *G*. This is provided with a stopcock so that the suction chamber can be shut off from the rest of the vacuum system. It is observed that the volume of the suction chamber is very small as compared with the rest of the system. This makes a more accurate adjustment possible.

The suction chamber, *G*, is of a special design, the upper surface is flat and the skin area under observation can be visualized during the time that measurements are being taken, and the evolution of the hemorrhages can be observed by means of a lens. (An otoscope furnishes illumination as well as a lens for this purpose.) The hole in the suction cup is 5 mm and the flange is 10 mm. A 5 mm aperture is used because with a larger opening the skin may be sucked into the chamber and hence cause pain in infants and children.

The whole instrument is enclosed in a carrying case measuring 12 by 9 by 9 inches and weighs 20 pounds (fig. 2).

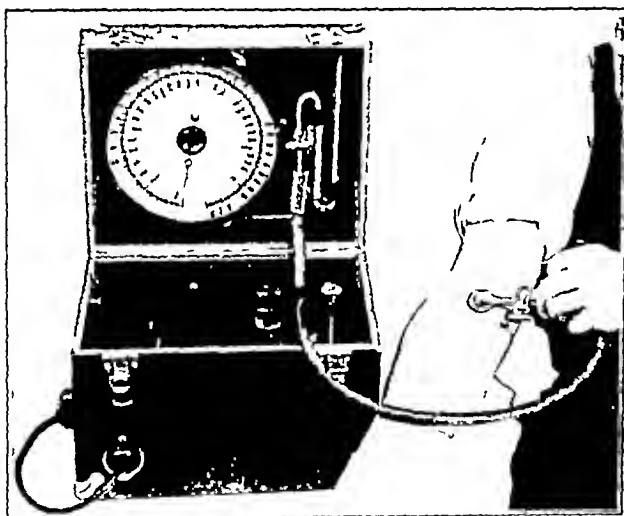


Fig. 2—Appearance of the instrument

To operate, the suction pump is turned on with the stopcock of the suction chamber closed. The desired negative pressure is obtained by adjusting the 'by pass' needle valves. The suction cup is applied to the skin when it is desired to make an observation and the stopcock on the suction cup is opened. No special seal is necessary. The skin over the area is observed (through the suction cup) by means of the lens of an otoscope. The otoscope also furnishes the illumination. The suction is applied for thirty seconds and the number of hemorrhages are recorded. Readings are taken at intervals of 50 mm of negative pressure, although shorter periods may be used.

The skin area most commonly used is the cubital space or the infraclavicular region, as these areas give the most uniform results.

There seem to be two types of hemorrhage, one evidenced by a bright red spot interpreted to be due to capillary rupture, and the second by a darkened more diffuse hemorrhagic area

thought to be due to hemorrhage by diapedesis. These can be distinguished grossly, and experiments are now in progress to determine the microscopic differences between the two lesions.

Results thus far obtained with this instrument indicate that it has a wide field of usefulness in the study of the peripheral vascular bed, with particular reference to the factors under lying capillary hemorrhage.

303 East Chicago Avenue.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

GASTRO-INTESTINAL PRINCIPLES

EXCEPTING THOSE HAVING ANTIANEMIC AND CIRCULATORY EFFECTS

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed the series will be published in book form.—Ed

SALIVARY GLANDS

There is no evidence indicating that a hormone mechanism is significantly concerned in the secretion of saliva. Extracts of the buccal and pharyngeal mucosa fail to stimulate the salivary glands, and the introduction of dilute acid into the mouth does not stimulate the recently denervated submaxillary gland.¹ Stimulation should result if a hormone mechanism is concerned.

It has been shown that, following the stimulation of the peripheral end of one chorda tympani nerve, a choline-like agent appears in the blood, this results in a slight fall in blood pressure and in secretion by the salivary gland on the opposite side. Stimulation of the sympathetic supply of the submaxillary gland is said to cause liberation of an epinephrine-like agent. Whether such principles are elaborated during the mastication of a meal in sufficient amounts to exert a detectable physiologic influence has not been demonstrated.²

Some evidence has been reported purporting to indicate that the salivary glands produce an internal secretion which influences the production of other digestive secretions and even affects sugar metabolism. None of the evidence that has been submitted to date is convincing.³ It is interesting that bilateral ligation of the duct of the parotid gland in the dog increases sugar tolerance in the normal but not in the depancreatized dog.⁴

STOMACH

Gastrin—The secretion of gastric juice following the ingestion of a meal is due only in part to a humoral mechanism. That a humoral mechanism is concerned

From the Department of Physiology and Pharmacology Northwestern University Medical School.

1 Ivy, A. C. Role of Hormones in Digestion. *Physiol. Rev.* 10: 282 (April) 1930.

2 Cattell, McKee, Wolff, H. G. and Clark, Dean. Liberation of Adrenergic and Cholinergic Substances in the Submaxillary Gland. *Am. J. Physiol.* 109: 375 (Aug.) 1934.

3 Romer, C. Speicheldrüsen und innere Sekretion, *Mitt. a. d. Grenzgeb. d. Med. u. Chir.* 40: 465 (1927). Rosenfeld, G. Speicheldrüsen Kohlehydratstoffwechsel. *Klin. Wchnschr.* 12: 711 (May 6) 1933.

4 Glaser, E. and Bannet, I. *ibid.* 12: 345 (March 4) 1933.
4 Zimmerman, L. M. and Soskin, Sammel. Effect of Ligation of Parotid Ducts on Carbohydrate Metabolism. *Arch. Int. Med.* 40: 409 (March) 1932.

has been demonstrated by the secretion of an auto-transplanted gastric pouch following a meal.⁵ The humoral agent or agents may be either absorbed secretagogues present in or arising from the digestion of certain foods (meat, liver or other substances) or the hormone gastrin.

The fraction of liver extract that contains the anti-pernicious anemia substance is rich in gastric secretagogic potency. This fraction stimulates gastric secretion on local application to the gastric and intestinal mucosa. It does not act by being absorbed from the stomach but may act by being absorbed from the intestine. When this fraction is freed of vasodepressor substances, it will stimulate gastric secretion when slowly injected intravenously. Thus, there is an example of a gastric secretagogue that may act by way of a humoral route.⁶ The hormone gastrin is supposed to be elaborated chiefly by the mucosa of the pyloric antrum, and possibly by the mucosa of the intestine, when the mucosa is appropriately stimulated, preferably by solutions containing secretagogues.

An acid extract of pyloric mucosa, when injected hypodermically, stimulates gastric secretion. Crystalline histamine has been isolated from such an extract,⁷ the evidence indicates that it is the sole secretory excitant of such extracts, that is gastrin and histamine appear to be identical. It would appear, then, that histamine is the gastric hormone, if such a hormone exists. If some other substance is the gastric hormone, it has never been extracted from the pyloric mucosa.

Histamine (either the methyl or the ethyl derivative) is the most potent excitant of acid gastric secretion known, and it will stimulate the gastric glands in concentrations that have little or no effect on systemic blood pressure.¹ There is no evidence indicating that histamine has a therapeutic value. It does have a very definite place among the tests of gastric function, namely, to determine whether the gastric glands can secrete free acid. The histamine test is the most rigorous test that may be employed to differentiate between true and false anacidity.⁸

INTESTINE

The mucosa of the upper part of the intestine elaborates two hormones, namely, secretin and cholecystokinin, and the inhibitory principle enterogastrone. The possibility that two other hormones are also elaborated in the upper part of the intestine has been suggested: one is said to stimulate the production of insulin (incretin) and another to augment the motility of the intestine.

Secretin—The discovery of secretin by Bayliss and Starling in 1903 is one of the milestones in endocrinology. In the description of their observations they coined the term *hormone*. They found that when dilute acid is applied to the mucosa of the upper part of the intestine the pancreas is stimulated to secrete its digestive juice. They also showed that the intravenous administration of acid extracts of the duodenal mucosa stimulated pancreatic secretion. It was later

demonstrated that application of acid to a transplanted jejunal loop will cause the transplanted tail of the pancreas to secrete, if the circulation of two dogs is cross-connected and acid is then placed in the duodenum of one of the pair, the pancreases of both will be stimulated to secrete.

It should not be surmised from these crucial experiments that acid is the only substance that causes secretin to be formed. Fatty acids, soaps and peptones are other food substances that cause the duodenum to elaborate secretin.⁹ All attempts to demonstrate that postabsorptive circulating substances originating from food are concerned in stimulating the pancreas to secrete have met with failure.¹⁰

Highly purified preparations of secretin have a slight chologogic and diuretic effect, which is of no practical significance. Similar preparations have no effect on sugar metabolism.¹¹ The isolation of secretin in crystalline form has recently been reported.¹²

Highly purified preparations of secretin have been injected intravenously into man for the purpose of ascertaining whether secretin might be of practical use for estimating pancreatic function. It is too early to state whether secretin will be of value in this regard.¹³ Secretin has no known therapeutic value. It is ineffective when taken by mouth, and it is relatively inactive hypodermically.

Cholecystokinin—The chief stimulus of gallbladder contraction thus far discovered is the hormone cholecystokinin. Stimulation of autonomic nerves in the cat or dog has never been observed to have more than a slight temporary effect on the gallbladder. Attempts to demonstrate that postabsorptive circulating fatty substances originating from food are concerned in gallbladder evacuation have met with failure.

Cholecystokinin may be extracted from the mucosa of the upper part of the intestine of most animals and man. Such extracts, when free from histamine and choline, cause, on intravenous injection, a more or less prolonged contraction of the gallbladder with evacuation in man and animals. That this hormone operates physiologically has been shown by denervating the gallbladder, by cross-circulation and transplantation experiments in the dog and by blood transfusion experiments in man.¹⁵

The most effective excitants for production of this hormone are acids and fats acting in the upper part of the intestine. These substances have little or no action in the lower part. All fats are effective, but egg yolk and cream appear to be the most active. Proteins, particularly meat, rank next, and carbohydrates have little, if any, action.

Cholecystokinin is closely allied chemically to secretin but is probably not identical with it. Preparations of each have been made which are free of physiologically detectable quantities of the other.

This hormone has been shown to be active only on intravenous administration. Since it produces only a quicker, but not greater, effect on the gallbladder than ingested egg yolks and cream, it is not likely that it will prove to be of therapeutic or diagnostic value.

⁹ (a) Ivy¹ (b) Still E U Secretin *Physiol Rev* 11:328 (July) 1931

¹⁰ Ivy A C. Unpublished data

¹¹ Hammarsten, E. Jörpes E and Agren G. *Versuche zur Reinigung von Sekretin* Biochem Ztschr 204 272 1933

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¹³ Ivy A C. *Physiology of the Gallbladder* *Physiol Rev* 14 1 (Jan) 1934

⁵ Ivy¹ Klein Eugene and Arnheim Ernest. Gastric Secretion. I Transplanted Gastric Pouch. *Arch Surg* 25 433 (Sept.) 1932 Klein Eugene II. Studies in a Transplanted Pouch Without Auerbach's Plexus, *ibid* 26: 442 (Sept.) 1932

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Enterogastrone—It has long been known that undigested fat inhibits gastric secretion and motility, particularly when the fat is in the intestine. This inhibition was formerly thought to be due solely to a nervous reflex mechanism. It was found,¹⁴ however, that the motility of a transplanted gastric pouch was inhibited by ingested fat and that this was not due to the absorption of fat or fatty substances.¹⁵ This has been shown to be true also for the inhibition of gastric secretion caused by fat.¹⁶ Lim and his colleagues found that a crude preparation of cholecystokinin, when injected in large doses, would inhibit gastric secretion.¹⁷ This observation was then examined in detail, and it now appears that the inhibition of both gastric secretion and gastric motility caused by fat is due to a specific substance, which has been called enterogastrone.¹⁸ These observations have been confirmed in my laboratory.

It has been demonstrated recently that a similar mechanism is concerned in the inhibition of gastric motility that occurs when dextrose is present in the upper part of the intestine.¹⁹

Enterogastrone, though it may now be prepared free of vasodepressor and toxic effects in the dog, has not been prepared sufficiently pure for use in man. However, it may prove to be useful in certain cases of "peptic" ulcer after it has been purified, and particularly if it can be shown to be active when given hypodermically.

Islet Stimulating Hormone—Presumptive evidence has been reported indicating that the duodenum produces a hormone (incretin, or duodenin) which stimulates the pancreatic islets to produce insulin.²⁰ In the intact animal, certain fractions of duodenal extract cause a decrease in the hyperglycemia induced by dextrose or by epinephrine, regardless of the mode of administration. Some state that it will reduce the normal blood sugar level. It does not act in the depancreatized dog.²¹ Several observers assert that extracts containing the principle are effective orally in reducing the ketosis and blood sugar in diabetic patients.²²

The latent therapeutic possibilities in the fairly numerous reports now available on this principle justify careful clinical investigation. A theoretical question arises, however, in regard to the probable usefulness of this principle, namely, Should the islets of a diabetic patient be stimulated? Would not such stimulation result in injury?²

THE SECRETION OF SUCCUS ENTERICUS

It is certain that mechanical and chemical stimuli acting locally are the primary factors concerned in the secretion of intestinal juice.¹

Loops of the intestine transplanted into the skin secrete small amounts of juice continuously and are stimulated by local mechanical and chemical stimuli. Following a meal, it is difficult to detect an increase in secretion,²³ although an analytic study reveals some increase in volume of secretion and output of enzymes.²⁴ Thus, a humoral mechanism is apparently concerned in the secretion of succus entericus, but it does not play a predominant rôle.

A GASTRO-INTESTINAL MOTOR HORMONE?

Investigators from time to time have presented evidence purporting to show that gastro-intestinal motility is controlled in part by a hormone mechanism. In most of these studies an extract of intestinal mucosa was used that contained histamine, choline or both. In fact, choline has been called the gastro-intestinal hormone.²⁵ But the studies on which this claim was based are pharmacologic in nature.

In unanesthetized animals choline has variable effects; this is true also of man.¹ Its use in patients is not recommended.

There is some preliminary evidence available indicating that the intravenous injection of certain fractions of duodenal extracts, free from choline and histamine, augments intestinal motility.²⁶ Since the motility of transplanted loops of intestine is not definitely increased after the ingestion of a meal,²³ it would appear that if a hormone is concerned in regulating gastro-intestinal motility it is not readily detectable.

SUMMARY OF GASTRO-INTESTINAL HORMONE THERAPY

Although the gastro-intestinal hormones are of great physiologic interest, none of them have been definitely demonstrated to possess therapeutic value.

ADMINISTRATION OF PEPSIN

Pepsin as a therapeutic agent has passed through several periods of popularity since its discovery in 1835. In spite of this, practically no scientific evidence has been submitted showing that it is of real therapeutic value.

Theoretically, pepsin with adequate hydrochloric acid is indicated in achylia gastrica, particularly in those patients who complain of flatulent dyspepsia and diarrhea. Although such therapy is not infrequently employed in achylia gastrica, clinical reports are at variance in regard to the importance of the pepsin. Most of the recent reports indicate that hydrochloric acid alone is sufficient, however, others report that some patients do better after pepsin is added to the acid.²⁷

In the presence of gastric anacidity there is some evidence indicating that, after the adequate administration of acid, a normal amount of pepsin may be secreted by the gastric glands. In such patients the addition of

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- 28 Burgess and Ivy and Burget cited by Ivy¹
- 29 Templeton cited by Still²⁸
- 30 Sandblom and Voegtlin. Unpublished data
- 31 Loeper, M and Braumanu J. *Progrès méd.* 36: 348 (July 23) 1921
- 32 Brockbank, William. *Proc. Roy. Soc. Med.* 24: 951 (May) 1931
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pepsin to the acid is superfluous.²⁸ Whether the stomach of a patient manifesting anacidity will secrete adequate pepsin on the administration of acid can be determined only by fractional gastric analysis.

Recently several brief clinical reports have appeared, indicating that the administration of desiccated hog's stomach (ventriculin) may be as effective as hydrochloric acid in relieving the dyspeptic symptoms and diarrhea in patients having achylia gastrica and anacidity.²⁹

Pepsin has been administered subcutaneously to patients having a "peptic" ulcer,³⁰ the claim has been made that pepsin plays a specific role. Both favorable and unfavorable reports on this therapy have been made. The rationale on which such therapy is based and the clinical reports now available are not sufficiently impressive to warrant a statement concerning the details of the therapy.

THE ORAL ADMINISTRATION OF RAW PANCREAS AND PANCREATIN

Experimentally it is established that the absolute exclusion of pancreatic juice from the intestine in the dog results in polyphagia, the passage of large bulky stools, and a considerable disturbance of the digestion and absorption of fat and protein, and to a lesser extent of that of carbohydrate.³¹ It is also true that some dogs are much more affected than others and that the same dog may manifest considerable fluctuation from time to time in the capacity to utilize food fat. More than half of the dogs manifest progressive inanition and die unless large quantities of easily digested foods are supplied with a liberal supply of vitamins. Even this fails not infrequently after from six to ten months.

Many laboratory workers who have experimented in this field³² have added raw ground pancreas in relatively large amounts (from 50 to 200 Gm daily) to the diet of depancreatized dogs controlled with insulin and to the diet of dogs with absolute exclusion of the pancreatic juice from the intestine. With raw pancreas in the diet, such dogs have remained in excellent condition for several years, this is not otherwise the case, except in rare instances.³³

The mechanism of the effect of such therapy is not simple. Raw ground pancreas was originally administered with the hope that some of the contained enzymes would pass through the stomach without being inacti-

vated by the acid of the gastric juice.³⁴ However, this has never been demonstrated by direct experiment on dogs with duodenal or jejunal fistulas.³⁵ There is evidence, though meager, indicating that the administration of raw pancreas, pancreatin (from 10 to 20 Gm), or pancreatic juice to depancreatized dogs, or dogs deprived of pancreatic juice, decreases the fat lost in the feces,³⁶ as well as the nitrogen.³⁷ Whether this is due to improved digestion or absorption has not been settled, though the latter appears chiefly to be concerned. Further, in interpreting the changes in fecal fat loss, one has to consider also the possibility of changes in the excretion of fat by the intestinal mucosa. The problem is rendered more complex, yet more important, by the more recent reports that the lecithin and choline content of the raw pancreas, rather than the enzymic content, is chiefly responsible for the better nutrition and greater longevity of insulin-controlled depancreatized dogs. The administration of raw pancreas, lecithin or choline prevents the marked fatty infiltration of the liver and hepatic insufficiency.³⁸

The clinical literature prior to 1912 contains reports on a few well studied patients with pancreatic deficiency in whom the administration of raw pancreas or pancreatin decreased the fecal loss of fat and nitrogen.³⁹ Since then very little clinical investigation has been reported.⁴⁰ The survey of Bastedo²⁷ in 1925 indicated that pancreatin was not being widely used except in tropical sprue and pancreatitis. Pancreatin and raw pancreas are still being used in sprue,⁴¹ although their value has not been definitely demonstrated by a thorough study. It has been reported that in sprue the concentration of enzymes in duodenal contents is normal,³⁸ but this does not mean that the total output is normal. Pancreatin therapy has been recently reported to be of value in the treatment of arthritis deformans⁴² and scleroderma.⁴³

SUMMARY

The administration of adequate amounts of raw pancreas or active pancreatic extracts orally in the presence of a deficiency of the external pancreatic secretion has a firm theoretical basis. The value of raw pancreas given orally to depancreatized dogs is established, the chief value of the therapy apparently being to prevent fatty degeneration of the liver. There is some evidence indicating that administration of raw pancreas and pancreatin to animals and patients having a definite deficiency of pancreatic secretion decreases the loss of fat and nitrogen in the feces. Such therapy has been used in sprue and other conditions, but its value in these has not been definitely established.⁴⁴

303 East Chicago Avenue

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Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING ARTICLE

HOWARD A. CARTER, Secretary

TISSUE HEATING BY SHORT WAVE DIATHERMY

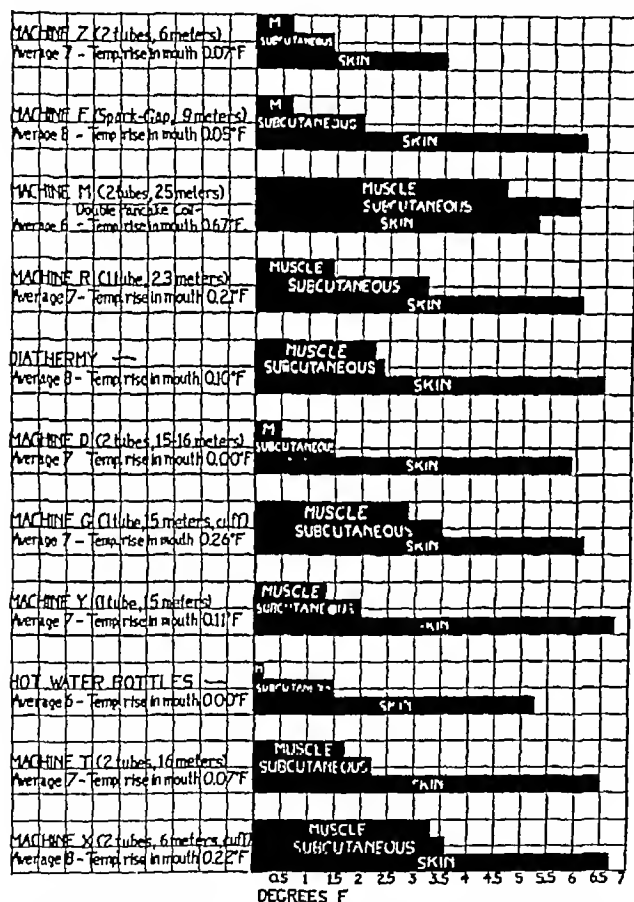
BERNARD MORTIMER, PH D, MD

AND

GERTRUDE BEARD, RN

CHICAGO

Following the technic described in a previous article,¹ nine new short wave diathermy machines were tested for their ability to heat the tissues of the human thigh. As before, the machines were used in rotation, and the



Temperature rises in human thigh Current on for twenty minutes
Technic directed by the manufacturers Dosage regulated by tolerance
of patient.

dosage was regulated entirely by the tolerance of the patient. A representative of each manufacturer was present at one test to direct the usage of his machine.

The machines submitted were (wavelengths listed are those quoted by the manufacturers)

- Machine X—2 tubes, 6 meters
- Machine T—2 tubes, 16 meters
- Machine Y—1 tube, 16 meters
- Machine G—1 tube, 15 meters
- Machine D—2 tubes, 15-16 meters

Aided by a grant from the Council on Physical Therapy of the American Medical Association

From the Department of Physiology and Pharmacology and the Department of Physical Therapy Northwestern University Medical School
1 Mortimer Bernard, and Osborne S L Tissue Heating by Short Wave Diathermy Some Biologic Observations J. A. M. A. 104: 1413 (April 20) 1933

- Machine R—1 tube, 23.31 meters
- Machine M—2 tubes, 25 meters
- Machine F—Spark-gap, 9 meters
- Machine Z—2 tubes, 6 meters

A conventional spark-gap diathermy machine was used for comparison

In addition to the machines listed, it was decided to run comparable tests with two hot water bottles, one on the medial and one on the lateral aspect of the thigh. The temperature of the bottle was maintained at from 43 to 45 C by an electrical heating element inserted through a rubber stopper

Temperatures of the skin, of the subcutaneous tissue and of the muscle (quadriceps extensor) were taken before and after a twenty minute clinical application by the thermocouples and potentiometer described previously. Mouth temperatures were also recorded. The accompanying graph illustrates the results that were obtained

Since several manufacturers had submitted cuff electrodes as additional equipment, two tests were carried out using cuffs with the conventional diathermy machine. The following average temperature increases were observed

Skin, 88 degrees F

Subcutaneous tissue, 9.95 degrees F

Muscle, 88 degrees F

To date fourteen short wave diathermy machines with wavelengths ranging from 6 to 25 meters have been tested for their ability to heat the tissues of the human thigh. From our results there appears to be no advantage of any one wavelength over another for heating purposes

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
PRELIMINARY REPORT

PAUL NICHOLAS LEECH, Secretary

IMMUNE GLOBULIN (HUMAN) PLACIM- MUNIN-SQUIBB, AND IMMUNE GLOBULIN (HUMAN)- LEDERLE

Immune Globulin (Human) is the protein material obtained from human placentas by extraction with saline solution and refined by precipitation with ammonium sulphate. It is referred to in the literature as "placental extract." The National Institute of Health has licensed its manufacture under the name "Immune Globulin (Human)"

Two firms, E. R. Squibb & Sons and Lederle Laboratories, Inc., have presented preparations for consideration of the Council, the one under the name "Placimmunin," the other under the name "Immune Globulin (Human)-Lederle." These products will be discussed individually later in this report

The experimental clinical work on the use of Immune Globulin (Human) has been done by McKhann and his co-workers, principally Chu. They found that the product apparently prevented (and in a few cases modified) measles in children exposed to the disease. The rationale for the use of placental extract was the natural immunity of the new born to certain diseases, including measles¹

The use of the globulin in place of the serum is apparently for concentration purposes. There is probably not a great deal of difference in potency. Schick and Karelitz² say "the

1 McKhann, C. F. and Chu, F. T. Antibodies in Placental Extracts. J. Infect. Dis. 52: 268 (March-April) 1933
2 Schick, Béla and Karelitz, Samuel. Studies in Prophylaxis of Measles. Am. J. Dis. Child. 47: 1162 (May) 1934

globulin fraction of the serum was tested. The results indicated that this fraction was at least as effective and probably slightly more effective than the serum from which it was extracted."

There has been no proof submitted to the Council to show that the globulin varies appreciably from the serum from the same source. Therefore the product is not entirely original, at least as far as is shown in the available evidence.

The first series of forty-three cases³ is reported in groups of children treated simultaneously. A table has been made from the articles by McKhann and others.⁴

These case histories³ show that placental extract is at least as efficacious as convalescent serum or adult whole blood for this purpose (i. e., prevention). It is also apparent that, with these dosages, prevention usually occurs even when modification is attempted. This is demonstrated clearly in the report of McKhann and Coady⁴ and even in McKhann's summary,⁴ prevention occurred in seven out of twenty-five cases in which modification was attempted. (N. B. Those who desire further information in regard to tabulation of preventions, modifications, and failures are referred to McKhann's latest article,⁵ which was published after the formulation of this report.)

In an analysis of twenty-one partial or complete failures by McKhann,⁴ it is pointed out that the five modifications marked a were "early cases treated when preparations and dosages were

On the basis of the available data, the only indicated procedure would be the use of a dose which ordinarily or in most cases would prevent measles, other factors being equal, with the hope that modification would result in many cases for the benefit of the individual. There is no evidence at the present time to indicate reasonable assurance of prevention of typical measles under certain circumstances, if the dosages recommended for modification were used. The number of tests is as yet inadequate to permit the exact determination of the best fraction of the extract to use and the dosage required for children of various ages and at various stages of the incubation period of the disease.

The Council is informed that reactions following the injection of placental extract, although infrequent, appear to be due in large measure to the inclusion in the finished extract of variable amounts of a specific tissue protein. It is pointed out that the aging of the placentas before preparation of the extract, with the autolysis of the tissues, must be considered as a possible factor. The Council holds that commercial products should be demonstrably effective in bringing about the results claimed for them and further that they should be made as free from reactions as possible.

Placimmunun—E. R. Squibb & Sons presented this preparation for the Council's consideration principally for approval of the name. The firm felt that additional data were necessary

TABLE 1—McKhann and Chu

Group number	1	2	3	4	5	6	7	8
Total number of cases	10	7	3	12	11	7	9	8
Age limits	18 months to 6 years	3 to 10 years	1 to 3 years	2 to 9 years	3 to 9 years	10 months to 2 years	1 to 9 years	5 to 9 years
Treated with								
Placental extract	7	6	2	6	7	7	4	2
Adult whole blood	3				4		5	1
Convalescent serum				6				
Untreated..		1	1					
Amount in cc.	4 10	30	5	—	3	—	—	—
Exposure to infection (days)	4	3	4	—	—	5	3	—
Days of exposure	1	1	—	—	—	2	2	—
Results								
Prevention..	6	6	2	6	6	5	3	—
Modification	1	3			2	1	4	—
Typical measles			1		1			2

very varied." In regard to the sixteen other results thus classed, marked b he states that they "occurred in attempts to determine adequate dosage of refined preparations in relation to time of administration." It is also evident that the unfiltered preparations are more potent than the filtered.

The reason for the development of this product is apparently the limited availability of convalescent serum and the feeling that placentas will be an adequate source for these immune factors.

The Council is of the opinion that the available evidence is insufficient on which to base recommended dosages, especially when those dosages are specifically designated as adequate for prevention or for modification. It would be preferable if clinical evidence from other sources were available to substantiate these dosages. The results were not especially uniform in obtaining modification when it was desired.

There are many factors that go to make up the adequate dose which will modify and yet prevent typical measles.

The intimacy of exposure, the length of exposure, the stage of the disease at the time of exposure, the virulence of the infection, the individual resistance, the lapse of time between exposure and immunization and the potency of the immunizing agent all influence this problem of adequate dosages to accomplish modification.

before the product could logically be presented to the medical profession. The Council's Committee on Nomenclature, although feeling that the term *Placimmunun* is somewhat unfortunate since it suggests that the product represents a new class of immunizing substances parallel to vaccines and the like, recommended that the name '*Placimmunun*' be recognized on the ground that it is fair to presume that placenta offers, at least, an additional source of the immunizing substance, the supply of which may otherwise be inadequate. The Council voted to recognize the name '*Placimmunun*' for the placental extract submitted by E. R. Squibb & Sons under that name provided the written consent of Dr. McKhann and his associates was secured by the firm and submitted to the Council. Subsequently the formal consent of Dr. McKhann and his associates was received by the Council.

The label for *Placimmunun* bears the following dosage statement:

Prophylactic 3.5 cc single dose
Therapeutic 5 cc., repeat as required

In the information presented by the firm there occurred the following statement:

Therapeutic Indications: Used in children as a prophylactic and therapeutic [agent] against measles. It is standardized with diphtheria toxin. No advertising issued.

The firm has recently submitted an advertising circular for the product to which the Council's referee has found no objection. It is believed that the prophylactic dose is probably adequate to prevent measles under ordinary circumstances if the potency is equal to that of McKhann's preparation.

Immune Globulin (Human)-Lederle—This product was submitted for the Council's consideration as a "measles modifier."

³ McKhann C. F. and Chu F. T. Use of Placental Extract in the Prevention and Modification of Measles. *Am. J. Dis. Child* 45: 475 (March) 1933.

⁴ McKhann and Chu³ McKhann C. F. and Coady H. Immunity in Infants to Infectious Diseases. Placental Antibodies. *South Med. J.* 27: 20 (Jan) 1934. McKhann. Totals in table 3 (not published elsewhere).

⁵ McKhann C. F. Green A. A. and Coady H. *Pediat* 6: 603 (May) 1935.

In a submitted circular, the firm emphasizes the variability of adequate dosage for the modification of measles in the following statement

"The strength of IMMUNE GLOBULIN (HUMAN) LEDERLE has been adjusted so that it is believed that 2 cc will usually modify the attack of measles if it be injected on the sixth or seventh day after exposure

In McKHANN'S later study it has been found that the dose required to modify the attack without preventing it or stopping it increases according to the length of the time interval between the date of the contact (exposure to measles) and the date on which the Immune Globulin is injected

Thus if 2.0 cc is the effective dose at the 7th day after contact then 1.0 cc should be sufficient on the 2nd or 3rd day but 10.0 cc would be needed if symptoms (fever, coryza etc.) have been present for 2 or 3 days

Still later experiences indicate that the dosage of the IMMUNE GLOBULIN must vary somewhat according to the intimacy of the exposure

On the other hand the physician must bear in mind that too large a dosage of the Immune Globulin tends to prevent the development of even the modified attack in which event the permanent active immunity would probably not be established

The physician should adjust the dosage in accordance with his knowledge of the circumstances

Thus last statement will probably always be true as far as the actual amount required for each individual case is concerned. There should be, however, more evidence available and more proof of the adequacy of these dosages in most cases, before the physician can accurately adjust such a basic dose to meet individual requirements

The 2 cc trade package contains this recommendation "To modify measles inject 2 cc. on the 6th or 7th day after exposure" This is questionable, because such procedure with this amount might be inadequate at that time to insure against

TABLE 2—McKhann and Coady

	Total Number of Cases	Preven- tion of Measles	Modifi- cation of Measles	Typical Case of Measles
Placental extract to prevent	95	91	4	0
Placental extract to modify	8	6	3	0
Convalescent serum or adult whole blood	33	20	4	0
No treatment	2	0	0	2

typical measles (unless this commercial product is more potent than McKhann's preparation)

The Council is of the opinion that the circular "Immune Globulin (Human) Lederle Measles Modifier" should be rewritten to include mention of the prevention factor and to contain more substantial evidence of adequate dosage

In conclusion, the following points are of importance

1 The variation in potency between placental serum and globulin is apparently not marked and has not been demonstrated

TABLE 3—McKhann

	Total Number of Cases	Preven- tion of Measles	Modifi- cation of Measles	Typical Case of Measles
Unfiltered placental extract to protect	95	90	5a	0
Unfiltered placental extract to modify	3	1	2	0
Refined filtered placental extract to protect	157	142	6b	9b
Refined filtered placental extract to modify	25	7	17	1b

2 The product is as efficacious for prevention as convalescent serum and is derived from a more adequate source

3 The clinical results show sufficient evidence to warrant recommended doses for prevention those for modification are questionable on the basis of available evidence

4 Clinical reports from other sources in confirmation of the results are desirable

5 The standardization of this product on the basis of its neutralizing effect on diphtheria toxin seems adequate only if there is a definite ratio between the diphtheria immune and measles immune factors in the globulin (McKhann's latest report⁶ would seem to indicate that this ratio is not definite)

The standardization on the basis of a clinical trial on measles contacts does not appear to be adequate, but the details of the procedure have not been given and final judgment cannot be made until they are known

CONCLUSION

After considering the available evidence, the Council decided that although Immune Globulin (Human) appears to be a promising immunizing agent, more evidence of its value is needed before it may be generally used by the medical profession

The Council therefore postponed consideration of Immune Globulin (Human), and the brands submitted by Squibb (Placimmunin), and Lederle, until such further evidence is available, and authorized publication of the foregoing report.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORT
RAYMOND HERTWIG Secretary

NOT ACCEPTABLE

LACTO-DEXTRIN

The Battle Creek Food Company, Battle Creek, Mich., submitted to the Committee on Foods a product essentially lactose, dextrin, soluble starch and lemon powder called "Lacto-Dextrin"

Manufacture—Dextrin is prepared by diastatic enzyme hydrolysis of cooked cereal starch in a water suspension. Lactose equivalent to the dextrin yield (calculated on dry basis) is added. The mixture is dried at 42 C., admixed with an equal weight of dried lactose and 1 per cent of lemon powder, pulverized and sealed in tins

Analysis (submitted by manufacturer) —

	per cent
Moisture	4.6
Ash	0.2
Fat (ether extract) less than	0.1
Protein (N x 6.25) less than	0.2
Reducing sugars as lactose	75.6
* Soluble starch	2.9
Dextrins (by difference)	14.4
Titrate acidity as citric acid	0.2

* Browne's Hand Book of Sugar Analysis p 509

Discussion of Advertising—The advertising presents Lacto-Dextrin as "A special carbohydrate food for changing the intestinal flora an antitoxic food (it) combats autointoxication is not a medicine, but is most efficient for changing the intestinal flora—that is, for suppressing and destroying the poison-producing germs found in the intestinal tract. At the same time, Lacto-Dextrin builds up an army of protective or friendly germs. This is nature's way of preventing and opposing many common diseases. Lacto-Dextrin banishes intestinal poisons which may cause the acid condition (acid stomach) changes a putrefactive flora to a normal acidophilic flora by changing the culture medium (the bowel is always a culture medium for bacteria) from one that favors putrefactive organisms to one that is agreeable to fermentative bacteria when intestinal putrefaction occurs in the infant, as well as in the adult, a rational treatment is afforded in the use of Lacto-Dextrin an aid in the treatment of intestinal toxemia

provides the proper nutrient medium for promoting the growth of the normal protective organisms which combat putrefactive bacteria in the bowel can be depended on to counteract putrefactive organisms when the proper soil is supplied.

Providing culture material for the acidophilic bacteria is an effective method of combating putrefaction, inasmuch as the two bacterial groups are antagonistic. Battle Creek Lacto-Dextrin provides the soil for the development of the acid forming bacteria which, in the proper medium, inhibit the development of the proteolytic organisms and thus restore the normal flora taken in normal doses, a goodly portion reaches the colon before it can be absorbed and the protective bacteria B. Acidophilus and B. Bifidus at once begin to flourish

and soon outgrow the pernicious Welch's Bacillus, B. Putrificus and other harmful organisms. The symptoms of auto-intoxication begin to improve. A great burden is lifted from the liver and kidneys, and other vital organs whose function is to destroy and eliminate poisons. Headaches, bad breath, lassitude and other toxic symptoms disappear and a general improvement in health is experienced as putrefaction in the colon is gradually suppressed and the protective flora becomes dominant. This is the normal way to build health."

Dose—"HOW TO TAKE"—Begin with two tablespoonfuls dissolved in a glassful of hot or cold water three or four times daily. Gradually increase the amount to three tablespoonfuls and continue until the normal flora is restored.

"HOW MUCH TO TAKE"—If gas is produced in such quantities as to cause inconvenience, reduce the amount to a level tablespoonful or even less if necessary. Gas production is evidence that the food remedy has reached the colon where it is needed and in sufficient amount to be effective.

"WHEN TO TAKE"—Lacto Dextrin may be taken at meals or between meals, a half hour before meals when appetite is excessive and after meals when the appetite is poor."

The implantation of acidophilic organisms in the intestine is an uncertain procedure even when large doses of acidophilic culture are fed with or without accompanying lactose. The transformation of intestinal flora merely by feeding lactose and dextrin has not been found to be beneficial except in occasional selected cases. Lactose and dextrin alone cannot create B. acidophilus. The person who is to be thus benefited must have B. acidophilus in his intestine at the start, and many people ordinarily do not harbor B. acidophilus in their intestine.

Because (1) the product Lacto-Dextrin is not considered useful in the manner portrayed in the claims and (2) the advertising to the public is of a medicinal character involving self diagnosis and self treatment, the product will not be listed among the accepted foods of the Committee on Foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG Secretary

GREETINGS BRAND PINEAPPLE JUICE UNSWEETENED

Distributor—Alexander & Baldwin, Ltd., Honolulu, Hawaii.
Packers—Kauai Pineapple Company, Kalaheo, Kauai, Baldwin Packers, Ltd., Lahaina, Maui and the Maui Pineapple Company, Kahului, Maui (subsidiaries).

Description—Canned unsweetened pineapple juice retaining in high degree its natural vitamin C content.

Manufacture—Juice drained from crushed pineapple before cooking and pressed from crushed pineapple tissue is blended, 'flash' processed and canned.

Analysis (submitted by distributor) —

Moisture	per cent
Ash	85.0
Fat (ether extract)	0.4
Protein (N x 6.25)	0.01
Reducing sugar as invert sugar	0.3
Sucrose	9.3
Crude fiber	3.8
Carbohydrates other than crude fiber (by difference)	0.01
Titrateable acidity as citric acid	13.4
Alkalinity of ash (cc. normal acid solution per gram ash)	0.9
	10.7

Calories—0.6 per gram 17 per ounce

Vitamins—Chemical assay shows retention of about 90 per cent of the vitamin C of the fresh juice.

Claims of Distributor—For all uses of pineapple juice. Retains in high degree the natural nutritional values of fresh pineapple juice. Good source of vitamins B and C and contains A and G.

COLONIAL BREAD LONG, SLICED AND UNSLICED

COLONIAL PULLMAN BREAD A SPECIAL SANDWICH LOAF

Manufacturer—Colonial Baking Company, Cedar Rapids and Des Moines, Iowa

Description—White breads made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817), prepared from flour, water, sucrose, powdered skim milk, lard, yeast, salt, malt extract and a yeast food containing calcium acid phosphate, ammonium sulphate, sodium chloride, potassium bromate, potassium iodate and corn starch.

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors—

Loud and Jackson Dairies, Inc., Jackson, Mich.
Marsh Dairy Company, Winchester, Ky.
McIrvin Dairy, Chillicothe, Mo.
Melville Dairy, Burlington, N. C.
J. M. Miller Dairy, Culver, Ind.
Miller Dairy Products Company, Metropolis, Ill.
Monticello Dairy, Inc., Charlottesville, Va.
Northern Dairy Company, Ishpeming, Mich.
Pestigo Dairy Company, Marinette, Wis.
Frank Petelinz Dairy, Newburgh, N. Y.
Pine State Creamery Company, Raleigh, N. C.
Pipkin Dairy, Lakeland, Fla.
Quality Dairy Company, Hannibal, Mo.
Riverdale Supreme Dairies, Salamanca, N. Y.
Rowan Creamery, Inc., Salisbury, N. C.
Ruff's Dairy, St. Clair, Mich.
Sanitary Milk Company, Kalamazoo, Mich.
Sebree Dairy, Canton, Ill.
Smith Dairy, Midland, Mich.
Sprague Dairy, Flint, Mich.
Steffen Ice and Ice Cream Company, Arkansas City, Kan.
Steffen Ice and Ice Cream Company, Wichita, Kan.
Torrington Creamery, Inc., Torrington, Conn.
Van Eepoel Dairy Products, Inc., Tampa, Fla.
Wauchula Creamery Company, Wauchula, Fla.

Licenser—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink. Base and licenses its use, the name Krim-Ko and standard advertising under definite contract conditions.

Description—Pasteurized chocolate flavored sweetened skim milk, contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa tapioca flour, salt and traces of tartaric acid and agar, flavored with vanilla, vanillin and coumarin. See Krim-Ko Chocolate Flavored Drink (THE JOURNAL, June 30, 1934, p. 2187).

BUDDIE BRAND EVAPORATED MILK

Distributor—Howard E. Jones & Company, Baltimore

Packer—The Oatman Condensed Milk Company, Dundee, Ill.

Description—Canned, unsweetened evaporated milk, the same as Oatman's Brand Evaporated Milk (THE JOURNAL, April 16, 1932, p. 1376).

1. HERSH'S BEST BRAND TOMATO JUICE
2. MINUTE MAN SPECIAL TOMATO JUICE
3. UNITED SERVICE BRAND TOMATO JUICE

Distributors—1. L. F. Hersh & Brother, Elizabeth, N. J.
2. Falk & White Company, Lawrence, Mass.
3. United Service Stores Boston.

Packer—Vincennes Packing Corporation, Vincennes, Ind.

Description—Pasteurized tomato juice with added salt, retains in high degree the natural vitamin content of the raw juice. The same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 17, 1935

OUR BRITISH VISITORS

Elsewhere in this issue (Association News, page 518) appears an account of the entertainment of our British visitors, who this week passed through the United States en route to the meeting of the British Medical Association in Melbourne, Australia. Another large group of tourists made the trip by way of Canada. The group that passed through our country included not only four representatives of the official bodies of the British Medical Association but also many distinguished British physicians whose names mean much in the fields of science and medical literature, and a great number of general practitioners from various parts of the British dominion.

In New York the visitors were met on the *Georgic* by representatives of the New York State Medical Society and the American Medical Association. An official reception was held before the boat docked. They were entertained with a tour into the country under police escort and with a dinner for the leading officials on August 4. On August 5 they were shown through the leading medical institutions in New York City and also made a visit to Radio City and the music hall, ending their official visit with a luncheon at the Waldorf-Astoria. In Washington, D. C., they were received at the White House, visited all the notable buildings and were tendered a luncheon by representatives of the Medical Society of the District of Columbia and of the various official medical associations in the capital city. In Chicago the visitors were taken on a tour through the city to see the various medical institutions and were given a luncheon at the stockyards and a tea at the Edgewater Beach Hotel, completing the day with a dinner at the Hotel Stevens and with several private parties. Arrangements have also been made by the official medical organizations of New Mexico, Williams, Ariz., Los Angeles and San Francisco to provide suitably for our British guests.

Dr. E. Kaye Le Fleming, chairman of the council of the British Medical Association, Dr. G. C. Anderson, secretary, Dr. N. Bishop Harman, treasurer, and Dr.

H. G. Dain, deputy chairman of the representative body, expressed the warmest gratitude for the manner in which American colleagues had made them welcome. Moreover, such noted guests as Prof. John Bright Banister, Sir Comyns Berkeley and Sir Ewen Maclean, distinguished obstetricians and gynecologists, were hearty in their praise of American advancement in these fields. Sir Henry Gauvain, noted authority on surgical tuberculosis, and Prof. Ernest William Hey Groves, author of one of the most widely used textbooks in surgery, complimented American institutions and gave demonstrations and lectures en route.

Among the noted guests in the party are George Carmichael Low, renowned for his contributions in the field of tropical medicine, Albert Clifford Morson, urologist, Sir James Purves-Stewart, neurologist, David Waterson, anatomist, and Prof. Robert Hughes Parry, medical officer of health and pathologist.

The party included also a goodly number of women physicians, distinguished ladies and charming young people.

The American Medical Association was glad to extend the hand of greeting officially to our British colleagues and to provide for their entertainment. They in turn, by the warmth of their appreciation and cordiality, did much to cement the friendship between the physicians of the two great English speaking nations.

IMMUNE GLOBULIN (HUMAN) AND MEASLES

Recently THE JOURNAL pointed out that in 1859 life, on the average, ended at 40. The intervening years have brought great advances in the prevention of disease. Adequate research applied clinically has made available many protective measures that aid in the prolongation of life. Today, life expectancy at birth is 57 years.¹ In the acquisition of these seventeen additional years of life the protection against many of the diseases peculiar to infancy, childhood and adolescence has been significant. Unfortunately, however, there has been no suitable measure for dealing with one of the most infectious of all childhood diseases, measles. Any effort to provide a satisfactory weapon with which to combat this disease or to lessen its complications is most commendable. A study of the problem by McKhann² and his co-workers has resulted in the discovery of a new source of immune substance that is apparently capable of modifying or preventing the disease.

The first attempt to modify measles is presumed to have been made by a German physician more than thirty years ago.³ He employed convalescent serum in the early stages of the disease. Park and his associates

¹ The Prolongation of Human Life editorial J. A. M. A. 105: 202 (July) 1935.

² McKhann C. F. and Chn F. T. The Use of Placental Extract in the Prevention and Modification of Measles, Am. J. Dis. Child. 45: 475 (March) 1933.

³ Beckman Harry. Treatment in General Practice, Philadelphia, W. B. Saunders Company 1931, p. 93.

were the first to make use of the serum in this country. The first published report on the procedure was made by Nicolle and Conseil.⁴ Since then other workers have used convalescent serum in modifying the disease. It is frequently used today in the hope of preventing or at least modifying typical measles. The serum has the disadvantage of not being available in adequate amounts at all times.

In 1925 Tunnichiff⁵ found that the serum of a goat convalescing from a reaction to the inoculation of a "green producing diplococcus" was capable of protecting rabbits against a subsequent injection of infective material from patients with measles. Even though it was not known definitely that rabbits were susceptible to human measles, this work was used as a basis for clinical study. Hoyne and Gasul⁶ and later Tunnichiff and Hoyne⁷ found it useful in children over 6 months of age if used before the fifth day of exposure. They stated that protection seemed assured in about 90 per cent of these cases.

McKhann and his co-workers,⁸ observing the natural immunity of the new-born to various diseases, including measles, injected an extract derived from human placentas in an attempt to modify and prevent the disease. For this product they claim an adequate source at all times. Two commercial preparations of the extract (Immune Globulin [Human]) are available at present. The extract was first used by McKhann and his co-workers in institutional cases. This procedure facilitates careful clinical notes and accurate records but, as Levitas⁹ points out in this issue of *THE JOURNAL*, it would not seem to be an accurate estimate of its usefulness. Routine hospital procedure, after the discovery of a case in the wards, and the fact that the contacts are not ordinarily intimate, results in an indefinite degree of exposure. It is generally more definite in cases seen at home, but accurate notes and records are more difficult to obtain under these circumstances. These factors are of interest, especially in view of the standardization of one of the commercial products against measles contacts. The other commercial product is tested against the diphtheria toxin neutralizing effect of the extract. McKhann's¹⁰ latest paper suggests that this method is not entirely satisfactory, because the two immune factors are present to a different degree in different portions of the extract.

McKhann's results have been satisfactory, and the preparation holds promise of being a useful agent in

the prevention and modification of measles. The Council on Pharmacy and Chemistry, in a preliminary report on Immune Globulin (Human) on page 510 of this issue of *THE JOURNAL*, defers consideration until more evidence is available. One of the principal questions requiring additional study is the dosage of this immunizing agent. Frequently, when McKhann¹¹ was attempting to modify the disease, prevention resulted, in some cases modification occurred, and occasionally typical measles developed. This is not surprising in view of the many factors involved in estimating adequate dosage, length of exposure, individual resistance, intimacy of contact, and elapsed time between exposure and injection. McKhann¹⁰ has noted that, because of the short duration of the resultant immunity, it is doubtful whether its use to protect against measles outside of institutions, or in special cases, is justifiable. He points out that, if it is used to modify measles, a permanent immunity would probably result from the ensuing modified disease. He expresses the opinion (and notes that it is not adequately substantiated at present) that modified measles is not known to be followed by complications which render the unameliorated disease a menace.

Several instances of reactions following the use of this agent have been reported, and McKhann concludes his latest paper¹⁰ as follows:

Reactions following the injection of placental extract, although infrequent, appear to be due in some measure to inclusion in the finished extract of variable amounts of specific tissue protein. A method of preparation and administration of the extract to eliminate reactions is at present under investigation.

This consideration of adequate standards, of adequate dosages, and of reactions substantiates the position taken by the Council on Pharmacy and Chemistry. It is noted with interest that McKhann¹⁰ experimented clinically with the two commercial preparations along with his own extract and its various fractions and obtained similar results with them. In the cases in which commercial products were administered, prevention occurred in 73 per cent and modification in 22 per cent. This further illustrates that adequate dosage for modification without prevention is not clearly defined. (It is not stated that modification was the object in these cases, but in view of McKhann's remarks it seems to be a logical assumption.)

Although this preparation should be of great interest to pediatricians and other physicians, its present status does not seem to warrant general use. It is hoped that additional evidence by those in a position to do adequately controlled clinical work will be forthcoming. This immunizing agent may become a useful measure in combating measles if subsequent results bear out the present evidence. If measles can be adequately and

4 Nicolle C and Conseil E. Bull et mém Soc. méd d hôp de Paris 42 336 1918

5 Tunnichiff Ruth J Infect. Dis 37:193 (Sept.) 1925

6 Hoyne A. L. and Gasul B. M. Measles Prophylaxis J A M A 87 1185 (Oct 9) 1926

7 Tunnichiff Ruth and Hoyne A. L. Prevention of Measles by Immune Goat Serum J A M A 87:2139 (Dec. 29) 1926

8 McKhann C. F. and Chu F. T. Antibodies in Placental Extract J Infect. Dis 52 268 (March April) 1933

9 Levitas I. M. Treatment Modification and Prevention of Measles by Use of Immune Globulin (Human) this issue, p 493

10 McKhann C. F. Green Arda A., and Coady Harriet. Factors Influencing the Effectiveness of Placental Extract in the Prevention and Modification of Measles J Pediat 6 603 (May) 1935

11 McKhann C. F. and Coady Harriet. Immunity of Infants to Infectious Diseases. Placental Antibodies South M J 27:20 (Jan) 1934

safely controlled, an advance will have been made against the ravages of a disease the sequelae of which may be more severe than the disease itself, especially in infants

THE PAN-AMERICAN MEDICAL ASSOCIATION

On August 2 the Pan-American Medical Association completed its sixth cruise to South America. The itinerary included brief visits to Nassau, Jamaica and Curaçao, more extended visits to Rio de Janeiro and São Paulo, and again brief visits to Trinidad, Puerto Rico and Bermuda. The visit of more than a hundred American physicians to our South American neighbors must result in benefit to international relations and acquaint the South American countries more fully with the medicine of the United States. Moreover, opportunity was given to the American visitors to obtain an insight into the medical institutions and to some extent into the nature of practice of the countries visited.

The participants in the cruise were cordially greeted and more than welcomed in each of the countries at which the *Queen of Bermuda* called. In all the British territories the governors arranged for official receptions, and in Brazil the president took part in the opening session. Moreover, the participants in the cruise provided for themselves a scientific program that included the presentation of some two hundred manuscripts, motion pictures and graduate lectures. Almost universal satisfaction was expressed by the participants of the cruise in both the scientific and the social functions.

One of the difficulties of a congress of this type is the securing of adequate official representation from the medical professions of each of the nations involved. Dr. Chevalier Jackson, president of the cruise, presented to the organization a gavel containing pieces of wood from each of the twenty-two nations holding membership in the Pan-American Medical Association and expressed the wish that all these nations might be more closely united, as symbolized by the circle of silver enclosing the gavel. Yet on the cruise itself only Chili, Mexico, Brazil, Cuba, Canada and the United States were represented by membership. It might be more conducive to the purposes of the organization if the national medical organization of each of the countries concerned were invited to delegate an official representative for such a congress and if only these representatives were to represent the respective nations on official occasions. Many papers, particularly those on tropical medicine, were contributed by authors who were not themselves present. From the scientific point of view, little is gained by reading such papers in an audience and discussing them in the absence of the authors.

On previous cruises as many as from 400 to 500 physicians have participated. The cruise to Brazil involved five weeks of travel, which no doubt diminished the total number of those taking part to approximately 125 physicians.

The trip more than repaid those who had opportunity to visit the medical institutions of Brazil and Puerto Rico. The Oswaldo Cruz Institute in Rio de Janeiro is one of the finest and best equipped institutions for research in tropical diseases available in the world. The International Health Board occupies a palace formerly used by a mistress of the king of Brazil and there conducts exceedingly interesting work in the prevention and control of yellow fever. The medical school in Rio de Janeiro educates a great number of young men in medicine but on cursory inspection fails to measure up to the class A medical colleges of the United States. Its structure and equipment are lavish, but the ages of the students, the quality of the teaching, and the library and laboratory service are hardly on a par with American standards. The hospitals afford opportunity, however, to see rare conditions not usually seen in the United States and particularly an extensive service in dermatology and the venereal diseases. São Paulo by contrast has a most modern medical school, marvelously equipped through the beneficence of the Rockefeller Foundation. Here the quality of instruction and equipment are excellent. Moreover, there is adjacent to the medical school the Instituto Oscar Freire, a most modern institution for the investigation of legal medicine. This institution provides extensive exhibits in the identification of wounds, stains, hair and similar materials associated with crime; it provides for the study of bullets, fire arms, knives, ropes and other materials used in crime. There are postmortem records covering twenty years, adequately indexed. There is a library of legal medicine and a complete setup for preparation of donors for blood transfusion. Moreover, there is near to São Paulo the Institute of Butantan, an institute of experimental medicine under the direction of Professor Amaral. Here is a complete arrangement for the cultivation of snakes and the preparation of anti-venins. Also special investigations of spotted fever and other tropical disorders are conducted, and the institute provides the usual antitoxins and biologic preparations used in the attack on infectious diseases. So complete is this plant that it raises all the animals used in experimental medicine as well as pedigreed horses and other stock. It provides complete botanic and agricultural setups and a cooperative store and school for all the employees. This institution is also no doubt unique among similar institutions throughout the world.

The Brazilian medical profession received the American tourists with open arms, provided lavishly for their entertainment, and arranged for decorations and diplomas for many of the officers and some of the distinguished members of the cruise.

Many years ago Paracelsus stated his opinion that a physician does not learn by sitting at home behind the stove but by traveling about in other places to see what is being done. The tradition of travel for education in medicine has persisted from the earliest times.

There are trends which indicate to the world the places in which medical education and investigation are advancing, these places thereby become the centers of graduate education. From time to time Germany, Austria, France, Belgium, Alexandria in Egypt, Greece, England, Ireland and various other countries have held their place in the sun. Today many specialties and surgery particularly are studied in the United States. The more frequent interchange of visitors between the United States and the South American countries must result in good for both. For many years the majority of South Americans have gone for education and travel to Europe. A realization by them of what the United States has to offer, a realization by Americans of what the southern half of the American hemisphere has to offer, and the extending of a gesture of friendliness bring about a better understanding not only among physicians but also among all the people of all the American nations.

Current Comment

FROZEN MONKEYS

When the weather gets hot the news gets low, then the newspapers begin to indulge themselves in the vagaries of the pseudoscientists. Thus the big story of last week concerned an experiment said to be performed in California—it would be California—in which a "scientist" claimed to be able to freeze living animals solid and then to restore them to life. The story attracted added attention when volunteers offered themselves for human experiment. Eventually newspapers began to inquire into the antecedents of the "scientist." The records of the American Medical Association indicate that "Dr. Ralph Stanley Willard" is actually not a doctor at all, although he has claimed at various times to have been graduated from Columbia University and from the "Tiflis University College of the City of New York" (?). There seems to be no record of such a school. Indeed, there is no actual evidence that "Dr. Ralph Stanley Willard" was ever in any school of medicine. The records of the American Medical Association reveal the interesting fact that Mr. Willard is presumably a chemist and that in Kansas City in 1927 he was associated with the promotion of the Cunningham tank treatment for many diseases. Moreover, "Dr. Ralph Stanley Willard," who is now called an "obscure Russian scientist," claimed at that time to be actually Prince Raphael Napoleonovitch Lubomirsky and that he was descended from a French marquis who had been left in Moscow by Napoleon. He appeared again in the records in May 1933, when he was convicted in California of violation of the medical practice act and sentenced to spend 150 days and nights in the hoosegow or pay a fine of \$150 and later placed on one year probation. It is perhaps not extraordinary that the newspapers should accept his tales of extraordinary experimentation without any investigation of his status as a scientist or without any certainty that he had actually performed the experiment

reported. There are some investigators who are convinced that the old process known as substitution or sleight of hand was involved in the production of a live monkey in place of the frozen animal, which "Doctor Willard" claims spent three days in the refrigerator. No doubt the volunteer, said to be one Stephen Simkhovitch, a movie writer—it would be a movie writer—will be prevented by the authorities from submitting himself to the congealing process, even though his fiancée has said the experiment is satisfactory to her. Perhaps she likes them cold! But, no doubt, also the California authorities will express themselves with sufficient urgency on the subject to make unnecessary the subsequent trial for murder should the "doctor" proceed with his experiment. According to the newspaper reports, three hundred additional human Californians volunteered themselves for the ordeal. Students of psychology may make their own comments.

MALARIA IN A VILLAGE

An epidemic of malaria recently occurred in a village 30 miles from Cleveland, in which there had not been a case of malaria reported since the health district was organized fifteen years ago. While the evidence as to the original infected person in the outbreak is not complete, some interesting facts are known. A local resident was reported to have had malaria in Florida a few months before returning to this village. On two occasions during the epidemic, however, this person's blood smears were negative for malaria parasites and he lived in a part of town not affected by the epidemic. It seems unlikely that he was the immediate source of the infection. The first person to have malaria in the outbreak was a section hand who had been ill for two months with recurring chills. He lived near a pond in an unscreened shanty near the center of the area affected by the epidemic. A majority of the total of thirty-seven patients lived within a mile of this pond. Hoyt and Worden¹ report that a mosquito survey made at this time showed *Anopheles punctipennis* in abundance along the river which runs by the village. *Anopheles quadrimaculatus*, however, was found in the homes of three malaria patients, and this species of mosquito, it is believed, was the responsible transmitting agent. By oiling the breeding places of mosquitoes and by requiring patients to stay within screened enclosures until four negative blood smears, taken twenty-four hours apart, were obtained, the health commissioner promptly had the outbreak under control. This epidemic probably was not caused by transmission from a local resident. There are many other communities in the United States which are similarly in danger of an outbreak of malaria. They have a pond or swamp where mosquitoes breed and some of them have also the mosquitoes that transmit malaria. When a malaria-infected person visits these communities the stage will be set for an outbreak of malaria. Perhaps a stop in town just long enough to have lunch or to take on motor supplies would be sufficient for the mosquitoes to find the malaria-infected visitor.

¹ Hoyt, R. N. and Worden, R. D. *Malaria Epidemic in Aurora, Ohio*. Pub. Health Rep. 50: 895 (July 5) 1935.

Association News

BRITISH PHYSICIANS VISIT UNITED STATES EN ROUTE TO AUSTRALIA

Fifty-five British physicians, with members of their families making a group of 110, visited New York, Washington, Chicago, Albuquerque, the Grand Canyon, Los Angeles and San Francisco between August 4 and 14 on their way to the annual session of the British Medical Association in Melbourne, Australia, in September. On their arrival in New York on the *S S Georgic* Sunday, August 4, the visitors were met by Drs Morris Fishbein and Austin A Hayden, Chicago, and Arthur W Booth Elmira N Y, representing the American Medical Association, and by Drs Frederic E Sondern, New York, and Arthur J Bedell, Albany, president and immediate past president, respectively, of the Medical Society of the State of New York. Sunday afternoon the guests were taken by motor to Grasslands Hospital, Valhalla, N Y, with a special police escort. Monday, August 5, was spent in visits to the Columbia University-Presbyterian Hospital Medical Center, the New York Hospital-Cornell Medical Center, the Rockefeller Institute for Medical Research and other points of interest, with a luncheon at the Waldorf-Astoria. The following two days, Tuesday and Wednesday, the party saw the sights of Washington, D C, and Mount Vernon. They were received at the White House and entertained at a reception at the British embassy. They were also guests at a luncheon at the Mayflower Hotel, at which officials of the Army and Navy medical corps the U S Public Health Service, the British embassy and the Medical Society of the District of Columbia were hosts. Arriving in Chicago, August 8, the British visitors spent the day viewing places of interest in the city accompanied by Dr Hayden, who was in charge of arrangements for the day, Dr Olin West, Secretary of the American Medical Association, Dr Fishbein, Dr Thomas P Foley, president-elect, and Dr Robert Hayes, secretary of the Chicago Medical Society, and Dr Lemuel E Day, member of the council of the Illinois State Medical Society. At the Union Stockyards Mr G H Swift, together with medical and other officials of the firms of Swift and Company, Armour and Company and Libby, McNeill and Libby were hosts at a luncheon for the visitors. At a tea at the Edgewater Beach Hotel Mr Robert Ross, acting British consul in Chicago, and representatives of the various official bodies made addresses, to which Dr Ernest Kaye Le Fleming, chairman of the council of the British association responded. In the evening the party was entertained at dinner at the Stevens Hotel, during which there was cabaret entertainment, later individual members of the group were guests at private parties. During the day Prof Ernest W Hey Groves operated at Cook County Hospital. Sir Comyns Berkeley, Sir Ewen MacLean and Prof John Bright Banister visited the radium centers at Michael Reese Hospital and the Chicago Lying-In Hospital.

At midnight they departed on a special train for Albuquerque, N M, where they were to be entertained by the Bernalillo County Medical Society, Saturday, August 10, with visits to the University of New Mexico and the Indian village of Isleta. The next day was spent at the Grand Canyon as guests of the local medical society. Thence the British physicians were to go to Los Angeles for the day and night of August 12, with the Los Angeles County Medical Association as hosts. Tuesday, August 13, they were to take the daylight coast line trip to San Francisco, where the San Francisco County Medical Society and the California Medical Association were to entertain them with sightseeing and a luncheon at the Palace Hotel. In the afternoon they were scheduled to embark on the *S S Aorangi* for Australia, stopping one day at Honolulu, where the Hawaiian Territorial Medical Association and the Honolulu County Medical Society have planned entertainment including sightseeing trips around the island of Oahu and a dinner at the Royal Hawaiian Hotel, with special Hawaiian music and dancing, if time is available before the boat sails.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Increase in Malaria—An appropriation of \$1,967,980 has recently been approved by President Roosevelt to finance a drainage program in all counties of Alabama for the control of malaria. Reports indicate an alarming increase in the disease, despite the elaborate program of malaria control carried out in the state last year, 1,132 cases having been recorded during the first five months of 1935 as compared with 514 for the similar period in 1934. This is the first time in ten years that so much malaria has been reported for a corresponding period, it is said.

State Health Conference—All city and county health workers in the state met in Montgomery, July 22-23, for a conference called by the state health officer, Dr James N Baker. Governor Graves opened the meeting and speakers included

Dr Calvin C Applewhite, U S Public Health Service, Training of Personnel
Dr Daniel C Gill, Montgomery Tuberculosis and Hookworm.
Mr G H Hazlehurst, Montgomery Malaria Control and Sanitation.
Dr Burton F Austin, Montgomery Maternal Infant and Child Hygiene.

CALIFORNIA

Dr Porter's Term Extended—At a recent meeting of the board of regents in Los Angeles, the term of Dr Langley Porter as dean of the University of California Medical School San Francisco, was continued one year. Dr Porter's normal retirement period was reached this year, it was stated. He has been dean of the medical school since 1927.

Graduate Courses—The Stanford University School of Medicine in cooperation with the San Francisco Department of Public Health will conduct a series of graduate courses for practicing physicians, September 10-13. Morning lectures will review cardiology, diseases of the chest and obstetrics and gynecology, while afternoons will be devoted to medical aspects of syphilis and its treatment, proctology, surgical anatomy with special reference to operative approach and technique, and ophthalmology. The first evening session will be given over to a consideration of nephritis and hypertension, the second to glandular diseases and their treatment, and the third to gastrointestinal disease.

COLORADO

Hospital News—An appropriation of \$691,700 has been allotted to the Fort Lyon Veterans' Hospital by the Veterans' Administration, for additions.

State Board Election—At a special meeting of the Colorado State Board of Medical Examiners, Denver, recently, Drs Vardry A Hutton, Florence, was chosen president, Nohe Mumey, Denver, vice president, and Harvey W Snyder, Denver, secretary-treasurer.

Radiologic Conference—The Denver Radiological Club will hold a midsummer radiologic conference, August 28-30. The program will comprise symposiums on neoplastic diseases, development, anomalies and diseases of the spine, and pulmonary and gastro-intestinal diseases. Speakers will include Drs. Benjamin H Orndoff, Chicago, secretary of the American College of Radiology, William Edward Chamberlain, Philadelphia, professor of radiology and roentgenology, Temple University School of Medicine, James M Martin, Dallas, Texas, professor of radiology, Baylor University School of Medicine, and Dr Henry J Ullmann, Santa Barbara, Calif. In addition, local physicians on the program include Frederick E. Diemer, president of the Denver Radiological Club, Sanford M. Withers, Harry S Finney, Josiah N Hall, Ernst A Schmidt, Henry Sewall, Luther R. Moore, Leonard G Crosby, Samuel B Childs, Kenneth D A Allen, William W Wasson, Hamilton I Barnard, Frank B Stephenson and John S Bouslog, all of whom are from Denver. A joint meeting will be held with the Medical Society of the City and County of Denver, August 28, at which Drs Chamberlain and Ullmann will be the speakers. Dr Harmon P Brandenburg, Denver, will address the banquet.

DISTRICT OF COLUMBIA

Medical Bills in Congress—H. R. 8552, introduced by Representative Smith, Virginia, proposes to direct the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art in the District of Columbia to Dr. Leo Solet.

GEORGIA

Glynn County Wins Prize—Dr. Millard E. Winchester, Brunswick, commissioner of health of Glynn County, was guest of honor at a dinner given by the Brunswick Board of Trade, June 28, in recognition of his county's winning first prize in the southeastern division of his county's winning first prize in this year by the U. S. Public Health Service and the Chamber of Commerce of the United States. A plaque has already been presented to the county, commemorating the accomplishments in health conservation for 1934. Speakers at the dinner included Dr. Thomas F. Abercrombie, director of public health, who served as the first health officer of Glynn County. This county was the first in the state to have the services of a paid health officer.

Society News—Dr. Robert B. McIver, Jacksonville, Fla., was chosen president of the Chattahoochee Valley Medical Association at its annual meeting at Radium Springs, near Albany, July 9-11. Other officers elected are Drs. John C. Keaton, Albany, and Edward S. Sledge, Mobile, Ala., vice presidents, and Frank K. Boland, Atlanta, secretary-treasurer. The next annual session will be at Radium Springs. Included on the program were the following physicians:

- David Henry Poer, Atlanta: Carcinoma of the Thyroid
- Thomas L. Ross Jr., Macon: Peripheral Vascular Disease with Special Reference to the Lower Extremities
- Willis P. Jordan, Columbus: Urologic Disorders Undiscovered in Physical Examinations
- Frank K. Boland, Atlanta: Surgical Treatment of Pulmonary Tuberculosis
- Roy R. Kracke, Emory University: Agranulocytosis Etiology, Diagnosis and Treatment
- Harold P. McDonald, Atlanta: Suction of Undescended Testicle

The William J. Love Lectureship was created at this meeting in honor of the late Dr. Love, Opelika, who had been secretary of the association since its organization.

ILLINOIS

Tests for Skill of Drivers at State Fair—Medical examination of adults for heart impairment and tests to determine the skill of automobile drivers will be offered free to all visitors to the state fair in Springfield August 17-23, as special features of the exhibits on health and safety, according to the state health department. Each person who takes the test will receive a record showing his reaction time and folder indicating a safe speed for him together with driving rules. The Sangamon County Medical Society is cooperating in the heart examinations, and Dr. John J. McShane, chief of the state division of communicable diseases, will be in charge.

Gastro-Enteritis Due to Contaminated Milk—More than twenty cases of gastro-enteritis at Enfield recently were traced to a contaminated raw milk supply, the state health department reports. The milk from three cows was served to the members of a women's missionary society. Some of the milk was given to friends in the community and the remainder was used by the family. Within four hours after drinking the milk fourteen of the twenty society members, four of the family members and several friends were seized with paroxysms of vomiting followed by diarrhea. Tests showed the milk to be heavily infected with staphylococci. The outbreak subsided when use of the milk was discontinued.

IOWA

Rocky Mountain Spotted Fever—Four cases of Rocky Mountain spotted fever have been reported to the state health department thus far in 1935 including one death (THE JOURNAL, July 27, p. 287). The counties involved, Linn, Lee, Poweshiek and Union, are widely separated in the southern half of the state. The death was that of a little girl in Linn County.

KANSAS

Society News—At a joint meeting of the Brown County Medical Society and the newly organized Northeast Kansas Dental Association in Hiawatha, June 28, speakers were Dr. Charles L. Husted, Falls City, on 'Management of Post-operative Complications,' and Mr. A. L. Peterson, Topeka, on 'Medical Dental Jurisprudence.' Dr. Robert M. Brian, El Dorado, among others, addressed the Butler-Greenwood County Medical Society in El Dorado on Encephalitis Lethargica.

Its Complications and Sequelae.—Dr. Robert L. Ferguson, Arkansas City, discussed medical care of the indigent before the Cowley County Medical Society in Arkansas City, June 20. At a meeting of the Crawford County Medical Society in Pittsburg, June 27, Dr. Roletta O. Jolly-Fritz spoke on dementia praecox. Papers were presented before the Dickinson County Medical Society in Hope, July 18, by Drs. Lawrence G. Heins, Abilene, and Theodore Kroesch, Enterprise, on "Diseases of the Coronary Arteries" and "State Medicine," respectively. The Golden Belt Medical Society was addressed at its quarterly meeting in Manhattan, July 11, by Drs. Walter M. Reitzel, Manhattan, on "Bladder Neck Obstructions," Emmanuel Raymond Gelvin, Concordia, "Transurethral Prostatectomy, Its Progress and Possibilities," Ray M. Balyeat, Oklahoma City, "Therapeutic Value of the Intratracheal Use of Iodized Oil in the Treatment of Intractable Asthma," and Allen B. Kanavel, Chicago, "Diagnosis and Treatment of Infections of the Hand."

LOUISIANA

Personal—The completion of thirty-five years' practice in Gretna by Dr. Charles F. Gelbke was observed with a reception recently held by his friends in Jefferson Parish. Among other gifts, he received a bronze statue and an automobile. Dr. Gelbke has served as mayor of Gretna and coroner of the parish. Dr. Bjarne Pearson, Taylors Falls, Minn., has been appointed assistant professor of pathology at the Louisiana State University Medical Center, New Orleans.

Dr. Matas Resigns from Touro Infirmary—Dr. Rudolph Matas has resigned as chief of the department of surgery at Touro Infirmary, New Orleans, and Dr. Isidore Cohn has been appointed to succeed him. It was stated that Dr. Matas wished "to free himself of administrative and teaching duties so that he would have more time to devote to strictly professional activities." Following his resignation, Dr. Matas was named honorary chief of the surgical service at the infirmary. A native of New Orleans, Dr. Matas was named as the school of Medicine in 1880. He was professor of surgery at Tulane from 1895 until 1927. He has been chief senior surgeon at Touro Infirmary since 1905. Dr. Matas was vice president of the American Medical Association in 1921 and again in 1932. Last year the Violet Hart Fund established a medal in his honor at Tulane University to be awarded to the "North American surgeon who has contributed outstanding work in vascular surgery." In 1926 Dr. Matas was presented with the Henry Jacob Bigelow Medal of the Boston Surgical Society in his fiftieth anniversary in the practice of medicine and marking his fiftieth anniversary in the practice of medicine a festschrift was published in his honor, containing contributions of professional friends and colleagues. Dr. Cohn is clinical professor of surgery at Tulane and professor of surgery at the graduate school and has been associated with Dr. Matas at Touro Infirmary for many years. He is 50 years of age and graduated from Tulane in 1907.

MINNESOTA

Physicians' Hobby Exhibit—An extensive display of physicians' hobbies was a feature of the recent annual meeting of the Minnesota State Medical Association in Minneapolis, June 24-26. Grouped under the following headings, exhibits included:

- Anecdotes and Epigrams: Dr. Charles G. Sutherland, Rochester, Minn.
- Archery: Drs. John M. Armstrong, St. Paul, and Austin V. Denman, Mankato.
- Architectural Drawings: Dr. Leo M. Crafts, Minneapolis.
- Big Game: Drs. Kenneth Bulkley and Frederick H. K. Schaaf, Minneapolis.
- Minneapolis: Austin V. Denman and John T. Schlesselman, Mankato.
- Edmund L. Warren, St. Paul.
- Birds: Dr. Thomas S. Roberts, Minneapolis.
- Boats: Drs. Armstrong and Gilbert G. Cottam, Minneapolis.
- Books: Dr. Richard O. Leavenworth, St. Paul.
- Charcoal Sketches: Dr. David L. Tilderquist, Duluth.
- Clay Models: L. B. Franklin, student, University of Minnesota.
- Medical School Drawings: Dr. Frederick A. Willius, Rochester.
- Feeding Bottles: Dr. Robert Rosenthal, St. Paul.
- Guns: Drs. Bulkley, Paul F. Dwan, Schaaf, Louis B. Wilson, Rochester.
- Crafts: Dr. John S. Holbrook, Mankato.
- Oil Paintings: Drs. Russell T. Costello, Rochester, Arthur N. Collins, Duluth, Schlesselman and Luisa Herschbaumer, St. Peter.
- Photographs: Drs. Walter C. Alvarez, Rochester, Horace G. Scott, Arthur T. Henri, Erling S. Platou, Minneapolis, Eric P. Quam, Bemarek, N. D.
- Stamp Collection: Dr. Carlos W. del Plaine, Minneapolis.
- Miscellaneous: Drs. Bulkley, Schaaf, Richard O. Leavenworth, and Edmund L. Warren, St. Paul, Gordon B. New, Rochester.
- Music: Dr. Virgil J. Schwartz, Minneapolis.

The Minneapolis Rifle Club also furnished an exhibit, physicians members were Drs. Frederick A. Olson and Arthur C. Skjold. Several dentists also participated in the hobby show.

MONTANA

Society News—Dr George E. Brown, Rochester, Minn., addressed physicians of Great Falls and vicinity, July 3, on cardiovascular diseases

NEBRASKA

Personal—Dr Francis W. Heagey, Omaha, was elected president of the Nebraska Tuberculosis Association at the recent annual meeting—Dr Victor E. Levine, professor of biological chemistry and nutrition, Creighton University School of Medicine Omaha, is in Alaska continuing his studies of the Eskimo. He will make observations in the region north of Nome including Teller Cape Prince of Wales, Deering, Kivalik, Shishmaref Kotzebue Point Hope, Point Lay, Wainwright and Point Barrow. This is Dr Levine's third trip to the arctic

NEW MEXICO

Position Open for Health Officer—Dr J. Rosslyn Earp, state health officer, announces that an examination to qualify for the position of district health officer will be held at Santa Fe, September 7. Dr Owen E. Puckett, Carlsbad has been appointed health officer of a district made up of Eddy, Lea and Chaves counties

NEW YORK

Hospital News—Dr Clarence H. Bellinger, assistant superintendent at Utica State Hospital Utica, has been appointed superintendent of the Brooklyn State Hospital. He will succeed Dr George W. Mills who will become superintendent of the Creedmor State Hospital, formerly a division of the Brooklyn institution but recently made separate by legislative enactment

Typhoid Carriers—Thirty-nine chronic typhoid carriers were discovered during 1934 by the New York State Department of Health, making a total of 335 in the state, exclusive of New York City, where there were 352 and state institutions, in which there were fifteen. Twenty-two of the newly discovered carriers were housewives, seven were in the milk industry, one was a hotel cook and nine were in occupations not connected with food. All were more than 20 years old, the oldest 78

New York City

Hospital News—A new private pavilion with a capacity of seventy-five beds is to be built at Columbus Hospital Extension at a cost of \$170,000—Dr Kurt Goldstein, formerly of Frankfurt and Berlin, Germany has been appointed attending physician on the neurologic division of Montefiore Hospital and will be in charge of a new neuropsychologic laboratory

Regulations on Sale of Vitamin D Milk—In order that consumers may know what kind of vitamin D milk they are receiving, the department of health has recently issued regulations requiring complete information to be printed on the caps of bottles. This must include not only the method that has been used in fortifying the milk but also the number of units of vitamin D per quart. The board has fixed the following minimum vitamin D content for the three kinds if produced by feeding irradiated yeast to cows, 430 units per quart if produced by direct irradiation with ultraviolet rays or carbon arc ray lamps 135 units if produced by the addition of concentrate, 400 units. Physicians should give instructions as to which kind of vitamin D milk they wish their patients to receive, the health department bulletin suggested

OHIO

Personal—Dr Charles O. Munns Oxford, was guest of honor at a meeting of the Oxford Kiwanis Club, July 23 celebrating his completion of fifty years of medical practice—Dr J. Will Payne, Willowood, has been appointed health officer of Lawrence County—Dr Gail E. Miller, Lima has been named health officer of Allen County on a part time basis to succeed Dr John J. Sutter, who served sixteen years as a full time officer—Dr Howard Dittrich, Cleveland, has been named an official delegate from the United States to the Tenth International Congress of the History of Medicine in Madrid, September 23-29. He will read a paper on 'Early American Devices for Infant Feeding'

Society News—Speakers at a meeting of the Adams County Medical Society, West Union June 26 were Drs William B. Morrison and Frank W. Harrah, Columbus, on "Surgical Treatment of Lesions of the Gastro-Intestinal Tract" and Transurethral Resection of the Prostate, respectively, and Samuel C. Clark, Cherry Fork. Mumps—Dr John A. Caldwell Jr., Cincinnati, addressed the Butler County Medical

Society, Hamilton, June 12, on "Acute Traumatic Bone Atrophy"—Dr Joseph D. Heiman, Cincinnati, addressed the Clinton County Medical Society, Blanchester, on "Uterine Bleeding"—At a meeting of the Highland County Medical Society, Hillsboro, June 5, Dr Wells H. Teachnor Jr., Columbus, spoke on 'Mesenteric Adenitis'—Dr Forest William Cox, Dayton, was guest speaker at a meeting of the Greene County Medical Society, Xenia, July 3 on 'Common Diseases of the Lower Third of the Colon'—Drs Eugene F. McCampbell and Sylvester J. Goodman, Columbus, addressed the Auglaize County Medical Society, Minster, June 27, on "Heart Disease in Pregnancy" and 'Common Toxemias of Pregnancy,' respectively—Dr Milton B. Cohen, Cleveland, addressed the Trumbull County Medical Society, Warren, June 19, on 'Allergic Influences on Diseases'—Drs Samuel L. Meltzer, Portsmouth, discussed x-ray and radium treatment of cancer at a meeting of the Hempstead Academy of Medicine, Portsmouth July 8—Dr Charles A. Doan, Columbus, addressed the Tuscarawas County Medical Society, Uhrichsville, July 11, on anemia

PENNSYLVANIA

Symposium on Endocrinology—The Montour County Medical Society sponsored a symposium on the thyroid gland and the endocrine system at the Geisinger Memorial Hospital, Danville July 25. Dr Harold L. Foss conducted an operative clinic in the morning and Dr Richard B. Cattell, Boston, a dry clinic in the afternoon. The following program of papers was presented

Dr Henry F. Hunt, Danville, Pathology of the Thyroid Gland.
Dr Carl E. Ervin, Danville, The Heart in Hyperthyroidism.
Dr Cattell, Hyperthyroidism—Its Diagnosis and Treatment.
Dr George M. Curtis, Columbus Ohio, Significance of the Iodine Content of Human Blood.
Edward C. Kendall, Sc.D., Rochester, Minn., Historical Outline of Treatment of Exophthalmic Goiter.
Prophylactic Use of Iodine.
Production of Goiter Through Administration of Organic Iodides.
Recent Work on the Thyrotropic Hormone: Relation Between the Thyroid and Suprarenal Glands

RHODE ISLAND

Medicolegal Society Fifty Years Old—The Rhode Island Medico-Legal Society celebrated its fiftieth anniversary at a dinner at the Narragansett Hotel, June 27. Speakers were Dr Fritz W. Gay, Malden, president, Massachusetts Medico-Legal Society, Dr Timothy Leary, Boston, medical examiner of Suffolk County and Charles A. Walsh, associate justice of the Superior Court of Rhode Island. Officers elected were Dr Benjamin F. Tefft, West Warwick, president, Sigmund W. Fisher Jr., Providence, vice president, and Dr Jacob S. Kelley, Providence, secretary

TENNESSEE

Rockefeller Gift to Vanderbilt University—The General Education Board, New York, has made a gift of \$2,500,000 to Vanderbilt University for the school of medicine, it was announced July 1. About \$700,000 will be used for buildings and equipment and the remainder for an endowment, it was said.

University News—A portrait of the late Dr. William B. Rogers at one time dean and professor at Memphis Hospital Medical College was presented to the University of Tennessee College of Medicine June 4, by former students and faculty of the old college. The presentation was made by Dr Joseph A. Crisler Sr at a meeting of the Memphis and Shelby County Medical Society and was accepted by Dr James B. McElroy, professor of medicine. At the society meeting Dr Giles A. Coors presented a paper on enterostomy

WEST VIRGINIA

Society News—Drs Arthur A. Shawkey and Randolph L. Anderson Charleston addressed the Fayette County Medical Society, Oak Hill, July 16, on 'Pyelonephritis in Infancy and Childhood and Injuries of the Spinal Column, Old and New' respectively—A symposium on cancer was presented before the Central West Virginia Medical Society in Webster Springs, July 27, by Drs Rome H. Walker, Benjamin H. Swint, McLeod Gilhes, John E. Cannaday and J. Ross Hunter, all of Charleston—Dr John W. Strieder, Ann Arbor, Mich., addressed a joint meeting of the Preston and Monongalia County medical societies at Hopemont Sanitarium, July 9, on 'Surgical Treatment of Pulmonary Tuberculosis'

WISCONSIN

Scarlet Fever Declines—For the first time in two years a day passed without a new case of scarlet fever in Milwaukee, the health department reported July 25. The total number of active cases was sixty one, as compared with 233 a year before and 1,513 February 1

HAWAII

Cancer Survey—Dr John M Flude, western field representative of the American Society for the Control of Cancer, has recently completed a cancer survey in the Hawaiian Islands. The Territorial Medical Society sponsored the survey, a report of which is not yet available.

GENERAL

Orthopedic Board Examination—The American Board of Orthopedic Surgery announces that its next examination will be held in St Louis in January 1936. Candidates interested in the activities of the board may obtain information by writing the secretary, Dr Fremont A Chandler, 180 North Michigan Avenue, Chicago. This board was incorporated in 1934 and has been approved by the Advisory Board for Medical Specialties. Besides Dr Chandler, officers are Drs Melvin S Henderson, Rochester, Minn., president, Edwin W Ryerson, Chicago, vice president, and Henry W Meyerding, Rochester, Minn., treasurer.

Medical Bills in Congress—Changes in Status The conference report on H R 7260, the social security act, has been approved by the House and Senate. H R 8554, the Second Deficiency Appropriation Bill, has been sent to the President for his approval. This bill appropriates \$21,250,000 for veterans' hospital and domiciliary facilities. H R 4513 has passed the House, authorizing the payment of claims for unauthorized emergency treatment of World War veterans. **Bills Introduced** H R 9010, introduced by Representative Cartwright, Oklahoma, proposes to authorize an appropriation of \$250,000 for the construction of a hospital for Indians at Tahina, Le Flore County, Oklahoma.

Bacteriologists Organize Branch Society—The North Central Branch of the Society of American Bacteriologists was organized during the meeting of the American Association for the Advancement of Science at the University of Minnesota, Minneapolis, June 26, with Robert E Buchanan Ph D, dean of the graduate college and director of the agricultural experiment station, Iowa State College, Ames, Iowa, as president, Dr Arthur T Henrici, professor of bacteriology and immunology, University of Minnesota Medical School, vice president, and Rudger H Walker, Ph D, Ames, secretary. The branch society includes members of the national organization and others living in Minnesota, Wisconsin and Iowa. Semiannual meetings will be held, rotating between Minneapolis, Madison and Ames. Included on the program were the following:

Halvor O Halvorson Ph D University of Minnesota The Effect of Chance on the Mortality of Experimentally Infected Animals
Dr Robert G Green University of Minnesota The Nature of Filtrable Viruses
Dr Edward C Rosenow Rochester Minn Studies on Experimental Encephalitis and Poliomyelitis
Clifford P Fitch Sc D, and Lucille Bishop, University of Minnesota, A Study of Certain Methods for the Isolation of Brucella Abortus from Milk

Medical Papers at Chemists' Meeting—At the summer meeting of the American Chemical Society in San Francisco, August 19-22, the following papers, among others, will be presented in the division of medicinal chemistry:

Dr Paul J Hanzlik and Arthur P Richardson San Francisco, State of Bismuth in Body Fluids and Tissues
Drs Jacob Arnold Bergen and Bayard T Horton and Arnold E Osterberg Ph D Rochester Minn, Lead in the Chemotherapy of Cancer
Dr Maurice L Tainter, San Francisco, The Role of Chemical Structure in the Activity of Diotrophenol Derivatives as Metabolic Stimulants
Dr Francis M Pottenger Jr, Monrovia, Calif Clinical and Experimental Observations of the Effects of Suprarenal Hormones
Dr Howard L Eder, Santa Barbara Calif Use of Iron Therapy by the Normal Individual for the Prevention of Sunburn
Margaret Cammack Smith Tucson Ariz. Relation of Diet to Fluorine Toxicities
Dr Herbert M Evans, Oliver H Emerson Ph D and George A Emerson Berkeley Crystalline Derivatives of an Alcohol Having Vitamin E Potency
Chauncey D Leake Ph D San Francisco Pharmacologic Aspects of Vitamins

Joint symposiums will be held with the divisions of agricultural and food and biological chemistry, of which some of the papers mentioned will form a part.

Anniversary of Narcotics Limitation Convention—Secretary of State Cordell Hull in a message to the World Narcotic Defense Association at a luncheon in New York, July 9, said that cooperation by the United States with other nations in suppression of the abuse of narcotic drugs is handicapped by the inadequacy of state laws. The luncheon was held to celebrate the second anniversary of the coming into effect of the Narcotics Limitation Convention of 1931. Fifty-four governments have ratified or acceded to the convention of 1931 and fifty-nine are parties to the Hague Opium Convention of 1912, Secretary Hull reported, there are only eight

governments that participate in none of the narcotic drug conventions. To make the international agreements effective, enactment of state laws is necessary, the federal government has done all it can to meet the treaty obligations, Secretary Hull said. More than half the states have already enacted the uniform state narcotic drugs act, which is designed to fulfill the treaty obligations. Among these obligations Secretary Hull named control of the production and distribution of raw opium, limitation of the manufacture, sale, distribution and use of narcotics to medical and scientific purposes, control of the production of cannabis sativa, and restriction of the manufacture of narcotic drugs to persons, establishments and premises licensed for the purpose.

Congress of Physical Therapy—The fourteenth annual session of the American Congress of Physical Therapy will be held in Kansas City September 9-12, with headquarters at the Hotel Kansas Citian. An instruction course under a corps of twenty lecturers will precede the meeting, September 5-7. The formal opening of the congress will be Monday evening, September 9, when Dr John S Hibben, Pasadena, Calif, will be installed as president. Dr Arthur Steindler, Iowa City, will deliver the third annual William Benham Snow lecture, on "Physical Properties of Bone." Section meetings will be held Tuesday and Wednesday mornings and the remainder of the time will be devoted to general assemblies. Among speakers on the general program are:

Dr Ralph H Kuhns, Chicago, Present Status of Fever Therapy for Dementia Paralytica in the State Hospitals of Illinois
Dr Vernon L Hart, Minneapolis Mechanical and Physiologic Principles Underlying Prevention of Deformity and Disability
Dr Theodore P Brookes, St Louis, Hallux Valgus Postoperative Physical Therapy
Dr Lester Hollander Pittsburgh, Treatment of Cancer of the Lip by Massive Doses
Dr Edward H Skinner, Kansas City Radium Therapy in the Curable Field of Malignancy
Dr Lewis J Moorman, Oklahoma City Intrapleural Pneumolysis
Dr Miland E Knapp Minneapolis, Treatment of Erysipelas by Ultra violet Radiation

Included in the program will be symposiums on electrosurgical resection of the prostate, short wave diathermy, arthritis and gynecology. Tuesday evening there will be a joint meeting with the Jackson County Medical Society, with the following speakers: Drs Bernard Fantus, Chicago, on "Unemployability: A Medical Problem", Franz Nagelschmidt, London, "Present Status of Physical Medicine in Treatment of Disease" and Henry W Meyerding, Rochester, Minn., "Volkmann's Ischemic Contracture."

Boy Scout Jamboree Canceled Because of Poliomyelitis—In a statement from the White House, August 8, President Roosevelt canceled the International Boy Scout Jamboree, which was to have been held in Washington, August 19-30, because of the outbreak of poliomyelitis in Virginia within 100 miles of the capital. Thirty thousand boys from all parts of the world were to have come to Washington. The decision was made after a conference with Surg Gen Hugh S Cumming of the U S Public Health Service Commissioner George Allen of the District of Columbia and James E. West, New York, chief scout executive. While the prevalence of the disease was not "unduly alarming," it was thought better not to create undue apprehension on the part of parents and of state health officers, who might fear that the disease would be brought back by returning scouts. The poliomyelitis epidemic was believed to be declining in North Carolina, where it first appeared only thirty-seven cases having been reported from August 1 to 7. From May 1 to August 1 there were 468 cases. The outbreak appeared later in Virginia, only fifty-two cases having been reported in June as compared with 198 in North Carolina. In July, however, Virginia had 250 and North Carolina 226. From August 1 to 7 the number of cases reported in Virginia was ninety-one. It was said that the epidemic area was apparently not extending except for a slow northward spread. Dr Alexander G Gilliam of the U S Public Health Service was transferred to Virginia, July 20, after spending several weeks in North Carolina in connection with the outbreak. Midshipmen of the U S Naval Academy, Annapolis, Md, have been ordered not to go to North Carolina and Virginia during their annual leave from August 30 to September 27. Thirty cases were reported to the state health department of Tennessee during July, according to the Nashville Tennessean, July 31, a number definitely above the normal expectation. Most of these were in counties of East Tennessee near the North Carolina and Virginia borders, twelve occurred in Stewart County in the western part of the state. The Delaware State Board of Health has adopted the procedure of requiring all persons from the poliomyelitis area to register with the nearest health unit and to be examined daily for twelve days.

Government Services

Changes in Public Health Service

Passed Asst Surg Adolph S Rumreich, relieved at Washington, D C, and assigned at Moscow U S S R
 Passed Asst Surg Edward C Rinck relieved at Norfolk Va, and assigned at Washington
 Passed Asst Surg Thomas B McKenely relieved at Washington and assigned at the marine hospital Ellis Island
 Sr Surg Newton E Wayson, relieved at Honolulu and assigned at the marine hospital, Baltimore
 Surg Lueius F Badger, relieved at Washington and assigned at Honolulu in charge of the leprosy investigation station
 Medical Director Ernest A Sweet relieved at Ellis Island and assigned in charge of the quarantine station at Gallops Island Boston
 Sr Surg Harry F White, relieved at Curtis Bay Baltimore, and assigned at Port Townsend in charge of quarantine station
 Surg LeGrand B Byington relieved at Angel Island and assigned in charge of quarantine station at Curtis Bay Baltimore
 Asst Surg John W Oliphant relieved at Seattle and assigned at marine hospital in Chicago
 Asst Surg Frederiek J Brady relieved at marine hospital, Chicago and assigned at marine hospital Seattle
 Passed Asst Surg Mason V Hargett relieved at Warsaw Poland and assigned at Stuttgart

Position Open in Indian Medical Service

The U S Civil Service Commission announces an open competitive examination for the position of area medical director in the Indian Service, Department of the Interior, at a salary of \$5,600 a year. Applications must be filed with the commission at Washington, D C, not later than August 26. At present there is a vacancy in the consolidated Navajo area and it is possible that similar positions will be created in the near future, according to the announcement. Competitors will not be required to report for examination but will be rated on education and experience. They must be citizens of the United States and graduates of recognized medical schools. In addition they must have had at least three years' experience in the fields of medicine and public health among peoples whose concepts of medical science are primitive. They must have had two years of responsible paid full-time administrative experience in a state or national organization of recognized influence devoted to promoting public health. A degree of doctor of public health from a recognized university may be substituted for one year of this experience. They must not have reached their fifty-third birthday. Further details and application forms may be obtained at any first class postoffice, from the commission at Washington, D C, or from the civil service district office in any of the following cities: Atlanta, Boston, Chicago, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C Z, and San Juan, P R.

New Units for Food and Drug Research

Two new divisions have been organized in the Food and Drug Administration of the U S Department of Agriculture to conduct research on vitamins and in pharmacology, it is announced. The vitamin division will be under the direction of Elmer M Nelson, Ph D, recently associated with the Bureau of Chemistry and Soils. Its work will be to check the claims and help establish standards for food and drugs for which claims of vitamin potency are made. Chester D Tolle Ph D, who has engaged in research on vitamin potency with the U S Bureau of Fisheries, has also been appointed to Dr Nelson's staff. The pharmacologic division is headed by Dr Erwin E Nelson, associate professor of pharmacology of the University of Michigan Medical School, Ann Arbor, who was appointed principal pharmacologist of the Food and Drug Administration last January. Dr Nelson is on leave of absence from the university until the beginning of the academic year 1936-1937. In addition to the original staff of the pharmacologic section, the following have been newly appointed: Dr Edward W Wallace, from the University of Chicago, Dr George E Farrar Jr, University of Michigan, Ann Arbor, Lloyd C Miller, Ph D, recently with the University of Rochester, N Y, J M Curtis, Ph D, National Research Fellow in Anatomy at Yale University, New Haven, during the past year, Herbert O Calvery, Ph D, assistant professor of physiologic chemistry, University of Michigan, Ann Arbor, and Edwin P Laug, Ph D, University of Pennsylvania. It will be the duty of this division to develop methods for identification and evaluation of new types of medicinal preparations such as glandular extracts, to study effects of substances known to occur as impurities, such as arsenic and lead, to study toxicity of insecticides used as sprays on fruits and vegetables, and to learn the effects of new synthetic products according to a statement made by Walter G Campbell, chief of the Food and Drug Administration.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 20, 1935

Résumé of the Public Health

In the house of commons Sir Kingsley Wood, minister of health, surveyed the progress of public health in the last twenty five years. He said that never during a single generation had there been such advances in the preservation of life and the improvement of health of our people. Above all there had been a great widening of the national conscience on the matter of health. The nation was learning in many ways the supreme art of right living, was showing greater common sense in health, clothing and the dietary, and was making increasing use of daylight for leisure and recreation. Life was becoming longer and better. In 1910 the death rate at all ages was 13.5 per thousand persons, and 95,000 infants under the age of 1 year died. Last year the death rate had fallen to 11.8 and the deaths of infants to 35,000, yielding the lowest rate on record. Cancer accounted for 60,000 deaths last year, but he had hopes from research and the increasing use of radium.

National health insurance had developed during the last quarter of a century. Since 1911, \$2,400,000,000 had been disbursed in benefits and in the last ten years \$750,000,000. That scheme had been adopted by twelve other nations, from Norway to Japan. Widows and old age pensions had steadily expanded and now included 600,000 pensioners between the ages of 65 and 70, 600,000 widows' pensions supplemented by 270,000 allowances in respect of children, and 15,000 orphans' pensions.

Unreduced maternal mortality was a great blot on the health record. It was a complex problem requiring patience, constant research and active endeavor. A committee that inquired into 6,000 maternal deaths reported that 3,000 might have been prevented. In the past three years there had been an increase in the visits paid by health visitors to 60,000 expectant mothers, 240 more antepartum clinics had been provided, and the number of women attending had increased by 49,000. The number of women admitted into maternity beds provided by the local authorities or subsidized by them had increased by 29,000. He had great hopes in the special inquiries into maternal mortality that were being made by his officers with the assistance of a distinguished specialist.

Slum clearance and better housing was one of the greatest contributions of this generation to making a healthier nation. Since the war no nation had done so much, 2,670,000 new houses had been provided of a standard greatly improved in comparison with a quarter of a century ago.

International Congress on Life Assurance Medicine

The first International Congress on Life Assurance Medicine will be held in London from July 23 to July 26. The president is Sir Walter Langdon Brown and the honorary secretary Dr Otto May. The congress is concerned with the application of the results of modern medical research to the special problems of the selection of individuals for life assurance. One session will be devoted to the subject of health service and life assurance, and an exhibition in connection with it is being arranged by Dr Otto Neustatter of Berlin. July 23 a government reception will be held, when the minister of health will receive the guests.

The Employment of Married Physicians

The employment of married women is a vexed question. Some hold that married women should not by their competition be allowed to exclude from public appointments women who have to depend on their own exertions. On the other hand, those who believe in sexual equality hold that marriage should not be a bar to employment for women any more than for men.

This point is strongly insisted on by women's organizations. Some time ago the London County Council decided not to employ married women and to make marriage of its women employees a bar to further employment. The capture of the council by the labor party has produced a change. Various women's organizations sent deputations or made representations, all urging that married women be eligible for employment without restriction throughout the council's service. The general purposes committee of the council has made a report stating that the complexity of the question is such that any decisions must be in the nature of a compromise. The admission of married women must exclude from employment persons dependent on their own earnings in favor of an equal number for the most part not dependent. On the other hand, there are occupations in which marriage enhances the value of an officer. Considering the question from the point of view of the public service and not in the interest of any category, the committee has come to the conclusion that in two instances—the medical and teaching professions—material advantage to the public service would result if married women were eligible. "Not only do the duties of both doctor and teacher call for certain personal qualities which may be thought to be enriched by marriage, but the training of those entering these professions involves in many cases considerable expenditure of public money, the fruits of which are lost to the community if the career of every woman is terminated by marriage. We propose therefore, subject to certain limitations, that restrictions which at present debar married women in these professions from entering or remaining in the council's service shall be withdrawn." The limitations refer to practical difficulties. With regard to resident appointments, their holders must be available for duty when required at any hour of the day or night. Such demands are incompatible with the normal domestic and family responsibilities of a married woman. The committee therefore proposes that, excepting part-time consultants and specialists, all members of a hospital medical staff, including medical officers in the mental hospital service, and all teachers in residential appointments other than resident assistant nurses in special service institutions, should be excluded from the scope of the proposals. But in the case of the last-named exceptions difficulties will not arise if it is made clear to the staff concerned that marriage will involve their transfer to nonresident appointments. The council adopted the report by 76 to 37 votes.

Regulation of Automobile Lighting

New regulations designed to afford greater safety on the roads at night have been prepared by the minister of transport. They deal with dazzling headlights, variation in the height of lights and the practice of leaving stationary vehicles with head-lamps on. The new regulations provide that the beam from any electric lamp exceeding 6 watts in power, fitted to an automobile, shall either be permanently deflected or susceptible of deflection to such an extent that it is incapable of dazzling any person standing on the same horizontal plane as the vehicle at a greater distance than 25 feet from the lamp and whose eye level is not less than 3 feet 6 inches above that plane. The practice of leaving vehicles stationary with their head-lamps on also causes unnecessary danger and inconvenience on the road. The regulations prohibit the use of electric lamps exceeding 6 watts (a reasonable and normal power for side lamps) while the vehicle is stationary on a road. Another matter about which complaints have been made is the height at which front and rear lamps on some types of vehicles are carried. The new regulations provide that the front lights on a vehicle shall not be higher than 5 feet from the ground and that if the rear red light is at a height exceeding 3 feet 6 inches a red reflector and white patch similar to those used on pedal cycles shall be carried at or below that height.

PARIS

(From Our Regular Correspondent)

July 5, 1935

Too Much Reliance on Laboratory Results

Several years ago, one of the heads of a large American clinic cited an instance of one of the younger clinicians asking for the roentgen examination of the teeth of a patient, without taking the trouble to examine the mouth and verify the fact that the patient had only false teeth. This example was quoted to demonstrate that one is apt to neglect physical examinations in favor of laboratory reports. An article by Charles Fiessinger along the same lines appeared in the June 8 issue of the *Journal des praticiens*. Faure, Sergent and Vires have recently directed attention to the fact that clinical diagnosis must be aided by laboratory results but that the latter ought not to replace the former. Some of the examples cited by Fiessinger may appear exaggerated, but there seems to be much truth in them. The presence of albumin in the urine is of much importance only when accompanied by other symptoms, such as hypertension or signs of renal insufficiency such as headache, or of cardiac decompensation such as dyspnea on exertion. Often the albuminuria may be due to disturbances of nutrition in the form of digestive disturbances. As to glycosuria, small quantities of sugar in the urine most commonly are of little significance. A restriction of carbohydrates will correct the condition in the majority of cases. In children, especially, small amounts of sugar in the urine do not justify a diagnosis of diabetes. The urea content of the blood is of value only if it remains high in successive analyses. Numerous persons are seen with a blood urea of from 60 to 100 mg per hundred cubic centimeters. If these are treated as nephritic, the urea will return to normal in a month and they will never later show a higher figure. Slight disturbance in liver action is often responsible for this transitory increase in blood urea, according to Noel Fiessinger. In such cases the treatment should be aimed at correction of the liver instead of at the renal disturbance. Acid fast bacilli which are thought to be tubercle bacilli, can be found on slides inadequately cleaned or even in ordinary tap water or the rubber tubing used in laboratories. The presence of tubercle bacilli in the sputum does not always signify an active pulmonary lesion. They are found in certain cases of bronchitis and pleurisy in which roentgenography fails to reveal any lesions. André Meyer has recently shown in a study of thirty cases of occult tuberculosis (pulmonary) that recovery occurs rapidly in the majority.

As to hypertension this is not a menace unless it rises to 280 or 300 mm of mercury. Hypertension is a serious condition only because of the underlying renal lesions that so frequently accompany it. Hypertension without such renal changes may exist for many years without resulting in the slightest accident. One often finds marked hypertension in very old persons. An increased diastolic pressure is of far more significance than an increased systolic rise. One must always bear in mind that the former condition may be transitory because of vascular spasm of nervous origin and is frequently observed in men active in business, lasting only a few weeks, and receding after an enforced absence from the strains of daily responsibilities. In women especially during the menopause, one is apt to find high blood pressure, which responds well to regulation of diet and rest. Diet, according to Fiessinger, is one of the best therapeutic aids especially in obese individuals and in cases of hypertension. Hypertension is a perfect phobia in many individuals. It is only a defensive reaction against interference with peripheral circulation, whether the latter is due to vascular spasm, to arteritis or to a renal lesion. The most important effect of high blood pressure is the extra work it places on the heart, hence, as soon as such a patient presents evidence of tachycardia digitalin in small doses should be

given for four days and continued if the tachycardia persists. If this is done, the "gallop rhythm" does not appear for a long time, perhaps never. Fiessinger cites some cases in which erroneous interpretation of roentgenograms has led to unnecessary operations. In one case a spasmodic contraction of the colon was interpreted as a neoplasm. The same is true of gastric radiography, so that in doubtful cases he puts the patient to bed for one to two weeks lessens the intake of food and gives atropine to exclude pyloric spasm and dextrose solution rectally to combat dehydration. If the defect persists, operation is indicated. Fiessinger in closing pleads for good clinical observation as a supplement to laboratory results. In the majority of cases a delay of two or three weeks will not jeopardize the patient's life. Laboratory studies may then be repeated and may give a different result. Most patients are in a hurry to have an exact diagnosis made but, when the advantages of further observation are explained few will object to waiting until possible sources of error in diagnosis are eliminated. Fiessinger's reputation as a clinician merits attention being given to his warning to correlate clinical and laboratory observations.

Vaccination Against Typhus with a Living Virus

At the April 2 meeting of the Academy of Medicine, the report of the Pasteur Institute of Morocco's experience with antityphus vaccination during the past two years was submitted by Blane and Gaud. They vaccinated 2180 natives with the virus of the murine type of typhus isolated from rats of Casablanca (Morocco). The virus was employed in a 1:500 or 1:1000 dilution to which 5 per cent by volume of sterilized oxbile was added. No vaccinal reaction was ever observed. Of the 2180 natives, there were 1149 men, 584 women and 447 children. The immunity enjoyed by one series of vaccinated, as well as the cessation of epidemics in two other localities has led Blane and Gaud to the belief that the use of a living virus mixed with bile will be successful in the future. It should be given as a prophylactic measure supplementary to delousing in every native community in which typhus is raging.

Evaluation of Previous Studies of Tubercle Bacillemia

An article from the Pasteur Institute of Paris has appeared on the frequency of finding tubercle bacilli in the blood of individuals suffering from a number of diseases usually considered as of nontuberculous origin. This article by the late Professor Calmette and Dr. A. Saez, one of his associates, is published in the fourth volume of the *Quarterly Bulletin* of the Committee on Hygiene of the League of Nations. The conclusions are the following: The Loewenstein medium is superior to all others for cultures of the human, bovine and avian types of tubercle bacilli. Only twelve positive results, i. e., 1.2 per cent, were obtained with this medium out of 936 blood examinations, a total of more than 6000 tubes.

These blood cultures were made from patients suffering from acute and chronic tuberculosis, rheumatism and dementia praecox. The cases of tuberculosis yielded only 1.58 per cent positive results and the appearance of the cultures showed that only a small number of tubercle bacilli were present, the majority being of the human type. Blood cultures from thirty-seven cases of acute or chronic rheumatism were all negative. The same was true of eighty-three cultures made from the blood and of sixty from the spinal fluid of patients suffering from dementia praecox. This marked difference from the relatively large percentage of positive results from blood cultures of the same diseases, as obtained by Loewenstein, cannot be ascribed to any errors of technic or sensibility of culture medium or to any lack of collaboration between the clinicians and the laboratory workers. The luxuriant aspect of the cultures obtained in Loewenstein's laboratory as well as the posi-

tive results obtained in stains of the blood used for inoculation from dementia praecox, erythema nodosum and polyarthritis have never been found either at the Pasteur Institute or at other laboratories, despite the efforts of a large number of well qualified investigators. Although the Loewenstein medium is superior to all others for the cultivation of tubercle bacilli, it is far less reliable for hemocultures of the tubercle bacillus than the guinea-pig, as brought out in a recent report (*Compt. rend. Soc. de biol.* 118:1159, 1935) by Saez, Costil and Sadet. Calmette and Saez believe that the Loewenstein technic affects the vitality of the tubercle bacilli.

First Lecture at Hôpital de la Pitié by Professor Clerc

Prof. A. Clerc, cardiologist, has begun a series of clinical lectures at the Hôpital de la Pitié, to which hospital he was transferred after many years of service at the Lariboisière Hospital.

BERLIN

(From Our Regular Correspondent)

June 17, 1935

Annual Session of the German Surgical Society

In April, the Deutsche Gesellschaft für Chirurgie held its annual session in Berlin. The attendance was 1,000. The main topic, 'Cancer' was opened by F. König of Würzburg, who discussed the question as to whether surgery can still regard carcinoma as a local disorder, his conclusions being for the negative. Observations extending over many years have shown that in addition to the cell degeneration that occurs in the primary focus, another, general factor facilitates the genesis of cancer. Evidence for this conception is the fact that frequently cancers that are histologically different from one another occur in the same person. The healing of cancer disease cannot be solved locally by a certain operation but is to a great extent subject to the influence of the general factors. The importance of the latter is shown by the fact that even with an evidently incomplete operation a recurrence is sometimes delayed for many years. Recurrences following sarcoma have often a different histologic character from the original tumor. On the other hand without an operation no cure is possible. Whether or not the effects of the operation will be enduring will depend on the general factors, for example, on the predisposition to cancer. This condition is not yet fully understood, but it can apparently be influenced. Probably postoperative irradiation produces a modification of predisposition and thus constitutes a valuable addition to the operation. Klein of Ludwigshaven believes he has isolated a cell-bound but labile agent with which, with a high degree of certainty, malignant tumors can be produced in animals. Substances that have been regarded in the past as productive of cancer, such as aniline and tar, are doubtless factors that break down the defense. Measurement of the defense forces in man is possible through a modification of the Freud method, with the use of which Klein states that he secured usable results in 90 per cent of the cases. This makes possible an early diagnosis of tumors, persons menaced might be detected and finally, the relative danger of a recurrence after an operation might be estimated. The substance that exerts a lytic action on the cancer cell is located in the reticulo-endothelial system, probably in the lymphocytes. Familial predisposition to cancer is based probably on a loss of defense forces of hereditary origin.

Hellner of Munster emphasized that the osteogenic sarcoma must be distinguished clinically, histologically and roentgenologically from the Ewing sarcoma, which constitutes 6 per cent of all bone sarcomas. Permanent cures as a result of roentgen irradiation have not been observed. Most, of Breslau, brought out that metastasis of mammary cancer to the supraclavicular glands occurs in three different ways, hence evacuation of these

glands as a fixed principle should be demanded. In scrutinizing the material of the Bier Clinic, Hintze of Berlin found cancer to be the second most common cause of intestinal occlusion. Only about half of such cases are amenable to a radical operation. Likewise lymphosarcomas may, by compression of the intestine or by causing intestinal invagination, give rise to intestinal occlusion. Schonbauer of Vienna emphasized that the indications for the irradiation of malignant tumors have narrow limits. For carcinoma of the tongue, the buccal mucosa and the tonsils, the best treatment is combined radium and roentgen irradiation following electrocoagulation of the tumor. Tumors of the larynx and the thyroid react well to rays, cancer of the penis to radium, likewise cancer of the portio vaginalis. Tumors of the extremities should, under all circumstances, be treated surgically. Ray treatment is not favorable in cancer of the esophagus and in tumors of the gastro-intestinal canal, with the exception of cancer of the anus. Schonbauer saw no good effects of irradiations in brain tumors.

During the discussion, Kirschner of Heidelberg took a critical stand toward the cancer reactions of Klein. In a series of 600 cases he obtained correct results in 82 per cent. Since the reaction is disturbed by fever, cachexia, roentgen irradiation and drugs, about 30 per cent of the patients have to be eliminated. Nevertheless, Kirschner regards the method in combination with other methods as valuable. According to other speakers, the method is not yet sufficiently developed for general use. Nevertheless, Hummel, of the Sauerbruch Clinic in Berlin, has reported satisfactory results.

The next main topic was "Sterilization." According to an inquiry instituted by K. H. Bauer of Breslau, the number of sterilizations carried out thus far (in the two sexes) was 45,000. A grave mental defect supplied the indications in more than 96 per cent of the cases. The percentage of hereditary bodily malformations, on the other hand, was small. In his collected statistics on some 6,000 cases only 0.19 per cent belonged to that category. Half of the sterilized men were from 20 to 35 years old. Even though the judge of the eugenics court decides in favor of sterilization and orders it carried out, the operator must take account of any contraindications, such as general disorders and already existing sterility. In man, the operation may be indicated up to age 70. Concerning the technic there is considerable uniformity, the operation is usually carried out under local anesthesia. The number of modifications, however, is manifold. Bauer recommends bilateral ligation and resection of two prepubic segments of the vas deferens. He rejects the scrotal operation. Complications of a psychic or reflexive nature were not observed after the operation. Hematoma, however, was noted in 1 per cent and infection in 0.7 per cent. In a series of 6,052 cases there were seven deaths (1.15 per thousand). The causes of death were pneumonia 2, cardiac weakness 1, myocarditis 1, epilepsy 1, erysipelas 1. In 85 per cent of the cases of the series the reason for the sterilization was unknown to the operator. The diagnosis should, however, be given to the physician even though the judge bears the responsibility for the indications.

Von Mikulicz-Radecki of Königsberg spoke on the "Sterilization of Women." The proportion of women already sterile is between 2 and 3 per cent. As a rule the abdominal operation should be applied to children and the vaginal operation to women who are already mothers. The supravaginal resection or total extirpation of the uterus is prohibited. The best procedure is excision of the intramural portion of the tube. In the whole series the average mortality was 0.4 per cent (circulatory weakness, pneumonia). The average duration of the hospital stay was sixteen days.

An animated discussion followed. Von Brandis reported his observations on 214 operations in the Freiburg clinic. Only in 15 per cent were motile spermatozoa demonstrable a week after the operation.

Bätzner of Berlin reported his experiences with a new anesthetic, divinyl ether, which is highly volatile and acts promptly, forty seconds after the anesthesia is started the operation may be begun, and the patient awakens almost immediately after the last drops are administered. The anesthesia can be readily controlled. On the other hand, a definite dosage (from 60 to 100 Gm) cannot be exceeded without danger, and the anesthesia cannot be extended beyond half an hour. Killian of Freiburg called attention to fatalities occurring in America.

The second day's session was devoted to thrombosis and embolism, the opening paper being presented by Stich of Göttingen. Postoperative embolism is never induced by one cause alone but always is due to several preconditions, which are associated with changes in the blood, the circulation or the vascular walls. The site of the thromboses that lead to an embolism is usually the femoral vein, at the point where it unites with the saphenous vein. The saphenous vein itself has little importance for the origin of an embolism. The deep veins of the calf and particularly those of the pelvis are more likely to be involved. The age of the patient plays a part, for often the necessary muscular play and secure closure of valves are lacking, which taken together may occasion a retardation of the circulation. If, in addition, there is a circulatory weakness, the preconditions for the development of a thrombus are soon present. The formation of a thrombus is facilitated by the fact that, as a person advances in age, the velocity of the circulation naturally decreases. Postoperatively one observes a changed composition of the blood. More particularly, from the fourth day on there is a shifting toward each other of the albumin and the globulin components. In young persons, however, all these changes do not suffice to produce a thrombosis, nor is a damage to the intima alone sufficient for the formation of a thrombus. It is primarily the inflammatory changes of the vascular walls that must be considered. Also electric storms and violent winds cause an increase of emboli, doubtless owing to their influence on the vegetative nervous system, the details of the mechanism are, however, not known. Statistics over long periods reveal that the proportion of fatal embolisms has remained about the same (from 0.2 to 0.3 per cent). The danger of embolism is almost nil in operations on the upper extremities, the neck and the thyroid. Exploratory laparotomy is more likely to produce embolism than are appendectomy and gastric resection (because one is dealing for the most part with inoperable carcinomas in elderly persons with existing acidosis). It is not the abdominal incision as such that constitutes the menace of embolism but the fundamental disorder. The highest percentages are found in prostatectomy and in operations on rectal carcinoma. It is important to prevent as far as possible the development of decomposition products by conservative destruction of the tissues during an operation. In Stich's comprehensive statistics 83 per cent of all embolisms were in patients more than 40 years old, two thirds in patients more than 50 years old, and 20 per cent in persons more than 70. Age plays a part, owing to dehydration of the tissues, also through increase of the blood pressure and impairment of the circulation. Obese persons, owing to the commonly existing circulatory disturbance, are particularly menaced. Preventive measures include reduction of operative injuries to a minimum, limiting as far as possible the thirst and hunger period, ample introduction of fluids before and after the operation getting up early or at least early exercise in bed in the form of movements of the legs or frequent changing of position, and frequent examination and strengthening of the circulation (strophanthin is more effective than digitalis, especially if combined with dextrose). The combating of postoperative acidosis is important. Therapy is almost powerless in dealing with embolism, operative treatment is but rarely indicated. If the attack is not fatal, active circulatory therapy is indicated, also sufficient quantities of narcotics to allay fear. Oxygen administration is absolutely necessary.

Payr of Leipzig pointed out that in inflammatory thromboses irradiation will cause swelling and pain quickly to recede, he recommends irradiation also in traumatic thromboses. Through the injection of from 20 to 40 cc of the patient's own blood when the patient was more than 20 years old, Specht of Frankfort-on-Oder reduced the cases of embolism to one in 5,000 patients, as compared with from 0.6 to 0.9 per cent in previous series of patients. The Gottingen physiologist Rein stressed emphatically that the acceleration of coagulation had nothing to do with thrombosis.

Rehn of Freiburg called attention in his paper on "The Menace of Operations" to the fact that all injuries resulting from operations or anesthesia are primarily circulatory injuries, which are not easily influenced by ordinary remedies. However, by means of a thyrotropic hormone an improvement may be secured, it brings about an increase in the total amount of blood in circulation and an augmentation of the basal metabolism. The danger lies in a simultaneous impoverishment of the liver glycogen, to combat which vitamin A should be administered.

The opening paper on the next main topic, 'Hemophilia,' was presented by Schloessmann of Bochum, who emphasized the hereditary factors. He stated that hemophilia is not observed in the colored races but reappears in half-breeds. Since the disorder is hereditary and is firmly rooted in all the body cells, a cure is impossible. However, a symptomatic improvement can sometimes be secured through the administration, for example, of vitamin C preparations.

The opening paper on the next main topic, 'Brain Surgery,' was presented by Sauerbruch. He opposed an exaggerated specialization in this field. The surgery of brain tumors, however, should be reserved to specialists. The chief dangers in brain operations lie in postoperative increased pressure and in postoperative hemorrhage. Sauerbruch operates with the patient in a sitting posture, in order to reduce as much as possible the flow of blood to the brain. By the inspiration of rarefied air a large quantity of blood is transferred to the lungs. Electrocoagulation signifies a distinct advance for brain surgery. The results as a whole, in spite of the great progress made by Cushing, are disheartening. It appears doubtful whether the surgeon will ever be able to dispense with the collaboration of the neurologist.

The opening paper on the final main topic, 'Surgery of the Prostate,' was presented by Voelcker of Halle. He prefers the perineal route. The mortality ranges between 7 and 15 per cent. Emboli are the most frequent cause of death. The functional tests are important. High blood pressure demands caution but is not a contraindication. Cancer of the prostate is difficult to diagnose, and a radical operation is not easily effected. Resection with the aid of the cystoscope constitutes a distinct advance in hypertrophy of the prostate.

Professor Lexer of Munich was chosen president of the society.

Marriages

VICTOR EUGENE FRAZIER, Hot Springs National Park, Ark., to Miss Annie Lee Daniel of Independence, Mo., June 18.

SIGURD B. GUNDERSEN, La Crosse, Wis., to Miss Eleanor Head of Madison, at Stamford, Conn., recently.

JOHN KEMP DAVIS, San Francisco, to Miss Edith Elizabeth Nash of Landrum, S. C., in Atlanta, June 16.

THOMAS W. MATTINGLY to Miss Frances Elizabeth Wannamaker, both of Washington, D. C., June 3.

JAMES ROBERT JACKSON, Belzoni, Miss., to Miss Anne Bagwell at Murfreesboro, Tenn., June 19.

DE WITT DOMINICK, Philadelphia, to Miss Elizabeth Lakin Pullman of Bridgeport, Conn., July 13.

WARREN MONROE GILBERT, Boulder, Colo., to Miss Mary Cuttino Harbin of Rome, Ga., May 21.

Deaths

George Milton Linthicum ☉ Baltimore, College of Physicians and Surgeons, Baltimore, 1893, member of the House of Delegates of the American Medical Association at a special session in February, 1935, since 1913 professor of diseases of the rectum and colon, University of Maryland School of Medicine, formerly professor of physiology and proctology, Baltimore Medical College, past president and vice president of the Medical and Surgical Faculty of Maryland, member and formerly vice president of the American Proctologic Society, fellow of the American College of Surgeons, served during the World War, consultant to the city health department, proctologist to the University of Maryland, Maryland General, Baltimore City and West Baltimore General hospitals, consultant to the Hospital for Consumptives, Towson, and Veterans' Administration, Perry Point, proctologist to the U. S. Marine Hospital for fourteen years, consultant in proctology and a member of the board of trustees of the E. C. Hazard Hospital, Long Branch, N. J., medical examiner for the Fidelity Life Insurance Company of America, aged 64, died, July 18, at his home in Roland Park, Maryland, of cerebral hemorrhage.

Louis Francis Jermain ☉ Milwaukee, Northwestern University Medical School, Chicago 1894, dean from 1913 to 1926, at which time he was elected dean emeritus, and clinical professor of medicine, Marquette University School of Medicine, past president of the State Medical Society of Wisconsin, Milwaukee County Medical Society and the Milwaukee Academy of Medicine, fellow of the American College of Physicians, in 1927 was decorated Knight of St. Gregory by the Pope, aged 67, on the staffs of the Milwaukee County Hospital and St. Joseph's Hospital, where he died, July 24, of diverticula of the colon, cirrhosis of the liver and coronary sclerosis.

Jesse Worthy Lea ☉ Jackson, La., Tulane University of Louisiana Medical Department, New Orleans, 1891, fellow of the American College of Physicians, formerly president of the East and West Feliciana Parish Medical Society, past president and counselor of the Sixth District Medical Society, served during the World War, for eight years on the staff of the East Louisiana State Hospital, and at one time on the board of administrators, aged 66, was found dead, July 9, of coronary occlusion.

Daniel Hamer Calder, Los Angeles, University of Vermont College of Medicine, Burlington 1895, member of the California Medical Association, formerly instructor and assistant professor in neurology and psychiatry, College of Physicians and Surgeons, medical department of the University of Southern California, for many years superintendent of the State Hospital, Provo, Utah, on the staff of the Los Angeles County Hospital, aged 62, died suddenly, July 19.

George D. Miller, Logansport, Ind., Central College of Physicians and Surgeons, Indianapolis, 1901, member of the Indiana State Medical Association, formerly secretary of the Cass County Medical Society, past president and secretary of the board of health of Logansport, at one time county coroner and state senator, on the staff of the Cass County Hospital, aged 61, died, July 19, of a skull fracture received in an automobile accident.

James Starr Hewson, Millburn, N. J., College of Physicians and Surgeons, Baltimore 1909, member of the Medical Society of New Jersey, police surgeon and member of the board of health of Millburn, served during the World War, aged 68, on the staffs of the Presbyterian Hospital and the Newark (N. J.) Beth Israel Hospital, where he died, July 8, of duodenal ulcer and pulmonary embolism.

Lawrence Hendee ☉ Buffalo, University of Buffalo School of Medicine, 1897, fellow of the American College of Surgeons, at one time assistant demonstrator of anatomy, Cornell University Medical College, Ithaca, N. Y., on the staffs of the Millard Fillmore Hospital, Buffalo, and the J. N. Adam Memorial Hospital, Perysburg, aged 58, died, June 27, of coronary occlusion and arteriosclerosis.

Edward Lewis Armbricht, Wheeling, W. Va., Jefferson Medical College of Philadelphia, 1892, member of the West Virginia State Medical Association, city councilman, for many years president and member of the board of education on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital, aged 65, died, July 10, of coronary thrombosis.

Mariano Tolentino y Guerrero ☉ Manila, P. I., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910, formerly associate professor

of gynecology, University of the Philippines College of Medicine, on the staff of the Philippine General Hospital, aged 47, died recently, of cerebral hemorrhage

Robert Bronson Hartsfield ♂ Johnson City, N Y, Syracuse (N Y) University College of Medicine, 1928, formerly assistant professor of pathology at his alma mater member of the Medical Society of the State of New York; aged 36, was drowned, July 8, when his automobile plunged into a canal

Orville Lee Baldwin ♂ Columbus, Ohio Rush Medical College, Chicago, 1922, member of the American Academy of Pediatrics, on the staffs of the Grant, White Cross, St Ann's and Children's hospitals, aged 41, died June 9 of coronary thrombosis, while attending a meeting in New York

Elwood Palmer Spencer, Cooperstown, Pa University of Pennsylvania Department of Medicine Philadelphia, 1903 member of the Medical Society of the State of Pennsylvania, aged 68, on the staff of the Franklin (Pa) Hospital where he died, July 2, following an operation for appendicitis

Harry Wilson Stout ♂ Wenonah, N J, University of Pennsylvania School of Medicine, Philadelphia, 1917 past president of the Gloucester County Medical Society, aged 44 on the staff of the Underwood Hospital Woodbury, where he died, June 29, of acute dilatation of the heart

Robert Elwood Heimbach ♂ Castle Point, N Y Cornell University Medical College, New York 1923, member of the Medical Society of the State of Pennsylvania, served during the World War, aged 40, died, May 25, in the Veterans Administration Facility of pulmonary tuberculosis

Manyard H Davis ♂ Mays Lick Ky University of Louisville Medical Department, 1881 in 1929 member of the House of Delegates of the American Medical Association, aged 75, died, June 14, in the Christ Hospital, Cincinnati, of hypertrophy of the prostate and pulmonary embolism

Joseph Wellington Schoffstall ♂ Sunbury, Pa Jefferson Medical College of Philadelphia, 1902, served during the World War, on the staff of the Mary M Packer Hospital, aged 55, died, June 23, in the George F Geisinger Memorial Hospital, Danville, of cerebral thrombosis

John Norfolk Morris, Sykesville, Md, University of Maryland School of Medicine, Baltimore, 1893, member of the Medical and Surgical Faculty of Maryland on the staff of the Springfield State Hospital, aged 62, died, June 22, of peptic ulcer

John Edgar Getman ♂ New York, Columbia University College of Physicians and Surgeons New York 1899 served during the World War on the staffs of St Luke's and Post-Graduate hospitals, aged 58, died, June 12, of heart disease, at Brewster, N Y

Luther Herbert Thomas, Branchville, S C Medical College of the State of South Carolina Charleston, 1910 formerly mayor, member of the South Carolina Medical Association, member of the board of health, aged 50, died, June 20, of heart disease

William P Love, Youngstown Ohio, Western Reserve University Medical Department, Cleveland 1896, member of the Ohio State Medical Association, veteran of the Spanish-American and World wars aged 64, died, July 11, of cerebral hemorrhage

Frederick Van Vliet, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895, aged 63 died, July 8 in the Kings County Hospital Brooklyn of meningococcal meningitis and cerebral thrombosis

Christus A Derebey, Chicago, Northwestern University Medical School, Chicago 1897 member of the Illinois State Medical Society, aged 78, on the staff of the Belmont Hospital where he died, June 25, of chronic endocarditis and arteriosclerosis

Emil Joseph Susslin ♂ Bridgeport, Conn University of Vermont College of Medicine Burlington, 1921, aged 37, on the staffs of the Englewood Hospital and the Bridgeport Hospital where he died, July 9, of subacute bacterial endocarditis

Park Alfonso Findley ♂ Des Moines Iowa, Drake University Medical Department Des Moines 1895, formerly sheriff of Polk County and chief of the Iowa State Bureau of Criminal Investigation, aged 60, died suddenly, June 13 of heart disease

Edwin Harwood Smith ♂ Bemidji Minn University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis 1900 city health officer on the staff of the Lutheran Hospital aged 59, died July 7, of lobar pneumonia

George Guy Snyder, Harrisburg, Pa, Medico Chirurgical College of Philadelphia, 1899, member of the Medical Society of the State of Pennsylvania, since 1919 county prison physician aged 59, died, July 13, of hypertension and uremia

David Howard Cooper, Pittsburgh, University of Pittsburgh School of Medicine, 1923 on the staffs of the Homestead (Pa) Hospital and the Montefiore Hospital, aged 37, died suddenly, June 12, of coronary occlusion

Samuel Omer Barwick, Elkhart, Ind, Eclectic Medical Institute, Cincinnati 1894, member of the Indiana State Medical Association, aged 72, on the staff of the Elkhart General Hospital, where he died, July 7, of pneumonia

Edwin Remick, Tamworth, N H, University of Vermont College of Medicine, Burlington, 1894, member of the New Hampshire Medical Society aged 69, died, June 2, of chronic myocarditis and acute pulmonary edema

Myra Brown-Tynan, Portland, Ore., Willamette University Medical Department, Portland, 1889, for seventeen years connected with the city health department, aged 67, died, June 20, of cerebral hemorrhage

Peter T Barnum Shaffer, Elizabeth, Pa, Western Reserve University Medical Department, Cleveland 1877, member of the Medical Society of the State of Pennsylvania, aged 85, died, June 25, of carcinoma of the stomach

James Thomas Flannigan, Sinclairville, N Y, University of Buffalo School of Medicine, 1928 aged 32, on the staff of the Jamestown (N Y) General Hospital, where he died, May 25, of encephalomyelitis

Charles Wilber Seever, Sheldon, Ill, Chicago College of Medicine and Surgery, 1909, served during the World War, aged 54, died, July 4, in the Garfield Park Hospital, Chicago, of cirrhosis of the liver

Benjamin L Clifton, Millen, Ga, Southern Medical College, Atlanta, 1885, member of the Medical Association of Georgia, aged 77, died, June 7, of cerebral hemorrhage and acute nephritis

Albert Lewis Martin, Wyandotte, Mich, State University of Iowa College of Homeopathic Medicine Iowa City, 1887, aged 68, died, July 20, at his home in Trenton, of cerebral hemorrhage

William Altman ♂ Cleveland, Ohio State University College of Homeopathic Medicine Columbus 1916, aged 47 died, July 16, of chronic myocarditis, heart disease and pulmonary edema

Duffield Roy Kruger, Manila, P I, Kansas City (Mo) College of Medicine and Surgery 1916, aged 41, died suddenly, April 6, in St. Paul's Hospital, of pulmonary embolism

Edward Bates Clements, Macon Mo, Howard University College of Medicine, Washington, D C, 1881, aged 74, died, June 19, of injuries received in an automobile accident

Alton R Danforth, Norcross Ga, Southern Medical College, Atlanta 1890, aged 76, died, June 5 in a hospital at Atlanta, of chronic nephritis and cirrhosis of the liver

Earle Rice Davis, Renovo, Pa, Hahnemann Medical College and Hospital of Philadelphia, 1917, served during the World War, aged 40, died June 15, of heart disease

John Thomas Edwards, Glencoe, Ala, University of Tennessee Medical Department, Nashville 1890, aged 78, died, May 26, of hypostatic pneumonia and arteriosclerosis

Edward James McConaghy, Audubon, N J, Jefferson Medical College of Philadelphia, 1911, aged 52 died, June 18, in the Lakeland Sanatorium, Glenloch, of pneumonia

John Daniel Grant ♂ Allock, Ky, University of Louisville Medical Department, 1917, past president of the Perry County Medical Society, aged 45 died, June 2

Charlie Bib Townes ♂ Tahoka Texas Vanderbilt University School of Medicine, Nashville, Tenn, 1908, aged 58, was killed, July 10 in an automobile accident

William Hastings Dial, Laurens, S C, University of Maryland School of Medicine, Baltimore, 1884, formerly mayor, aged 75, died, June 1

Archie Royal Fleming, Suffolk, Va, Howard University College of Medicine, Washington, D C, 1919, aged 43, died, April 10, of angina pectoris

Albert Emmons Connell, Cleveland, Western Reserve University Medical Department, Cleveland, 1904, aged 62, died, June 12, of myocarditis

Robert Benjamin Killian, Lincolnton N C Louisville (Ky) Medical College, 1885, aged 79, died, June 26, of carcinoma of the colon

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States
Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

Captain Bryant's Grand American Remedy—F W Bryant Scranton Pa Composition Essentially volatile oils including those of pepper mint and red peppermint with alcohol water and red coloring For stomach disorders diarrhea toothache dyspepsia etc. Fraudulent therapeutic claims—[N J 21983 September 1934]

Curry's Headache Powders—Curry Arrington Co Rome Ga Composition Essentially 24 grains of acetanilid 0.94 grain of caffeine and 15 grains of baking soda in each powder Misbranded because amount of acetanilid per powder was not declared on the label as required by law misbranded further because of fraudulent therapeutic claims—[N J 21984 September 1934]

Breeden's Blood Medicine—Breeden Drug Co Inc Memphis Com position Essentially potassium iodide extracts of plant drugs and alcohol (14.2 per cent by volume) Fraudulent therapeutic claims—[N J 21993 September 1934]

Copinol—Copinol Co Los Angeles Composition Essentially mineral oil with a trace of an alkalioid such as berberine and perfume For catarrh hay fever sinus trouble etc. Fraudulent therapeutic claims—[N J 21994 September 1934]

Hutchison's Antiseptic Healing Oil—Hutchison Medicine Co Tex arkana Texas Composition Essentially volatile oil such as sassafras and turpentine with carbolic acid a vegetable oil such as linseed and mineral oil (about 75 per cent) For eczema itch piles boils etc. Fraudulent therapeutic claims—[N J 21995 September 1934]

Kulnow's Anti Asthma Powder—Hutchison Medicine Co Tex arkana Texas Composition Essentially saltpeter and plant material such as stramonium or belladonna Fraudulent therapeutic claims—[N J 21995 September 1934]

Nash's Salve—Hutchison Medicine Co Texarkana Texas Com position Essentially volatile oils including menthol, camphor eucalyptus sassafras and turpentine in a mixture of glycerin and petrolatum For coughs catarrh asthma piles boils tonsillitis etc. Fraudulent therapeutic claims—[N J 21995 September 1934]

Bamaoca Oil—Bamaoca Co Boston Composition Essentially small amounts of volatile oils including wintergreen spearmint and rosin in mineral oil Cure-all Fraudulent therapeutic claims—[N J 21996 September 1934]

Bamaoca Salve—Bamaoca Co, Boston Composition Essentially a small amount of volatile oil such as spearmint in a mixture of petrolatum and rosin For boils carbuncles, tonsillitis pneumonia appendicitis peritonitis etc. Fraudulent therapeutic claims—[N J 21996 September 1934]

Gastralint—Bamaoca Co Boston Composition Essentially starch sugar and a small amount of a fatty acid such as stearic acid in tablet form For dyspepsia, gastritis, heartburn nervous prostration etc. Fraudulent therapeutic claims—[N J 21996 September 1934]

Nanzetta's New Prescription—Composition Essentially plant drug extracts including cascara sagrada licorice and sarsaparilla with alcohol (81 per cent by volume) and water For rheumatism impure blood liver and stomach disorders etc. Misbranded because quantity or proportion of alcohol not declared on label and because of fraudulent therapeutic claims—[N J 21998 September 1934]

Zepyril—Stearns Hollinshead Co Inc Portland Ore. Composition Small amounts of zinc chloride common salt, glycerin saccharine alcohol (25 per cent by volume) and water colored and flavored For skin diseases tonsillitis influenza catarrh etc. Not antiseptic or germicidal as claimed. Fraudulent therapeutic claims—[N J 22002 September 1934]

Beatsel Earache Outfit—G & W Laboratories Inc. Jersey City N J Composition Essentially ether camphor eucalyptol and alcohol Fraudulent therapeutic claims—[N J 22003 September 1934]

Oyster X Tonic—Oyster X Co Cleveland Composition Tablets containing material derived from nux vomica, calcium iron and aluminum compounds traces of copper iodine manganese and phosphorus compounds proteins and starch. For blood building etc. Misbranded because the ingredients named were present in insignificant amounts and because the statement government inspected was false. Fraudulent therapeutic claims—[N J 22004 September, 1934]

Mother Gray's Sweet Powders for Children—A S Olmsted Co, Le Roy N Y Composition Essentially sulphur baking soda, licorice, starch and sugar For stomach liver and digestive disorders Fraudulent therapeutic claims—[N J 22005 September 1934]

Force—Union Pharmacal Co Kansas City Mo. Composition Essentially plant drug extracts including a laxative with phenolphthalein, phosphoric acid alcohol sugar and water For debility anemia, physical and mental exhaustion etc. Fraudulent therapeutic claims—[N J 22009 September 1934]

Her Villa—Anglo American Pharmaceutical Corporation and Huxley Laboratory Inc New York Composition Essentially the glycerophosphates and formates of calcium, iron manganese, sodium and potassium, with strychnine glycerin sugar and water For weak nerves anemia debility etc. Fraudulent therapeutic claims—[N J 22013 September 1934]

X Z Mex—Dr Jayess Pharmacal Products Allston Station Boston. Composition Essentially zinc oxide (53 per cent) salicylic acid (11 per cent), sodium salicylate (13 per cent) mercurous chloride (2.2 per cent) volatile oil such as cade oil (1 per cent) and water (47 per cent) incorporated in petrolatum For eczema psoriasis ulcers dandruff etc. Fraudulent therapeutic claims—[N J 22012 September 1934]

The \$20 000 A Dose Discovery—C Neil Simpson Houston Texas. Composition Essentially a mixture of zinc sulphate and powdered digitalis leaves For blood disorders syphilis and other venereal diseases, cancer ulcerated stomach piles boils pellagra etc. Fraudulent therapeutic claims—[N J 22014 September 1934]

Rainey's Vitality Tablets—Dr Rainey Drug Co Chicago Composition Calcium carbonate metallic iron iron carbonate and plant drug extracts including cinchona and nux vomica For anemia, indigestion, neurasthenia etc. Fraudulent therapeutic claims—[N J 22180 September 1934]

Rainey's Laxatives—Dr Rainey Drug Co Chicago Composition Uncoated tablets containing calcium carbonate plant drug extracts including nux vomica and a laxative and a small amount of an iron compound. For liver disorders stomach catarrh, etc. Fraudulent therapeutic claims—[N J 22180 September 1934]

Hiseen—Hiseen Corporation Chicago Composition Essentially phenobarbital atropine and a small amount of plant material For asthma hay fever and bronchitis Misbranded because labeled "Non-habit forming" also because of fraudulent therapeutic claims—[N J 22016 September 1934] This nostrum was the subject of a detailed article that appeared in this department of THE JOURNAL, Oct. 14 1933

Colonald—Norwood Pharmaceutical Co Inc. and Clyde F Lloyd, Chicago Composition Essentially milk sugar casein dextrin and smaller amounts of starch phenolphthalein calcium phosphate a potassium compound and carbonates For stomach and bowel troubles, auto-intoxication etc. Misbranded because called harmless natural laxative food which it was not also because of fraudulent therapeutic claims—[N J 22019 September 1934]

Anti Cholelith—Leon Chemical Co Springfield Mo Composition Essentially plant drug extracts including hydrastis and a small amount of acetic acid with glycerin and water For gallstones kidney stones, auto-intoxication indigestion constipation etc. Fraudulent therapeutic claims—[N J 22191 September 1934]

Silver Salve Gall Remedy—Diehl Chemical Co Omaha Composition Zinc oxide (9 per cent) and a small amount of benzaldehyde in a mixture of petrolatum and fat colored blue For old sores wounds ringworm protruding piles varicose veins eczema etc. Fraudulent therapeutic claims—[N J 22193 September 1934]

Ensign Remedies—Ensign Co Battle Creek Mich. Composition Remedy No 42 99.6 per cent of sugar Remedy No 7 99.2 per cent of sugar no therapeutic agents found. Fraudulent therapeutic claims for Remedy No 42 as cure for primary syphilis etc. and for Remedy No 7 as a cure for la grippe influenza, etc.—[N J 22196 September 1934]

Cascara Cold Breakers—National Pharmacal Co Detroit Composition Acetanilid (17 grains) small amounts of plant drug extracts including a laxative drug ammonium chloride camphor red pepper and sodium salicylate and a trace of a drug containing a mydriatic alkalioid. Adulterated because below professed standard of purity and strength misbranded because quantity and proportion of acetanilid not declared on label and also because of fraudulent therapeutic claims—[N J 22195 September 1934]

Petro Ido—White Specific Toilet Co, Nashville Tenn Composition 0.05 per cent of iodine dissolved in mineral oil For stomach ulcer appendicitis typhoid stomach cancer high blood pressure heart trouble, etc. Fraudulent therapeutic claims—[N J 22198 September 1934]

Santay Swiss Anti Diabetic Tea—Modern Health Products Inc., Milwaukee Composition Plant drugs including peppermint leaves and stems malva flowers senna pods and dog grass. Fraudulent therapeutic claims—[N J 22199 September 1934]

Nutro Links—Modern Health Products, Inc Milwaukee Composition Formulas No 5 and No 6 and No 6 Tablets Powdered plant material common salt and Glauber's salt. For rheumatic conditions. Fraudulent therapeutic claims—[N J 22199 September 1934]

Black's Browe Powder—Dr W E. Black Co Dallas Texas. Composition Essentially baking soda magnesium carbonate and an iron compound For acidosis gastritis ulceration kidney disorders etc. Fraudulent therapeutic claims—[N J 22302 November 1934]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

EARLY DIAGNOSIS OF TUBERCULOSIS

To the Editor—*I thoroughly enjoy reading Queries and Minor Notes of particular interest to me were the articles on tuberculin testing appearing in the issues of May 26 and Sept 22 1934. Please allow me to discuss briefly one phase in the last part of your answer to Dr. Billard (Sept 22 1934 p 935).*

In the finding of the first infection focus of tuberculosis which practically always results in a positive tuberculin reaction the x-ray film is of little avail. By it 75 per cent or more of the lesions are missed, as demonstrated by Miller (*Am. J. Roentgenol.* 20:191 [Aug.] 1931) and others who have carefully studied x-ray films made ante mortem and compared the observations with what has been found post mortem.

I think that Dr. Miller's observations in the recognition of thoracic calcifications are accurate. However in your answer an inference might be drawn that 75 per cent of serious lesions were missed by roentgen examination. This is probably not the way you meant it. However, I will discuss briefly the question of roentgen examination and tuberculin testing from a practical point of view. Positive reactors denote live tubercle bacilli in the body; the x-ray film shows whether or not there are serious lesions in the lungs. It is well known that with a good roentgenogram, gross or serious lesions, which soon prove fatal to the patient, are seldom missed. Now are small primary lesions and calcification and enlarged tracheobronchial lymph nodes serious? All admit that the latter types of patients and all positive reactors should have repeated roentgen examinations in order to pick up serious lesions if they develop.

During the past six years in the Los Angeles County Health Department, out of some 15,000 children who were positive reactors and who were negative for pulmonary tuberculosis by roentgen examination only six in the calcified and enlarged lymph node group were found to have developed pulmonary tuberculosis (reinfection). Two of these active cases were in known contacts. The majority of positive reactors have been rechecked several times by x-rays and are consistently negative. All active cases are of course, isolated from the rest of the family when ever possible. However this is many times impossible as a high percentage of our patients are Mexicans whose home conditions are undesirable.

This is our plan which I think is practical for it is working.

All positive reactors are roentgenographed and the following essential points are taken into consideration:

1. Has the patient pulmonary tuberculosis? If so will he infect others?
2. Is the patient suitable for sanatorium care?
3. Is the patient suitable for collapse therapy?
4. Has the patient demonstrable enlarged lymph nodes or calcified lesions? If so are they considered serious?

(The following discussion is confined principally to point 4.)

We do not consider calcification and enlarged lymph nodes serious at the moment. These patients will not infect others and will not die from these types of lesions.

Is this type of patient suitable for preventorium or sanatorium care? Usually not. If all these patients were sent to sanatoriums there would not be sufficient accommodations. Furthermore beds would be filled with clinically well patients. If the home conditions are good even the patients who have small primary uncalcified lesions are seldom sent to sanatoriums, as the lesions usually disappear within six months.

The method we use when we find a small lesion in the lung (in order to rule out bronchopneumonia) is to recheck roentgenographically within a month. If the lesion persists we consider it tuberculous.

It is not my wish to enter into a controversy regarding endogenous and exogenous tuberculous infection as I feel that this is a two-sided question, and the correct answer may not be forthcoming for several years. However, Professor Blacklock has shown by many autopsies that in no instance has there been a retrograde spread from the tracheobronchial lymph nodes back into the lung substance, and he concluded that the lymphogenous origin of the primary infection is unlikely (*Tuberculous Disease in Children: Its Pathology and Bacteriology*, Special Report Series No. 172, Medical Research Council Glasgow, Scotland).

I think that roentgen examination is of major importance in all suspected cases of tuberculosis as serious lesions can be immediately ruled out. After all this is of primary concern. We tuberculosis workers are inclined to be so scientific that we fog the issue. The novice doesn't know how to interpret our observations.

MERRI LEE PINDELL, M.D., Los Angeles.

Roentgenologist for Los Angeles County Health Department

ANSWER.—The statement that 75 per cent or more of lesions of the first infection type of tuberculosis are missed by roentgen examination was intended to emphasize the fact that the x-ray film is a gross method of locating lesions of this type but that the tuberculin test is a delicate method of finding such cases. Many workers have been of the opinion that if the roentgen examination does not reveal a lesion none exists and have expressed the belief that such persons are only

infected and do not have disease. This statement by no means discredits the value of the x-ray film but only points out the helplessness that still exists in the attempt to locate the site of the lesion in large numbers of persons who have tuberculosis.

The question has been raised as to whether the first infection type of tuberculosis either in the inflammatory stage and sufficiently large as even to be mistaken for pneumonia by roentgen examination alone, or in the calcified stage, may ever be considered serious of itself. Apparently nearly all the serious lesions are produced by reinfections. The belief that reinfections are frequently from endogenous sources is gaining ground as indicated by such workers as Miller (*Ann. Int. Med.* 8:243 [Sept.] 1934). Therefore, one must look on every first infection type of lesion, whether or not it is demonstrated roentgenographically, as having serious potentialities through providing tubercle bacilli, which are transmitted elsewhere, where they often set up serious reinfection types of lesions. From such studies as those made by Chadwick (*School Physicians' Bull.*, October 1934), Myers and Harrington (*THE JOURNAL*, Nov. 17, 1934, p. 1530) and Stewart (*THE JOURNAL*, April 8, 1933, p. 1077) it appears clear that children with the first infection type of tuberculosis, which has caused them no illness, are many times more likely to develop serious lesions in later life than children who have not developed the first infection type of disease. Therefore, in roentgen examinations the chief concern should be not with finding the first infection type of lesion, since the positive tuberculin reaction has already shown that it exists, but rather with finding the reinfection type, to which the term "serious" is always justifiably applied, no matter how small the lesion may appear. This fact should justify the making of x-ray films periodically of every positive reactor.

The chronic reinfection type of pulmonary tuberculosis is not frequently seen until adolescence approaches. Therefore it has been suggested that periodic x-ray film work of positive reactors begin at about that age except among children with other manifestations of disease or when funds are not a problem.

The fact that six cases of the reinfection type of tuberculosis have already been found among 15,000 children under observation only six years is of considerable significance, since tuberculosis is a communicable disease. If the group of children at Los Angeles is similar to those observed elsewhere, this number will be markedly increased if they are kept under observation until even the age of 25 years is reached. It has been said that it seems remarkable that probably from thirty to forty million persons in the United States would react positively to the tuberculin test and that the number with clinical tuberculosis is relatively small. One must not neglect the fact that nearly all of the remaining eighty to ninety million persons in this country who probably would react negatively to the tuberculin test are free from clinical tuberculosis, that is, the thirty to forty million with positive reactions provide practically all the tuberculosis load of this country.

The plan of procedure described is excellent. Under point 1 the correspondent doubtless has in mind the reinfection type of pulmonary tuberculosis. The question as to whether such patients are suitable for sanatorium care or collapse therapy must always be determined for the individual case, depending on the extent of disease, whether it is unilateral or bilateral, whether it has broken down so that the patient is disseminating tubercle bacilli, whether the home conditions are such that one is justified in beginning collapse therapy, and whether the patient's temperament is one that will require much discipline. All these and many other points are doubtless taken into consideration in determining which form of treatment shall be employed, each is good in its place.

Under point 4 there is no doubt that those who have observed large numbers of children with the first infection type of disease over many years will agree that calcification and enlarged lymph nodes are not serious at the time. They will also agree that preventorium and sanatorium care usually are not indicated. The method of rechecking when a small lesion first makes its appearance in the lung is ideal, for certainly no one by an x-ray film or physical examination can differentiate between small lesions of pulmonary tuberculosis and bronchopneumonia.

As Professor Blacklock's studies were based entirely on post-mortem examinations, it is obvious that he had the opportunity of making only the final examination. While it is true that this is the most accurate method of making an examination, it is also true that serial examinations of lesions by x-ray film and other methods over long periods of years is the only method by which one can trace the actual evolution of tuberculosis.

CONTAGIOUS ABORTION IN CATTLE

To the Editor—Recently I have been asked a number of questions about contagious abortion in cattle that are too much for me. 1 Is it the same disease as Malta or relapsing fever? 2 Is it transmitted through cow's milk? 3 Is cooking in ordinary ways sufficient sterilization of the meat of an aborting cow? 4 Is there any danger in feeding milk of such cows to chickens or hogs? 5 Is the blood test as done by federal veterinary surgeons a reliable test? 6 Would a positive test on a cow that has never aborted and is symptom free be enough evidence to justify destruction of the cow? 7 Is a cow that is a reactor but has never aborted and is symptom free a menace to other cattle in the same herd? Will you please cite references to authorities as this is quite an important question in the community just now.

E R HUCKLEBERRY, M D Garibaldi, Ore

ANSWER—1 Malta fever, now more commonly called undulant fever or brucellosis and contagious abortion in cattle are caused by the same etiologic agent, *Brucella*. Relapsing fever is quite a different disease, caused by several varieties of spirochetes belonging to the genus *Spirillum*.

2 Brucellosis in human beings is commonly transmitted through raw cow's milk or unpasteurized dairy products.

3 Yes

4 There is danger in feeding the milk of cows with *Brucella* infection to hogs. Emmel and Huddleson have isolated *Brucella* from the domestic fowl in a naturally infected flock and have produced the disease in several breeds of fowl, usually with fatal termination, after feeding the fowl on mash containing *Brucella*.

5 Yes

6 Such a cow should be isolated from noninfected animals or destroyed.

7 Yes

Following are references

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Carpenter C M, and Baker D W. A Study of *Brucella Abortus Infection* in Milk from Fifty Herds Supplying the City of Ithaca N Y. *Cornell Veterinarian* 17: 276 (July) 1927.
Hardy A V, Jordan C F, Borts J H, and Hardy G C. Undulant Fever with Special Reference to a Study of *Brucella Infection* in Iowa. *Pub Health Rep* 45: 2433 (Oct 10) 2525 (Oct 17) 1930.
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Huddleson I F, and Emmel M W. The Pathogenicity of the Species of the Genus *Brucella* for the Fowl. *Technical Bulletin* 103. Agricultural Experiment Station Michigan State College East Lansing, Mich. August 1929.
Simpson W M. Undulant Fever. Then and Now. *Hygiea* 13: 112 (Feb) 1935.

ASTHMA AND INFECTION AFTER EXPOSURE TO SULPHUR DIOXIDE

To the Editor—I have seen several cases of asthma and chronic pulmonary infections that developed apparently after exposure to irritating sulphur dioxide gas. I have looked for literature on this phase of the relationship of sulphur dioxide exposure toward the causation of acute and chronic episodes of pulmonary disease but find the literature wanting.

NAT SPITZER, M D New York

ANSWER—The total number of cases of proved damage from exposure to sulphur dioxide gas is not sufficiently high to lead to statistical arrangements. Many of these cases have followed exposure to sulphur dioxide gas in the manufacture of electrical refrigerators, other cases have resulted from leaks in refrigerator equipment after installation in homes, hotels and elsewhere, still other cases have appeared in connection with claims against the owners of burning gob piles connected with coal mines. In the following publications may be found extensive comment relative to the action of sulphur dioxide on the respiratory tract.

- Encyclopedia of Pathology, Hygiene and Social Welfare volume 2 No 31. International Labor Office Geneva 1930.
Journal of Industrial Hygiene 14: 159 (May) 1932.
Bulletin 582 U S Bureau of Labor Statistics page 45.
Henderson and Haggard. Noxious Gases and the Principles of Respiration Influencing Their Action. New York Chemical Catalog Company 1927.

From the first mentioned a brief excerpt is quoted.

"With those not accustomed to it sulphur dioxide in quite weak concentration produces an acid taste in the mouth an increased flow of saliva and irritation of the nasal ocular and respiratory mucous membranes. Its action is less irritating to

the conjunctival than to the respiratory mucous membrane, in which area sneezing and attacks of coughing occur which are often spasmodic. If the action is too severe or too prolonged then catarrhal inflammation, either bronchial or pulmonary, occur with viscid, often blood stained expectoration. In some cases congestion and pulmonary asthma have been noticed. Serious cases caused by this gas are rarely fatal."

From the second cited publication a similar extract is presented.

"Exposure to sulphur dioxide under the conditions observed (100 subjects, forty-seven of whom had had from four to twelve years of exposure in the plant of one of the large manufacturers of electrical refrigerators) produces two distinct sets of effects (1) irritation of the upper respiratory tract, which is at first acute in character, and subsequently subacute or chronic, and (2) systemic symptoms of a mild type such as are associated with any type of increased acid absorption or production in the tissues."

In the fourth citation the following may be found not all of which is exclusively with reference to sulphur dioxide.

"Although the action of sulphur dioxide is mainly in the upper respiratory tract, severe exposure causes inflammation of the bronchi and lungs. The outstanding feature of inflammation in the lungs resulting from the action of irritant gases is pulmonary edema. The condition reaches its height in from twelve to twenty-four hours after the exposure. If death does not occur it tends to regress within forty-eight hours."

"The edema induced by irritant gases differs from the edema of nonirritant origin in that the latter is usually particularly marked in the pendent portion of the lungs, while the edema arising from irritation is not greatly affected by gravity or the posture of the subject. Not all parts of the lungs however, are equally involved in the inflammatory changes arising from the action of irritant gases. The irritant action upon the smaller bronchial tubes may cause some of them to contract so that the portions of the lungs to which they lead escape the action of the gas. Owing to this bronchoconstriction as well as to the plugging of the bronchi with sloughed mucosa and fibrin, areas of atelectasis and emphysema may occur in the edematous lung."

While some persons become inured to the action of fairly high concentrations of this gas and apparently are no longer irritated through prolonged day by day exposure, other persons apparently develop no protective mechanisms and readily present on trivial exposure, such as from 15 or 20 parts of the gas to a million parts of air, manifestations of irritation of the respiratory tract including on occasion typical asthmatic characteristics.

NONPROTEIN NITROGEN RETENTION

To the Editor—In an arthritic patient with a history of suppurative otitis media and acute mastoiditis fifteen years ago what significance would be given to a nonprotein nitrogen retention of 60 mg with no evidence in the urine of albumin or kidney degeneration? At present there is no evidence of ear disease except deafness and roentgen examination of the mastoid region shows some destruction of the mastoid cells. I might add that the patient has had several acute exacerbations of chronic polyarticular arthritis during the past fifteen years confining him to bed for a period of three months on two occasions.

J N CROSS M D, Alexandria Ohio.

ANSWER—The normal nonprotein nitrogen is usually between 25 and 35 mg per hundred cubic centimeters of blood. The figures run parallel to the urea estimation, so that little information is gained that cannot be more accurately and easily obtained by urea nitrogen estimation. With mild impairment of renal function the urea nitrogen often reaches from 16 to 30 mg and the nonprotein nitrogen from 30 to 60 mg. There are many causes of an elevated urea or nonprotein nitrogen.

- 1 Bilateral diffuse kidney disease (acute subacute chronic or hypertensive)
- 2 Congenital polycystic kidneys
- 3 Pyelonephritis or pyonephrosis
- 4 Poisoning with heavy metals
- 5 Passive congestion of the kidneys
- 6 Dehydration probably compensatory to maintain the osmotic pressure of the plasma at a normal level after excessive loss of salts from vomiting, diarrheas and so on
- 7 Obstruction in the urinary tract, especially when bilateral

Many of the foregoing causes of increase in the nonprotein nitrogen can be determined by the history, physical examination, and careful examination of the urine.

In the case cited, the presence of focal infection in the middle ear and mastoid, and several attacks of rheumatic fever suggest the possibility of a nephritis. In most cases repeated urine examinations will reveal some albumin, casts or blood cells. A nonprotein nitrogen of 60 mg on repeated examination speaks for some form of renal damage listed.

ALKALINITY OF URINE

To the Editor—I have a patient whose urine is persistently alkaline. When the urine is alkaline there is frequent and painful urination. The only other abnormality found in the urine is the presence of considerable amounts of mucus. All the usual drugs for acidification of the urine have been tried with only temporary and partial amelioration of the symptoms. Daily irrigation of the bladder with boric acid solution affords the patient the greatest degree of comfort of any of the measures tried. Irrigations of the bladder with solutions containing acidophilus bacilli were tried but were not tolerated. The patient is a woman aged 54. Last September she suffered what appeared to be a coronary thrombosis. She was put on absolute bed rest and symptomatic treatment. Weeks went by and she failed to make any improvement. Rather she became progressively weaker. Gastro-intestinal symptoms of anorexia and nausea became prominent. Early in January it was noted that her skin was becoming pigmented. Although her blood pressure had maintained a fairly constant level of 120 systolic 80 diastolic, it was decided to try adrenal cortex extract. Marked improvement immediately followed the institution of treatment. Since the latter part of January she has been receiving daily doses of from 2 to 4 cc. She is now able to be out of bed and can walk short distances about the house. The gastro-intestinal symptoms have largely disappeared and the heart is apparently able to meet ordinary demands. However, the alkaline urine remains a troublesome factor. I should greatly appreciate any information you can give me as to the etiology and treatment of these urologic symptoms. Please omit name and address.

MD Montana

ANSWER.—The progressive weakness, gastro-intestinal symptoms and pigmentation, and the improvement with adrenal cortex extract strongly suggest Addison's disease. In this disease there are occasional cases in which the blood pressure remains at a normal level for a considerable time.

The alkaline reaction of the urine with considerable mucus may be due to a chronic cystitis. Such urine usually contains a varying number of bacteria and a large amount of phosphates. The urine is also alkaline in alkalosis, owing to obstructing gastric lesions or severe vomiting, as well as with alkali therapy. Such an alkalosis can be corrected by administration of ammonium or calcium chloride.

The food intake also influences the urinary reaction. Two or three hours after a meal the acidity is reduced or the reaction may even be alkaline. This is due to the temporary absorption of the acid by the food in the stomach. Proteins tend to produce an acid urine and fruits a neutral or alkaline urine. Sodium or potassium citrate or sodium bicarbonate renders the urine alkaline.

In Addison's disease there is often an achlorhydria, and an increase in the nonprotein nitrogen, urea and sulphates in the blood, which is an indication of renal insufficiency and circulatory disturbance. There may be a creatinuria. The cortical extract exerts a beneficial effect on food ingestion and utilization, so that the achlorhydria and creatinuria usually disappear. There is a disturbance of chloride metabolism, and the patient often craves sodium chloride. Its administration is often very beneficial. The decrease in chlorides may be a factor in causing the alkaline urine.

Impaired renal function with nitrogen retention predisposes to the development of alkalosis as well as acidosis. Frequent alkali reserve estimations should be made in all such cases and the diet carefully regulated.

DANGERS OF LEAD ARSENATE AS SPRAY IN ORCHARDS

To the Editor—Have you any information in regard to symptoms probably resulting from the handling of lead arsenate in spraying orchards over a period of years?

WILLIAM G EYTON MD Newark N J

ANSWER.—The use of lead arsenate for insecticidal purposes has given rise to reports both of lead and of arsenic poisoning. Lead poisoning is believed to be more common than arsenic poisoning. In the manufacture of this agent lead poisoning is fairly frequent while systemic arsenic poisoning rarely arises or at least is rarely diagnosed. In one instance connected with orchard spraying the farmer's residence was situated at the lower edge of a hillside orchard. Currents of air carried some of the spray containing arsenic onto the roof and there deposited it. The farmer made use of cistern water collected off the roof, but only his wife used the cistern water for drinking purposes. In due time she developed a totally disabling disorder diagnosed as arsenic poisoning, and arsenic was found in the cistern water. Hamilton's comment on lead arsenate as found in 'Industrial Toxicology' (Harper and Brothers, 1934) is as follows: "In regard to lead arsenate the curious fact is poisoning often takes the form of lead poisoning, not arsenic, as in a case of Aub's which followed long exposure to lead arsenate used as a spray. This was in a man of forty-two years who had for twenty-seven years worked in the Massa-

chusetts State Forestry Department spraying lead arsenate on trees. During each spraying season he had an attack of colic, then double wrist drop came on which lasted for twelve years before his death from pneumonia, and during the last three years he had had difficulty in walking. At autopsy lead was isolated from the long bones." It is conceivable that lead and arsenic poisoning might coexist or might arise consecutively.

TREATMENT OF SYPHILIS

To the Editor—Please outline the proper treatment for a woman aged 28 who has paralysis of one pupil and 4 plus Wassermann and Kahn reactions. She married at 14 and has been several times pregnant with miscarriages, some due to natural causes some to interference. She was divorced and remarried about one and one-half years ago. The present husband's blood gives a negative reaction. The general examination gave negative results. She has had one course of bismuth treatment and seven neoarsphenamine injections with return of the pupillary contraction to normal. Would the kind and amount of treatment be very different in the case of a person 65 years of age? Please omit name.

MD Connecticut

ANSWER.—Treatment with neoarsphenamine and heavy metals, bismuth or mercury compounds in alternating courses, should be continued for at least a year. In the interim between courses, iodides should be administered. At the end of a year the serum reaction of the blood should be checked and a spinal puncture done to determine whether the case is one of asymptomatic neurosyphilis or an early parenchymatous involvement of the nervous system. Further treatment will depend on the condition of the spinal fluid. In positive cases, tryparsamide should be used or some form of fever therapy. The kind and amount of treatment would be decidedly different in a person 65 years of age. The arsphenamines must be given with great caution in older people with an impaired cardiovascular apparatus.

GLAUCOMA

To the Editor—I have a case of chronic glaucoma with greatly reduced vision in one eye the other being recently enucleated. There is no inflammation and no pain. The pressure varies from 30 to 40 mm of mercury. There is some exudate on the posterior side of the lens which resembles an incipient cataract. The eye recently enucleated showed this exudate to a marked degree yet the inside of the lens did not seem to be affected. The question is: At what pressure will nerve destruction take place? Should the eye be operated on as long as the pressure can be maintained with the aid of mydriatics? Please do not publish name or town.

M D., Oklahoma.

ANSWER.—The amount of intra-ocular pressure as measured by the tonometer is no indication of the necessity for surgery. A numerical value cannot be placed on so-called normal pressure, for normal pressure is that degree which the tissues of the eye can withstand without damage to function. Consequently, repeated examinations of the peripheral visual field, of the central visual field and of visual acuity are necessary to determine whether or not the existing pressure is pathologic for the eye in question. If these functions are damaged by the pressure of from 30 to 40 mm of mercury that pressure is greater than the eye can withstand and surgical intervention is indicated. On the other hand, if there are no losses in the visual fields and the visual acuity remains unchanged, the same pressure is not above the normal range for that eye.

POSSIBLE INFECTION OF ETHMOID SINUSES

To the Editor—A man aged 40 with a right chronic purulent otitis media has had a slight continuous discharge for the past ten years. There is a large central perforation in the drum. Examination of the nose shows a deviated septum to the left with a large polyp probably arising from the ethmoid. Roentgen study with iodized oil shows cloudy ethmoids and maxillaries. The capacity of the maxillaries is 7 to 9 cc of iodized oil. The emptying time is good. What therapeutic procedure is advisable? Please omit name.

MD New York.

ANSWER.—Cases presenting a large central perforation, which usually show no involvement of bone, are seldom proper subjects for aural operation. Even though radical mastoidectomy is performed in some of these cases, suppurative continues in many. As long as there is no bone involvement, there is usually no indication for the radical operation. However, since this type of case often persists because of constant infection by way of the eustachian tube, any nasal or nasopharyngeal infection should be treated. If, therefore, there is evidence of involvement of the nasal accessory sinuses treatment directed toward them is indicated. If there is disease of the ethmoid with polyp formation ethmoidectomy is probably indicated. The use of boric acid alcohol solution in the middle ear by way of the external auditory canal is sometimes beneficial in these cases.

WASSERMANN TEST IN VINCENT'S ANGINA

To the Editor—Kindly advise me whether it is probable that a persistent Vincent's throat (the bacilli and spirilla have been isolated a number of times in the last five months) could produce a positive blood Wassermann reaction. The particular patient I have in mind gives no history that would suggest a syphilitic infection although she has had this persistent Vincent's condition for five months. The literature I have available says that the Wassermann reaction is always negative in Vincent's angina yet I would think that because of its being a spirillum infection over a period of months the bacteria might enter the blood stream and give a positive Wassermann reaction. I would appreciate your opinion or information where I can obtain authoritative literature on the subject.

M D Chicago

ANSWER—The Wassermann reaction is not positive in Vincent's angina. The presence of a positive Wassermann reaction must be attributed to a syphilitic infection and not to the Vincent infection. The fusiform bacilli and spirilla of Vincent's angina are very different from *Spirochaeta pallida* in their pathogenicity and in the lesions produced. It is not to be expected, therefore, that they should produce similar serologic reactions. The books of Kolmer and Kahn on the diagnosis of syphilis discuss the specificity of the Wassermann and Kahn tests.

Perhaps the fact that arsphenamine has great therapeutic value in Vincent's infections as well as in syphilis has led to the incorrect view that Vincent's angina may produce a positive Wassermann reaction. The patient being a woman with history of but little value in excluding syphilis. The positive Wassermann reaction obtained from a competent laboratory is certainly an indication for antisyphilitic therapy, which will also clear up the Vincent's infection in most cases.

OCCIPITAL HEADACHE—HEART MURMURS

To the Editor—Kindly explain if possible the mechanics of (1) occipital headache in intestinal disorders and (2) heart murmur heard only when the patient is in the horizontal position and its significance.

HARRY HALLERMAN, M D, New York

ANSWER—1 We are unable to furnish an explanation of the mechanics of occipital headaches in gastro intestinal disorders. Headaches occur not infrequently in patients with gallbladder disease and duodenal ulcer. Dr. Kleitman of the department of physiology of the University of Chicago in a study of hunger contraction mentioned several years ago the occasional occurrence of headache with retrograde peristalsis in the duodenum. The headache may also be of toxic or migrainous origin.

2 The heart murmurs heard only when patients are in the horizontal position are mostly cardiorespiratory in origin, occurring with cardiac systole by compression of air out of the margins of the overlying lung. They are of no clinical significance and are not heard when the individual is in the upright position, because of lack of the close contact that obtains in the horizontal one.

PLASTIC OPERATIONS ON POSTERIOR PILLARS
AFTER TONSILLECTOMY

To the Editor—A girl aged 16 years, had her tonsils removed several years ago and has a marked scarring and binding down of the posterior pillars on both sides. Resonance is poor. I would appreciate your opinion as to the success of a plastic operation separating the pillars and temporarily suturing in some air silk in an attempt to get some flexibility. The patient has also a colloid goiter. Please omit name.

M D, Texas

ANSWER—Plastic operations of this character are difficult to perform and the results are not always pleasing. They should be undertaken if the patient suffers from marked disability, but the possibility of a poor result should be explained. The operation mentioned might work, but the oiled silk or other material used to prevent the reformation of adhesions would have to be kept in for a week or two.

J. E. MacKenty (Nasopharyngeal Atresia, *Arch. Otolaryng.* 61 [July] 1912) described an operation, which has been valuable in the hands of some. This procedure depends for its success on the formation of palatal flaps in such a fashion that mucous membrane and not raw edges approximate. Dilatation too should be practiced for weeks after.

USE OF HENNA WHITE ON HAIR

To the Editor—I have a patient who has asked me whether or not henna white would harm her hair or scalp. Kindly omit name.

M D Iowa

ANSWER—Henna white is a bleach, varying in composition with various users. One formula, sodium perborate, 18 Gm, henna leaves, 2 Gm., affords an excuse for the name. No other excuse can be seen for the waste of henna leaves. Some use

hydrogen dioxide alone, others make a paste by combining it with magnesium carbonate. Another formula is 68 parts of magnesium carbonate and 32 parts of sodium perborate. This is made into a paste with hydrogen dioxide diluted with an equal quantity of water. All such preparations tend to make the hair brittle. No other harm is done unless loss of the natural color can be called harmful. White henna or henna white is a name used for any bleaching preparation.

REACTIONS TO DIPHTHERIA TOXOID

To the Editor—Is there an increased danger in using the single dose alum precipitated toxoid in children with possible allergy over the usual two dose toxoid? In using the two dose toxoid what is the interval between doses that gives the optimal immunizing effect? Please omit name and address.

M D, Illinois

ANSWER—There is no increased danger in using the single dose of alum precipitated toxoid in children with possible allergy over the usual two dose toxoid.

In using the two dose toxoid the optimal immunizing effect between doses seems to be produced at about monthly intervals. Severe reactions in allergic individuals who have been given alum precipitate toxoid have not been reported.

DINITROPHENOL AND LYMPH GLANDS

To the Editor—I wish to ask whether dinitrophenol will produce hyperplasia and hypertrophy of the lymphatic glandular tissue. A woman came to me who had taken this drug for obesity. The exact quantity she did not remember but at one time she was using fifteen tablets a day. The glandular enlargement involves alone the anterior cervical group bilaterally. The enlargement is pronounced and resembles Hodgkin's disease. This trouble has been present six months and first began two months after the patient stopped the drug. Please omit name and address.

M D Indiana

ANSWER—Dinitrophenol does not produce glandular enlargement as far as is known from published reports. One large series of about 200 patients has been followed without this being observed as a complication. Dogs given three times the therapeutic dose daily for six months show no adenopathy as observed grossly or by microscopic study of their organs. In addition, the drug is probably completely excreted from the body within about three days. All these facts taken together make it extremely unlikely that a glandular enlargement beginning two months after the drug was stopped could have any connection with its administration.

CONVALESCENT BLOOD IN PUERPERAL SEPTICEMIA

To the Editor—In treating a patient with puerperal septicemia, would blood from a patient who has recovered from a similar infection be more beneficial for transfusions? If blood from a cured patient has special antibodies how long would they be likely to remain in the blood stream? Kindly omit name.

M D., West Virginia

ANSWER—There are good reasons to believe that blood from a patient who has recovered from puerperal septicemia would be more beneficial in the treatment of puerperal septicemia than the blood from a person who has not had the disease. It is not possible to say how long the special antibodies may persist in the blood after recovery from puerperal septicemia, but indications are that they may be present at least to some extent for many years.

OBESITY IN CHILDREN

To the Editor—I wish to know the treatment recommended for overweight children between the ages of 8 and 12 whose metabolism is around normal and wish the treatment recommended with thyroid extract and pituitary whole gland and wish to give this by mouth. If the pulse is normal is the treatment perfectly safe if children are at least 15 to 25 pounds (7 to 11 Kg.) overweight for their age? Please omit name.

M D Alabama

ANSWER—The treatment of obese children, normal in other respects, by glandular therapy cannot be recommended. The treatment should be dietary and should be directed at establishing a new and better food habit, so that once the excess weight is lost it does not reappear. The effects obtained with glandular products, when the diet is unchanged, are not only temporary but may actually cause harm by disturbing the normal endocrine balance. With regard to the specific glandular products mentioned, only the thyroid extract has been definitely shown to be effective when taken by mouth. The query does not contain sufficient data to enable one to offer specific dietary advice.

INFECTION OF SEMINAL VESICLES

To the Editor—About one year ago, a man aged 20 came to my office five days after contracting a gonorrheal infection. He had a marked discharge, which persisted for two months. During this time he was taking injections of 0.5 per cent strong silver protein twice daily with much diminution in the amount of the discharge. About three months after the institution of treatment, sounds were passed for two months to prevent stricture formation while injections of 5 per cent silver nucleinate were now used. About five months ago an epididymitis developed which cleared up after two weeks. For the past four months he has been receiving prostatic massage. There is still a slight morning mucoid discharge, and smears are still positive for the gonococci. Is there any other treatment that you could suggest? Please omit name and address.

M D, Pennsylvania

ANSWER.—In view of the fact that the patient had an epididymitis, it is quite evident that the seminal vesicles as well as the prostate gland are involved in the infection. In carrying out prostatic massage sometimes the vesicles are missed and may be responsible for the continuation of the presence of organisms in smears. Massage of the vesicles as well as of prostate gland, followed by an instillation into the prostatic urethra of 0.25 per cent silver nitrate solution, gradually increasing up to 1 per cent, should be repeated about every five days.

SAND BLAST HELMETS

To the Editor—I am surgeon for a large foundry. In the sand blast operation the men are protected by masks made of hardened rubber. The air is purified by passing through water. The question has been raised as to what is the best method of sterilizing these masks after they have been used by one person and before they are put on by another employee.

M D, Ohio

ANSWER.—The U S government, in its specifications for sand blast helmets purchased by its various departments, requires that each article be capable of passing either one of the following sterilization tests

(a) Immersion for ten minutes in a solution of formaldehyde made by placing one part of 40 per cent solution of formaldehyde in nine parts of water, or

(b) Subjection to sterilization by a moist atmosphere of antiseptic gas preferably formaldehyde, for a period of ten minutes, at room temperature.

It has been suggested that care should be taken to remove all the formaldehyde from the masks by washing with water before they are placed in use.

COMPARISON OF BLOOD OF MAN AND ANIMALS

To the Editor—Can you suggest any textbook or periodical references that will deal with the following subjects: A study of the evolution of blood from the simplest circulatory fluid to the highly developed blood of man or a comparative study of the vascular fluids found in all the animals. The textbooks in this library do not cover these subjects at all and I would appreciate your assistance very much.

Librarian, Harper Hospital

JEANNE REEN Detroit.

ANSWER.—The best way to obtain references for these subjects is to look up each phase of the circulatory fluid in each animal and compare it with man. Books on comparative anatomy will give only part of the subject. Data on the formed elements of the blood and their evolutionary history may be obtained from the article by H E Jordan in the *Quarterly Review of Biology* (8 53, 1933) and the monograph by Dr M Hausman (Entstehung und Funktion von Gefässsystem und Blut auf zellulär-physiologischer Grundlage, Basel, Benno Schwabe & Co, 1935).

FALSE POSITIVES IN BENEDICT SUGAR TEST

To the Editor—Will you kindly give me a list of drugs and other substances other than dextrose that reduce copper in Benedict's solution? Please omit name.

M D Massachusetts

ANSWER.—The copper compound in Benedict's solution may be reduced by a number of chemical substances. Chloroform will give a reduction and may be mistaken for sugar. When used as a preservative, it should be removed by heating the urine before testing for sugar. Formaldehyde may also lead to reactions simulating sugar. Boric acid may interfere with sugar determination. Benedict's solution is promptly reduced by alkaloids or the conjugated glycuronic acids. Chloral may also give a reduction.

The first time a urine of any patient shows reduction, further tests are indicated to determine whether the substance is sugar, and the kind of sugar.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY The Cincinnati examination previously announced will not be held. The next examination will be given in St Louis, Nov 18. Application must be filed before Sept 15. Sec Dr William H Wilder 122 S Michigan Ave, Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY Cincinnati Sept 14 Sec, Dr W P Wherry 1500 Medical Arts Bldg Omaha.

AMERICAN BOARD OF PEDIATRICS Philadelphia Oct 10 and St Louis, Nov 20. Sec Dr C A Aldrich 723 Elm St, Winnetka Ill.

AMERICAN BOARD OF RADIOLOGY Detroit Dec 12. Sec Dr Byrl R Kirkhn Mayo Clinic, Rochester Minn.

ARIZONA Basic Science Tucson Sept 17. Sec Dr Robert L Nugent Science Hall University of Arizona Tucson. Medical Phoenix, Oct 12. Sec Dr J H Patterson, 826 Security Bldg Phoenix.

COLORADO Denver Oct 1. Sec, Dr Harvey W Snyder 422 State Office Bldg, Denver.

IDAHO Boise Oct 1. Commissioner of Law Enforcement Hon Emmitt Pfister 205 State House Boise.

MINNESOTA Basic Science Minneapolis Oct 12. Sec Dr J C McKinley, 126 Millard Hall University of Minnesota Minneapolis.

MONTANA Helena Oct 1. Sec Dr S A Cooney 7 W 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination Sept 16-18. Ex. Sec, Mr Everett S Elwood 225 S 15th St Philadelphia.

NEW HAMPSHIRE Concord Sept 12-13. Sec. Board of Registrars in Medicine Dr Charles Duncan State House Concord.

NEW YORK Albany Buffalo New York and Syracuse, Sept. 16-19. Chief, Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany.

OKLAHOMA Oklahoma City, Sept 10-11. Sec, Dr James D Osborn Jr, Frederick.

PUEBLO Rico San Juan, Sept. 3. Sec. Dr O Costa Mastry Box 536 San Juan.

RHODE ISLAND Providence Oct 3-4. Dir Department of Public Health, Dr Edward A McLaughlin 319 State Office Bldg Providence.

WISCONSIN Basic Science Madison Sept 21. Sec., Professor Robert N Bauer, 3414 W Wisconsin Ave Milwaukee.

New York January Examination

Mr Herbert J Hamilton, chief, Professional Examinations Bureau, reports the written examination held by the New York State Board of Medical Examiners in Albany, Buffalo, New York and Syracuse, Jan 28-31, 1935. The examination covered 9 subjects. An average of 75 per cent was required to pass. Two hundred and twenty-nine candidates were examined, 175 of whom passed and 54 failed. The following schools were represented:

School	PASSED	Year Grad	Number Passed
University of Arkansas School of Medicine	(1932)	(1934)	2
George Washington University School of Medicine	(1934)	(1934)	1
Georgetown University School of Medicine	(1934, 2)	(1934, 2)	2
Howard University College of Medicine	(1934, 3)	(1934, 3)	3
Emory University School of Medicine	(1934)	(1934)	1
University of Georgia School of Medicine	(1932)	(1932)	1
Loyola University School of Medicine	(1934, 2)	(1935)	3
Rush Medical College	(1934)	(1934)	1
School of Medicine of the Division of the Biological Sciences	(1934, 2)	(1934, 2)	2
University of Illinois College of Medicine	(1934)	(1934)	1
University of Louisville School of Medicine	(1932)	(1932)	1
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934)	(1934)	1
Boston University School of Medicine	(1934)	(1934)	1
Harvard University Medical School	(1930)	(1932)	2
Tufts College Medical School	(1931)	(1933)	2
University of Michigan Medical School	(1933)	(1933)	1
Wayne University College of Medicine	(1933)	(1934)	2
St. Louis University School of Medicine	(1933)	(1934)	2
Washington University School of Medicine	(1929)	(1931)	2
Creighton University School of Medicine	(1934)	(1934)	1
Albany Medical College	(1934, 4)	(1934, 4)	4
Columbia University College of Physicians and Surgeons	(1932, 2)	(1934, 3)	5
Cornell University Medical College	(1932, 3)	(1934)	4
Long Island College of Medicine	(1933)	(1934, 6)	7
New York Homeopathic Medical College and Flower Hospital	(1934, 4)	(1934, 4)	4
Syracuse University College of Medicine	(1934, 5)	(1934, 5)	5
New York University University and Bellevue Hospital Medical College	(1932)	(1933, 2)	(1934, 8)
University of Buffalo School of Medicine	(1932)	(1934, 8)	11
University of Rochester School of Medicine	(1932)	(1934, 4)	8
Hahnemann Medical College and Hospital of Philadelphia	(1932)	(1933)	5
Jefferson Medical College of Philadelphia	(1932), (1933, 4)	(1933, 4)	2
University of Pennsylvania School of Medicine	(1927), (1932), (1933)	(1934)	7
Woman's Medical College of Pennsylvania	(1933)	(1934)	4
Medical College of the State of South Carolina	(1932)	(1932)	2
University of Tennessee College of Medicine	(1933)	(1933)	1
University of Wisconsin Medical School	(1933)	(1934, 2)	3
University of Alberta Faculty of Medicine	(1933)	(1933)	1
Dalhousie University Faculty of Medicine	(1933, 2)	(1933, 2)	2
Queen's Univ Faculty of Medicine	(1928), (1929), (1933, 2)	(1933, 2)	4
Univ of Toronto Faculty of Med	(1931)	(1932, 3)	(1933)
University of Western Ontario Medical School	(1934)	(1934)	1

McGill University Faculty of Medicine (1932), (1934)	2	Johns Hopkins University School of Medicine (1928) (1929) (1933)	(1921) Maryland
Medizinische Fakultät der Universität Wien (1926), (1932) * (1933, 2), * (1934 2)	6	University of Maryland School of Medicine and College of Physicians and Surgeons (1931) (1932), (1933, 2), (1934 2)	Maryland (1930) Puerto Rico
Université Catholique de Louvain Faculté de Médecine (1933)	1	Boston University School of Medicine (1933) N B M Ex	(1933) N B M Ex
Licentiate of the Royal College of Phys of London and Member of the Royal College of Surgs of England (1934, 3)	3	Harvard University Medical School (1928) (1930) (1932) N B M Ex	(1922)
Université de Paris Faculté de Médecine (1930) (1934 3) *	4	Tufts College Medical School (1925) Connecticut	(1906) Mass.
Friedrich Wilhelms Universität Medizinische Fakultät Berlin (1933) * (1934) *	2	University of Michigan Medical School (1921) Michigan	
Hamburgische Universität Medizinische Fakultät (1933) *	1	University of Minnesota Medical School (1920) (1930) Minnesota	
Johann Wolfgang Goethe Universität Medizinische Fakultät Frankfurt am Main (1934) *	1	Kansas City Medical College, Missouri (1896) R Island	
Schlesische Friedrich Wilhelms Universität Medizinische Fakultät Breslau (1934 2) *	2	St. Louis University School of Medicine (1933) New Jersey	
Universität Köln Medizinische Fakultät (1932), * (1932)	2	Washington University School of Medicine (1927) Illinois	
Universität Leipzig Medizinische Fakultät (1928)	1	Columbia University College of Physicians and Surgeons (1930), (1932 3)	(1933) N B M Ex
Magyar Királyi Ferencz József Tudományegyetem Orvostudományi Kara, Szeged Hungary (1922)	1	Cornell University Medical College (1931) (1932) (1933 6) N B M Ex	(1932) Ohio
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása Budapest (1932) *	1	Long Island College of Medicine (1933) New Jersey	
Regia Università degli Studi Roma Facoltà di Medicina e Chirurgia (1933) *	1	New York Homoeopathic Medical College and Flower Hospital (1932) N B M Ex	
Regia Università degli Studi di Siena Facoltà di Medicina e Chirurgia (1932) *	1	New York University University and Bellevue Hospital Medical College (1930) (1933 3) N B M Ex	
Licentiate of the Royal College of Physicians of Edinburgh of the Royal College of Surgeons of Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow (1913) * (1934) * (1934)	3	University of Buffalo School of Medicine (1932) N B M Ex	
University of Aberdeen Faculty of Medicine (1934) *	1	University of Rochester School of Medicine (1931) Ohio	
University of Glasgow Medical Faculty (1933) * (1933) (1934 4) *	6	Duke University School of Medicine (1932) N B M Ex	
University of St Andrews Conjoint Medical School Scotland (1933) * (1934 8) *	10	Ohio State University College of Medicine (1930 2) Ohio	
Universität Bern Medizinische Fakultät (1934 4) *	4	Hahnemann Medical College and Hospital of Philadelphia (1930) (1934) Maryland	
Universität Zürich Medizinische Fakultät (1933) *	1	Jefferson Medical College of Philadelphia (1931) N B M Ex	
Université de Genève Faculté de Médecine (1933) * (1933), (1934) *	3	University of Pennsylvania School of Medicine (1924) (1932) N B M Ex	Penn.
School	FAILED	Year Grad	Number Failed
University of Arkansas School of Medicine (1932)	1	Meharry Medical College (1934) Tennessee	
Georgetown University School of Medicine (1934)	1	University of Tennessee College of Medicine (1932) Tennessee	
Loyola University School of Medicine (1935)	1	Vanderbilt University School of Medicine (1931) Tennessee	
Northwestern University Medical School (1933)	1	University of Texas School of Medicine (1933) Texas	
Rush Medical College (1930)	1	University of Vermont College of Medicine (1932) N B M Ex	
St. Louis University School of Medicine (1934)	1	Medical College of Virginia (1926) Virginia	
Creighton University School of Medicine (1934)	1	Univ. of Virginia Department of Medicine (1932) (1934) Virginia	
Long Island College of Medicine (1934)	1	Queen's University Faculty of Medicine (1926) Ontario	
New York Homoeopathic Medical College and Flower Hospital (1934 3)	3	University of Western Ontario Medical School (1927) Ontario	
New York University University and Bellevue Hospital Medical College (1933)	1	McGill University Faculty of Medicine (1929) N B M Ex	
University of Buffalo School of Medicine (1933)	1	University of Sydney Medical School (1924) England	
Hahnemann Medical College and Hospital of Philadelphia (1931) (1934)	2	Karl Franzens Universität Medizinische Fakultät Graz (1920) Quebec	
Jefferson Medical College of Philadelphia (1932) (1934)	2	Université Libre de Bruxelles Faculté de Médecine (1913) * England	
Medical College of the State of South Carolina (1932)	1	Université de Paris Faculté de Médecine (1924) France	
Dalhousie University Faculty of Medicine (1934)	1	Albert Ludwigs Universität Medizinische Fakultät Freiburg (1929) * Germany	
University of Montreal Faculty of Medicine (1925)	1	Friedrich Alexanders Universität Medizinische Fakultät Erlangen (1920) * Germany	
Medizinische Fakultät der Universität Wien (1934 4) *	4	Friedrich Wilhelms Universität Medizinische Fakultät Berlin (1923) * (1924) * Germany	
Masarykovo Univerzita Fakulta Lékařská Brno, Cze (1928)	1	Georg August Universität Medizinische Fakultät Göttingen (1931) * Germany	
Université de Paris Faculté de Médecine (1929) * (1932) *	2	Hamburgische Universität Medizinische Fakultät (1925) * Germany	
Université de Toulouse Faculté de Médecine et de Pharmacie (1934) *	1	Johann Wolfgang Goethe Universität Medizinische Fakultät Frankfurt am Main (1920) * (1921), * (1923) *	Germany
Albert Ludwigs Universität Medizinische Fakultät Freiburg (1930) *	1	Julius Maximilians Universität Medizinische Fakultät Würzburg (1914) * (1919) * (1922) * Germany	
Albertus Universität Medizinische Fakultät Königsberg (1933) *	1	Ludwig Maximilians Universität Medizinische Fakultät München (1914) * (1921) * (1934) * Germany	
Friedrich Wilhelms Universität Medizinische Fakultät Berlin (1930 2) * (1933) *	3	Schlesische Friedrich Wilhelms Universität Medizinische Fakultät Breslau (1912) * Germany	
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása Budapest (1931) *	1	Universität Heidelberg Medizinische Fakultät (1920) * Germany	
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia (1934) *	1	Universität Köln Medizinische Fakultät (1921) * Germany	
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia (1932)	1	National University of Ireland (1927) Ireland	
Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia (1920) (1932)	2	Regia Università degli Studi di Genova Facoltà di Medicina e Chirurgia (1924) New Jersey	
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1933) * (1934) *	2	Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia (1934) * Maryland	
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1931) (1932) * (1932) (1934 2) *	5	Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1933) Maryland * New Jersey	
Kiev Medical Institute (1913)	1	Regia Università degli Studi di Siena Facoltà di Medicina e Chirurgia (1933) * Maryland	
Licentiate of the Royal College of Physicians of Edinburgh of the Royal College of Surgeons of Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow (1934)	1	Regia Università di Napoli Facoltà di Medicina e Chirurgia (1920) Texas	
University of Edinburgh Faculty of Medicine (1934) *	1	Regia Università di Torino Facoltà di Medicina e Chirurgia (1922) * Italy	
University of St Andrews Conjoint Medical School Scotland (1934) *	1	University of Edinburgh Faculty of Medicine (1932) N B M Ex	
Universität Bern Medizinische Fakultät (1926) (1931) (1934) *	3		
Université de Genève Faculté de Médecine (1933), * (1934) *	2		

One hundred and thirty-two physicians were licensed by endorsement from January 1 through May 20. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad
College of Medical Evangelists	(1932) N B M Ex.	
University of Colorado School of Medicine	(1931) California	
Yale University School of Medicine	(1929) N B M Ex	
Georgetown University School of Medicine	(1934 4) Maryland	
Howard University College of Medicine	(1933) N B M Ex	
University of Georgia School of Medicine	(1929) Georgia	
General Medical College Chicago	(1923) Illinois	
Hahnemann Medical College and Hospital	(1933) (1934 2) New Jersey	
Loyola University School of Medicine	(1933) (1934 2) New Jersey	
(1934) Maryland,		
University of Illinois College of Medicine	(1931) Indiana	
Indiana University School of Medicine	(1926) Indiana	
State University of Iowa College of Medicine	(1931 2) Iowa	
(1932) (1933, 3)		

Nevada May Examination

Dr Edward E. Hamer, secretary Nevada State Board of Medical Examiners, reports the oral and written examination held in Carson City May 6-8, 1935. The examination covered 11 subjects and included 110 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School	(1930)	89.3	
Rush Medical College	(1923)	85.1	
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of California Medical Department	(1913)		California
John A. Creighton Medical College	(1906)		Nebraska
Western Reserve University School of Medicine	(1931)		Ohio
Jefferson Medical College of Philadelphia	(1913)		Penn.

Book Notices

Stammering and Allied Disorders By C S Bluemel M.A. M.D.,
F.A.C.P. Cloth Price \$2 Pp 182 New York Macmillan Com
pany 1935

This is a splendid discussion by one of the keenest students of stuttering. Allied disorders are mentioned only to aid in understanding the nature and cause of stuttering. The term "stuttering" is preferable to "stammering," since the latter is used in several different senses. Bluemel divides stuttering into two types: primary, or basic, and secondary. Primary stuttering is regarded as due to a physiologic clash between the speech response, whether viewed, following Pavlov, as a conditioned (author's preference) or unconditioned reflex, and temporary or intermittent inhibition that obstructs it, with resulting secondary emotion. Total inhibition produces mutism. Inhibition is defined as a physiologic function that checks the conditioned reflex. It may affect inborn as well as conditioned responses. Although Bluemel insists that emotion is not the basic cause of primary stuttering and that physiologic inhibition can explain almost all the mysteries of primary stuttering, he fails to mention that in Pavlov's experimental work with animals it is most probable that a state of excitement, interest or expectation is aroused and is responsible for the so-called positive conditioning, while its absence occurs in negative conditioning. He fails to define the term "emotion" as he uses it. If he agrees to its definition as an excited state of the total animal machine (both "mind" and "body"), then the causes for inhibition enumerated by him (excitement, overstimulation, fatigue, illness, shock) produce emotion.

Secondary stuttering depends mainly on associative or so-called conditioned inhibition, resulting from negative conditioning to words, letters, persons and situations, and also leads to associative emotional responses. The symptoms (abnormal respiration, unwonted physical effort in speech, the use of starters, wedges and synonyms, embarrassment, self-consciousness, confusion, fear, inferiority feelings, hypersensitive social attitudes) are attempts by the stutterer to escape his predicament and are but complications of primary stuttering. Although he states that the two types may coexist and that secondary "does not necessarily" replace primary stuttering, he does not deny that it may. Of course, if it does, emotion per se could be responsible for stuttering.

The principles of treatment are enumerated as (1) tranquilization (by rest, isolation, sedatives, calming atmosphere) to minimize the effects of inhibition at the onset of stuttering; (2) reinforcement of the conditioned speech response in various ways (by reading to the patient, speaking in unison, pronouncing difficult words for him when in speech distress, both alone and in class); (3) unconditioning by whispered speech, drawing speech, blindfolding during speech, and (4) extension of these ideas to as many environmental speech situations and as continuously as possible. Primary stuttering he regards as curable in most cases, but secondary stuttering less so especially in confirmed adult stuttering. The author admirably discusses other current views only to show their unsoundness.

Although it has been written primarily for teachers, stutterers and parents, no one seriously and scientifically interested in stuttering should fail to study this book. It is indeed a valuable contribution to the literature on this important problem.

Manchurian Plague Prevention Service Memorial Volumes 1912-1932.
Edited by Wu Lien Teh Director National Quarantine Service. Cloth
Pp 469 with illustrations Shanghai National Quarantine Service 1934

The delegates who attended the ninth Congress of the Far Eastern Association of Tropical Medicine at Nanking in October 1934 received this handsome memorial volume recording the work of the Manchurian Plague Prevention Service for the two decades of its functioning under Chinese auspices under the able direction of Dr. Wu Lien-Teh. The Japanese occupation of Manchuria has shifted the direction since 1932 into other lands.

The wide distribution of plague as the result of the last pandemic, not only in the tropics but also in temperate zones, and the fact that the pneumonic form was prevalent in man in

the winter months in Manchuria, both serve to create a basis for a general interest in the subject among physicians throughout the United States. Added reasons for such interest lie in the facts that in man the pneumonic form of plague is generally fatal is accompanied by coughing, and is spread by droplet infection in cold climates. Hence no insect vector, such as the rat flea, is directly involved, and no mammalian reservoir host, such as the rat, is necessarily concerned at all throughout the period of a human holocaust. The rodent reservoir host is, however, the background in which continuously lurks the ever imminent danger of the flare of pneumonic plague in man. It is for this reason that the invasion of sylvatic plague among the ground squirrels of the foothills of the Sierras and Cascade Mountains creates a widening menace in the United States.

The sequence of events in the epidemiology of the pneumonic form of the plague in Manchuria was as follows: 1. Deaths by plague (of the pneumonic type in experimental rodents) occurred among the Tarabagan or Siberian marmot, *Arctomys bobac*, extensively collected for its fur, which is used as a substitute for Russian sable. 2. The migrating young of the year may enter old burrows, the former inmates of which died of the plague, and they also may acquire the infection and die in their burrows. Other rodents in Manchuria also die of the plague. 3. Chinese coolies from Shantung and elsewhere to the number of 10,000 visit the marmot territories from August to October, collect the skins, and often dig the marmots out of their burrows and may eat their flesh. These trappers gather in the Manchurian centers of the fur trade from October to November in crowded, insanitary quarters with their (in some instances) germ-laden skins, and, when the sales are made, return to their homes in China. This sets the stage for the tragedy that follows.

In the two major epidemics of pneumonic plague in Manchuria of 1910-1911 and 1920-1921 there were sporadic cases of bubonic plague in August, with the subsequent appearance of the pneumonic type in October, followed by the rapid spread of this form of the disease as the trappers exposed to infection from the rodents streamed back to their homes. Persons exposed to droplet infection from human cases scattered from each center after the first death, unless restrained by the authorities in their efforts to isolate those who had been thus exposed. The rapid course of the disease, the ignorance and terror of the people, and the violence of the soldiery made control doubly difficult. The exclusive operation of human agency by droplet or other contagion is emphasized by the fact that not a single case of rat plague was detected in 13,000 rats examined in cities in which the human pneumonic plague was at the time in full swing. Toward the close of the epidemic, human cases of pulmonary (septicemic) type tend to increase in number.

Dr. Wu cites the prevalent opinion that the rodent disease has long been known among the Manchurian peasantry and the trappers, and that they usually expected the disease among men to run its course and die out. Occasional cases of bubonic and even of pneumonic plague came to record in Manchuria or Siberia between 1911 and 1921 but no great epidemic developed in that interval. The reservoir of rodent plague did not overflow in the interval, as in the years of the two epidemics.

The physicians of the United States should be aware that sylvatic plague is established in this country among the rodents, as it is in Manchuria. The California ground squirrel (*Citellus beecheyi* Richardson) and the Oregon ground squirrel (*Citellus oregonus* Merriam) harbor the infection, for which their fleas are the insect transmitters. Fortunately the centers of plague infection, as far as known, are few and have been closely watched by the federal and the California state authorities. Two new centers have, however, appeared in the past summer with devastation of the local rodent populations, both in regions with a sparse human population. Only a single human bubonic case occurred in each of these rodent areas, one of which was chronic. It is obviously the duty of the federal authorities to see to it that this situation does not get out of control for lack of adequate and thorough inspection.

This memorial volume of Dr. Wu's gives the detailed history of the two Manchurian outbreaks, the microscopic appearance of the lesions, the pathologic changes and the clinical symptoms. There is also a study of insect transmission among rodents, a list of known rodent hosts and of the parasites of these hosts, and discussions of the perpetuation of the plague among rodents and of the "original home" of the plague. Some account of the work of the Plague Prevention Service on cholera and in other fields is also included in the book.

Dr. Wu has rendered a great service to the cause of preventive medicine by his presentation in English of the scattered data in the Chinese reports on these two disastrous epidemics of the most dangerous form of the plague. His book makes it clear that rat control can by no means be trusted to serve as a protection from the invasion of plague in its worst form.

Mental Health: Its Principles and Practice, with Emphasis on the Treatment of Mental Deviations. By Frank F. Howard, Ph.D., Professor of Education and Psychology, Middlebury College, and Frederick L. Pauly, M.D., Psychiatrist, State Education Department, University of the State of New York. Cloth. Price \$3.50. Pp. 551 with 14 illustrations. New York and London: Harper & Brothers, 1935.

Mental Health is a somewhat misleading name for this book, as the subject matter is mainly concerned with the contributions of psychiatry to the understanding and management of educational problems. The book is similar to the volume of Anderson on Psychiatry and Education and the volume of Bassett on the School and Mental Health. It differs from previous similar attempts to correlate the fields of education and psychiatry in that the approach is entirely that of the psychobiologic school of Meyer. The book might have been called Educational Psychobiology. This clear and forceful presentation of the credo of the psychobiologists is welcome, for previously there was no handy epitome of this significant point of view.

The pluralistic approach to psychiatric problems with its emphasis on the behavior of the total human organism appeals to the unprejudiced reader as a form of sound eclecticism. The insistence of the psychobiologist that he refuses to be strait-jacketed by any single school of thought or practice which presumes to hold the key to exclusive salvation should be placed before scientific assemblies to remind them that propagandism and fanaticism have no place in scientific research. The cacophonous terminology of objective psychobiology has not yet been accepted by psychiatrists in spite of the widespread adherence to the fundamental tenets of Meyer's teachings. The classification of the psychoses and neuroses, therefore, is the least commendable part of this interesting work.

After a rather long introduction and exposition of the psychobiologic teachings and a review of the principles of modern psychopathology, including mental mechanisms, the authors discuss the specific problems of the school child. The criticism of the emphasis on the intellect in the school system and the urging of greater attention to training of character, personality, emotional attitudes and the individual's total reaction to reality is no longer a cry in the wilderness. The role of conative and affective factors in performance is being emphasized in all recent educational programs. The specific suggestions for reconstructing personality and handling deviations in child behavior are worthy of study. The psychobiologic balance chart, which will permit adequate records of the psychologic development of pupils physically, intellectually, emotionally and socially, is a worthy attempt to formulate some practical plan of gathering the necessary data for a more fundamental understanding of the nature of mental illness.

The chapter on the visiting teacher, who is a sort of liaison officer between the school and the other institutions that modify and influence the pupil's behavior, should be read by every psychiatrist. The classification of children's behavior disorders and the outlines for case studies contain invaluable data for clinical organization. The group of concrete illustrations on page 331 of the personality twists and shortcomings of professional people is an unusually rich fragment of descriptive psychiatry. The Peyser plan for character building and prevention, Miss Farrell's classic work on the education of mental defectives and the review of the child guidance movement are all worthy of the attention of every medical practitioner and student.

The volume is essentially addressed to laymen and occasionally a certain amount of oversimplification is evident, perhaps for pedagogic purposes. The repeated emphasis on the unquestionable role of bad habit in the etiology of the psychoses and neuroses strikes one as rather dogmatic. The statement on page 259 that "the possibility of recovery of schizophrenia is conditioned almost entirely on its early detection and proper treatment by a skilled psychiatrist" will be challenged by many. The authors obviously fail to place the proper emphasis on the role of subconscious constellations as determinants of human behavior. This decided stress on the role of the environment in causing behavior disturbances is perhaps a necessary check on some of the recent unbridled tendencies to disregard the role of such exogenous factors.

It would be well to banish the term insanity from a textbook of this type unless problems of responsibility are discussed from the legal standpoint. The text is readable, though there is a great deal of repetition. The use of some obsolete words, such as labileness, imaginal and frustrantous, impairs the clarity of the text. The authors failed to mention the role of pernicious anemia in accounting for the mental symptoms of a woman whom they discussed on page 70. The reports of neurologic examinations of the cases presented in detail need revision. The reaction of pupils to light and in accommodation does not belong under the second cranial nerve. Convergence is not a function of the optic nerve. The division of the examination of cranial nerves into anterior, middle and posterior hindbrain segments is confusing and has no clinical value.

Thérapeutique médicale. VIII. Système nerveux. Par M. Loeper. Avec la collaboration de Alajouanine et al. Paper. Price, 50 francs. Pp. 379 with 21 illustrations. Paris: Masson & Co. 1935.

The first portion of this book, by Loeper, deals with general therapeutics, including a study of nerve sedatives, hypnotics, analgesics, anesthetics and tonics. He considers bromides, valerian and borax sedatives to the general nervous system, and the drugs of the atropine series mesencephalon sedatives because of their value in parkinsonian tremor, which is not affected by the first mentioned group. The term "sympathicolytic" is proposed for sedatives of the sympathetic nerve system, and under this heading are classified ergotamine, yohimbine and crataegus. The belladonna series is spoken of as "para-sympathicolytic" (why not "vagolytic") in contrast to the sympathicotonic epinephrine and ephedrine and the vagotonic physostigmine. Among the general anesthetics, evipal is given a rather special discussion, which it probably deserves. Under hypnotics, the synergism of trional and paraldehyde, and of opiates with chloral is emphasized, so is the increase in analgesic value of the combination of coal tar analgesics with barbiturates. The special therapy of diseases of the nervous system is discussed by a number of specialists, in "whose conscientiousness and competence" the editor-in-chief has confidence. In the discussion of apoplexy, Alajouanine mentions statistics of Forx, according to which cerebral softening is four times as frequent as hemorrhage and partial obliteration of the blood vessels twice as common as total obliteration. Mollaret classifies the various methods of pyretotherapy according to therapeutic value in diseases of the nervous system as follows: malaria therapy, short wave electropexia, then fever induced by sulphur in oil and lastly that excited by intravenous vaccine administration. It finds its chief place in syphilitic diseases of the nervous system and is of doubtful value and even harmful in most others. In the treatment of epilepsy, Pagniez lists phenobarbital as the remedy first in value, provided it is given in sufficient dosage and without interruption. When cerebral hypertension is suspected, concludes Lemaire, the tension of the cerebrospinal fluid should be measured and differentiation made between free and block-d hypertension. Decompression by lumbar puncture must be performed slowly, to avoid bulbar block. Osmotherapy is of doubtful value; massive venesection is more valuable in acute conditions. In chronic cerebral hypertension due to tumor, operative decompression should be undertaken before vision is much damaged, if radiotherapy fails. The localization of cerebral tumors and subsequent operation should be undertaken promptly, emphasizes Martel. Radiotherapy should be considered merely a treatment for cranial

hypertension due to cerebral tumors rather than for the tumors themselves, says Hagenau, in a special chapter devoted chiefly to the roentgenologic technic. In the treatment of migraine, Vallery Radot attempts to differentiate various etiologic forms endocrine, digestive, biliary, allergic and cervical neuritis from a group of migraines of indeterminate origin. The book concludes with a chapter on the electrotherapy of pain by Delhern, on psychotherapy by Cadet, and on balneotherapy and climato-therapy by Villaret.

Diseases of the Heart. By John Cowan B.A. M.D. D.Sc. Consulting Physician Royal Infirmary Glasgow and W. T. Ritchie O.B.E. M.D. F.R.C.P.E. Professor of Medicine and of Clinical Medicine Edinburgh University. With a chapter on The Ocular Manifestations of Arterial Disease by Arthur J. Ballantyne M.D. F.R.F.P.S. Lecturer on Ophthalmology University of Glasgow. Third edition. Cloth Price \$9. Pp 632, with 335 illustrations. Baltimore: William Wood & Company 1935.

In 1914 Cowan published his work on the heart. The second edition with Ritchie as co author appeared twelve years later. These volumes received and deserved commendation. They were popular as textbooks for undergraduates and were useful to practitioners. The third edition merits the success of its predecessors. The many advances in knowledge of heart disease of the last twenty or even twelve years have necessitated much revision and much in the way of addition. The arrhythmias, the electrocardiogram, bacterial endocarditis, coronary thrombosis and angina pectoris are some of the topics that have been expanded and brought down to the present. Anatomy and pathology are adequately discussed. Mention should be made of the excellent character of the illustrations, nearly all of which are original. There is a helpful chapter by Arthur J. Ballantyne on the ocular manifestations of arterial disease. Fortunately the authors in their enthusiasm over the x-rays and the electrocardiograph have not forgotten the stethoscope and percussion. Valvular diseases are still deemed worthy of consideration, the murmurs are diagrammed and physical diagnosis not slurred over as out of date. The book is one that may be warmly recommended to the practitioner or undergraduate as scientific, practical and trustworthy.

Traité de pathologie médicale et de thérapeutique appliquée. Publié sous la direction de Emile Sergent professeur de clinique médicale propédeutique L. Ribadeau-Dumaeu médecin de la Salpêtrière et L. Babonnel médecin de St Louis. Tome XXXII. Radiologie. Fascicule 2. Radiothérapie rayons x—radium. Par Paul Cottenot médecin électro-radiologiste de l'Hôpital Broussais et Simone Laborde chef du service de curiethérapie à l'Institut du Cancer. Second édition. Papier. Price 70 francs. Pp 514 with 80 illustrations. Paris: Norbert Maloine 1934.

Students and practitioners of radiotherapy will find in this volume a satisfactory and scientifically accurate description of the physical properties of the x-rays and the armamentarium and technical information necessary for their application to the treatment of disease. A section of the book concerns the physical properties of radioactive substances and the instrumentation and technical details of application of curie therapy. A third section deals with the biologic action of roentgen rays and the radiations from other radioactive substances, their effects on normal and pathologic tissues, and their application to various pathologic states. The latter are classified according to systems in the classic manner. More than a hundred pages or one fifth of the book, is devoted to the treatment of malignant disease. A chapter on protection for patient and operation concludes. The details and methods concerning the various lesions are in keeping with methods generally accepted, but much is included that belongs to the history of the past and has been discarded in the practice of today.

The units of measurement of x-ray dosage are discussed and compared. Many American readers of abstracts of French articles on radiotherapy do not appreciate that the French unit R has a smaller value than the international unit r. The R devised by Solomon represents the quantity of x-radiation that liberates by ionization in a small ionization chamber the same quantity of electricity that is liberated in a second in the same chamber by a gram of radium placed 2 cm from the axis of this little chamber, the radium rays being filtered through 0.5 mm of platinum. The international unit r adopted by the International Congress of Radiology in Stockholm in 1928 is equal in value to 2.2 R (Solomon).

The work is a practical handbook of current knowledge up to within a fairly recent date. The practice is also that currently approved in most of the larger hospitals.

Know Thyself. A Study in Mental Qualities. By John Potts M.D., D.C.L. Cloth Price \$3. Pp 267. Philadelphia: Dorrance & Company Inc. 1935.

This seems to be an effort to make every one into a psychologist. The author promulgates a hundred rules for evaluating the minds of those with whom the reader may come in contact. He seems distressed by the prevalent human tendency toward wishful thinking and toward making excuses for failures. He divides minds, apparently to his own complete satisfaction, into three groups: superior, mediocre and inferior. The ideas expressed in 250 pages of tedious and repetitious platitudes could readily have been condensed to one-third the verbiage. One cannot escape the impression that any one who takes the book seriously and goes about applying the hundred rules to his friends will soon become an insufferable intellectual snob. Despite the obvious sincerity of the author and the presence in the book of much useful information, the work can scarcely be recommended as a significant contribution to the popular literature on mental hygiene.

Clinical Science Illustrated by Personal Experiences. By Sir Thomas Lewis C.B.E. F.R.S. M.D., Physician in Charge of Department of Clinical Research University College Hospital London. Department of Clinical Research University College Hospital London. Cloth Price 12s. Pp 189 with 49 illustrations. London: Shaw & Sons Ltd. 1934.

Sir Thomas Lewis is generally looked on as a laboratory worker. That he has also been in touch with the patient is shown by his early publications, *Clinical Disorders of the Heart Beat* and *Clinical Electrocardiography*. His later volume on *Diseases of the Heart* is further evidence that the author of *Mechanism and Graphic Registration of the Heart Beat* is interested in clinical medicine as well as in laboratory research. Of late Sir Thomas has been emphasizing the need of scientific investigation in hospitals of problems presented by phenomena of disease that are not yet clearly understood. This work demands concentrated study on the part of men who are not alone practitioners but who are also trained in the technic and imbued with the scientific habits of thought of the laboratory worker. This volume has as its major motive the stimulation of competent men to work of this character. The scope and methods of this "clinical science" are considered in the first chapter of the book. This chapter may be regarded as a sermon based on the text presented by the original observations and experiments described in the remaining chapters. These chapters—the same is true of the first one—consist largely of articles previously published. They are more than reprints, however. They are rewritten, often condensed, and stripped of distracting references to authorities or to conflicting theories. Among the topics considered are auricular fibrillation, auricular flutter, capillary pulsation, axon reflexes in man, muscular pain in intermittent claudication, anginal pain and Raynaud's disease. It is surely a cause for congratulation that workers in medicine may have these articles brought together in such convenient form, revised and edited by Sir Thomas himself. The practitioner too, though he may not plan to be an investigator in "clinical science" will enjoy and profit by the reading of this volume, for it is needless to add that when Sir Thomas Lewis writes he has something to say and that he says it forcefully, concisely and clearly.

Common Sense for Mothers on Bringing up Your Children from Babyhood to Adolescence. By Mrs. John S. Reilly. With an introduction by Charles Gilmore Kerley M.D. Cloth Price \$2. Pp 380 with illustrations. New York & London: Funk & Wagnalls Company 1935.

This book is divided into five parts: a discussion of babies, toddlers, school age children, adolescent boys and girls, and some common sense suggestions for mothers. The many problems that arise in caring for children are discussed in a personal, friendly manner. The author believes that the mother should have a dominant position in the home in the training of the children. She discusses the everyday problems, familiar to all mothers, emphasizing especially feeding, sleeping, clothing, preschool difficulties and the modern problems of the adolescent boy and girl. She asserts that there should be close

association between the parents and the children, and points out that the rewards in motherhood are many. The section relating to the school age and adolescence are unique and will aid parents in solving many of the perplexing questions that arise at this time of the child's life. The book will be found valuable to all parents.

Experimental Studies on Cancer I The Influence of the Parenteral Administration of Certain Sugars on the Growth of Malignant Tumors By Carl Voegtlin R. H. Fitch Herbert Kahler J. M. Johnson and J. W. Thompson II The Estimation of the Hydrogen Ion Concentration of Tissues in Living Animals by Means of the Capillary Glass Electrode By Carl Voegtlin Herbert Kahler and R. H. Fitch III The Influence of Hydrogen Ion Concentration upon the Reversal of Proteolysis in Oxygenated Extracts of Normal and Neoplastic Tissues By Mary L. Mayer J. M. Johnson and Carl Voegtlin IV A Comparison of the Growth of the Jensen Rat Sarcoma in Subcutaneous and Intramuscular Transplants By W. R. Farle and Carl Voegtlin Prepared by direction of the Surgeon General U. S. Treasury Department Public Health Service, National Institute of Health Bulletin No. 164 January 1935 Paper Price 10 cents Pp. 58 with 8 illustrations Washington D. C. Supt. of Doc. Government Printing Office 1935

This pamphlet contains four articles on the results of studies on various problems relating to cancer.

Medicolegal

Dental Practice Acts Statutory Restrictions on Advertising Upheld, Regulatory Power of Board—The Modern System Dentists, Inc., the New System Dentists, Inc., and the Parks Painless Dentists, Inc., apparently engaged in the practice of dentistry in Wisconsin, sought to restrain the Wisconsin board of dental examiners from enforcing certain rules adopted by the board with reference to dental advertising. The trial court sustained a demurrer interposed by the board, and the plaintiffs appealed to the Supreme Court of Wisconsin.

The dental practice act of Wisconsin provides that the term "unprofessional advertising," as used in the act, shall include (1) advertisements containing untruthful, impossible, deceptive or misleading statements, (2) the advertising of professional superiority, (3) the advertising of fixed prices "when the nature of the service rendered and material furnished must be variable," and (4) advertising by means of large, display, glaring, illuminated or flickering light signs or signs which contain the representation of a tooth, bridge work or any portion of the human head. The act authorizes, furthermore, the board of dental examiners to adopt reasonable regulations pertaining to unprofessional advertising as defined in the act.

The statutory restrictions on advertising were upheld, the court basing its holding on the reasoning of the Supreme Court of Oregon in *Scimler v. Oregon State Board of Dental Examiners*, 34 P. (2d) 311 (55 Sup. Ct. 570) abstracted in THE JOURNAL, June 1, page 2025, in which case the constitutionality of similar statutory provisions in the Oregon dental practice act was upheld. The Wisconsin act, said the Supreme Court of Wisconsin, does not deprive the plaintiffs of property without due process of law. If their practices are in the judgment of the legislature detrimental to the health, morals and welfare of the state, their activities may be restrained in the manner attempted by the dental practice act.

The board, purportedly acting under statutory authority, promulgated certain rules relative to advertising which the plaintiffs contended were invalid. The board declared that the following form of advertising tended to deceive or mislead the public, within the meaning of the act:

- (a) The advertising of particular services or appliances at a price From \$—— Dollars up or wording to that effect.
- (d) Signs of dentists used in any other place except on the premises of the building in which the office is located.

Another rule promulgated by the board provided:

Rule 5. It is the opinion of the Board that the nature of professional services rendered and materials required vary in each instant case and that the advertising of any fixed price for any particular operation or work is in violation of 152.06. (c) which provides Advertising definite fixed prices when the nature of the professional services rendered and the materials required must be variable.

The legislature, in the opinion of the court having defined "unprofessional advertising," the power of the board was limited in that respect to a ruling as to what does and does not come within the statute and to amplifying and defining the terms used therein. The board ruling providing that advertising particular services or appliances at a price "From \$—— Dollars up" tends to deceive or mislead the public was held to be clearly within the power of the board to adopt. On the other hand, the board had no authority to adopt the rule prohibiting the use of a sign in any place other than on the premises of the building in which the dentist's office is located, because, while the dental practice act restricts the contents of signs, it is silent concerning the place where the sign may properly be placed, whether on an office door, wall, billboard or in a news paper. The validity of the rule providing that the nature of professional services is such that all dental services rendered and materials furnished are variable was upheld. This involved, in the opinion of the court, a matter of expert knowledge about which the members of the dental board were much better informed than any one outside the profession could possibly be. It may be argued, said the court, that from the language of the statute itself it follows as a necessary implication that there are some services and some materials which are not variable. That is a matter, however, on which the legislature had no more information than other laymen and they quite clearly left it to the board of dental examiners to determine that matter as a question of fact. Likewise, a rule relating to the size of advertisements and the maximum size of letters to be used thereon was upheld.

Since some of the regulations adopted by the board were not authorized under the dental practice act, the Supreme Court held that the complaint stated a good cause of action and that the trial court erred in sustaining the demurrer interposed by the defendant board. The case was therefore remanded to the trial court with directions to overrule the demurrer—*Modern System Dentists Inc. et al v. State Board of Dental Examiners of Wisconsin (Wis.)*, 256 N. W. 922.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Cincinnati, Sept. 14-20. Dr. William P. Wherry 107 South 17th Street, Omaha, Executive Secretary.
- American Association of Obstetricians Gynecologists and Abdominal Surgeons Sky Top Pa. Sept. 16-18. Dr. James R. Bloss 418 Eleventh Street Huntington W. Va. Acting Secretary.
- American Congress of Physical Therapy, Kansas City, Mo. Sept. 9-12. Dr. Nathan H. Palmer 921 Canal Street, New Orleans. Secretary.
- American Hospital Association, St. Louis. Sept. 30-Oct. 4. Dr. Bert W. Caldwell 18 East Division Street, Chicago. Executive Secretary.
- American Public Health Association Milwaukee Oct. 7-10. Dr. Reginald M. Atwater, 50 West 50th Street New York. Executive Secretary.
- American Roentgen Ray Society Atlantic City N. J. Sept. 24-27. Dr. E. P. Pendergrass 3400 Spruce Street Philadelphia. Secretary.
- Association of Military Surgeons of the United States New York, Oct. 3-5. Dr. H. L. Gilchrist, Army Medical Museum Washington D. C., Secretary.
- Colorado State Medical Society Estes Park September 5-7. Mr. Harvey T. Sethman 537 Republic Building Denver. Executive Secretary.
- Delaware, Medical Society of Wilmington Oct. 8-9. Dr. William H. Speer 917 Washington Street Wilmington. Secretary.
- Indiana State Medical Association Gary Oct. 8-10. Mr. T. A. Hendricks 23 East Ohio Street Indianapolis. Executive Secretary.
- Kansas City Southwest Clinical Society Kansas City, Mo. Oct. 7-10. Dr. Ralph R. Coffey 1103 Grand Avenue Kansas City, Mo. Secretary.
- Kentucky State Medical Association Louisville Sept. 30-Oct. 3. Dr. A. T. McCormack 532 West Main Street Louisville. Secretary.
- Michigan State Medical Society Sault Ste. Marie, Sept. 23-25. Dr. Burton R. Corbus 313 Metz Building Grand Rapids. Acting Secretary.
- Mississippi Valley Conference on Tuberculosis Madison Wis., Sept. 12-14. Mr. A. W. Jones 613 Locust Street St. Louis. Secretary.
- Ohio State Medical Association, Cincinnati Oct. 2-4. Mr. C. S. Nelson Hartman Theatre Building Columbus. Acting Secretary.
- Oregon State Medical Society Gearhart Sept. 19-21. Dr. Blair Holcomb, Stevens Building Portland. Secretary.
- Pennsylvania, Medical Society of the State of, Harrisburg Sept. 30-Oct. 3. Dr. Walter F. Donaldson 500 Penn. Avenue Pittsburgh. Secretary.
- Southern Minnesota Medical Association Austin Aug. 25-26. Dr. Harold C. Haben 102 Second Avenue S.W. Rochester. Secretary.
- Utah State Medical Association Logan, September 5-7. Dr. George N. Curtis Judge Building Salt Lake City. Secretary.
- Wisconsin State Medical Society of Milwaukee Sept. 17-20. Mr. J. G. Crumhart 119 East Washington Avenue Madison. Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

American Heart Journal, St. Louis

10 567 704 (June) 1935

Coronary Arteriosclerosis Coronary Thrombosis and Resulting Myocardial Changes Evaluation of Their Respective Clinical Pictures Including Electrocardiographic Records, Based on Anatomic Findings O Saphir W S Priest, W W Hamburger and L N Katz Chicago —p 567

Treatment of Angina Pectoris and Congestive Failure by Total Ablation of Normal Thyroid XIV Results in Arteriosclerotic Heart Disease H L Blumgart, J E F Riseman D Davis and A A Weinstein Boston —p 596

Effect of Position of Heart on Electrocardiogram I Electrocardiogram in Revived Perfused Human Hearts in Normal Position W B Kountz, M Prinzmetal E F Pearson and K F Koenig, St. Louis —p 605

Id II Observations on Electrocardiogram Obtained from Dog's Heart Placed in Human Pericardial Cavity W B Kountz M Prinzmetal and J R Smith, St. Louis —p 614

Effect of Position of Heart on Electrocardiogram III Observations on Electrocardiogram in Monkey W B Kountz, M Prinzmetal and J R Smith St. Louis —p 623

Course of Rheumatic Heart Disease in Adults III Influence of Auricular Fibrillation on Course of Rheumatic Heart Disease A C DeGraff and Claire Lingg New York —p 630

*Interrelationship of Arteriosclerotic Heart Disease and Chronic Congestive Failure. G Nemet and H Gross New York —p 643

Value of Sound Records in Diagnosis of Mitral Stenosis F D Johnston Ann Arbor, Mich —p 654

Occlusive Diseases of Coronary Arteries Analysis of Pathologic Anatomy in One Hundred and Sixty Eight Cases with Electrocardiographic Correlation in Thirty Six of These E Appelbaum and Gertrude H B Nicolson New York —p 662

Delay in Onset of Ejection of Left Ventricle in Bundle-Branch Block L N Katz H Landt and A Bohning Chicago —p 681

*New and Simple Method of Avoiding High Resistance and Overshooting in Taking Standardized Electrocardiograms J L Jenks Jr Cambridge Mass. and A Graybiel Boston —p 693

Arteriosclerotic Heart Disease and Chronic Congestive Failure—Nemet and Gross studied the factors that are responsible for the development of chronic congestive failure in chronic coronary disease and myocardial fibrosis. The clinical and postmortem records of 100 unselected cases were studied. The majority were in or gave a history of, congestive failure. Varying degrees of vascular and myocardial damage were common to the entire series, but the majority of patients with congestive failure had definite and in most instances advanced cardiac hypertrophy. There were but three exceptions to this rule. The group not in failure had nonhypertrophied or, in a few cases, slightly hypertrophied hearts. The characteristic feature of the chronic congestive phase of chronic coronary artery disease is the presence of cardiac hypertrophy. Increased initial fiber tension rather than increased work is the stimulus for generalized cardiac hypertrophy. Contraction with increased initial tension compensates for inadequate contractility. Myocardial disease by diminishing contractile power calls forth increased initial fiber tension and may according to the theory be the cause of generalized cardiac hypertrophy. The application of this concept is not sufficiently supported, however, by clinical experience. The data in the literature are contradictory on this point. The authors' opinion is that in the majority of cases generalized and advanced cardiac hypertrophy is caused by hypertension present or antecedent, and not by vascular and myocardial damage. Diminished blood supply and severe muscle damage produce loss of contractility and may cause failure without leading to fiber hypertrophy. The striking predominance of hypertrophied hearts of the group in failure however, indicates that it is work under long standing increased fiber tension irrespective of the cause, and the eventual loss of contractile power of the hypertrophied fiber that lead to chronic congestive failure. Congestive failure in

chronic arteriosclerotic heart disease is—like that of other types of heart disease—overwhelmingly the failure of the hypertrophied heart

Method of Taking Electrocardiograms—To avoid distortion in taking standardized electrocardiograms it seems to Jenks and Graybiel necessary to provide an electrode which will not polarize even in the presence of moderately high skin resistance, or to adjust the damping of the string to prevent in part the overshooting or to reduce the skin resistance to consistently low values. Experiments were made with a view toward lowering sufficiently the natural impedance to electric currents found in the skin, thus permitting the use of a high frequency string of low resistance. By this procedure there would also be the added advantage of minimizing the effects of outside vibration. During the course of experimentation a combination of substances which gave unexpectedly good results was discovered, and it was found possible to include the requisite substances in the form of a paste. By the use of this paste, patients from whom it was previously impossible to obtain satisfactory electrocardiograms now yielded complexes of correct form and amplitude. Although the chief purpose of the paste is to reduce skin resistance, it was also found to form an excellent nonpolarizing contact between the skin and the electrode. The mixture contains $6\frac{1}{2}$ pounds of sodium chloride, 8 pounds of pumice (powder), 8 ounces of gum tragacanth, 4 ounces of potassium bitartrate, 24 ounces of glycerin, 1 ounce of phenol (carbolic acid) and 2 gallons of water. The gum tragacanth and glycerin are heated in half the volume of water for six hours. The potassium bitartrate and sodium chloride are dissolved in the remaining volume of water and added. The resulting mixture is stirred thoroughly with an electric mixer and heated again for an hour. The phenol and pumice are now added, together with more water if necessary, and the whole mixture is again mixed until it is of a creamy consistency. In actual use a small quantity of the paste is rubbed briskly on the desired skin area, a small surplus being left to facilitate contact with the electrode. The electrode, a german silver plate measuring about 5 by 8 cm., is firmly applied over this area and held by means of an elastic ribbon or band. Within reasonable limits, the size of the electrode is immaterial so far as the resistance of the skin and polarization of the electrode are concerned. Resistance measured on the electrocardiograph, using the electrodes and paste described, is in most cases about 1,000 ohms and rarely as high as 2,000 ohms. This applies equally to myxedematous, cachectic or Negro patients, from whom it is sometimes difficult or impossible to obtain satisfactory tracings. Electrocardiographic tests made on about 400 patients showed uniform results, with resistances of from 1,000 to 2,000 ohms and no overshooting.

American Journal of Diseases of Children, Chicago

49: 1399 1692 (June) 1935

Constitutional Inferiority in Infancy A S Sokolow Moscow U S S R —p 1399

Beta Hemolytic Streptococcal Infection in Infancy and in Childhood I Antifibrinolysin and Antistreptolysin Response V W Lippard and Priscilla Johnson New York —p 1411

Id II Effect of Transfused Blood and of Streptococcal Antiserum on Concentrations of Antifibrinolysin and Antistreptolysin in Blood of Recipients V W Lippard and Priscilla Johnson New York —p 1430

Morphologic Flora of Nose Throat Stools and Urine of Patients with Poliomyelitis J A Toomey Cleveland —p 1438

*Treatment of Infantile Scurvy with Cevitamic Acid Elvira Goettach, New York —p 1441

*Clinical Manifestations of Calcium Deficiency in Infancy and in Childhood H T Nesbit Dallas Texas —p 1449

Röntgen Therapy for Acute Cervical Adenitis S G Schenck Brooklyn —p 1472

Prognosis of Nephrotic Syndrome in Children Clinical Study Vivian Tappan Tucson Ariz —p 1487

Dosage of Camphorated Tincture of Opium and Morphine for Infants H E Irish Chicago —p 1503

*Allergic Eczema Eczema Initiated by Sensitization to Foods J G Hopkins and B M Keeten New York —p 1511

Pathologic Changes in Asthmatic Infants G L Waldbott Detroit —p 1531

Treatment of Scurvy with Cevitamic Acid—Goettach gave cevitamic acid intravenously to four infants having severe scurvy long enough for comparison with control patients receiving orange juice. Calcium was deposited in subperiosteal

hematomas on the second, third, fourth and fifth days, respectively, while in the control infants who received orange juice calcification was not noted until the eighth, tenth and eleventh days. Initial roentgenograms taken before therapy was instituted in six cases showed no evidence of subperiosteal hemorrhages of the long bones, while in the remaining two slight calcification of such hematomas could be seen. The clinical condition of the latter infants prevented further maintenance in the hospital on a scorbutic diet to corroborate the histories obtained on admission. In each case the diet consisted of boiled milk only, and no specific antiscorbutic substance had been added for at least one month prior to admission. In one patient initial roentgenograms revealed definite calcification of small subperiosteal hemorrhages of the lower extremities, but none in the upper extremities. Four days after cevitamic acid had been given an extremely large subperiosteal hematoma of the left humerus was outlined by newly deposited calcium, while only a slight increase in density had occurred in the hematomas of the lower extremities. The spectacular increase of density in the hemorrhage cloaking the humerus was never matched by similar changes in the hematomas of the tibias. From the point of view of relief of subjective symptoms, treatment with cevitamic acid resulted in satisfactory clinical improvement and was at least as effective as treatment with orange juice. In three babies who received cevitamic acid, pain was apparently relieved more quickly than in the controls. In no infant was pain relieved immediately, even when the massive dose of 400 mg of cevitamic acid was given intravenously. No untoward reaction followed intravenous therapy, in spite of the fact that the acid was not neutralized before injection. The tourniquet test was not found reliable as a measure of healing of the scorbutic process in infants.

Calcium Deficiency in Childhood—Nesbit describes a syndrome of increased neuromuscular irritability and functional imbalance occurring in infancy, which is strikingly relieved by measures that improve the absorption of calcium. Thirty-six cases illustrate the relation of the syndrome to convulsions and functional disturbances occurring in later childhood. These cases portray a symptom complex manifested (1) in early infancy by hypertonia, restlessness, excessive crying, retraction of the head, irregular respirations, bronchospasm, enterospasm, pyloric spasm, convulsions and spells of cyanosis, (2) in the runabout period by sleeplessness, extreme restlessness, syncope and convulsions, and (3) in the school period by hypertonicity, emotional instability and incorrigibility, together with other symptoms of increased neuromuscular irritability and chorea. The frequency of emotional upsets, excessive apprehensiveness, sleeplessness and tremor in the mothers of children having these symptoms has been demonstrated. The prompt relief afforded by calcium therapy in each of the instances cited encourages one to attribute the underlying cause to some error in mineral metabolism.

Allergic Eczema.—Among about 400 cases of eczematous eruption studied in the allergy division of the dermatologic clinic in the last six years, Hopkins and Kesten were able to find seventy-five in which the evidence seemed definite that food was either the sole cause or a contributing cause of the dermatosis. Food was the sole cause in two thirds and a contributing cause in one third of the cases. More than two thirds of the patients were children. The most striking clinical characteristic of food eczema is the distribution of the eruption. The similarity is remarkable among patients in each age group. Equally striking are the changes both in distribution and in character that mark the progress of the disease. Patients with food eczema often present other symptoms of food allergy and of allergy to other substances, the frequency of which is shown. In forty patients there was a history of allergic disorders among the patient's relatives. There was no special frequency of eczema as compared with asthma and hay fever. The occurrence of allergic conditions in the families of these patients was frequent enough to indicate that hereditary factors are important. Whether there is a unit character that makes sensitization possible or impossible seems doubtful, but at least one can say that many of these patients come of a stock which shows an unusual tendency to become sensitized. In determining whether foods are responsible and, if so, what foods, skin

tests are of value, and intradermal tests seem more helpful than percutaneous tests. Elimination diets as devised by Rowe are the most useful means for the clinical determination of sensitivity to food. Symptomatic treatment, though often helpful, has been avoided as far as possible in this series in order to observe more accurately the influence of diet. In cases in which eczema is due solely to sensitization to a few unimportant foods their exclusion is the only treatment required, but for patients sensitive to one or more basic foods desensitization seems the only solution. The most practical method is that of Schofield and Schloss, by which there is a daily feeding of gradually increased amounts beginning with minute doses. Attempts to desensitize patients by ingestion of the "specific propeptan tablets" have been disappointing. The occurrence in these patients of other allergic symptoms, such as gastrointestinal reactions, urticaria, asthma, hay fever and migraine, indicates that the eczema is only one manifestation of the familial type of allergy. As this dermatosis is an expression of the familial type of allergy, a convenient designation for it is allergic eczema.

American Journal of Physiology, Baltimore

112 227-404 (June) 1935

- Response of Hyperthyroid Heart to Epinephrine. C H McDonald, W L Sheppard, M F Green and A F DeGroat. Little Rock, Ark.—p 227
- Study in Reflexes. Identification of Cutaneous Afferent Fibers Which Evoke Ipsilateral Extensor and Flexor Reflexes. A S Harris. St. Louis.—p 231
- Effect of Total Thyroidectomy on Experimental Diabetes Insipidus in Dogs. W Mahoney and D Sheehan. New Haven Conn.—p 250
- Effects of Magnesium Deficiency on Teeth and Their Supporting Structures in Rats. H Klein, Elsa R Orent and E V McCollum, Baltimore.—p 256
- Growth and Glycogen Content of Fetal Liver and Placenta. E L Corey. Charlottesville Va.—p 263
- Comparative Study of Sympathin and Adrenine. W B Cannon and A Rosenblueth. Boston.—p 268
- Equation of Voltage Capacity Curve for Excitation of Sciatic Nerve of Rana Pipiens. H A Blair. Rochester N Y.—p 277
- Effect of Diet Poor in Salts on Growth and Composition of Incisors of Rat. Miriam F Clarke and A H Smith. New Haven Conn.—p 286
- Utilization of Carbohydrate During Aerobic Activity in Isolated Frog Muscle. C L Gemmell. Baltimore.—p 294
- Evidences of an Altered Tissue State in Ventricular Fibrillation. N D Kedar and D R Hooker. Baltimore.—p 301
- *Weight Loss Changes During Muscular Work Following Food Ingestion. C I Hovland. New Haven Conn.—p 307
- Role of Hypophysis in Experimental Chronic Adrenal Insufficiency. A Grollman and W M Firor. Baltimore.—p 310
- Effect of Initial Tension on Spontaneous Activity and Responses of Nonpregnant Cat Uterus. F A Simeone, Boston.—p 320
- Alimentary Motor Conditioning and Pitch Discrimination in Dogs. S Dworkin. Montreal.—p 323
- Electrical Stimulation of Interior of Cerebellum in Monkey. H W Magoun, W K Hare and S W Ranson. Chicago.—p 329
- *Quantitative Determination of Urinary Estrin. G V S Smith and O W Smith. Brookline Mass.—p 340
- Effect of Coronary Occlusion on Myocardial Contraction. R Tennant and C J Wiggers. Cleveland.—p 351
- Phasic Variations in Peripheral Coronary Resistance and Their Determinants. D E Gregg, H D Green and C J Wiggers, Cleveland.—p 362
- So-Called Normal Alcohol of the Body. R N Harger and Anna L Goss. Indianapolis.—p 374
- Rates of Resorption in the Gallbladder. Further Experiments with Methylene Blue on Rabbits. B Halpert, P A O'Connor and W R Thompson. New Haven Conn.—p 383
- Water and Chloride Excretion of Decerebrate Cats. Margaret Sumwalt, W H Erb and H C Bazett, Philadelphia.—p 386
- Studies on Water Metabolism in Normal and Hypophysectomized Frogs. Mildred E. Jones and F R Steggers. Urbana, Ill.—p 397
- Permeability of Frog Capillaries to Protein. Rnth E. Conklin, Poughkeepsie, N Y.—p 401
- Loss of Weight During Muscular Work**.—Hovland recorded the loss of weight during relaxation and during the performance of finger oscillation following the ingestion of large and small meals. Ten subjects were used four days each. Efficiency, judged by the increment of loss of weight during work as compared to the loss during relaxation, appears better after a light lunch, the advantage being greatest in the earlier part of the afternoon, immediately after eating. Maximal inefficiency, from the standpoint of the expenditure of energy, is found in the late afternoon, about four hours after eating.
- Quantitative Determination of Urinary Estrogenic Substance**.—The Smiths conducted a series of comparative analyses which demonstrated that chloroform, olive oil, ethyl

acetate and benzene could not be counted on to give complete recovery or quantitatively comparable percentages of estrogenic substance as it occurs in untreated pregnancy urines. Chloroform gave the lowest and benzene the highest values. Recovery experiments, employing twenty-four hour continuous extraction with benzene, revealed that assays on untreated pregnancy urines could not be used as a gauge of the amount of estrogenic material actually present, since in some cases more was recovered than had been demonstrable in the unextracted specimens. Pregnancy urines, after being boiled for from five to ten minutes with 15 per cent of their volume of concentrated hydrochloric acid, increased greatly in their estrogenic content. There was, however, no constant ratio between the amount found in the untreated specimens and the amount "freed" by acid treatment. The ratios varied between 1.15 and 1.40. When the concentration of acid and the time of boiling were varied, no greater increase in potency could be produced by changing the technic within certain limits and no destruction of "freed" hormone resulted from boiling for ten minutes with 15 per cent acid. This procedure therefore, was adopted and the estrogenic substance so recovered was called "total." In assays on the pure hydroxyketone, theelin, it appeared that on long standing in the slightly alkaline solution in which it is put up, theelin was bound, since when first diluted for injection the potency was considerably less than could be demonstrated after the diluted solution had stood for ten days or more. Acid treatment did not result in any further increase in its estrogenic activity. Acid treatment simply "freed" the theelin that was originally present. No relation between the p_r of urine specimens and the amount of free estrogenic substance could be established, but it seems probable that the amount of the material "free" at any one time in any one specimen depends on variations in the other urinary constituents. From repeated analyses over a period of one month on the fresh, slightly acid urines of a pregnant woman the values for "free" estrogenic substance were strikingly inconsistent from day to day, but the "total" estrogenic substance followed a uniform curve, rising steadily as the pregnancy advanced. The actual ratios of "free" to "total" substance varied between 1.5 and 0.30. The results on single specimens from twelve nonpregnant subjects showed ratios of "free" to "total" material varying from 1.1 to 1.35 +.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill. 33:733-860 (June) 1935

- *Roentgenologic Diagnosis of Tumors in Sellar Region. B. H. Nichols. Cleveland.—p. 733.
*Enlargement of Defect in Air Shadow Normally Produced by Choroid Plexus. Its Occurrence After Ventricular Puncture. C. G. Dyke, C. A. Elsberg and L. M. Davidoff. New York.—p. 736.
Reliability of Brain Tumor Localization by Roentgen Methods. F. J. Hodges and V. C. Johnson. Ann Arbor Mich.—p. 744.
Responsibility of Roentgenologist in Detection of Intracranial Tumors. K. Kornblum. Philadelphia.—p. 752.
Suppuration in Pneumatic Petrous Apex. H. K. Taylor. New York.—p. 767.
Bronchiectatic Emphysema of Adults. H. H. Cherry. Paterson N. J.—p. 774.
Velled Air Bubble in Hydropneumothorax. E. Korol and H. A. Scott. Lincoln, Neb.—p. 777.
The Reexpanded Lung. P. Dufault. Rutland Mass.—p. 781.
Dangers of Roentgenoscopy and Methods of Protection Against Them. V. Some Considerations of Dose Received During Examination of Colon. E. I. L. Ciley, E. T. Leddy and B. R. Kirklind. Rochester Minn.—p. 787.
Considerations Relative to Evaluation of Ultraviolet Radiation in Absolute Units. W. W. Coblenz. Washington D. C.—p. 793.
Benign Lesions of the Eye, Ear, Nose and Throat. G. A. Robinson. New York.—p. 801.
Treatment of Chronic Infection of Parotid Gland. G. M. Dorrance. Philadelphia.—p. 803.
Deep Roentgen Therapy of Carcinoma of Bladder and Prostate. A. T. Nisbet. Sydney Australia.—p. 807.
Results of Radium Therapy in Benign Conditions of Uterus. J. A. Corcoran. New York.—p. 810.
Benign Uterine Hemorrhage with Especial Consideration of Radiation Therapy. H. Schmitz. Chicago.—p. 819.
Hazards in Use of Radium in Cancer. M. J. Sittenfeld. New York.—p. 825.
Tumor Classification for Diagnostic Radiotherapy. J. Gershon Cohen. Philadelphia.—p. 829.

Roentgenologic Diagnosis of Tumors in Sellar Region

—In reviewing twenty-four cases of tumor in or near the sella, twelve intrasellar lesions and twelve suprasellar lesions, Nichols discusses the roentgenologic criteria observed in roentgenograms

of the sellar region and in encephalograms made following the injection of air. The signs on the roentgenogram indicative of pathologic changes in or near the sella include decalcification and erosion of the clinoid processes, calcification, and elevation or depression of either the roof or the floor of the sella. When these definite roentgenographic signs are absent, encephalography is employed. This method is most valuable in the case of a suprasellar tumor that may be visualized directly or may be producing a deformity of the ventricles or of the basilar cisterns. Encephalography is seldom necessary in making a diagnosis of intrasellar tumor, which usually produces sufficient calcification or deformity to make possible the diagnosis from the roentgenogram.

Air Shadow Normally Produced by Choroid Plexus—Dyke and his associates point out that during puncture of the ventricles in the posterior parietal region for the introduction of air, as ordinarily done, the brain cannula may accidentally come into contact with and traumatize the glomus of the choroid plexus or a vessel in the wall of the ventricle. This may produce a hematoma or edema of the choroid plexus or the ventricular wall, which can be recognized on the roentgenogram as a defect in the outline of the lower wall of the lateral ventricle situated in or near the position of the glomus. In the authors' cases the location of the abnormally large defect corresponded to the glomus of the choroid plexus. The defect occurred only after ventriculography and was on the side of the ventricular puncture when a single puncture was done. At subsequent encephalography the defect was definitely decreased in size. The disease from which the patient was suffering was in each case unrelated to the defect in the ventricle. A defect of large size was never observed in the routine examination of the roentgenograms taken in 1,400 cases in which air was injected only by the lumbar route. A hematoma in the ventricle near the position of the glomus following ventricular puncture was demonstrable in a case at postmortem examination.

Anatomical Record, Philadelphia

62:213-330 (June 25) 1935 Partial Index

- Effect of Antutrin S on Male Lizard, *Anolis Carolinensis*. L. T. Evans. Boston.—p. 213.
Effect of Estrin and Male Hormone Injected Separately and Simultaneously on Smooth Muscle and Epithelium of Seminal Vesicle in Albino Rat. M. D. Overholser and W. O. Nelson. Columbia, Mo.—p. 247.
Some Structural and Functional Features of Rabbits Uteri Following Prolonged Estrin Administration. S. R. M. Reynolds. Brooklyn.—p. 269.
Variations of Middle Meningeal Artery Within Middle Cranial Fossa. S. B. Chandler and C. F. Derezinski. Chicago.—p. 309.

Annals of Internal Medicine, Lancaster, Pa.

8:1575-1730 (June) 1935

- Marrow Insufficiency. W. S. Middleton and O. O. Meyer. Madison, Wis.—p. 1575.
*III. Metabolic Aspect of Associated Diabetes Mellitus and Pulmonary Tuberculosis. R. M. McKean and G. B. Myers. Detroit.—p. 1591.
Erythremia. L. F. Bishop, L. F. Bishop Jr. and M. Trubek. New York.—p. 1602.
Treatment of Lobar Pneumonia by Artificial Pneumothorax. Study of Twenty Five Cases. H. F. Stoll, Hartford Conn., H. P. Hopkins Chatham Mass. and J. C. Martin West Hartford Conn.—p. 1611.
Occurrence of Coronary Air Embolism in Artificial Pneumothorax. T. M. Durant. Ann Arbor Mich.—p. 1625.
*Shock Syndrome in Medicine and Surgery. V. H. Moon. Philadelphia.—p. 1633.
*Atopic Annoyances in Course of Pulmonary Tuberculosis. E. W. Phillips. Phoenix Ariz.—p. 1649.
Pain. The Patient's Complaint. C. W. Irish. Los Angeles.—p. 1659.
Association of Polycythemia Vera and Peptic Ulcer. D. L. Wilbur and H. C. Ochsner. Rochester Minn.—p. 1667.
The Present Status of the Problem of Rheumatism. Review of Recent American and English Literature on "Rheumatism and Arthritis." Part III. P. S. Hensch. Rochester, Minn., W. Bauer. Boston, A. A. Fletcher. Toronto, D. Ghrist, Los Angeles, F. Hall. Boston and P. White. Charlotte N. C.—p. 1673.

Diabetes Mellitus and Pulmonary Tuberculosis—Since there is no general agreement regarding the management of diabetes complicated by tuberculosis and the effect of the pulmonary process on the carbohydrate metabolism, McKean and Myers discuss thirty-two of eighty cases selected for nutritional study. Each patient in this group was under observation in the hospital for six or more consecutive months, the average length of stay being 555 days. All seldom or never refused any

portion of the meals served to them and none, the authors believe, obtained additional food elsewhere. The group included five persons in the third decade of life, six in the fourth, ten in the fifth, eight in the sixth and three in the seventh. The sex distribution was about equal. The tuberculosis in twenty-seven cases was far advanced on admission and in five it was moderately advanced. April 1, 1934, seven of the group were dead, one was untraced and twenty-four were known to be alive. Nine of the latter cases were classed as arrested or apparently arrested, four as quiescent, four as improved and seven as unimproved. The deaths were all due to tuberculosis. None of the patients who died in the hospital showed a clinical degree of acidosis at death. Severe insulin reactions occurred in many whose strength was slightly or moderately impaired without threatening life. The available dextrose in the diet in excess of the insulin required to keep the blood sugar below 140, calculated on the basis that 2 Gm of dextrose is covered by 1 unit of insulin, may serve as an index of carbohydrate tolerance. The carbohydrate tolerance was regarded as markedly improved when there was an increase of more than 50 Gm in the available dextrose uncovered by insulin, slightly improved when there was an increase of from 15 to 49 Gm, and unchanged when there was an increase or decrease of less than 15 Gm. A decrease of from 15 to 49 Gm was considered a slight fall in carbohydrate tolerance, a decrease of more than 50 Gm a marked fall. According to these criteria, the carbohydrate tolerance showed a marked improvement during the period of hospitalization in eleven cases, a slight improvement in four, no change in seven, a slight fall in four, and a marked fall in six. Twelve patients had been under observation in diabetic clinics prior to the onset of the tuberculosis. Five of these showed a marked fall in tolerance with the advent of the tuberculosis, five a slight fall and two no appreciable change. Several patients showed periods of improvement and retrogression in the tuberculosis. It does not necessarily follow, of course, that the change in tuberculosis was responsible for the change in carbohydrate tolerance merely because the two were coincidental. However, care was taken to eliminate from consideration any period in which there was an obvious cause for the change in tolerance apart from the tuberculosis. In twenty-seven instances there was a parallel change in the tuberculosis and diabetes, in seventeen cases the two showed improvement concurrently, and in ten cases both became worse. In thirteen instances the courses of the tuberculosis and diabetes were divergent. An improvement in tuberculosis was accompanied by a fall in carbohydrate tolerance in six cases, whereas the reverse occurred in seven. There appears to be no fixed rule governing the effect of tuberculosis on coexistent diabetes. The courses of the two diseases are usually parallel but may be divergent. An intercurrent pleural effusion, however, is generally accompanied by a temporary fall in tolerance. A marked fall in tolerance occurred coincidentally with the development of an effusion in three cases, a slight fall in six, no appreciable change in three and a slight rise in one.

The Shock Syndrome.—Moon attempts to correlate the contradictory phases of the shock syndrome, pointing out that it results whenever the volume of blood inadequately fills the vascular system. This may result from loss of blood or fluid, or from atony or dilatation of the vascular walls, especially the capillaries and venules. Combinations of these two factors are the rule. Circulatory failure of this type results not from cardiac or vasomotor inefficiency but from an inadequate return of venous blood from systemic areas. Increased concentration of the blood is a constant feature of shock. This is of clinical value both in recognizing the condition and in determining its degree. Shock produces characteristic changes demonstrable by postmortem examination. These consist of marked capillary and venous congestion of the viscera, edema of lungs and mucosae, petechial hemorrhages in serous and mucous surfaces, and effusion of fluid into serous cavities. Not only does shock occur following extensive surgery or trauma, it is seen in a wide variety of clinical conditions including extensive burns, poisoning with various substances, metabolic intoxications, abdominal emergencies and severe acute infections. Cerebral hemorrhage and other lesions of the central nervous system may terminate in shock the mechanism of which is not evident. Perhaps prolonged vasomotor disturbance results in tissue

asphyxia, which in turn causes capillary atony and permeability. Shock develops in varying degrees. Maximal degrees lead to death by circulatory failure. Lesser degrees may be followed by recovery or by death from pneumonia. Many cases of secondary pneumonia have their origin in this type of circulatory disturbance.

Atopic Annoyances in Course of Pulmonary Tuberculosis.—Phillips uses the word "atopic" to characterize spontaneous acquired sensitization to a foreign protein, excluding the delayed inflammatory reaction of the infected individual to tuberculo-protein, a reaction generally described as "allergic." A series of 250 consecutive tuberculous patients are included in the study, fifty of whom showed during the period of observation clinically evident sensitization to identified foreign proteins. Four others had symptoms quite as typical, but their atopens could be demonstrated only by the therapeutic test. In thirty-four cases, sensitization to pollens was indicated by skin tests confirmed by the effect of pollen therapy and in certain instances further substantiated by the relief afforded by residence in the filtered air of an allergen free room. Sixteen patients were found to be sensitive to foods alone, and seven of the pollen sensitive group reacted to foods as well. The offending foods were most often those which the patients had taken in excess in the hope of gaining weight: milk and egg, cocoa, tomato, cod liver oil, wheat, potato and chicken. The four patients whose atopens could be identified only indirectly had eosinophilia, a positive family history and negative skin tests. The symptoms of food sensitivity resembled frequently the digestive disturbances incident to the toxemia of tuberculosis, less often, those caused by organic disease of the digestive tract. Both sorts were relieved by exclusion of the offending foods from the diet. The discomfort incident to pollinosis interfered with the patients' rest and was detrimental to their general health. Food sensitivity, in addition to this, impaired their nutritional state. In dealing with food sensitivity in tuberculous patients, the diet should not be restricted to the point of causing continued loss of weight. Patients with chronic tuberculosis on the rest treatment, spending most of their days and nights in the open air, are heavily exposed to pollen in the pollinating seasons. The same patients, leading a monotonous life and desiring to gain weight, are likely to eat in excess foods, such as milk and egg, and tend to become sensitized to them. Appropriate pollen therapy, before or during the attack, may safely be employed in the presence of active tuberculosis. The recognition and proper management of sensitivity to foreign proteins constitute a useful addition to the hygienic treatment of tuberculosis.

Archives of Otolaryngology, Chicago

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- Cardiospasm. Report of Two Cases with Postmortem Observations. P. B. MacCready. New Haven Conn.—p. 633
- Sarcoma of Larynx. Report of Two Cases. G. B. New. Rochester Minn.—p. 648
- Nasal and Bronchial Allergy in Childhood. A. H. Rowe. Oakland, Calif.—p. 653
- *Value of Reflex Contraction of Muscles of Middle Ear as Indicator of Hearing. H. Kobrak, J. R. Lindsay and H. B. Perlman, Chicago.—p. 663
- Subcortical Fistulas of Anterior Surface. Their Management in Suppuration of Petrous Pyramid. M. C. Myerson. New York, H. Rubin and J. G. Gilbert, Brooklyn.—p. 677
- Ear and Cranial Trauma. A. B. Murphy. Everett, Wash.—p. 686
- Syndrome of Diplacusis and Nerve Deafness for Low Tones. G. E. Shambaugh Jr. Chicago.—p. 694
- Noncancerous Epithelial Tumor Obstructing Bronchus of Upper Lobe of Left Lung. J. W. Miller. New York.—p. 703
- Surgical Approaches to Deep Suppuration in Neck and Posterior Mediastinum. S. Iglaier. Cincinnati.—p. 707

Reflex Contraction of Muscles of Middle Ear as Indicator of Hearing.—The experiments of Kobrak and his associates in determining the value of the reflex of the muscles of the middle ear as an indicator of hearing reveal that 1. The acoustic contractions of the tensor muscle are almost always present in rabbits and allow easy quantitative measurements under the same procedure as a clinical test with the audiometer. Quantitative comparison of the contractions in different animals does not always show satisfactory uniformity. 2. Continued observations on one animal over several hours show a remarkable constancy. The reflex is therefore reliable.

as an indicator of hearing for acute experiments 3 Continued observations on one animal over several days show a high degree of constancy 4 Comparison of the response of the left and that of the right tensor muscle does not show any considerable variation 5 Small changes of the position of the animal and especially of the position of the pinna do not produce considerable differences, so it is not important to place too much significance on minute displacements of the loud speaker or of the animal The application of the sound may be carried out in the natural way and not necessarily by means of rubber tubes 6 The comparison between the readings of two different but equally trained observers shows a constancy which is about equal to that in clinical tests of hearing Besides the experiments in rabbits, observations on the stapedius reflex in man have been carried out It was possible to compare the curve of hearing and the curve of the reflex response of the stapedius muscle quantitatively and to express the difference in decibels The inconstancy in the distance between the two curves is probably due to individual peculiarities of the middle ear (adhesions of tendon) However, the relationship between the two curves is such that a good curve of the reflex of the stapedius muscle may be taken to indicate a relatively good curve of hearing This might be used clinically, for example, in cases of malingering

Georgia Medical Association Journal, Atlanta

24: 199 240 (June) 1935

- Medicine as a Career C L Ayers Toccoa—p 199
Care of the Normal Obstetric Patient O R Thompson Macon—p 204
Menstrual Disorders Functional Types B T Beasley Atlanta—p 207
Discussion of Mortalities Following Operation on Thyroid Gland in Atlanta 1929 to 1933 Inclusive B H Clifton Atlanta—p 212
Some Clinical Observations and Treatment of Eczema H Hailey Atlanta—p 218
Eyes as Related to Sinusitis J A Smith Macon—p 219
The Atlantic City Session of the American Medical Association C W Roberts Atlanta—p 222

Illinois Medical Journal, Chicago

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- Fundamentals of Medical Religion C S Skaggs East St Louis—p 500
Survey of the Medical Situation C B Reed Chicago—p 506
Simultaneous Bilateral Operative Removal of Renal and Ureteral Calculi Report of Case L D Smith, Chicago—p 512
Intestinal Obstruction F Christopher Evanston—p 515
Leukoplakia Oralis C M Epstein Chicago—p 517
*Skio Test for Diagnosis of Gonococcal Infections Preliminary Report. B C Corbus Chicago—p 521
Review of Blood and Spinal Fluid Reports F W Sokolowski, Alton—p 524
Management of Vertex Presentation by Episiotomy and Outlet Forceps C E Galloway Evanston—p 526
*Postoperative or Incisional Hernias of Anterior and Lateral Abdominal Wall A P Heineck, Chicago—p 529
Basal Pulmonary Tuberculosis O B Ragins and E B Freilich Chicago—p 537
My Experience with Intravenous Injections of Mercurochrome in About Four Hundred Cases A P Martin Chicago—p 539
Systemic Blastomycosis with Recovery H J Wing Maywood—p 551
Primary Bronchogenic Carcinoma with Metastases Report of Case. D J Louis Chicago—p 552
How to Facilitate Labor S D Soter Chicago—p 554
Intra Abdominal Hemorrhage of Ovarian Origin H N Rafferty and T N Rafferty, Robinson—p 559
Conditions of Uterus Necessary for Version Physiologic and Clinical Consideration L Rudolph—p 561

Skin Test for Diagnosis of Gonococcal Infections—Corbus performed experiments that show that the specific exotoxin present in the gonococcus bouillon filtrate (Corbus-Ferry), when 0.15 cc. is injected intradermally, is in sufficient quantities to obscure the true allergic reaction in individuals infected with the gonococcus Clark Ferry and Steele pointed out that a large proportion of normal persons give cutaneous reactions when injected with dilutions as low as 1:1500 This precludes its use as a specific diagnostic skin test for gonococcal infections With this added information in mind the bouillon (Corbus-Ferry) filtrate was detoxified by fractional heating and experiments were performed, 0.1 cc. instead of 0.15 cc. being used It appears that in individuals with either negative or positive histories of gonorrheal infection a positive allergic

reaction with detoxified gonococcus filtrate (Corbus-Ferry) is evidence of gonorrheal infection It also appears that this allergic condition may be passively transferred to a normal person even as early as forty-eight hours after the onset of the infection It is likely that this allergic condition remains constant for the duration of the infection It is also possible that this skin test will have further value in determining when a given patient is cured of the infection

Incisional Hernias—Heineck points out that by eliminating the etiologic factors of incisional hernias the incidence of the deformity and infirmity can be minimized and almost completely prevented Every case of incisional hernia calls for fascial fortifying of the path of escape of the hernial contents The use of autogenous living fascia lata transplants, either as approximating sutures or as a substitute for hernial defects, has proved satisfactory when employed with proper technique A permanent bond of union and closure of the hernia results The use of the Masson "fascial stripper" facilitates the removal of autogenous living transplants and causes negligible and only minimal scarring of the thigh This instrument is made to glide between the muscles and the subcutaneous fat, detaching the fascia and cutting it in desired lengths Ox fascia lata, sterilized and preserved in alcoholic solution, can be used either as suture material or in sheets in the repair of postoperative hernial defects The use of ox fascia eliminates the objectionable feature of an associated operation on the thigh It has given satisfactory results

Indiana State Medical Assn. Journal, Indianapolis

28: 313 364 (July 1) 1935

- Emergency Surgical Treatment N K Forster Hammond—p 313
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Hobbies for Physicians C B Paynter Salem—p 326
Consideration of Treatment of Complicated Appendicitis (Variously Grouped as Perforated Gangrenous and Suppurative Appendicitis, Appendiceal Abscess Local and General Peritonitis) E D Clark and J K Berman Indianapolis—p 329

Journal of Infectious Diseases, Chicago

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- Systematic Study of Pasteurella Genus and Certain Closely Related Organisms G D Brigham and L F Rettger, New Haven, Conn—p 225
Preparation of Specific Bacterial Carbohydrate Substances by Electrolisis A C H Yen and T J Kurochkin Peiping China—p 238
Studies on Antigenic Structure of Variants of Staphylococcus Aureus I Carbohydrates of Rough and Smooth Forms of Staphylococcus Aureus Rachel E. Hoffstadt and W M Clark Seattle—p 250
Oxidation Reduction Potentials in Salmonella Cultures I Development of Potential Levels Characteristic of Species W Burrows and E O Jordan Chicago—p 255
*Studies on Relation of Bacterium Granulosis to Trachoma. F F Tang and C H Chou Shanghai China—p 264
Influence of Hydrogen Ion Concentration on Dissociation of B Friedlander and M Tuberculosis W Steenken Jr Trudeau N Y—p 273
Biologic Studies of Saprophytic Acid Fast Organisms I Dissociation of Mycobacterium Phlei S A. Petroff and W Steenken Jr Trudeau N Y—p 277
Antigenic Reactions of Staphylococcus Aureus and Its Variants Rachel E Hoffstadt and G P Yoomans Seattle—p 288
Relation of Allergy to Antibody Content in Animals Vaccinated with BCG B J Clawson and A B Baker Minneapolis—p 297
Attempts to Transmit Chicken Leukosis by Mosquitoes and by Mites H L Ratchiffe and E L Stuhls Philadelphia—p 301
Studies on Bacterial Nutrition I Separation of Growth Factors from Veal Infusion S A Koser and F Saunders Chicago—p 305
Relation of Incidence of Serum Disease to Square Root of Amount of Antiserum Injected T D Gerlough New Brunswick N J—p 317
*Experimental Brucellosis in Dogs W H Feldman J L Bollman and C Olson Jr Rochester Minn—p 321
Studies on Anaerobic Bacteria V Serologic Agglutination of Clostridium Acetobutylicum and Related Species Elizabeth McCoy and L S McClung Madison Wis—p 333

Studies on Relation of Bacterium Granulosis to Trachoma—The attempts of Tang and Chou to isolate Bacterium granulosis in 179 cases of classic trachoma were negative The specimens used for cultivation consisted of lacrimal secretions epithelial scrapings, follicular contents and tarsal conjunctival tissue The mediums used were "leptospira" semisolid medium and carbohydrate blood agar plates Attempts to induce trachoma in rhesus monkeys and in man by subconjunctival injection

tion of cultures of *Bacterium granulosis* were negative. A disease of the conjunctiva characterized by follicle formation, but with no pannus formation or papillary hypertrophy, was induced in two out of nine monkeys injected with human trachomatous material. *Bacterium granulosis* was not isolated at any time from either of these animals. Antibodies against *Bacterium granulosis* could not be demonstrated in the serums of twenty-six subjects suffering from acute or chronic trachoma.

Experimental Brucellosis—Feldman and his associates introduced two strains of *Brucella abortus*, obtained from swine and bovine sources, respectively, into a series of eleven adult mongrel dogs to determine (1) whether a definite state of disease could be induced and (2) whether there was any significant difference in the pathogenic behavior of the swine and bovine varieties of *Brucella* in dogs. Five of the dogs received the bacteria in suspension intravenously and six were fasted twenty-four hours and were fed the organism mixed with raw meat. *Brucella* agglutinins developed as early as the fourth day in animals receiving the organisms intravenously, and in this group titers of from 1:800 to 1:1,600 were not uncommon one week after the introduction of the organism. Successive titers varied considerably in many cases. For those animals receiving the infective agent orally, the agglutinative response was much slower and was never as pronounced as for those receiving it intravenously. In a few cases it was possible to isolate *Brucella abortus* from the blood stream, but only within two or three weeks after introduction of the infective material. From two of the dogs it was possible to obtain the organism in the urine. Although most of the dogs lived for several months after receiving the infective bacteria, clinical symptoms of disease and specific lesions of minor significance were observed in only one dog. From only two of the dogs did the authors succeed in recovering *Brucella abortus* after death, and both had received the infecting inoculum intravenously, one dog thirty-nine days and the other 185 days previously. There was no discernible difference in the pathogenic propensities of the two varieties of *Brucella abortus* used. While the dog is capable of producing *Brucella* agglutinins following experimental introduction of either the swine or bovine varieties of *Brucella abortus*, a profound resistance to the organism exists, which precludes in most instances the development of clinical symptoms and specific lesions.

Laryngoscope, St. Louis

45 405-488 (June) 1935

- Flying Blind. Study in Physiology of the Eighth Nerve. L. H. Jones, Los Angeles and W. C. Ocker.—p. 405
 Conservation in Petrosal Empyema. C. Hall. Los Angeles.—p. 421
 *Evaluation of Symptoms in Meningitis and Brain Abscess. M. A. Weinstein. Philadelphia.—p. 427
 Medical Aspects of Hearing Conservation in the New York Schools. E. P. Fowler. New York.—p. 435
 Sinusitis in Children. H. J. Burman. New York.—p. 440
 Some Features in Sinus Operations and Therapy. J. Frenn. Boston.—p. 452
 Need for Improved Technique in Tonsillectomy. A. F. Holding. Albany, N. Y.—p. 458
 Syphilis of Tonsil. Report of Two Cases. F. S. Mainzer. Clearfield, Pa.—p. 466
 Critical Analysis of Methods of Physical Therapy in Rhinolaryngology. L. M. Hurd. New York.—p. 468
 Scientific Status of Physical Therapy in Otology. A. R. Hollender. Chicago.—p. 471
 Physiologic Basis of Physical Measures in Otolaryngology. R. Kovacs. New York.—p. 480

Symptoms in Meningitis and Brain Abscess—Weinstein describes tuberculous meningitis in a man, aged 55, who was brought to the hospital in a condition of stupor. The consulting neurologist regarded the condition as a reactive or serous meningitis and as a focal cerebritis in the left hemisphere from an adjacent ear condition. Necropsy revealed tuberculous meningitis with no trace of any abscess cavity in the brain. The author in evaluating the symptoms of meningitis and brain abscess points out that the finding of a quiescent chronic otitis media reinforced by such symptoms as headache, motor aphasia, rigidity of the neck, increased reflexes and mental confusion prejudged and confirmed the diagnosis of otitic abscess. But all these manifestations of generalized intracranial pressure and to some extent focal localization may also be due to an infectious encephalitis. An otitic brain abscess must

originate by contact infection with a diseased temporal bone. Once the infection has crossed the meninges into the brain substance and induced an abscess, its growth is gradual. During this latent stage a number of vague toxic symptoms may appear. When the abscess becomes manifest, symptoms of toxemia become aggravated, signs of intracranial pressure due to its increase in size, and injury to vital centers, impairing or destroying their function, make their appearance. A quite constant and important pressure symptom is a slow pulse, below 50, while in meningitis it is usually rapid. Aphasic disturbances are among the first and most frequent dysfunctions as the result of destruction of brain tissue in the temporal lobe and the adjacent brain tissue, their existence points clearly to an abscess in that region. Rigidity of the neck is present in brain abscess, but mostly when it affects the posterior fossa, otherwise it is a symptom of associated meningitis just as the Kernig and the motor irritation symptoms, such as increased reflexes, Babinski and Oppenheim. Repeated lumbar punctures before and after a mastoidectomy performed on the author's patient gave a clear fluid, while every brain abscess should show a turbid liquor. The cerebrospinal fluid gave a sterile, clear, predominantly polymorphonuclear liquor with diminished chlorides. He concludes that these laboratory observations in conjunction with the several contradictory symptoms made the diagnosis of brain abscess, regardless of the alluring discovery of a focus of infection, if not improbable, at least questionable.

Medical Annals of District of Columbia, Washington

4: 153-184 (June) 1935

- Operations for Radical Cure of Cancer. R. B. Greenough, Boston.—p. 153
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 Pseudosurgical Abdominal Attacks in Diabetes Mellitus. J. H. Lyons, Washington.—p. 169

Minnesota Medicine, St. Paul

18: 351-420 (June) 1935

- History of Development of Surgery for Peptic Ulcer. E. S. Judd, Rochester.—p. 351
 Management of Essential Hypertension. E. L. Tuohy. Duluth.—p. 354
 *Lysozyme. One of Natural Defense Factors of the Eye. A. C. Hilding. Duluth.—p. 360
 Use of Living Sutures in Repair of Abdominal Hernias. J. C. Masson, Rochester.—p. 365
 Clinical Studies in Juvenile Rheumatism. M. J. Shapiro and Gertrude K. Shapiro. Minneapolis.—p. 370
 *Mumps Meningo-Encephalitis. T. L. Birnberg. St. Paul.—p. 377
 Effects of Early Postoperative Feeding. O. I. Sohlberg. St. Paul.—p. 382

Lysozyme—Hilding states that there is a natural antiseptic, chemically an enzyme, that is found widespread through the body fluids and tissues. It has the power of destroying and dissolving certain groups of bacteria even when highly diluted. It is found most abundantly in tears, very abundantly also in nasal mucus. Its purpose in these two secretions seems to be to protect one from the atmospheric bacteria for which it is deadly. The pathogenic bacteria are inhibited in their growth by it but are not necessarily destroyed. The lysozyme content of tears falls moderately in a number of the acute external diseases. In fact, it falls during any epiphora. That this has any etiologic significance is not thoroughly established. In vitamin A deficiency and xerophthalmia, however, there is a marked decrease in lytic power that seems fairly definitely to have an etiologic importance in the development of infection and keratomalacia. The three humors within the eye showed little or no lytic power when tested and therefore probably contain little or no lysozyme.

Mumps Meningo-Encephalitis—Birnberg observed nine cases of mumps meningo-encephalitis in the last eighteen months. This relatively high incidence suggested the possibility that many cases may be unrecognized, further, the increase also of cases of epidemic encephalitis, during this period, suggests some possible causal relationship. The problem of diagnosis rests essentially on the knowledge that neurologic complications do occur and on the recognition of the related mumps, the circumstantial evidence of mumps contact or a

prevalent mumps epidemic To the author the relatively mild symptoms in comparison with the high spinal fluid cell count is a valuable differential criterion In treatment, spinal drainage and symptomatic procedures are all that are indicated

New England Journal of Medicine, Boston

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- Old Age and Basal Metabolism F G Benedict Boston—p 1111
Primary Pneumococcus Arthritis Report of Case M H Bloomberg Boston—p 1122
Social Trends Underlying Health and Hospital Insurance S R Roberts Atlanta Ga—p 1123
Progress in Anesthesia in 1934 R F Sheldon, Boston—p 1129

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- Secondary Operations of Common Bile Duct R H Miller and M K Bartlett Boston—p 1153
Transitory Visual Disturbances in Diabetes Mellitus Report of Cases A Rudy and B Sachs Boston—p 1157

Northwest Medicine, Seattle

34: 191-234 (June) 1935

- *Recent Trends in Obstetric Analgesia National Questionnaire C E Hunt Eugene, Ore.—p 191
When Is Food Toxic? C U Moore Portland Ore—p 196
Gastro-Intestinal Allergy Points to Consider in Its Diagnosis M W Moore, Portland Ore—p 200
Urinary Proctose in Dermatology S E. Light, Tacoma, Wash—p 203
Surgical Progress in 1934 R. D. Forbes, Seattle—p 206
Operation for Diverticulum of the Esophagus Facilitated by Use of Nasal Catheter and Stomach Tube D Metheny Seattle—p 210
Bowel Distention, L P Gambee Portland Ore—p 212
History of Multnomah County Medical Society O Larsell Portland Ore.—p 218
Roentgenoscopy of Chest Its Limitations and Dangers H E Nichols Seattle—p 222

Recent Trends in Obstetric Analgesia—Based on the statements of seventy-eight of the leading obstetricians of the country, Hunt observed that 1 There is a great increase in scientific interest in the subject of obstetric analgesia on the part of the profession. 2 Numerous drugs in various combinations are being used in an attempt to meet the requirements under various conditions. 3 The ideal obstetric analgesia has not yet been perfected. 4 No routine method can be used in all cases, and there is no method that does not possess dangers for the mother and child unless handled with great care and intelligence. 5 The best results are obtained by being familiar with more than one method and individualizing the patient. Only large experience with various drugs will prepare the obstetrician to administer them skilfully. 6 The use of any method entails a greater expenditure of time and greater responsibility on the part of the obstetrician. 7 There is a distinct tendency away from a complete twilight sleep as well as a complete Gwathmey technic. Twilight sleep should be employed in well equipped hospitals by those skilled in its use. The Gwathmey method is adaptable for use in homes by practitioners. 8 There seems to be an increase in the use of scopolamine combined with various methods to increase amnesia. 9 Parts of various methods are being combined. 10 There is a great increase in the use of various barbiturates and a decrease in the use of morphine and its derivatives. Barbiturates can be given earlier in labor than any other drug, with less effect on the baby. 11 The most widely used and most satisfactory barbiturate in obstetrics is pentobarbital sodium. Its combination with rectal ether-oil after the method of Irving and others enhances its action and counteracts its tendency to cause excitability. 12 Rectal ether-oil is being used extensively in combination with the barbiturates and other drugs. 13 Serious attempts are being made to find a drug that will combine the favorable features of the barbiturates and yet be free from their tendency to cause excitement.

Ohio State Medical Journal, Columbus

31 481-560 (July 1) 1935

- Cistern (Suboccipital) Puncture D J Kindel, Cincinnati—p 497
Postoperative Treatment of Cataract A. B. Bruner Cleveland—p 501
Role of Glandular Therapy in Treatment of Behavior Disorders of Children L. A. Lurie Cincinnati—p 504
Postpartum Care W D Fullerton Cleveland—p 509
Some Remarks on Pharyngeal Lymphatics Indication for Tonsil and Adenoid Operation H G Beatty Columbus—p 511
Comfortable Feet for the Worker C L Ferguson, Portsmouth—p 520

Oklahoma State Medical Assn Journal, McAlester

28: 199-246 (June) 1935

- Your Brother and You L H Ritzhaupt Guthrie—p 201
Public Health and Organized Medicine C M Pearce Oklahoma City—p 204
Postoperative Pneumothorax Case Report and Consideration of Factors That Might Be Concerned in Its Etiology F G Dorwart, Muskogee—p 205
Cancer of Colon and Rectum R L Murdoch, Oklahoma City—p 208
Acute Mastoiditis H S Browne, Ponca City—p 210
Observations Bearing on Use of Ultraviolet Rays and Sunlight M O Nelson, Tulsa—p 212

Pennsylvania Medical Journal, Harrisburg

38 675-768 (June) 1935

- Blood Studies in Otolaryngology W V Mullin, Cleveland—p 675
Medical Management of Hemorrhagic States in Childhood I N Engelmann, New York—p 679
Treatment of Angina Pectoris C C Wolferth Philadelphia—p 690
Inheritance and Disease J H Barach, Pittsburgh—p 693
Repeated Blood Sugar Determinations in Certain Cases of Diabetes E P Griffiths and L C Shrader Pittsburgh—p 699
Pregla Solution in Treatment of Ocular Conditions A Cowan, Philadelphia and J S Jordan Scranton—p 704
Management of Underweight Children G J Feldstein Pittsburgh—p 706
Anuria as Surgical Complication F G Harrison, Philadelphia—p 710
*Hypertension Simulating Thyrotoxicosis R. L. Hamilton and A. P. Knight Sayre—p 717

Hypertension Simulating Thyrotoxicosis—Hamilton and Knight believe that all patients suspected of hyperthyroidism should be examined carefully as to cardiac competence and blood pressure. A patient with an increased basal metabolic rate in whom there is also an increase in blood pressure should be critically considered as to whether the hypertension is due to the thyrotoxicosis or whether it is a separate or distinct entity. The symptoms of thyrotoxicosis and hypertension seem to be an expression of an increased tonus of the sympathetic nervous system, principally giving rise to an abnormal rhythm in the thyroid and adrenals. These symptoms are modified, however, by a mild parasymphaticotonia in certain cases. A study of 215 selected case records showed that there was an increase in the systolic pressure both in the exophthalmic group and in those patients with adenomas and hyperthyroidism, as compared to the control series. Patients with thyrotoxicosis followed by thyroidectomy showed a small drop in systolic but a slight rise in diastolic pressure. There is no noticeable relationship between the blood pressure and the basal metabolic rate, except in the general averages of some groups and then not to a significant degree. The changes in blood pressure were consequent on age. There was a definite increase in the blood pressure of patients with thyrotoxicosis compared to the control group. Hypertension was a relatively frequent occurrence in patients with thyrotoxicosis. There was a significant drop in the basal metabolic rates of all thyrotoxic patients following thyroidectomy, and the basal metabolic rate following thyroidectomy was practically the same as that of the control group. A review of the literature and a survey of the cases suggest that the adrenal and thyroid are intimately associated in the production of the symptoms of hypertension and hyperthyroidism and that the adrenals are apparently the dominant controlling factor. Therefore any treatment that might be directed toward the lessening of the adrenal activities should be of some value in the control of these diseases.

Public Health Reports, Washington, D C

50: 831-854 (June 21) 1935

- *Benign Lymphocytic Choriomeningitis (Acute Aseptic Meningitis) New Disease Entity C. Armstrong and P F Dickens—p 831

50 855-890 (June 28) 1935

- Leprosy Effect of Vitamin B₁ Deficient Diet on Incubation Period of Rat Leprosy L. F. Badger and W H Schrell—p 855

Benign Lymphocytic Choriomeningitis—Armstrong and Dickens describe a symptom complex of headache, fever, meningeal irritation, and cerebrospinal fluid under increased pressure, with an increase in cells (with a lymphocytic response dominant) above 50, coupled with a normal chloride, sugar and urea content in the cerebrospinal fluid and a negative spinal fluid Wassermann reaction. This disease entity has previously

been designated in man as acute aseptic meningitis. The virus of Armstrong produces a similar symptom complex in monkeys. The blood serum of patients who have recovered from the disease protects animals from the virus of Armstrong. This disease occurs sporadically in man and has been transferred experimentally to animals. Traub has isolated a virus from white mice, and Rivers and Scott have isolated a virus from human patients, which are serologically identical with the National Institute of Health strains of the Armstrong virus. This condition by priority should be designated acute aseptic meningitis, but "acute lymphocytic choriomeningitis" is a more accurate designation.

Rhode Island Medical Journal, Providence

18:81-92 (June) 1935

Twenty Five Years of Pediatrics H. E. Utter, Providence.—p. 81
New Treatment for Tenosynovitis (Unna's Paste Boot) J. Fieldman, Brockton, Mass.—p. 89

Surgery, Gynecology and Obstetrics, Chicago

61:1-144 (July) 1935

- Physiologic Responses of Transplanted Prostatic Tissue in Anterior Chamber of Eyes of Rabbits N. J. Heckel and H. L. Kretschmer, Chicago.—p. 1
Ileocolitis Acute Ileocolitis Simulating Appendicitis and Characterized by Edema of Ileocecal Region and Mesenteric Glands Its Relation to Regional Ileitis or Chronic Cicatrizing Enteritis I. H. Erb and A. W. Farmer, Toronto.—p. 6
Experimental Production of Excessive Endometrial Hyperplasia S. Zuckerman and A. H. Morse, New Haven, Conn.—p. 15
*Experimental Studies on Effects of Perforation of Peptic Ulcers A. Blalock, Nashville, Tenn.—p. 20
*Further Quantitative Determinations of Prolan and Estrin in Pregnancy, with Especial Reference to Late Toxemia and Eclampsia G. Van S. Smith and O. W. Smith, Brookline, Mass.—p. 27
Synthesis of Hippuric Acid Its Value in Detecting Hepatic Damage Secondary to Diseases of Extrahepatic Biliary System P. F. Vaecaro, Monongahela, Pa.—p. 36
Dysontogenetic and Mixed Tumors of Urogenital Region Report of New Cases of Sarcoma Botryoides Vaginae in a Child and Comments on Probable Nature of Sarcoma J. McFarland, Philadelphia.—p. 42
Transpleural Nephropexy W. J. Moore, Glasgow, Scotland.—p. 58
*Chondrosarcoma Relation of Structure and Location to Clinical Course O. T. Roberg, Jr., Graz, Austria.—p. 68
*Surgical Treatment of Severe Forms of Lymphedema (Elephantiasis) of the Extremities Study of End Results R. K. Ghormley and L. M. Overton, Rochester, Minn.—p. 83
Correction of Hip Flexion Deformity in Anterior Poliomyelitis A Result Study G. deN. Hough, Jr., Springfield, Mass.—p. 90
Osteomyelitis in Infants R. B. Dillehunt, Portland, Ore.—p. 96
Mesenteric Venous Thrombosis S. Warren and T. P. Eberhard, Boston.—p. 102

Perforation of Peptic Ulcers—Blalock performed experiments to find the factors which are mainly responsible for the rapidly developing signs and symptoms that follow the perforation of peptic ulcers. The alterations in the circulation which are produced by the introduction into the peritoneal cavity of the various juices of the upper intestine were studied. Bile, pancreatic juice, gastric juice and duodenal secretion were obtained by cannulation. The juices were injected with a syringe and needle into the peritoneal cavities of other dogs. 1. Following the injection of rather large amounts of one or more of the juices of the upper intestine the animals became ill almost immediately. There was usually an increase in the pulse rate and vomiting. 2. Death did not occur in any of the nine experiments in which sterile pancreatic juice varying in amounts from 11 to 39 cc per kilogram of body weight was injected. Infected pancreatic juice in smaller quantities produced death. 3. Bile that is recovered after the first several days following the cannulation of the common duct exerts more ill effects when injected into the peritoneal cavity than that which is collected later. Six experiments were performed in which uninfected bile obtained from animals operated on less than four days previously was injected into other animals in amounts equaling 21 cc. or less per kilogram of body weight. All the recipients became quite ill, but only one died. 4. Eleven experiments were performed in which equal quantities of uninfected bile and pancreatic juice were injected into the peritoneal cavity. The amounts introduced were closely comparable to those injected in the studies in which bile or pancreatic juice alone was used. Four of the animals died, and

it seemed quite definite that the combination of bile and pancreatic juice is more toxic than an equal volume of either of them. 5. Death did not occur in any of the nine experiments in which a corresponding quantity of gastric juice was used or in the three experiments in which duodenal secretion was injected. These two secretions seemed to result in less harm than a corresponding quantity of bile alone or a combination of bile and pancreatic juice. 6. The animals that died as a result of the introduction of one or more of the secretions exhibited marked reddening of the intraperitoneal structures. This reddening and the presence of massive fat necrosis was particularly marked in the experiments in which the mixture of bile and pancreatic juice was injected. There was usually a large quantity of free fluid in the peritoneal cavity at necropsy, but this quantity by itself alone was not sufficient to account for the decline in blood volume and death. It is possible that this quantity with the blood that was present in the many dilated intraperitoneal blood vessels might be sufficient. The increase in the concentration of the red blood cells in some experiments was extreme, while in others it was not marked. 7. Studies on the cardiac output and blood pressure were performed before and following the injection of bile or pancreatic juice or both. The major early alteration consisted of a decline in the blood pressure, as is found in primary shock, and the subsequent change consisted of a greater drop in the cardiac output than in the blood pressure, as is found in secondary shock.

Quantitative Determinations of Anterior Pituitary-like Principle and Estrogenic Substance in Pregnancy—The further quantitative studies of the Smiths of anterior pituitary-like principle and estrogenic substance in twenty-seven additional cases confirm their previous observations of excessive gonad-stimulating hormone and, less consistently, subnormal levels of the estrogenic in the toxemias of late pregnancy and eclampsia. They also indicate that 1. In normal pregnancy a peak in the level of anterior pituitary-like principle occurs during the second, third or fourth month, followed by a marked drop. During the remainder of pregnancy the anterior pituitary-like principle maintains almost a constant level. 2. The amount of estrogenic material increases as pregnancy advances, reaching a peak at term. There is usually a marked elevation of the substance level between the third and fifth months. 3. In cases of toxemia of late pregnancy, an excess of anterior pituitary-like principle has probably been present for some time before the appearance of toxic symptoms. High levels of anterior pituitary-like principle during the sixth and seventh months in apparently normal women, therefore, may indicate that toxemia will develop, whereas normal figures at this time favor the prediction of continued normal pregnancy. A rise after the seventh month may not be significant, since delivery occurs so soon. 4. No abnormal figures for anterior pituitary-like principle or estrogenic substance can be described as typical of miscarriage. 5. The nausea of early pregnancy may be associated with a low estrogenic factor. 6. Although the highest values for serum of the anterior pituitary-like principle have been encountered in cases of eclampsia, the degree of excess of anterior pituitary-like principle does not always run parallel with the severity of the symptoms. 7. Quantitative analyses of serum of the anterior pituitary-like principle may be of diagnostic assistance in differentiating between toxic and nephritic conditions. 8. Quantitative analyses on women who in the middle third of pregnancy are showing some toxic symptoms may be of prognostic value.

Chondrosarcoma—Roberg presents nine cases of chondromyxomatous tumors from a clinical standpoint. Six of these were malignant sarcomas, two chondromas and one a circumscribed chondrosarcoma occurring in a toe. The close histologic relationship of these tumors is reason for seeking a connection between their clinical course and deviations from a unity of structure and factors apart from their histologic composition. From these features are derived factors of prognostic value. 1. Limitation by a capsule of cortical bone, characteristic of the chondromyxomatous tumors of the small bones of the hand and foot, is usually accompanied by a slow, local

ized growth 2 A predominantly myxomatous tissue is less invasive and more slowly growing than that in which a greater differentiation of cartilage cells has occurred Although the standpoint that myxomatous tissue is the least differentiated form of cartilage seems confirmed in these cases, the implied contradiction may be explained by an inhibitory effect of the myxomatous matrix on the cells which are contained in it, and by the view that bony differentiation depends partly on the matrix supplied for its formation by the destruction of bone by the less differentiated cells 3 The chondromyxosarcomas arising on the basis of a preexisting osteochondroma or chondroma pursue a less rapid course after the assumption of a malignant character than those which are malignant from the outset 4 An incomplete operation greatly accelerates the growth of a chondrosarcoma 5 The more proximal location of this type of tumor in a limb, or the existence of such a tumor in bone simultaneously undergoing normal developmental metaplasia or in the neighborhood of numerous structures arising from precartilaginous connective tissue, makes the prognosis less favorable Resistance to radiation, the beneficial effect of which lies chiefly in the stimulation of reactive bone, makes this form of treatment useful only as a supplement to operation Local, complete removal of an isolated, circumscribed tumor, which exhibits histologically a comparatively uniform structure, makes possible a more radical procedure should there be recurrence For the undoubtedly sarcomatous members of this group, a resection or amputation is advocated, as much as possible should be removed of the adjoining tissues that are composed of cells which exhibit stages in early cartilaginous development related to the tumor itself, although of an orderly and normal architecture

Lymphedema of the Extremities—Ghormley and Overton review the methods of surgical treatment of severe forms of lymphedema and report the end results of cases in which treatment was given at the Mayo Clinic in the last ten years A sufficiently long interval has elapsed since operation to make it reasonably certain that final results have been obtained Sixty-four patients have been operated on by the modified Kondoleon method since Sistrunk's report of his technic in 1923 These cases have been followed over a period of from two to ten years The improvement among patients who were followed was graded on a basis of 0 to 4, the latter signifying almost complete relief According to this grading, the condition of 12.5 per cent of the patients was unimproved, that of 14 per cent was improved, grade 1, that of 7.8 per cent was improved, grade 2 that of 31.3 per cent was improved, grade 3, and that of 10.9 per cent was improved, grade 4 There was a mortality rate, both immediate and remote, of 9.3 per cent The three postoperative deaths made an operative mortality of 4.7 per cent Further analysis of the cases revealed that there was very slight relationship between the severity of the disease and the degree of improvement The results were influenced by the wearing of an elastic supporting stocking of some sort Some form of supporting bandage must be worn after operation Improvement was found in 72.5 per cent of those cases in which the patients were known to be wearing a bandage after operation, whereas the condition was improved in only 40 per cent of those cases in which a bandage was not worn The relative incidence of infection before and after operation showed marked improvement Of twenty-six cases in which the patients were suffering from recurrent attacks of infection of some sort, in only six was the infection worse or unchanged, whereas in nine it was much improved and in eleven it had completely disappeared

Wisconsin Medical Journal, Madison

34: 369-440 (June) 1935

- Early Diagnosis and Treatment of Pyelitis of Pregnancy J W Harris, Madison—p 379
Coronary Thrombosis and Its Sequels W M Jermain Milwaukee—p 381
The Heart in Surgery A J Patek, Milwaukee—p 386
Prostatic Resection H L Kretschmer Chicago—p 390
Common Infections of Urinary Tract and Their Treatment J C Sargent, Milwaukee—p 395
Genito-Urinary Tuberculosis G J Thomas, Minneapolis and T J Kinsella, Oak Terrace, Minn—p 398

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

10: 125-210 (June) 1935

- Infective Reticulo-Endotheliosis Chiefly Localized in Lungs, Bone Marrow and Thymus S van Creveld and F H Ter Poorten—p 125
Gastric Secretion in Anemia J W Ogilvie—p 143
*Celiac Disease Showing Unusual Features Successfully Treated with Insulin and Glucose Case B Schlesinger and K D Keele—p 149
Remarks on Heredity in Relation to Tuberculosis G G Kayne—p 157
Statistical Study of Nocturnal Enuresis Robina S Addis—p 169
*Gastromegaly from Arterioesenteric Compression of Duodenum in the New Born R Miller and H C Gage—p 179
*Early Anemia of Premature Infants Hemoglobin Level of Immature Babies in First Half Year of Life and Effect During First Three Months of Blood Injections and Iron Therapy Helen M M Mackay—p 195

Celiac Disease Treated with Insulin and Dextrose—Schlesinger and Keele present a case of clinically typical severe celiac disease with rickets and symmetrical fractures Fat analysis of the stools was normal The cause of the disorder appeared to be bound up with a faulty carbohydrate metabolism Marked clinical improvement was obtained with insulin and dextrose therapy Progress was most clearly depicted by the increase in weight Despite a low fat diet, ultraviolet rays, calcium and viosterol, loss of weight continued steadily for eight weeks, amounting to 3 pounds 12 ounces (1,700 Gm) When insulin and dextrose therapy (insulin 3 units, dextrose 15 Gm. twice daily) was begun immediate improvement was noticed, with a gain of 4 pounds 12 ounces (2,155 Gm.) in seven weeks Two control periods are consistent with the fact that this gain in weight was due to the treatment The gain in weight was accompanied by general clinical improvement, and the whole mental outlook became brighter The stools were less frequent, firmer and no longer offensive Their total fat content remained normal At the same time the blood phosphorus rose to 64 mg per hundred cubic centimeters Estimation of the blood sugar no longer showed a flat curve but a more normal rise of 30 mg per hundred cubic centimeters The bearing of this and other similar cases in the literature on the etiology of the disease is discussed A tentative suggestion is made that a significant part is played by a disordered endocrine system

Gastromegaly from Arterioesenteric Compression of Duodenum—Miller and Gage discuss three cases of chronic duodenal ileus from arterioesenteric compression in new-born infants and submit the evidence on which the diagnosis is based The chief clinical features of the syndrome consist of the enlarged stomach (gastromegaly) causing protrusion of the upper abdomen and showing occasional visible peristalsis, and vomiting of the obstructive type, the vomitus being profuse, projected and containing mucus Alternatively, refusal of food may keep the vomiting in abeyance for the time being Roentgen examination will demonstrate the presence of obstruction in mild cases, and in the severe ones it will distinguish between complete and incomplete obstruction It easily excludes any form of pyloric obstruction and, especially in oblique views, may demonstrate duodenal stasis The opaque meal should be given directly after gastric lavage and should be considerably larger than the normal for the age to allow for the enlargement of the stomach Medical treatment, chiefly by means of gastric lavage, is capable of restoring the tone of the distended stomach, so that satisfactory progress is possible in spite of the persistence of some degree of duodenal obstruction It is urged that, when symptoms suggesting duodenal stenosis or atresia are found to arise from an incomplete duodenal obstruction, the possibility of duodenal ileus should be considered and a brief trial made of medical measures before submitting the infant to the extreme risk of an abdominal operation In exceptional cases, in which gross megaduodenum is present, operation is probably essential, but in the type described here there is no possibility of the performance of duodenojejunostomy

Early Anemia of Premature Infants—Mackay found in twelve premature infants a loss in the total solids of the blood in the second month of life, which reached its maximum in the third month with a parallel decrease in red cells and hemo-

globin. There was not, however, any alteration in the weight curves to indicate water retention. From Sanpaules's work presumably a loss of solid elements must be supposed rather than an increase of fluid in the third month of life, or else a change in the relative amount of water in the circulation and in the tissues. If there is a loss from the body of solid elements of the blood without change in the blood volume, the low blood cell counts would still indicate that the total number of corpuscles in circulation in the body is subnormal. No definite knowledge exists at the present time of the cause of edema in new-born babies, though excessive cooling of the body appears to predispose to this condition.

British Journal of Radiology, London

8 339 402 (June) 1935

Quality of High Voltage Radiations I W V Mayneord and J E Roberts—p 341

*Constitutional Effects of X Rays as Determined by Blood Serum Tests S G Scott and F Hernaman-Johnson—p 365

Speedier Production of Finished Radiograph. A. E. Barclay—p 373

Radium Dosage Calculator H S Souttar—p 385

Peroral Pyelography Note H Morris—p 393

Report Concerning Effect of Radium Chloride Injections W Altschul—p 396

Effects of X-Rays as Determined by Blood Serum Tests—Scott and Hernaman-Johnson point out that the vanadic acid test carried out in apparently healthy people gives results of sufficient constancy to establish a norm. The vanadic acid sedimentation test is the outcome of the work of Bendien, Lowe and Coke. Ortho vanadic acid has the property of causing a precipitate in blood serum. Within certain limits, the amount of the precipitate is determined by the acidity of the vanadic solution that is added. When the vanadic acid test varies from the normal, variations in the "green field" appear to be a measure of resistance to disease, whereas the red field measures toxicity. Although the test is nonspecific, the graph affords a great deal of useful information when the disease is already known. When the test is positive in certain diseases, it can be brought back to normal by suitable wide field roentgen therapy. Examples have been given in cases of asthma, spondylitis and breast cancer. The use of the test is not limited to the control of roentgen therapy. In cancer, for instance, the favorable alteration in the graphs may be shown as a result of treatment of another kind, such as the injection of colloidal selenium. While the local effects of x-rays will always be of importance, the time has come when it should be realized that x-radiation is also a powerful drug, having a pharmacology and therapeutics of its own, which will repay the closest study.

British Medical Journal, London

1: 1157 1204 (June 8) 1935

Abdominal Pain in Children A R Short—p 1157

Cortical Mastoid Operation Analysis of Ninety One Cases R Salkeld—p 1160

Bacillary Dysentery Summary of Treatment with Brief Statistics of Epidemic. H W Corner—p 1162

Rupture of Popliteal Artery and Vein W A. Steel—p 1165

Meckel's Diverticulum D P MacGnire—p 1167

Benedict's Qualitative Test Further Modification Suitable for Estimation of Urine Glucose in Ward or Side Room J Fine—p 1169

1: 1205 1250 (June 15) 1935

Psychotherapeutic Clinics in Fact and Fancy H Crichton Miller—p 1205

*Observations on Absorption of Carotene and Vitamin A J C Drummond Muriel E Bell and Elizabeth T Palmer—p 1208

Chylothorax Case Muriel E. Bell—p 1211

*Tuberculin in Treatment of Cutaneous Tuberculosis H S Burnell Jones—p 1212

Intussusception in Adult Due to Tumors Note on Five Cases E N MacDermott—p 1214

Ulcerations in Stomach After Adrenalectomy J Freud D Luvish and F Oestreicher—p 1216

Observations on Absorption of Carotene and Vitamin A—Drummond and his collaborators investigated the absorption of vitamin A and carotene administered to a patient suffering from a condition which led to part of the contents of the thoracic duct being diverted into the pleural cavities. Analysis of the fluid removed at intervals from the cavities of the chest enabled approximate estimations to be made of the amount of vitamin A and carotene absorbed by way of the chyle. It was found that a relatively small proportion of the carotene

administered orally could be accounted for by the pigment found in the chylous fluid, whereas in the case of vitamin A the amount recovered was such as to indicate an almost complete absorption. The vitamin administered as the free alcohol was found present in the lymph mainly in the esterified condition, and it is thought probable that the linkage with the fatty acids during passage through the intestinal walls accounts for the much higher coefficient of absorption as compared with that found when carotene was given. Observations on the chylous fluid show that over a range of reaction much wider than that encountered in body fluids no trace either of carotene or of vitamin A passed a dialyzing membrane. Both compounds appeared to be present in colloidal form and closely associated with the highly dispersed fat.

Tuberculin in Treatment of Cutaneous Tuberculosis—Burnell-Jones presents three cases of cutaneous tuberculosis treated with tuberculin. Each case is a law unto itself with regard to intervals between injections, increase and decrease of dose and the change of tuberculin, and clinical insight and experience have to be depended on. The arrest of disease and the improvement seen in these cases are strong indications that the work should be continued. In one of the earlier cases (not recorded) treatment was given for seven months before any change in the lesions could be seen. The author has heard a practitioner condemn tuberculin after using it in one case for only three months. All the cases treated were of long duration before tuberculin was given. One patient, notwithstanding the fact that allergy was marked, continued to improve with small doses. The author employs large doses only if the patient tolerates them without a rise of temperature or unpleasant general reaction. This tolerance varies. One patient will sometimes feel ill after 0.1 cc., whereas another will feel no discomfort after 16 cc. Increase of weight almost invariably accompanies the administration of tuberculin. Sooner or later one finds that the improvement is not as rapid as at first. Thus the author assumes to be a sign for temporary suspension of treatment or for extension of the interval in any case it behooves caution. It does not occur when any particular dose has been reached. Attention is called to the remarkable differences in the blood films one finds in the different types of cutaneous cases, and it is suggested that workers should do monthly differential blood counts in each case.

Glasgow Medical Journal

6: 329 404 (June) 1935

*The Common Cold Survey of Recent Work. C H Browning—p 329

Some Observations on Physiotherapy in Treatment of Fibrositis and Other Rheumatic Conditions J C. Alexander—p 350

Incidence of Positive Wassermann Reactions in General Medicine. J Carslaw—p 359

The Common Cold—Browning in his summary of the causation of the common cold states that 1 The common cold is, at least in some instances, due to an agent which is not habitually harbored by those attacked. This is proved by the outbreak of epidemics in isolated communities on the occasion of the first visit of strangers after an interval of no communication. 2 Evidence that an infective agent of the filter passing type is responsible is furnished by the transmission of colds to quarantined human subjects and chimpanzees by the intranasal instillation of sterile filtrates of the nasal secretions of persons in the early stage of colds. The causal agent can survive for a considerable period outside the body and is capable of proliferation in culture medium in vitro. 3 It is not determined whether the ordinary pathogenic bacteria which may occur in the upper respiratory tract are ever by themselves the causal agent of coryza, although there is no doubt that as superadded infections they are important in aggravating the condition and especially in bringing about complications. 4 The incidence of colds is to a great extent independent of climate but has some relation to weather. Thus a sudden fall in temperature tends to be followed by an outbreak, owing in all probability to a lowering of resistance of the tissues. Nothing is known regarding factors that may influence the virulence of the causal agents. 5 There is little or no evidence that the incidence of colds in a community is related to the general habits of living of its individual members.

Journal of Laryngology and Otology, London

50: 389-492 (June) 1935

Ventilation of Nose and Accessory Sinuses Oscillograph Method of Investigation J F O Malley—p 389

Journal Obst & Gynaec of Brit Empire, Manchester

42: 409 576 (June) 1935

Therapeutics with Ovarian Hormones C Kaufmann—p 409

*Some Causes of Puerperal Mortality and Morbidity and Methods of Prophylaxis Suggested for the Treatment of Puerperal Sepsis and Puerperal Pyrexia Analysis of Series of Eight Thousand One Hundred and Eighty Nine Cases of Confinement and Abortion, Treated in the County of Lanark Maternity Hospital Bellshill for the Years 1927 to 1934 H J Thomson—p 434

Prevention of Prolapse of Uterus and Vaginal Walls Following Child Birth. Margaret Salmoud, in conjunction with Gertrude Dearnley—p 446

Treatment of Postpartum Hemorrhage Due to Atony P Salacz—p 476
Note on Five Pelvis of Women of the Eleventh Dynasty in Egypt D E Derry—p 490

Puerperal Mortality and Morbidity—Thomson states that perineal lacerations account for 7 per cent of the morbid conditions. An open wound is fraught with danger of infection in any part of the body, but such a danger is markedly increased when the wound is in the neighborhood of the vagina or rectum. Delay in the repair of a perineal laceration allows the germs a sufficient time to gain entrance to the blood stream and, if the tissues are not sutured immediately, healing and repair do not necessarily occur. The toxemias of pregnancy render the tissues unhealthy. The untimely use of the forceps, which may result in laceration of the soft parts, hemorrhage and exhaustion after a prolonged labor, is provocative of puerperal sepsis and pyrexia. Vaginal intervention should be avoided as much as possible. In hospital work it is a great advantage to divide the clean from the suspect case. Patients suffering from pyelitis are often admitted to the hospital before their confinement in the same ward as the clean antepartum cases and it is certain that *Bacillus coli*, most often the cause of pyelitis in pregnancy, accounts for a percentage of the local and general serious infections of the puerperium. Other possible sources of infection are a baby with a discharge from the eyes, septic spots on its skin, nasal discharges and a septic umbilical cord. Babies included in these categories are not allowed to be fed by the breast until the evidences of sepsis disappear. If the clean cases were warded in one part of the hospital and the suspect cases were segregated and warded as doubtful and certain sources of infection, much of the puerperal sepsis in the hospital would disappear. The chief causative agent of puerperal sepsis, the streptococcus, may come from the patient herself. In the majority of cases the source of the infection is due to a discharge from the nose or throat of the attendant or patient when they cough or sneeze. Other sources are boils, abscesses, carriers of *Streptococcus haemolyticus* and the unnecessary routine vaginal examinations made during normal labor. A chronic infection of the pelvis, lighted up during labor and giving rise to acute symptoms, may lead to the death of the patient. Aerial disinfection is worthy of consideration. Puerperal antitoxin occupies a definite place among the preventive measures of puerperal sepsis. The use of acriflavine is limited to swabbing the skin round the vulva. Its use is satisfactory, especially when combined with ethereal soap 1 500. The administration of calcium sulphide in a group of 1,421 cases, including many complicated, gives a pyrexial rate (when cases febrile on admission are excluded) of approximately 3.5 per thousand, an irreducible minimum. Asepsis should be the routine practice, not antiseptics.

Lancet, London

1: 1313 1368 (June 8) 1935

Late Results of Operative Treatment of Osteo-Arthritis of Hip Joint. C M Page—p 1313

Pyrexia of Obscure Origin A H Donthwaite—p 1320

*Epidemic Pemphigus of the New-Born (*Impetigo Contagiosa et Bullosa Neonatorum*) W H Poole and C H Whittle—p 1323

Effect of High Protein Diet on Arterial Pressure in Cases of Hypertony I Harris C N Aldred and A G H English—p 1327

Epidemic Pemphigus of the New-Born.—Poole and Whittle aver that pemphigus of the new-born may occur either in endemic or in epidemic form, the latter variety has been

rare until comparatively recently but is now beginning to constitute a serious hospital problem. The disease may take various forms, the lesions being essentially vesicular. Its bacteriology, pathology, sources of infection, onset, course and symptoms, differential diagnosis and prognosis are discussed. The treatment falls into three phases: prevention, control of epidemics and treatment of cases. Prevention depends on infants not being handled by any one who is suffering from or in contact with an infective condition, and on scrupulous obstetric cleanliness and a rigorous nursing technic. In treatment of the actual cases the most satisfactory results are obtained by frequent cleansing with a mild antiseptic, followed by a dry dressing. Gregorson reports good results from repeated exposure to ultra-violet radiation, while Cole and Ruh think that the use of an autogenous vaccine is beneficial. Simpler measures are equally effective. In the Cambridge epidemic the cases were all isolated in a "septic ward", special nurses, who did not attend other cases, were responsible for the dressings, which were renewed every four hours by day and once during the night, if the dressings became soiled by excreta, they were changed at once. Whenever the skin was dressed, all unbroken blisters were pricked with a sterile needle. In all cases the babies' arms were splinted to prevent the spread of infection by scratching.

1 1369 1426 (June 15) 1935

Further Observations on Lung Abscesses and Their Treatment A J S Pinchin and H V Morlock—p 1369

Structure of External Urinary Meatus A R Thompson—p 1373

Diagnosis of Abnormal Hip Conditions in Children M Forrester Brown—p 1377

*Induced Water Retention in Diagnosis of Idiopathic Epilepsy J L Clegg and F T Thorpe—p 1381

Blood Chemistry in Epilepsy Note R T Fletcher and Olive D Peden—p 1382

Atypical Muscle Strain P Bauwens and J K McConnell—p 1384

Tonsil and Adenoid Operation Reasons for Reversal of Usual Order of Removal of Tonsils Before Adenoids D F A Neilson—p 1387

Induced Water Retention in Diagnosis of Epilepsy—Clegg and Thorpe repeated Jacobsen's procedure of differential diagnosis between idiopathic epilepsy and hysteria, administering large quantities of water by the mouth, accompanied by hypodermic injections of pitressin in sixteen adult epileptic subjects and seven nonepileptic controls. Their object has been to confirm his results, or otherwise, and further to see whether any changes in the osmotic pressure of the blood accompany the water retention. Pallor followed the administration of pitressin in each case, it usually became noticeable about five minutes after injection and lasted up to two hours. It was accompanied by slowing of the pulse, but there was no marked alteration in the blood pressure. After two or three injections the action of the drug on the intestinal muscle was shown by slight looseness of the stools. In all the cases the excretion of urine was diminished, and in one patient suffering from chronic nephritis considerable edema of the ankles and face was produced. Edema constitutes a definite contraindication to the carrying out of the test. There was a progressive increase in the body weight during the administration of pitressin and water, with a definite drop when it was discontinued. The excretion of urine was affected conversely. A fit occurred after the weight had increased by 4 pounds (18 Kg). Of the sixteen epileptic patients tested, twelve had one or more fits during the administration of pitressin in combination with water. In two of the four negative cases, the test had to be discontinued because of hiccup and vomiting. The other two were both cases in which the fits were normally infrequent. In none of the seven controls was a fit induced by pitressin and water, and in none of the epileptic subjects to whom water or pitressin was administered alone.

Medical Journal of Australia, Sydney

1: 671 700 (June 1) 1935

Immunization Against Diphtheria and Scarlet Fever Hilda Bull—p 671

Hypochlorites as Antiseptics. H S Stacy and H S H Wardlaw—p 682

Some Aspects of Medical Curriculum of the University of Sydney Through Eyes of Recent Graduate. I L Brodsky—p 684

Archives des Maladies de l'Appareil Digestif, Paris

25: 553 664 (June) 1935

- Roentgenologic Study of Colon of Normal Man N Fessinger and G Hutet.—p 553
 False Colitis F Gallart Monès —p 563
 Spontaneous Hypoglycemia in Diabetic Patient Case L Szyfman and J Wajnszok —p 571
 *Santonin Test in Diagnosis of Hepatic Insufficiency F Fernandez —p 576

Santonin Test in Hepatic Insufficiency—Fernandez discusses the evaluation of the liver's detoxifying function. Santonin can be utilized to test the capacity of the liver to retain or eliminate foreign substances. It is insoluble in water and, administered by mouth, is dissolved in the intestine, rapidly absorbed, transported to the liver, where it is transformed into a similar substance (oxysantonin), and eliminated by the kidney. To test this process it was necessary to prepare standards. For this purpose 5 cc of a 1 per cent alcoholic solution of eosin was prepared, to which 5 cc. of distilled water was added. This constitutes the "mother solution." Six tubes, each containing 5 cc of distilled water, were placed on a rack. Twenty-five drops of the mother solution was added to the first tube, fifteen to the second and five to the third. Five drops of the mother solution was added to 5 cc of distilled water and fifty drops of the latter added to the fourth tube, ten to the fifth and three to the sixth. The fasting patient is given 0.03 Gm of santonin in a wafer and a glass of water. The patient urinates at this time and each hour for the succeeding eight or ten hours. Three cubic centimeters of each micturition is placed in a tube of the same caliber as that of the standards. Two cubic centimeters of lye of a 36 degree Beaumé density, diluted with an equal amount of distilled water, is added to each specimen. The yellow, slightly reddish color becomes readily visible. This is compared with the standards and the number noted. The patient should drink water frequently to increase the diuresis, since the concentration of the urine does not appear to influence the test. In normal persons the elimination of santonin begins at the end of one hour, increases progressively during three or four hours and then diminishes until the seventh or the eighth hour. When the test is compared in normal persons and various types of hepatic insufficiency, the curve is normal if the elimination of santonin is neither too early nor too late, too brief or too long, too high or too low. Intermittent elimination seems a definite proof of functional liver deficiency.

Presse Médicale, Paris

43: 937 960 (June 12) 1935

- Treatment of Varices P Alglave.—p 937
 Macrogonitosomal Gynandrium Case E Sorrel and Mme Sorrel Dejerine —p 942
 *Contralateral Pneumothorax. Tobé Degeorges Salmon and Joly —p 946
 Physiopathology of Cerebral Hemorrhages D Paulhan and I Bistracano —p 951
 Anal Fistulas R Kaufmann —p 954

Contralateral Pneumothorax—Tobé and his collaborators have had their attention called to the favorable contralateral action in certain cases of pneumothorax. Their observations can be divided into three groups. In some instances in which the creation of a double pneumothorax was considered, the collapse of one lung was followed by a sufficiently satisfactory contralateral improvement so that the second pneumothorax was unnecessary. In some cases in which it was necessary to maintain a pneumothorax in extreme expansion, they noted an unexpected improvement of the contralateral lesions. Thirdly, in a case of spontaneous pneumothorax developing in the course of a serious bilateral form which seemed beyond the resources of collapse therapy, the contralateral lesions became improved in an un hoped for manner. The authors believe that a contralateral action can be sought in the presence of (1) bilateral lesions with a free pleura, (2) bilateral lesions when narrow adhesions make pneumothorax impracticable on the side of the most menacing lesions, and (3) lesions practically unilateral in which adhesions prevent homolateral pneumothorax. When these criteria are fulfilled and contralateral action is expected, the authors insist on the necessity of maintaining a negative pressure in the pneumothorax, the terminal expiratory pressure remaining definitely lower than the atmospheric.

Archivio Italiano di Chirurgia, Bologna

39: 701 858 (April) 1935

- Pathogenesis of Gastric Ulcer Experiments R Palma.—p 701
 Consequences of Total Obstruction of Femoral Artery Experiments. V Bernabeco and L Novara —p 731
 Posttraumatic Thrombosis of Internal Carotid Artery Case. T Greco. —p 757
 *Calcification of Gallbladder (Porcelain Gallbladder) Case. G Scopetta —p 785
 Anastomosis of Common Carotid and Subclavian Arteries Experiments. D Liroy —p 797

Calcification of Gallbladder—Scopetta reports a case of complete calcification of the gallbladder in a woman, aged 62, who showed no biliary symptoms of either objective or subjective character. The patient was apparently in normal health, except for the presence of a laparocoele. The diagnosis of calcified gallbladder was made during the roentgen examination of the gastro-intestinal tract in connection with the presence of the laparocoele. A cholecystectomy was performed. The author believes that the diffuse calcification of the gallbladder that results in the formation of the "porcelain gallbladder" originates in an inflammatory process of long duration and spontaneous regression in the gallbladder. This hypothesis seems to be confirmed by the pathogenic mechanism of calcification of the pleura and the pericardium. The condition may follow an evolution without symptoms. The roentgen diagnosis of calcified gallbladder is an indication for cholecystectomy.

Anales de Medicina Interna, Madrid

4: 507 599 (June) 1935

- Multiple Lipomatosis Painful on Pressure Case. A. del Cañizo and L F Pallardo —p 507
 Treatment of Addison's Disease by Sodium Chloride, Oral Route. G Marañón, J A Collazo J Gimena and J Barbudo —p 519
 Chronic Meningitis with Acute Recurrences and Subarachnoidal Eosinophilia Due to Cysticercosis of Neuraxis Case. W López Albo, A Feljó and M Marín —p 533
 Syringomyelia and Intramedullary Glioma Cases R Bueno —p 543
 *Sensitivity of Skin to Tuberculin T Cerviá J Pérez and J García López.—p 557
 Dynamic Specific Action to Proteins M Carmena —p 577

Sensitivity of Skin to Tuberculin—Cerviá and his collaborators say that the theories for the interpretation of the internal mechanism of the skin reaction to tuberculin are not unanimous. In twenty-nine patients suffering from pulmonary tuberculosis, the authors performed intradermal reactions with (1) physiologic solution of sodium chloride, (2) a nonspecific protein, (3) old tuberculin and (4) a mixture of old tuberculin and epinephrine. The authors conclude from a comparative study of the morphology of the papules and of the focal hematologic formula of the papules that a relation between the velocity of the reabsorption of the skin and the sensitivity to tuberculin cannot be proved. When the mixture of tuberculin epinephrine is used in the test, the sensitivity of the skin to tuberculin decreases and the reaction lasts longer than when tuberculin alone is used. The intradermal reaction to tuberculin is specific. There is a relation between the hematologic formula of the tuberculin papule and that of the peripheral blood. The focal lymphocytosis in the tuberculin papule is the manifestation of the condition of general allergy in tuberculous patients.

Deutsches Archiv für klinische Medizin, Berlin

177: 573 690 (June 15) 1935

- Chemical Studies on Human Hearts H Wassermeyer —p 573
 Clinical Aspects of Disorders of Adrenals. W Nagel.—p 600
 *Tumor of Hypophyseal Infundibulum with Galactorrhea Further Contribution to Hypophyseodiencephalic Syndrome F Salus.—p 614
 Clinical Observations on Dynamics of Descending Urinary Passages by Moving Roentgenography (Urokiymogram) G Holland G M Sack and G Willenweber —p 624
 *Clinical Aspects and Pathogenesis of Nicotine Poisoning S Genkan D Piskarew, B Serebrjanik and S Braun.—p 642
 Beat and Minute Volume in Mitral Defects I Oettinger and I Masel —p 661
 Various Forms of Aseptic Inflammation of Meninges A H Müller and H Klan —p 672

Tumor of Hypophyseal Infundibulum—Salus reports the history of a woman, aged 28, who became amenorrheal gained rapidly in weight (20 Kg), developed morbid sleepiness and complained of headache and vomiting. There was a lactating mammary gland. After about three months, visual distur

bances developed. The woman complained of a glittering sensation and of seeing fiery wheels. She also developed polydipsia. Tests revealed a tendency to retain water and sodium chloride. The basal metabolism was reduced (-40) and the specific dynamic protein action was absent. In the beginning of the clinical observation there existed multiple paracentral scotomas and later there was choked disk and hemianopia. The patient died several days after a surgical intervention. The necropsy disclosed a tumor the size of a walnut in the hypophyseal infundibulum. The tumor compressed the optical tracts and had destroyed the floor of the diencephalon. The hypophysis was enlarged, the anterior lobe showing diffuse hyperplasia. The adrenals were unusually large and rich in lipid, and the ovaries were atrophic. The author discusses the different symptoms, giving especial attention to the pathogenesis of the galactorrhea. He thinks that in this patient it was caused by hypophyseal changes. Then he points out that the concurrence of obesity and morbid sleepiness is a characteristic diencephalic syndrome and shows that recent studies have disclosed that the central regulation of the metabolism is localized in this area.

Nicotine Poisoning—Genkin and his associates made studies on fifty-five workers (forty-one men and fourteen women), who extracted nicotine and nicotine sulphate from tobacco leaves and some of whom developed symptoms of acute poisoning. The pathologic manifestations developing under the influence of repeated small doses of nicotine belong chiefly to the sphere of the vegetative nervous system. Many of the symptoms are manifestations of the irritation of the parasympathetic, such as bradycardia, arrhythmia, hyperacidity, spasms of the smooth muscles, excessive salivation, and sweating. Another group of symptoms indicates disturbances in the sympathetic. To this group belong vascular manifestations of an angiospastic character in the lower extremities, tremor and so on. General cerebral symptoms are the result of disturbances in the blood perfusion of the brain. Symptoms such as sleep disturbances, loss of memory and neurotic manifestations are caused by the direct toxic action of the nicotine on the central nervous system. The most frequent symptom and thus the one that is most important for the diagnosis of nicotine poisoning is bradycardia. It may appear also outside the acute intoxications. The authors think that it is not so much the result of a central action of the toxin as of the influence the toxin exerts on the nerve cells of the vagus (in the system of the intracardiac ganglions). The pupillary reactions likewise seem to have diagnostic significance. The authors observed in a considerable number of their patients either contraction of the pupils or a slowness of reaction.

Deutsche medizinische Wochenschrift, Leipzig

81:1025 1064 (June 28) 1935 Partial Index

- *Severe Electrocardiographic Disturbances in Diphtheria and Their Prognosis H. Frank—p 1025
- *Chronic Polyarthritides During Age of Growth and Central Nervous System V. Schaefer—p 1030
- Glossoptosis in Micrognathia G. Ullrich—p 1033
- Experimental Studies on Histology of Thyroid and Hypophysis in Castration Obesity K. W. Schnitzler—p 1041
- Intra Uterine Infection in Tuberculosis E. Loewenstein—p 1043

Electrocardiographic Disturbances in Diphtheria.—Frank shows that, in addition to the polyneuritic, the cardiac disturbances predominate in so-called toxic diphtheria. The majority of fatalities that occur in this form of diphtheria are the result of cardiac and circulatory disturbances. The author analyzes the symptomatology of the children who died as the result of severe cardiac and circulatory disturbances. He reports nine cases of diphtheria in children who had severe disturbances of the cardiac conduction system and eight cases in which the electrocardiogram indicated severe impairment of the myocardium. The prognosis is unfavorable. The clinical aspects permit no definite evaluation of the extent of the impairment; the electrocardiogram provides a better insight into the severity of the disturbances. All the children in whom the cardiac conduction was greatly impaired died. The author rejects the theory ascribing early death in diphtheria primarily to the circulation, for he maintains that electrocardiographic changes are found quite frequently in the early fatalities, and he thinks that those patients in whom they were not demon-

strable did not live long enough. In this connection he points out that in cardiac infarct the electrocardiographic changes appear frequently from one to three days after the clinical event. However, the circulatory disturbances do play a part in the early fatalities. In the treatment of the circulatory disturbance and of the toxic impairment of the heart, he saw the best results following the combined application of epinephrine and strophanthin and of the various restoratives, but he admits that, once the myocardial impairment has developed, treatment is of little avail. He maintains that prophylaxis in the form of early serotherapy is the most effective treatment. The early administration of the serum is more important than the size of the dose.

Chronic Polyarthritides During Age of Growth—Schaefer asserts that the thought of a causal relationship between acute and chronic polyarthritides and the central nervous system is not entirely new, for it was discussed during the last century. It was given up during the bacteriologic era in spite of the fact that a causal agent could not be found. The author made observations on ten patients, all young persons, and describes the histories of four of these who had systemic disorders and in whom increasing stiffening of the joints and dwarfism, especially of the extremities, were the most noticeable symptoms. In some of these cases the central nervous system is involved. This is indicated by the mental disturbances and by the peculiar physiognomy. Many of the patients were mentally deficient, for there were retarded intellectual development and deficiencies in the emotional life. They were irritable, hypochondriac and melancholic. The severest mental disturbances did not always concur with the articular pains but frequently appeared also during the interval. The hypochondriac moods often appeared several weeks or even months before the articular disturbances. The peculiar masklike physiognomy of the patients resembles greatly that observed following epidemic encephalitis and during parkinsonism. This is a further proof that the brain is the site of origin of the disorder, the more so since deforming articular changes have been observed as sequels of epidemic encephalitis. The symmetry of the articular disturbances is another factor indicating the neurocentral origin of the disorder. The author shows that the patients presented a number of other disorders of central origin. He mentions scleroderma, excessive sweating and hypersecretion of the sebaceous glands. Moreover, the trophic disturbances in the muscles cannot be explained by the dysfunction of the joints, for they frequently precede the articular disturbances. The author thinks that the muscular atrophy is like the other symptoms of central origin. He concludes that the articular disturbances are not the primary factor but that the condition is a systemic disease the various symptoms of which are of central nervous origin.

Jahrbuch für Kinderheilkunde, Berlin

144:311 370 (June) 1935

- *Protein Deficient Fruit-Vegetable Diet in Children with Diabetes Mellitus G. Fanconi—p 311
- Diphtheria in Chemnitz 1924 to 1932 R. Kochmann and G. Steinbach—p 334
- Measles with Cerebral Complications Two Cases H. Zischinsky—p 353
- Cured Agranulocytosis During Nursing Age S. Wolff—p 357

Protein Deficient Fruit-Vegetable Diet in Diabetes—Fanconi reaches the conclusion that the protein deficient fruit-vegetable diet constitutes progress in the treatment of diabetes mellitus in children. If a diabetic child is brought to the hospital in a comatose or precomatose state or with a high acetone and sugar elimination, medication with stimulants, particularly caffeine, brandy and metrazol, is resorted to and fluid (alkaline mineral water) is given in large quantities. If the child is comatose, the fluid is administered subcutaneously or intravenously. After several hours, orange juice is given in increasing quantities up to 400 Gm each day. Depending on the age of the child, from 10 to 20 units of insulin is administered and the injection is repeated after two or four hour intervals until the comatose symptoms have disappeared or until the urine has become free from sugar. Then the child is given only fruit for from two to three days. Beginning with the fourth or fifth day, steamed and raw vegetables prepared with butter or oil are added and, after another two to four days, from one to two egg yolks, from 100 to 400 Gm of almond milk or from

30 to 100 Gm. of cream in coffee or tea are added. Later, from 10 to 50 Gm. of nuts may be added and eventually a small amount of bacon. Soon after that, from 30 to 100 Gm. of potatoes and from 20 to 50 Gm. of graham or whole grain bread may be added and, with that, the protein deficient fruit-vegetable diet is complete and may be continued for years. The daily minimum of carbohydrates is 100 Gm. If with such an amount the child is not free from glycosuria, insulin is given. Because of a perhaps unfounded fear of chronic protein hunger, the author gives his patients once or twice a week from 30 to 100 Gm. of calf's liver, fish or meat. However, this is done only after the blood and urine have become normal because, if given before this, the meat may cause a sudden increase in the sugar content of blood and urine. Exclusive fruit days are intercalated from time to time, when sugar and acetone reappear in the urine. The protein deficient fruit and vegetable diet rapidly increases the carbohydrate tolerance and soon makes the use of insulin superfluous. Moreover, the diabetic children like this diet better than the former strict diets.

Klinische Wochenschrift, Berlin

14: 913 944 (June 29) 1935 Partial Index

- Action of Sulphur on Bone Marrow A. H. Müller—p. 917
- *Are There Complications After Injection of Salyrgan? G. W. Parade—p. 918
- Cervitamic Acid—Other Vitamins and Blood Catalase G. Torok and L. Neufeld—p. 919
- Angina Pectoris in Severe Anemias O. Zimmermann—p. 922
- *Methemoglobin Test for Determination of Antianemic Action of Liver Extracts J. F. Wilkinson and W. Deutsch—p. 926
- Unilateral Dorsal Reflexes in Duodenal and Gastric Ulcer F. Oefelein—p. 928

The Injection of Salyrgan—Parade considers that excellent diuretic action of salyrgan has been established beyond a doubt. He thinks that more or less severe complications which may follow the administration of salyrgan are not sufficient reason to dispense with the preparation. However, he demands that this medicament be employed in cases of heart disease only if a suitable digitalis and strophanthin therapy, eventually together with diuretics, has not succeeded in counteracting the decompensation and the edemas. He says that several years ago he pointed out that the too sudden elimination of severe edemas in patients with certain types of heart disease may eventually produce severe cardiac disturbances. He reports a case in which threatening symptoms developed following the injection of salyrgan. The severe cardiac disturbances were recorded by the electrocardiograph. The patient apparently had an aortic and coronary sclerosis, which probably had produced degenerative changes before the attack. An injection of salyrgan, preceded by the treatment with small doses of strophanthin, was followed by a severe tachyarrhythmia accompanied by threatening general symptoms (vomiting, debility and collapse). It is probable that during the attack there developed disorders in the blood perfusion of the myocardium, for the temporary appearance of a "coronary" T wave (in lead 3) seems to indicate this. The author concludes that, in cases of coronary disease in which myodegenerative processes exist, extreme caution is necessary in the use of salyrgan. If its administration becomes absolutely necessary in such cases, a small trial dose (0.5 cc intramuscularly) should be given first.

"Methemoglobin Test" for Determination of Antianemic Action of Liver Extracts—Wilkinson and Deutsch call attention to the fact that, in order to replace the clinical test method for which uncomplicated cases of pernicious anemia during the stage of relapse are required, attempts have been made in recent years to devise laboratory tests for the determination of the efficacy of the antianemic action of liver preparations. So far these attempts have not been entirely successful. Duesberg and Koll devised a laboratory method consisting in the spectroscopic examination of the liver extracts after they have been mixed with hemolyzed erythrocytes and kept in the incubator (38 C) for one hour. The authors resorted to this method in the determination of the antianemic action of a number of extracts and compared the results of this method with the clinical tests. They found that there is no relationship between the hematopoietic activity revealed by the clinical test and the capacity to form methemoglobin disclosed by the spectroscopic examination. By careful heating it is possible

to destroy the antianemic liver substance, but the methemoglobin-forming principle remains almost unchanged. The antianemic principle of the liver is not identical with the methemoglobin-forming factor but occurs independently. Consequently the methemoglobin test of Duesberg and Koll does not indicate the presence or absence of the antianemic action capacity of liver extracts, and the clinical test remains as yet the only reliable method for the determination of the efficacy of an extract in pernicious anemia.

Münchener medizinische Wochenschrift, Munich

82: 1021 1062 (June 28) 1935 Partial Index

- *Motility Disturbances of Intestine and Their Treatment K. Gutzeit—p. 1021
- Treatment of Fracture of Radius G. Magnus—p. 1024
- Milk and Milk Products as Transmitters of Contagious Diseases in Human Subjects W. Rimpau—p. 1026
- Change in Prognosis and Therapy of Detachment of Retina. W. Löhlein—p. 1029
- *Behavior of Diastase in Blood in Gastritis K. Voit and H. Pragal—p. 1031
- Recording of Heart Sounds and Their Reproduction by Means of Phonographic Method G. Kayser and A. Weber—p. 1032

Motility Disturbances of Intestine—According to Gutzeit the orderly motility of the intestine is the resultant of a number of interdependent as well as of independent functions. In the case of the intestine, as in that of the heart, the mural nervous system insures an automatic motor activity that depends on its contents and its nutrition. The plurality of other influences on the motility is of a supplementary type and has the object of adapting the automatic motor activity to the changing requirements of the environment into which the organism is placed. To these influences belong all neurohumoral actions, congenital and independent, as well as acquired and conditioned reflexes, a number of promoting and restraining incretory factors, orderly ferment production that is adapted to the intestinal contents and, last but not least, the controlling action of the harmonic interrelation of the sympathetic and the parasympathetic and their dependence on superordinated cortical and subcortical psychic equilibria. As the harmonic collaboration of all these factors and their adaptation to changed requirements insure an optimal intestinal motility, a failure of the physiologic correlations produces disturbances. The author points out that disturbances in the intestinal motility may be absent in conditions such as typhoid and dysentery in which they ordinarily develop. He thinks that this cannot be explained by the location and the extent of the inflammatory process but that compensatory mechanisms are at work and that nutritional and climatic factors may play a part, but in addition to these environmental factors there are also some within the organism. He discusses disorders of intestinal motility in various disease conditions, such as hyperthyroidism, myxedema, parathyroid tetany, Simmonds' cachexia, Addison's disease, sprue and other conditions, and he mentions the motility disturbances that result when certain secretions (pancreatic, biliary and gastric) are absent, or in case of dyspepsia or gastro-enteritis. Finally he discusses constipation and its treatment. He emphasizes the necessity of careful stool and roentgen examinations and shows that the treatment with purgatives and with a diet containing great amounts of roughage may exacerbate rather than improve certain forms of constipation and produce colitis.

Behavior of Diastase in Blood in Gastritis—Voit and Pragal call attention to reports by other investigators, who found that an increase in the diastase content of the blood is not restricted to the diseases of the pancreas. On the contrary, by means of Ottenstein's procedure, which they consider more sensitive than Wohlgemuth's method, an increase in the diastase content of the blood could be detected also in other disorders. The authors decided to study the diastase content of the blood of patients with gastritis in whom there existed no clinical indications of an involvement of the pancreas. In some cases they employed the method of Wohlgemuth in addition to the Ottenstein method. They first determined in tests on normal persons that the normal diastase values vary between 120 and 200 mg per hundred cubic centimeters. Consequently they consider as pathologic only values that exceed 200 mg per hundred cubic centimeters. They further determined the

diastase content of the blood according to Ottenstein's method on forty three patients in whom the symptoms of gastritis predominated and found that the diastase values are increased in most cases. They think that this makes it probable that the pancreas is involved, although there are no other clinical symptoms on the part of the pancreas.

Wiener klinische Wochenschrift, Vienna

48: 863-886 (June 28) 1935

Construction Metabolism of Malignant Tumors and Its Relation to Diagnosis and Therapy E. Freund—p. 863

Crisis in Twin Pathology Etiology of Mongolian Idiocy A. Greil—p. 868

*Microdetermination of Fat in Blood Serum G. Kien and Cornelia Wetzler-Ligeti—p. 871

Injection Therapy of Hemorrhoids F. Vogel—p. 872

Anhanemic Substances in Urine A. Decastello—p. 874

Speech Disturbances in Children E. Froschels—p. 874

Microdetermination of Fat in Blood Serum—Kien and Wetzler-Ligeti investigated the fat metabolism in various skin diseases and in the course of these studies they developed a micromethod for the determination of the fat content of the serum. For the purpose of deproteinization and the extraction of fat, 2 or 1 cc of serum is added in drops to 8 cc. of an ether-alcohol mixture (three parts of alcohol and one part of ether) that has been placed in two centrifuge test tubes. Following a short boiling in the water bath, centrifugation is done and the clear fluid decanted into a test tube with glass stopper and evaporated. The sediment is washed three times more with the ether-alcohol mixture and each time the fluid is evaporated. After complete evaporation of the solutions a yellowish sediment remains, which contains the total amount of the fats that are extractable by the ether-alcohol method. This sediment is shaken for one minute with 2 cc of chloroform and after that for one minute with 10 cc. of purified petroleum benzin. Then it is left to stand for ten minutes. The mixture of chloroform and petroleum benzin is put into test tubes (of the type used for blood sugar determination according to Hagedorn-Jensen) and is well shaken and evaporated until only a few drops remain. These remaining drops are absorbed by strips of filter paper about 4 or 5 cm. in length and of a width slightly less than the diameter of the Hagedorn-Jensen test tubes. The strips are fastened to a linen thread and are carefully weighed. Four strips are required for every double determination. After the contents of the test tube have been absorbed by the strips of filter paper, the tube is washed twice more with from 5 to 7 cc. of purified petroleum benzin. Evaporation is done again and the last drops are again taken up by filter paper. The strips are dried in an incubator at a temperature of 45 C. until a constant weight has been reached, which is usually the case after about thirty minutes. The increase in weight indicates in milligrams the quantity of fat contained in the amount of serum that was examined. In order to determine whether this method really detects the total quantity of fat, control tests were made with carefully weighed quantities of triolein and tripalmitin. These control tests corroborated the reliability of the method. The authors found that the fat content of the normal serum fluctuates between 350 and 500 mg per hundred cubic centimeters. Greatly increased fat content was detected in uremia, diabetes and icterus. The authors emphasize that all containers used for this test should be cleansed with chromosulphuric acid.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Stuttgart

111: 1136 (June 21) 1935 Partial Index

Relation Between Histology, Prognosis and Therapy of Genital Carcinoma P. Feldweg—p. 1

Action of Gonadotropic Substance on Human Ovary and Its Relation to Anterior Lobe of Hypophysis K. J. Anselmino and F. Hoffmann—p. 26

Pseudomyxoma of Peritoneum T. Antoine—p. 37

Pathologic and Clinical Aspects of Sixty Cases of Gastro-Enterogenosis Ovarian Carcinoma G. Optz—p. 54

Amino Acid Metabolism in Pregnancy J. Botella Lluis—p. 68

Relation Between Histology and Prognosis in Genital Carcinoma—Feldweg emphasizes that the mixed cancers (squamous cell carcinoma and adenocarcinoma combined) and the structureless cancers must not be disregarded in the histologic classification of cancers. He observed that the maturity

of the carcinomas increases with increasing age of the patient. He found that the results of the surgical treatment were slightly better in the less mature cancers. He noted considerable differences in the ray sensitivity of the various types of cancer. He found that the ray sensitivity of adenocarcinomas in the cervix and in the body of the uterus is less than that of squamous cell carcinomas. Fractional irradiation produces the best therapeutic results in cancers of average maturity, irrespective of where they are located and what degree of differentiation they present. The prospects of irradiation are best in cancers with a moderate number of mitoses and with a moderate degree of cornification. Severe inflammatory reaction in the connective tissue indicates a more favorable prognosis for irradiation or surgical treatment than does a milder reaction.

Pseudomyxoma of Peritoneum—Antoine describes seven cases. He maintains that the pseudomyxoma may originate in the appendix (the intestine) as well as in the ovary. Simultaneously existing pseudomyxomatous changes in ovary and appendix have developed side by side. The relatively frequent simultaneous involvement of the two organs is due to a tumor predisposition (atresia of the proximal portion) of the appendix. The jelly-like secretion is produced by the epithelium. The penetration of the jelly-like substance into the connective tissue is caused neither by the great pressure in the cyst spaces nor by a revision of the direction of the secretion from the cell but rather by a rarefaction of the connective tissue with compensatory filling of the spaces with the jelly-like substance. In discussing the treatment, the author states that the surgical treatment should be as radical as possible and should be followed by roentgen irradiation.

Zeitschrift für Krebsforschung, Berlin

42: 93-162 (June 8) 1935

*So-Called Endotheliomas of Pleura. S. Scheidegger—p. 93

Cellular Allergy and Genesis of Cancer O. Reuterwall—p. 117

Relations Between Carcinoma and Tuberculosis in Human Subjects Gertrud Heddaeus—p. 140

So-Called Endotheliomas of Pleura—Scheidegger points out that epitheliomas of the lung are mentioned much more frequently in the older than in the contemporary literature. Following a review of the literature on pulmonary tumors, he describes four tumors of the pleura and lung. In three cases of primary tumors that had developed in the pleura, endothelioid formations and peculiar tailed cell forms were found in addition to true epithelial cell accumulations. In the fourth case, a true bronchial carcinoma, the same formations were found. In spite of their partially uncharacteristic structure, the pleural tumors cannot be traced to the surface cells. If tumors develop from the surface cells, they must be mesenchymal formations. However, so far the literature records no such observations. The author observed sarcoma-like formations in an immature primary peritoneal tumor and typical endotheliomatous formations in a multicentric primary tumor of the liver. In the latter case the development of tumor cells from the hepatic epithelium could be observed. All tumors described by the author must be regarded as immature and highly malignant. He advises that such terms as endothelioma, mesothelioma and perithelioma be avoided. He is of the opinion that the cancers of the pleura originate in displayed epithelial tissue buds. He wants the term epithelioma restricted to tumors that really originate in the vessels. Endotheliomatous formations and long-tailed cell forms are frequently found in pulmonary and pleural carcinomas.

Zentralblatt für Chirurgie, Leipzig

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*Surgical Treatment of Nonresectable Duodenal Ulcer F. Hollenbach—p. 1509

*Further Experimental Studies on Destruction of Syphilitic Virus in Conserved Blood P. Oganesjan, E. Salkind and V. Kudryavtseva—p. 1513

Failures in Surgical Treatment of Ulcer of Stomach and of Duodenum F. Rabbani—p. 1518

Prophylactic Measures in Surgical Treatment of Acute Cholecystitis A. I. Melentyeva—p. 1527

Embolism of Both Axillary Arteries F. Kazda—p. 1529

Surgical Treatment of Nonresectable Duodenal Ulcer—Hollenbach shows that the surgical treatment of the non-resectable duodenal ulcer has been the subject of considerable

dispute in recent years, for neither gastro-enterostomy with closure of the pylorus nor Eiselsberg's exclusion has given satisfactory results. Consequently the duodenal ulcer the resection of which is impossible on account of its close relation to the pancreas or to the hepatoduodenal ligament can be treated by only two methods by simple gastro-enterostomy or by Finsterer's "resection for exclusion," designated also as palliative resection and consisting in large resection of the stomach with or without removal of the pylorus. The author discusses the attitude of several leading gastric surgeons, showing that in recent years resection for exclusion has been widely recommended but is still being rejected by some. He himself has performed it in seventy-five cases and in all but five cases has removed the pylorus. There were three fatalities among the seventy-five cases. In one case the fatality was caused by peritonitis resulting from duodenal insufficiency, in another by pulmonary embolism and in the third by a hemorrhage from the ulcer. A peptic ulcer developed in one case, but more than 90 per cent of the patients recovered completely. The author states that in the majority of cases the duodenum was severed on the upper edge of the ulcer and in some cases the resection was made right through the ulcer. He points out that the indurated tissues in the head of the pancreas are favorable for the suturing of the duodenum. By two rows of sutures through the thickened pancreatic covering and the anterior duodenal wall, duodenal closure can be done rapidly and without difficulty. In a case in which death resulted from an insufficiency of the duodenal stump, the author recognized the limits of this operative method. He thinks that in case of an ulcer which is far down and on the posterior wall and in which no induration has developed in the head of the pancreas it is difficult to perform the resection along the upper edge of the ulcer or through the ulcer because closing of the duodenum will be extremely difficult. In such cases it is advisable not to remove the pylorus.

Destruction of Syphilitic Virus in Conserved Blood—

The experiments reported by Oganessian and his collaborators were made in order to determine the behavior of the syphilitic virus in conserved blood and to find a method of destroying the virus without making the blood unsuitable for transfusion purposes. It was found that five days of storage in the refrigerator is sufficient to destroy the spirochetes in the conserved blood. The addition of quinine dihydrochloride in a concentration of 1:1,000 effects the destruction of the syphilitic virus in less than three days. If the conserved blood contains only a small number of spirochetes, the process of destruction is more rapid. The authors emphasize that the destruction of the syphilitic virus in the course of the storage of conserved blood does not justify neglect of the venerologic control of the donors. They merely wish to show that in case of transfusion of conserved blood there is less danger of the transmission of syphilis than if fresh blood is used for transfusion.

Zentralblatt für Gynäkologie, Leipzig

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Contribution to Theory of Menstrual Bleeding. C. Kaufmann—p. 1508

*Intermittent and Prophylactic Insulin Therapy in Menorrhagias and Metrorrhagias. E. Klawns—p. 1512

Technic of Tubal Sterilization According to Madlener. H. Ohlgmacher—p. 1532

Important Obstetric Manipulations and Their Correct Terminology. F. Eberhart—p. 1546

Insulin Therapy in Menorrhagia and Metrorrhagia—

Klawns states that the observation that menstruation is often postponed, when vaginal insulin treatment is employed for erosions or ulcerations, induced him to try insulin therapy in cases of polymenorrhea, that is, in patients in whom menstruation recurred every fourteen or sixteen days and persisted for from eight to fourteen days. He tried insulin therapy also in hypermenorrhea, in juvenile hemorrhagic metropathia, in preclimacteric metropathia and in hemorrhages resulting from myomas and disturbances of the adnexa. A later inspection of the literature disclosed that other investigators had observed a connection between the ovarian cycle and the action of insulin and that some had found a favorable action of insulin on menstrual disturbances. In menorrhagias and in metropathic hemorrhages the author's results with insulin therapy were not quite

as favorable as those reported by some other investigators. He thinks that the difference is due to the fact that he observed his patients for longer periods. However, he too observed a decrease in the duration and in the intensity of the hemorrhages in a considerable number of patients. In hemorrhages of inflammatory origin, other authors obtained more favorable results than did the author. However, his observations largely coincided with those of one other investigator in hemorrhages caused by myomas, polyps and anatomic changes in the uterine wall, such as chronic metritis, fibrosis of the uterus, and adhesive perimetritis, for in these cases insulin therapy had little effect. The author found cases of polymenorrhea well suited for insulin therapy, for the prophylactic administration of insulin prolonged the interval between the menstrual periods from fourteen to twenty-one, twenty-four and finally twenty-eight days. Moreover, the duration and the intensity of the menstrual bleeding were considerably reduced in a number of cases. To make the prophylactic administration of insulin effective, it was necessary to administer the insulin several days before the expected menstruation, when the insulin was given only during the last forty-eight hours, it proved ineffective. He discusses the action of insulin and describes animal experiments conducted to gain a better insight into this action mechanism. He concludes that the favorable results obtained with insulin therapy in the various forms of pathologic hemorrhages are the result of the improvement it produces in the metabolic processes, that is, better utilization of the carbohydrates, better glycogen fixation, more adequate water binding power of the cells and modification of the sympathetic nervous system, of the ovarian functions and probably also of the hypophysis. Correct selection of the cases, exact dosage and prolonged intermittent treatment are the fundamental requirements for the success of the insulin treatment. The simultaneous administration of ergotamine tartrate is contraindicated, as it increases the sensitivity to insulin.

Bibliotek for Læger, Copenhagen

127 221 256 (June) 1935

*Myocardial Infarct. Review of Symptomatology and Diagnosis Based on Twenty Eight Observations. C. J. E. Holst—p. 221
Studies on Blood Sugar and Glycosuria in Exophthalmic Goiter. W. T. Andersen—p. 245

Myocardial Infarct—Holst states that many of the symptoms of myocardial infarct are so transitory that they can be confirmed only on examination at certain times and on repeated examinations. The rise of temperature is probably most often slight, but 39 C. (102.2 F.), possibly more, is frequent even in patients who recover, the duration of the fever is as a rule longer than commonly indicated, often from two to four weeks. Three types of leukocytosis with different pathogenesis may be seen. The sedimentation reaction is increased in practically all cases but is sometimes so slight and transient that it is demonstrated only on repeated examinations. The changes in the electrocardiogram consist of disturbances in rhythm observed also in other conditions, of paroxysmal ventricular tachycardia and, more nearly pathognomonic for myocardial infarct, of a shifting of the ST interval, a peculiar arc shaped configuration of the ST interval and transitory inversions of the T deflections. The frequent and often misleading occurrence of gastrointestinal symptoms is discussed. Two typical and two atypical cases are described.

Hospitaltidende, Copenhagen

78 533 560 (May 14) 1935

*Spontaneous Healing of Cavities. N. J. Strandgaard—p. 533
Investigation of Vitamin E Content in Foods and in Preparations of Oil of Wheat Germ. A. Ringsted—p. 546
Congenital Dystrophia Brevicollis. T. K. With—p. 556

"Spontaneous" Healing of Cavities—In three cases of tuberculosis of the lungs reported by Strandgaard there had been symptoms for four, fifteen and three months, respectively, and on admission the roentgenogram apparently showed cavities 3.5, 3 and 4.5 cm. in diameter, respectively. During ordinary treatment in a sanatorium for from seven and one-half to twelve months the cavities wholly disappeared and simultaneously a marked general improvement set in. Seven months after discharge the improvement was maintained.

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PREVENTIVE MEDICINE

CHAIRMAN'S ADDRESS

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BALTIMORE

At the first meeting of the American Medical Association, held in Baltimore in 1848, a committee on public hygiene was appointed, with Dr James Wynne of Baltimore as chairman. At the second meeting of the Association, held in Boston on May 1, 1849 the first report of the committee was submitted. At a later date a section quite comparable to the present Section on Preventive and Industrial Medicine and Public Health was organized. The Council on Health and Public Instruction was established in 1910 and was succeeded in 1922 by the present Bureau of Health and Public Instruction. Through the publications of the Association, through the work of this section and the Bureau of Health and Public Instruction, through its broadcasting programs and other official agencies, the Association has provided helpful information to the public and encouraged the practice of preventive medicine and cooperative effort on the part of physicians with respect to all sound and reasonable measures for public health betterment.

Any open antagonism or passive resistance by the general practitioner to the practice of preventive medicine was declared by the late Dr William H Welch "to be a challenge to the health officials."

In Maryland we have always enjoyed the most cordial cooperation with the state medical society, the Medical and Chirurgical Faculty of Maryland, the Baltimore City Medical Society and the several county medical societies. All plans for public health activities are discussed by members of the state board of health with the council of the Medical and Chirurgical Faculty, and the final program has the support of the faculty. Most of the county societies have a public health committee, which meets with the county health officers to formulate the health program of the county.

I feel that any program approaching the ideal in preventive medicine must have the whole hearted support of the general practitioner.

It is stated that the position of the general medical practitioner is being steadily undermined by the modern development of public health clinics, hospitals and specialties. I cannot say how far this is true, but I do say that any loss in the position or influence of the general practitioner is good neither for the profession nor for the public. In our system of public health the general practitioner should be the keystone and a most

important factor in the whole program. The general practitioner, then, should be actively associated with the public health work of his community. The Maryland State Board of Health has always insisted that the physician should have a prominent part in the prevention and control of communicable diseases. Much progress has been made also in securing and holding the interest of a large part of the profession of this state in the maternity and child hygiene program.

EFFORTS IN MARYLAND

As an example of what the family physician may do in the control of communicable diseases, I cite Carroll County, Md, in which a very large proportion of the preschool and school population was immunized against diphtheria by the physicians, leaving to the full time health officer a small group which for some reason did not or could not get to the clinics held by the physicians. In the same county the health officer rarely is obliged to vaccinate children entering school as required by law. This is done entirely by physicians as a matter of course. Immunizations against diphtheria by physicians reached 1,237 in one small campaign recently conducted in that county.

In Washington County, Md the medical society appointed a public health committee, which cooperates with the county health officer in all matters relating to preventive medicine, child hygiene, maternal hygiene, venereal diseases, tuberculosis, and medical care of relief cases. The medical society took a very active part in a county-wide diphtheria immunization program recently. The encouraging feature was participation by all the members not only in the immunization but in the Schick testing that followed. Physicians were assigned to each school to do the Schick tests. All children showing a positive Schick test were referred to their family physicians for immunization. During the campaign, 5,179 children showing a preliminary positive Schick were immunized. Of this number, 1,839 were immunized by family physicians in their offices and 3,340 by the physicians and health officer at the schools.

In Prince Georges County, Md, the health department in the last year conducted preliminary Schick tests in all schools in the county. A total of 4,989 children were tested and all those who gave a positive Schick test were referred to their family physicians. The number of immunizations done by the physician is not yet available, however, some have reported that they have done quite a large number.

April 8, 1935, the Wicomico County Medical Society, on the eastern shore of Maryland, adopted resolutions as follows on participation in the public health program of that county:

"That the medical profession will assume joint responsibility with the health department and each

physician to immunize the children in his community or practice regardless of ability to pay

"That the health officer is to administer the program creating public opinion and response," by which is meant a program of publicity

At this meeting the medical society further agreed to cooperate with the health officer through the public health committee of the society in all matters pertaining to the program, and to take an active part in the antepartum clinics held at the hospital and in the various communities, and to cooperate in a plan for the lowering of the present high infant death rate of that county

Worcester County Medical Society about a year ago, on learning of the great prevalence of venereal diseases in the county, authorized the establishment of a clinic by the county health officer to which the members of the society would refer, for an examination and a Wassermann test, persons suspected of being infected. All persons receiving this service are to be reported back to the physicians sending them in. The physicians then will either treat these persons or will send them back to the clinic for treatment. Recently the same society, having learned of the high infant death rate that has obtained for years in the county, has asked the county health officer to provide antepartum clinics, which the neighborhood physicians will be privileged to attend.

In Montgomery County the county medical society and the health officer agreed on a plan for school examinations by the private practitioner. The physician will conduct the examinations, and the public health nurse will arrange the program, assist in the examinations and keep the records. No physician will examine the school children in his own district.

The Baltimore City Health Department is now in its fifth annual diphtheria prevention campaign, and the commissioner of health has said that the success of the diphtheria prevention campaign was due in a large measure to the active participation of the practicing physicians of Baltimore. The Baltimore City plan was to allow a period of four months to precede that portion of the campaign involving the city-wide publicity drive of May and June. During this preliminary period every effort was made by the health department to "skim off" into the offices of private physicians the cream of the diphtheria prevention practice. Figures are at hand for the campaign, which demonstrated, more than any earlier one, the growing interest and continuously increasing support of this public health project by the medical profession in Baltimore. The ratio of children under 5 years of age reported as inoculated against diphtheria in the offices of private physicians to those inoculated in clinics and dispensaries was 1 to 7 in 1933 as compared with 1 to 10 in 1932. The true ratio is probably more favorable to private medical practice, as reports from this source are as yet fragmentary. An effective and unusual permanent feature of the diphtheria prevention campaign was inaugurated Jan. 1, 1933, in the form of a six months personal greeting card from the commissioner of health, which since that date has gone daily in the mail to about thirty-five babies in Baltimore.

THE PROGRAM AGAINST COMMUNICABLE DISEASES

In the immunization program in a community the health officer might take as his objective the number of immunizations each year to approximate the birth rate of the preceding year.

"Today the battle for a clean environment and a minimum guaranty against destitution may be said to

be won." There can be found many who are equally positive regarding the accomplishments in the struggle against diphtheria, typhoid and smallpox.

Maternal mortality and the infant death rate for our country have responded in an encouraging manner to the preventive program, but much remains to be done. It will require the united efforts of those officially and unofficially engaged to hold the gains that have been made. The magnitude of the maternal and child health program in the United States may be judged by the number of live births reported in 1933, which was 2,064,944, or a rate of 16.4 per thousand of population. This does not include 76,837 stillbirths reported.

In the preventive program against communicable diseases, some notion will be gained of its size when I state that there are 11,500,000 children in the United States under 5 years of age who should be protected by vaccination and inoculations against those diseases for which specific agents exist. This list is rapidly increasing as new discoveries are made. In the school population alone there are 24,600,000 for the health of whom the medical profession should assume its share of the responsibility.

The value of these preventive measures is clearly demonstrated by the following figures, obtained from Surgeon General Hugh S. Cumming of the United States Public Health Service.

The death rate per hundred thousand of population for diphtheria for a group of states in 1930 was 4.6 and in 1934 had declined to 2.7. The United States Bureau of Census reports showing the death rates in the registration area in continental United States for a number of years reveal the low rate of 0.4 in one state, in 1933 several states had rates of less than 1. Diphtheria morbidity and mortality rates seem to offer a fairly sound test of the quality of medical service received by the community. The conquest of diphtheria is now in process. The methods of achieving victory are known. The date of complete triumph depends on the methods and intensity by which they are applied.

The rates for typhoid indicate that the efforts of the past and the constant vigilance of the present have had a most favorable effect on the downward trend of this disease. Typhoid has been brought under control and shows a continued decline. The death rate per hundred thousand of population for a group of states in 1930 was 3.7 and has shown a yearly decline. In 1934 it reached 2.3 and in a number of states it was even lower. If less diligence should be shown in the supervision of public water and milk supplies, inspections of general food supplies and control of the sporadic cases, the typhoid rate would show a marked increase.

Tuberculosis has responded remarkably well to the program for its control. Intensive studies of its epidemiology and more comprehensive methods for its control are now being conducted in many localities. The death rate per hundred thousand of population from all forms of tuberculosis was 68 in 1930 and has shown a decline reaching 54.3 in 1934. I may with some degree of pardonable pride call attention to the fact that it was in Maryland that the first concerted campaign for the control of tuberculosis had its origin. In 1899 Osler formed the Laënnec Society for the Study of Tuberculosis. Maryland had the first tuberculosis exhibit in this country and was the first state to register tuberculosis. It was in Baltimore that the first steps were taken preliminary to the organization of the National Tuberculosis Association.

DISEASES OF MIDDLE LIFE

The mortality of diseases of middle life remains high. The death rate per hundred thousand of population from cancer was 97.8 in 1930 and has continued to increase until in 1934 it was 107.9. Diabetes likewise shows an increase being 19.3 in 1930 and 22.9 in 1934. Diseases of the heart have shown a steady increase in death rates since 1930. The rate in 1930 was 210 and in 1934 it was 243.9.

Some time ago the American Medical Association prepared a manual for the conduct of periodic examinations. For some reason this movement has not spread as rapidly as its sponsors predicted. It is generally agreed that the heavy toll taken in middle life could be lessened if the plan of periodic examination and regular supervision by the family physician were generally adopted. In this way many diseases would be detected in their incipience and habits of living might be modified so that health might be conserved and lives prolonged for many years of usefulness and enjoyment.

MATERNAL AND INFANT MORTALITY

The maternal mortality rates show a slight decrease during the five year period 1930-1934. The rate in 1930 and 1931 was 6.2 and has shown a decrease each year, reaching 5.4 in 1934. Maternal mortality from puerperal sepsis has not fallen, despite the advances that have been made in the practice of medicine in general. A pronounced improvement in the prevention of puerperal sepsis can be accomplished if there is a close cooperation between public health authorities, the obstetrician and the general practitioner.

The total infant mortality given as deaths under 1 year per thousand live births was 62 in 1930 and shows a slight decrease reaching 56 in 1933 to increase in 1934 to 58. The infant mortality, except malformation and diseases of early infancy was 29 in 1930 and has fallen steadily each year to 25 in 1934.

INDUSTRIAL HYGIENE

Another important public health problem in which there is being manifested great interest at this time is industrial hygiene. Some health departments maintain separate bureaus or divisions of industrial hygiene and this branch of activity is assuming a more important role. This subject will be fully presented before the section. In dealing with industrial hygiene special methods are required. Nuisances can be extinguished or slums demolished as menaces to the health of the public, but these root and branch methods cannot be applied to the factory. It is not practicable to shut down an important process the moment it causes a hazard to the workers. One must, on the contrary, recognize the need to keep the wheels of industry turning and must take up the more difficult task of devising protection for the worker without arresting the work.

ADEQUATE ORGANIZATION

Under existing conditions of economic pressure the problems of public health become aggravated and the need of an efficient, well coordinated, clearly defined organization becomes correspondingly urgent.

A comparatively small percentage of the rural areas of the United States has the form of health organization that is generally recognized as adequate. At the close of 1933, 73 per cent of the rural population was without this form of organization. During that year fifty-five full time units were discontinued and only four established. Some of the losses of 1933 were

regained in 1934. I am glad to report that Maryland increased to 100 per cent the health service to the rural population during the latter year.

In closing, I wish to emphasize the necessity for whole hearted participation of the entire medical profession in the public health program if our people are to receive the benefits of existing knowledge for the prevention of unnecessary sickness and death.

2411 North Charles Street

CERTAIN MENSTRUAL DISTURBANCES

ASSOCIATED WITH LOW BASAL METABOLIC
RATES WITHOUT MYXEDEMA

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AND

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In 1933 we¹ reported the results of treatment, by the oral administration of desiccated thyroid glands, of twenty-seven patients who had amenorrhea or marked oligomenorrhea and low basal metabolic rates without evidence of myxedema. We found that, of twenty-two patients who had had periods of amenorrhea 59 per cent menstruated more normally after treatment than they had before. At this time we report the results of similar treatment of seventy-four patients who had amenorrhea, oligomenorrhea or menorrhagia and low basal metabolic rates. These patients were seen in the years 1929 to 1934 inclusive. The cases that were reported in the original paper are included in this study.

Since 1917 H. S. Plummer² has recognized a group of patients who had low basal metabolic rates without clinical evidences of myxedema. Litzenberg and Carey³ noted that menstrual disturbances which could not be accounted for by any pathologic condition in the pelvis were found with moderate frequency in such cases. Many of these patients also complain of fatigue states. There is at present no reason for assuming a pathologic basis for the low basal metabolic rate in these cases, signs of myxedema do not develop, however low the level of metabolism may be. The response of the basal metabolic rate to the oral administration of desiccated thyroid is not so consistent in these cases as it is in cases in which myxedema is present. Furthermore, the elevation of the basal metabolic rate is not followed by improvement as frequently in these cases as it is in cases in which myxedema is present. The presence of low basal metabolic rates among several members of a family and the finding of a low basal metabolic rate among great numbers of individuals who apparently are in normal health also argue against a pathologic basis for the condition.

Elevation of the basal metabolic rate in the group of cases under consideration was carried out by the daily oral administration of desiccated thyroid. During the first few weeks of treatment the patients were kept under close supervision, and frequent observations of the basal metabolic rate were made. When a provisional

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Mussey, R. D. and Haines, S. F. Amenorrhea and Oligomenorrhea Associated with Low Basal Metabolic Rates, *Am. J. Obst. & Gynec.* 27: 404-408 (March) 1934.

2. Plummer, H. S. Personal communication to the authors.
3. Litzenberg, J. C. and Carey, J. B. The Relation of Basal Metabolism to Gestation, *Am. J. Obst. & Gynec.* 17: 550-552 (April) 1929.

daily dose of desiccated thyroid had been decided on, some patients were allowed to return home for a few weeks or a few months, but in all cases subsequent observations and determinations of the basal metabolic rate were made. There is sufficient individual variation in the daily dose of desiccated thyroid to make it necessary to hold the basal metabolic rate at the optimal level for the individual patient. Therefore, patients were not treated unless they could be kept under observation long enough to work out the necessary dosage. Patients are seen from time to time in the course of improperly controlled administration of desiccated thyroid who show definite evidences of hyperthyroidism because of excessive doses, others are seen whose metabolism remains low because of inadequate dosage. We feel strongly that these unnecessary complications of this treatment should be avoided. This can be done only by careful observation and occasional determination of the basal metabolic rate for a few months, at least. In the group of cases under consideration the doses of desiccated thyroid varied from one-half to 3 grains (0.03 to 0.2 Gm.) daily. The original level of the basal metabolic rate was not necessarily a factor in determining the daily dose needed in any individual case. Because most patients feel best if the basal metabolic rate is held at about -3 to -8 per cent, this level was aimed at in the treatment. This metabolic level seemed as effective as higher levels in the treatment of menstrual disturbances and was much less likely to result in uncomfortable symptoms, such as palpitation, diminished heat tolerance, and weakness.

Because of the time necessary to establish properly the dosage of desiccated thyroid many patients found it impossible to remain under our care long enough to follow this method of treatment. We have not included in this report patients who received treatment elsewhere. Also, in many instances, the administration of other hormone preparations, the application of roentgen rays over the pituitary body and ovaries, or other treatments were used independently or in association with thyroid medication, cases in which these treatments have been employed have not been included in this report. No case in which the patient showed evidence of myxedema has been included in this report.

The specific factors that are included in this study can best be considered if the cases in which the patients had amenorrhea, oligomenorrhea or menorrhagia are divided into separate groups. The relationship of low basal metabolism to sterility and to repeated miscarriages is not considered in this report.

AMENORRHEA

Fifty patients who had had amenorrhea for varying periods were treated with desiccated thyroid. The average age of these patients was 26.9 years, the greatest number of patients (twenty-five) in any decade were between 21 and 30 years of age. Twenty-seven of the patients were married. After elevation of the basal metabolic rate, fourteen patients (28 per cent) reported no improvement in the menstrual disturbance, seven (14 per cent) reported slight to moderate improvement, and twenty-nine (58 per cent) reported that their menstrual periods were normal or nearly so. The average duration of amenorrhea in those cases in which the menstrual disturbances were improved was nine and one-half months. In eight of these cases the patients had had amenorrhea for one year or more, and of these one had not menstruated for two years, one for four years, and one for five years. The average duration of amenorrhea, in the cases in which the patients

reported that there was not any change in menstruation after treatment, was nine and two tenths months. One of these had not menstruated for two and a half years, and another had not menstruated for four years. Thirty-seven (74 per cent) of the patients in this group said that they were in better general health after the elevation of the basal metabolic rate than they had been before. Some patients who reported general improvement had not noted any improvement in the menstrual disturbance, and vice versa. The average basal metabolic rate in cases in which amenorrhea was relieved by the treatment was -18.1 per cent, that in the cases in which the amenorrhea was not improved by the treatment was -18.5 per cent. In each of these groups of cases the basal metabolic rates varied between -11 and -30 per cent.

OLIGOMENORRHEA

Nine patients who had varying degrees of oligomenorrhea were treated by elevating their basal metabolic rates. The average age of these patients was 30.6 years, six of them were married. Four patients (44.4 per cent) did not note any improvement in menstruation after the treatment, two patients (22.2 per cent) said that the menstrual periods were more normal than they had been, and three (33.3 per cent) said that their menstrual periods were normal or nearly so after the administration of thyroid. Six patients (66.7 per cent) noticed improvement in their general health after elevation of the basal metabolic rate. The average basal metabolic rate before treatment in those cases in which there was improvement in the menstrual disturbance was -19.8 per cent, and in those in which no improvement was noted it was -16.8 per cent.

MENORRHAGIA

Fifteen patients who were suffering from menorrhagia were treated with desiccated thyroid. The average age of these patients was 30 years, twelve were married. Four patients (26.6 per cent) did not note any change in the menstrual disturbance after elevation of the basal metabolic rate. In three cases (20 per cent) there was slight to moderate improvement of the menorrhagia, and in eight cases (53.3 per cent) the menstrual periods became normal or nearly so. Eighty per cent of the patients in this group noticed an improvement in general health after elevation of the basal metabolic rate. The average basal metabolic rate was -17.3 per cent in those cases in which there was improvement in the menstrual disturbance, and -22 per cent in cases in which the patients did not note any improvement in the menorrhagia. In another group of cases of menorrhagia, which is much larger than the present group, the patients were treated with curettage, with anterior pituitary or with other hormones, or with both curettage and such hormones, with or without desiccated thyroid. These cases are not included in this report.

COMMENT

The number of patients in either of these groups who would have noted improvement in the menstrual disturbances had they not had any treatments during the time they were under observation is, of course, unknown. Since the menstrual disturbances were of long standing in many cases, it seems evident that maintenance of the basal metabolic rate at or near the average normal level was a factor in the reestablishment of normal menses in at least a fair percentage of the cases. Fatigue states have been encountered frequently in these cases, as they have in many cases in which

there are low basal metabolic rates without evidence of myxedema. A high percentage of patients in each group noticed a diminution in fatigue after the basal metabolic rate had been raised. This experience has been widely noted in the entire group of cases in which there were low basal metabolic rates.

This method of treatment becomes of increasing interest in view of the opinion expressed in the past year by Frank, Goldberger and Spielman⁴ that the use of estrogenic substances appears entirely illusory, and because of the statement by Novak⁵ that anterior pituitary therapy is still largely a blank. We have not made any attempt to use the thyrotropic hormone of the anterior pituitary body in these cases, chiefly because of reports by Anderson and Collip⁶ and others of its temporary effect, and also because of the ease and accuracy with which elevation of the basal metabolic rate can be accomplished by the administration of desiccated thyroid. The work of Fluhmann⁷ indicates that thyroid substance inhibits the effect on the ovaries of the gonad stimulating hormone of the anterior pituitary body, and that this inhibition is the result of the direct effect on the ovary and not the result of indirect action through the anterior pituitary body. Although his observations seem to demonstrate that the thyroid gland has at least an indirect effect on ovarian activity, we are not prepared to say that this explains the results obtained following the administration of desiccated thyroid to patients who have menstrual disturbances associated with low basal metabolism.

SUMMARY

A group of patients who had amenorrhea, oligomenorrhea or menorrhagia and low basal metabolic rates were treated with carefully regulated oral doses of desiccated thyroid glands. Because of a desire to determine the effectiveness of desiccated thyroid alone in the treatment of these conditions no patients who received any other form of treatment are included in this report. Definite improvement in the menstrual flow was obtained in 72 per cent of the cases in which there was amenorrhea, in 55 per cent of the cases in which there was oligomenorrhea, and in 73 per cent of the cases in which there was menorrhagia. Aside from whether or not there was an improvement in the menstrual disturbance, about 75 per cent of the entire group of patients reported improvement in their general health after elevation of the basal metabolism to within the average normal limits.

ABSTRACT OF DISCUSSION

DR J. C. LITZENBERG, Minneapolis. The authors have brought out that there is a very definite relationship between the thyroid and the reproductive system and that there is a definite relationship between sterility and habitual abortions and the thyroid. The fixed idea that minus 10 to plus 10 is the normal basal metabolic rate leads to difficulty. That is true as to disease from the standpoint of the internist and the physician, but from a physiologic standpoint no one knows just what it is, because within these rates a great many cases have been treated with thyroid with favorable results in these functional disturbances. I wish to emphasize that in each individual the dosage must be established by the basal metabolic rate.

One-fourth grain (0.016 Gm.) of thyroid produced hyperthyroidism in a patient and, on the other hand, 5 grains (0.3 Gm.) a day failed to raise the rate, illustrating that each individual must be tested as to what her dosage should be. The results that I have observed are quite similar to those of the authors. One fourth of the patients with functional dysmenorrhea were improved when they had amenorrhea or oligomenorrhea and 60 per cent were definitely normal after the medication. The health of 80 per cent was definitely improved. Of course, speaking in percentages of small groups of cases probably does not express the exact condition of things. In 1926 I found that in sixty-nine cases of sterility the rate of the basal metabolism was low in 50 per cent and that with functional disturbances of menstruation, such as the authors have been discussing, 40 per cent of the patients were sterile. Out of 114 women, 40 per cent had functional disturbances. In 1929 our cases from the Nicolle Clinic were accumulated by my colleagues Carey and Blumstein. The number of cases by this time had been somewhat increased and the percentages have a little more value. There were 255 married women with low basal metabolic rates. Of these, 49.7 per cent were sterile, which agrees with our percentages of the smaller group. Of 469 with low basal metabolic rates 39.7 per cent had such disturbances and 63 per cent were improved. In all the different types of functional menstrual disturbances of approximately 500 women the improvement was 68.2 per cent.

DR T. J. WILLIAMS, University, Va. Many women with functional disorders of menstruation show essentially normal metabolic rates, although even in this group some improvement in the menstrual irregularity may follow thyroid medication. Excessive menstruation seems more likely to be associated with mild hypothyroid states than is scanty or absent menstruation, although in either instance irregularity of rhythm is common. The widespread use of some of the more recent glandular preparations without a complete examination and study of the patient has occasionally permitted lowered thyroid activity to be overlooked as a possible associated cause in menstrual disorders. I recall a young woman who at the age of 19 developed a functional amenorrhea and who for two years was treated with various glandular products. At this time, the basal rate was minus 22 and amenorrhea persisted. Under thyroid medication the rate was raised to minus 11, at which level menstruation recurred. On several attempts to discontinue the thyroid, amenorrhea recurred and the basal rate dropped as low as minus 40 on one occasion. In December 1933, after two years of thyroid therapy, it was finally discontinued and the periods remained regular in all respects until September 1934, when a pregnancy occurred, which has proceeded normally. In my hands the best results in the treatment of the functional menstrual disorders have been in individuals with lowered basal metabolism treated with thyroid. Definite improvement in from 55 to 73 per cent of the cases suggests that this method of therapy is simpler and more satisfactory than any of the other methods available at the present time. An important consideration in these individuals, aside from the correction of the menstrual disturbance, is the improvement in the general health and well being and the relief of fatigability and lassitude that are associated with the elevation of the basal rates. It is questionable whether the employment of the thyrotropic hormone of the anterior pituitary body, even if readily available, would have any great advantage over desiccated thyroid in the treatment of these patients. Patients treated with thyroid preparations should be under close observation, and, in deciding on thyroid therapy and in determining dosages, the physical signs of thyroid activity should be considered as well as basal metabolism determinations.

DR R. D. MUSSEY, Rochester, Minn. Dr. Litzenberg has called attention to the fact that percentages of small groups of cases sometimes are not absolutely accurate, I agree with this, yet I feel that these figures show the trend of results of treatment. This group is small because we have reported only cases in which we have exercised personal supervision during the course of the treatment. In addition to the low basal metabolic rate, it was realized that some of these patients may have had disturbances in the production of estrogenic or gonadotropic substances, and in some of these cases determinations of estro-

⁴ Frank R. T., Goldberger M. A. and Spielman Frank. Present Endocrine Diagnosis and Therapy, J. A. M. A. 103: 393-402 (Aug. 11) 1934.

⁵ Novak Emil. Application of Endocrinology to Gynecologic Problems, Am. J. Obst. & Gynec. 27: 473-482 (April) 1934.

⁶ Anderson E. M. and Collip J. B. Studies on the Physiology of the Thyrotropic Hormones of Anterior Pituitary, J. Physiol. 82: 11-25 (Aug. 24) 1934.

⁷ Fluhmann C. F. The Influence of the Thyroid on the Action of Gonad Stimulating Hormones, Am. J. Physiol. 108: 498-508 (May) 1934.

genic or gonadotropic substances or both were made. These determinations have not been carried on long enough to evaluate the possible association of any appreciable number of cases in which the basal metabolic rates were low and in which estrogenic and gonadotropic determinations may have also shown a variance. As a rule, thyroid treatment has to be continued for an indefinite period. We have noted that, when patients improve on thyroid medication, the discontinuance of this treatment is commonly followed by lowering of the metabolic rate and a relapse to their former condition.

CONGENITAL SYPHILIS

DIAGNOSIS BY MEANS OF DARK-FIELD EXAMINATION OF SCRAPINGS FROM THE UMBILICAL VEIN

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When one is dealing with an infectious disease, demonstration of the causative agent is always desirable in order to establish the diagnosis. The necessity for demonstrating the organism varies inversely with the vividness of the clinical picture presented by the patient. A new-born syphilitic child is usually free of symptoms during the first few days or weeks of life.¹ Hence, the demonstration of *Spirochaeta pallida*, were this possible, would be a valuable diagnostic aid.

Obtaining material in which to demonstrate spirochetes from a living child suspected of having syphilis presents a problem which is often insurmountable. It is true that spirochetes have been shown to be present in the blood stream,² the nasal secretion,³ the conjunctival secretion,⁴ syphilitic cutaneous lesions, the urine^{2c} and in the meconium⁵ of syphilitic infants, but in most instances the infant in whom the causative micro-organism is found has manifest clinical evidence of congenital syphilis or has succumbed to the disease before birth or shortly afterward. Spirochetes have been revealed in certain instances in all the products of conception in the placenta, the umbilical cord, the amniotic fluid and the various fetal membranes, but so far as diagnosing syphilis in the new-born child is concerned the demonstration of histologic changes or of spirochetes in the placenta or in the fetal membranes, however valuable it may be for demonstrating

the presence of syphilis in the mother, will never indicate with certainty whether or not the child is diseased (McCord,⁶ McKelvey and Turner,⁷ Trinchese⁸). There remains for purposes of diagnosis the umbilical cord.

This structure is unique in that, while it forms an important part of the fetal circulation, it is readily accessible for laboratory study after birth and it is the avenue through which the spirochetes must pass from the mother to the child, if the latter is to become infected. Several modes of transfer of the spirochetes from the maternal to the fetal circulation have been suggested,⁹ but the theory of permeation of the lymphatic system mentioned by Rietschel¹⁰ is the one that is of most concern in this study and the one that will accordingly be described. In brief, a transient spirochetemia in the mother infects the maternal portion of the placenta. An inflammatory reaction in the smaller blood vessels results in a swelling of the media, in an obliterative endarteritis and in the formation of a small infarct. Spirochetes multiply rapidly in this area, permeate the tissue membrane separating the maternal and fetal circulation and gain access to the tissue spaces in the fetal portion of the placenta. The fluids from these areas drain into the lymphatic vessels which course, in part at least, in the perivascular tissue surrounding the umbilical vein and apparently in the wall of the vessel itself. Thus the spirochetes gain ready access to the fetal organism through these channels.

Spirochetes have been described as present in the umbilical cord by a number of European workers.¹¹ As early as 1906 Huebschmann¹² and Simmonds¹³ found spirochetes in sections of umbilical cord stained according to the Levaditi silver impregnation method. Other investigators confirmed their work.¹⁴ These pathologists, however, were interested primarily not in the diagnosis of the disease in the infant but in showing the manner in which the fetus is infected. Thomsen and Boas¹⁵ in 1909 did remark, none the less, that the demonstration of spirochetes in the umbilical cord was a difficult procedure and of little practical value from a diagnostic standpoint. Emmons,¹⁶ pub-

From the Philadelphia General Hospital.

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lishing a year later in this country, came to a similar conclusion, having found spirochetes in silver stained sections of the umbilical vein in only one of fifteen syphilitic infants. More recently, Manouelian,¹⁷ in attempting to show the primary lesion of congenital syphilis, demonstrated the presence of many spirochetes in cases of periphlebitis of the umbilical vein. As a result of the combined investigations of the aforementioned workers, it has been learned that spirochetes may be found in the wall of the umbilical vein, in the wall of the umbilical arteries, more rarely in the blood within the lumen of these vessels, and in the jelly of Wharton, but it is agreed that the microorganisms are most numerous and most easily demonstrated in the wall of the umbilical vein.

Of more practical value, however, than the demonstration of spirochetes by histologic examination of silver impregnated microscopic sections, a procedure that requires a number of hours of work and an intimate knowledge of a rather specialized technic, is the demonstration of spirochetes by dark-field examination of fresh preparations made from scrapings from the wall of the umbilical vein. Gräfenberg¹⁴ mentioned having used this method as early as 1908, but it was rediscovered by Vulović¹⁸ in 1923 and since has been employed with more or less success by other investigators, especially Klasten¹⁹ and Philipp and Gornick.²⁰ They have considered the method of absolute diagnostic value in a limited number of cases. More than a year ago, McKelvey and Turner,⁷ reporting from Johns Hopkins University on syphilis in pregnant women, stated that they had attempted this diagnostic procedure but had found it too cumbersome for routine work. In view of the fact that the cord must be examined shortly after delivery, the method necessitates, in hospital practice, close cooperation between the medical and nursing staff and a full-time resident physician skilled in the use of the dark-field method.

One of the more important contributions in this field of study was that of Vulović, in Vienna, who examined 1,024 specimens of umbilical cords in unselected maternity cases and found spirochetes in seven. Two of the seven patients inadequately followed were never proved to have syphilis. Vulović subdivided the cases in which the dark-field examination gave negative results into the following groups: 703 apparently normal infants, 280 cases of supposedly nonsyphilitic abortion and stillbirth, seventeen apparently healthy infants of syphilitic mothers, fifteen macerated fetuses and two infants of mothers infected during pregnancy. Each of the mothers in the seven cases in which the dark-field examination was positive was proved to have syphilis.

Klasten in 1925, without stating the number of specimens that had been actually examined, reported twelve

instances in which spirochetes were found in scrapings from the umbilical vein. In all of these, with the exception of the case of one infant who was free of symptoms at the age of 11 months, syphilis developed. Klasten also found spirochetes in the cord of three of thirty macerated fetuses. Philipp and Gornick in 1926 reported positive results of dark-field examinations of material from the umbilical vein in nine living offspring and in fifteen still-born children of syphilitic mothers, all the living children being followed and the diagnosis of syphilis being made clinically. In the last nine years the method has been mentioned occasionally, but there are no reports of its having been used in any extended series of cases.

METHOD OF DARK-FIELD EXAMINATION

The method, as described by Vulović and as employed in the present investigation with slight modifications, is briefly as follows:

Immediately after delivery a portion of the umbilical cord, about 3 inches (7.6 cm.) long, is cut from the distal end (the end farther from the placenta and nearer the child). This is placed in a sterile moist bottle and kept without preservative at room temperature. For best results the examination must be made as soon as possible after the infant is born, for, if

TABLE 1—Results of Dark-Field Examination of Material from Umbilical Vein of Eight Syphilitic Stillborn Infants

Case	Para	Status of the Mother			At Time of Delivery		
		Type of Syphilis	Duration of Disease	Amount of Antepartum Treatment, Weeks	Wassermann Reaction		Dark Field Examination of Umbilical Vein
					Maternal	Cord	
1	1	Congenital	14 years	0	4+	1+	+
2	1	Secondary	4 months	0	4+	4+	+
3	5	Latent	5 years	4	8+	3+	+
4	1	Latent	2 years	0	4+	4+	+
5	2	Latent	5 years	1	4+	4+	+
6	1	Latent	1 year	0	4+	4+	+
7	2	Latent	Unknown	2	4+	4+	—
8	2	Secondary	8 months	3	4+	4+	—

the specimen stands for much longer than eight hours before it is studied, bacterial contamination begins to become evident and the possibility of obtaining a positive result is greatly diminished. When the examination is performed, the ends of the specimen are cut off and discarded, the middle inch (2.5 cm.) being saved. The two arteries and the single vein are then identified in cross-section without too great difficulty. The vein is best transfixed by passing through it from end to end some small blunt instrument, e. g. a probe (toothpicks have been used for this purpose), and the lumen of the vein exposed longitudinally by cutting down on the probe with a sharp scalpel. The blood adhering to the intima of the vessel, which somewhat hinders the study by making the spirochetes more difficult to find, is scraped away with a knife. The knife is then wiped clean and additional scrapings are taken from the wall of the vessel, placed in a drop or two of physiologic solution of sodium chloride, macerated, placed on a slide and examined in the dark-field microscope.

Spirochetes are never numerous. I have found one preparation, from a stillborn fetus, in which there were approximately twelve micro-organisms per field, but usually many fields were examined before a single spirochete was found. A specimen was called positive when at least two actively motile micro-organisms, morphologically *Spirochaeta pallida*, were revealed, it was called negative after examination of at least two preparations, for not less than one-half hour, did not demonstrate the presence of spirochetes.

17 Manouelian Y. Tréponème pale et phlébite syphilitique—étude clinique et histomicrobiologique de la phlébite syphilitique primitive de la veine ombilicale. Gynéc et obst 3: 407 (June) 1921. Syphilis héréditaire et formes évolutives du tréponème. Compt rend Acad d sc 180: 332 (Feb 3) 1930. L'accident primaire de la syphilis conceptionnelle (troisième observation). Bull Soc. d'obst et de gynéc 20: 396 (June) 1930.

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RESULTS OF STUDY

Dark-field examination was made of fresh preparations of scrapings from the umbilical vein in ninety-five unselected deliveries of syphilitic mothers at the Philadelphia General Hospital between May 31, 1934, and April 1, 1935. Spirochetes were found in twenty-five instances: six times in stillborn fetuses, nineteen times in living infants. None of the living children showed clinical symptoms at the time of delivery, and no treatment was given, but all the infants were followed sufficiently long to establish the diagnosis by some other means, clinically, serologically, roentgenographically.

From the practical standpoint it makes little difference whether or not spirochetes are demonstrated in the umbilical cord of a stillborn infant, since in those cases the damage has already been done to the child and the diagnosis of the disease is readily accomplished in the mother by means of blood tests. These cases are accordingly considered separately in table 1. The serology of the cord, which in this hospital is tested by means of the Wassermann reaction in two antigens and checked against the Kahn reaction, was invariably positive, the mothers had received little or no antepartum treatment, and spirochetes could be demonstrated in the scrapings from the umbilical vein in 75 per cent of cases.

It is with the living infants that the present study is principally concerned, for it is in such cases that treatment early and judiciously applied will decrease the infant morbidity and mortality resulting from congenital syphilis. The data concerning the nineteen liv-

ing infants who showed positive evidence under dark-field examination. The information obtained from the roentgenograms of the long bones, a much more valuable diagnostic aid for detecting congenital syphilis at the time of birth or shortly afterward, was compared with that from the umbilical vein in sixty-two instances (table 3). In nine instances the roentgenograms

TABLE 3—Comparison of the Results Obtained in the Offspring of Ninety-Five Mothers with Latent or Partially Treated Syphilis

	Dark Field Examination of Umbilical Vein			
	25 Positive Reactions		70 Negative Reactions	
	Number	Per centage	Number	Per centage
Infants born alive	19	76	68	97
Infants born dead	6	24	2	3
Positive roentgen evidence on sixth day	6 (18 cases)	33	9 (44 cases)	21
Positive Wassermann reaction of the cord	9	36	8	11
Positive maternal Wassermann reaction	22	88	46	66
Syphilitic infants	25	100	18	26
Average number of weeks of antepartum treatment	3		9	

showed definite positive evidence, whereas the examination of the umbilical vein showed negative results. Spirochetes were found in the umbilical cord, on the other hand, in twelve cases in which the child had not been infected long enough for the changes to become evident in the bones, and in which the diagnosis could not have been made in the first week of life by any other method. Eighteen (25.7 per cent) of the infants in whom the dark-field examination was negative were subsequently proved to have syphilis.

In case 10 (table 2) positive evidence of syphilis was obtained from an examination of the umbilical vein, but the infant has not been proved to have syphilis clinically by studies thus far made. This infant is the fourth child of a white woman with latent syphilis and with strongly positive blood serologic test, who received only two injections of neoarsphenamine prior to delivery and whose last child showed clinical evidence of syphilis with strongly positive serologic proof at the age of 7 months. At the age of 4 months the child had a generalized lymphadenopathic condition but was otherwise healthy. A blood test was negative and roentgenograms of the long bones at six days and at four months were negative. It is still possible that in the youngest child clinical symptoms of syphilis may develop. One infant, case 5, followed for nine months, has not shown a positive blood reaction, even though he has not received any treatment. He is the third child of a woman with latent syphilis and a strongly positive blood reaction, who received only one treatment prior to delivery and whose last antecedent pregnancy resulted in a late miscarriage. Roentgenograms of the long bones of the child at the age of 6 days and of 2 months showed typical osteochondritic changes. The infant, who at birth weighed 6 pounds 3½ ounces (2,820 Gm.) and weighed only 11 pounds (5 Kg.) at the age of 9 months, appeared pale and sick, with obvious obstruction to nasal breathing and an enlarged and palpable liver and spleen. A clinical diagnosis of syphilis was made by the pediatricians.

Although there is no reason to think that spirochetes or artefacts resembling them would be present in the

TABLE 2—Nineteen Living Infants in Whom Spirochetes Were Demonstrated in Dark-Field Examination of Scrapings from the Umbilical Vein

Infant Number	Status of Mother			Wassermann Reaction		Status of Child		
	Para	Type of Syphilis	Duration of Disease	Maternal at time of Delivery	Cord	Roentgen Examination at 6 Days	Dark Field Examination of Umbilical Vein	Syphilis Demonstrated
1	1	Latent	Unknown	4+	—	—	+	Yes
2	6	Latent	2 years	4+	—	—	+	Yes
3	8	Latent	8 years	—	—	0	+	Yes
4	3	Latent	2 years	3+	—	—	+	Yes
5	3	Latent	2 years	4+	—	+	+	Yes?
6	3	Aortic disease	5 years	3+	—	—	+	Yes
7	2	Latent	2 years	3+	—	—	+	Yes
8	1	Latent	Unknown	3+	—	—	+	Yes
9	5	Latent	Unknown	3+	—	—	+	Yes
10	4	Latent	2 years	4+	—	—	+	No?
11	2	Latent	Unknown	4+	—	—	+	Yes
12	2	Latent	Unknown	4+	4+	—	+	Yes
13	1	Latent	Unknown	4+	2+	—	+	Yes
14	3	Latent	3 years	3+	—	—	+	Yes
15	2	Latent	Unknown	3+	—	—	+	Yes
16	1	Latent	2 years	4+	—	—	+	Yes
17	3	Paresis	Unknown	4+	4+	+	+	Yes
18	4	Latent	Unknown	4+	—	—	+	Yes
19	5	Latent	12 years	—	—	—	+	Yes
Total positive results				17	3	6	19	17+2?
Total number of examinations				19	19	18	(36)	19
Percentage of positive results				89	16	33	(64)	100?

ing children in whom the specific micro-organism of syphilis was demonstrated in the scrapings from the umbilical vein are summarized in table 2.

The unreliability of the Wassermann reaction as an absolute diagnostic criterion in early infancy is well established and generally recognized.²¹ The Wassermann reaction of serum from the cord was positive in only three (16 per cent) of the nineteen living syphi-

circulation or tissue of nonsyphilitic infants careful dark-field examinations have been performed on preparations from the umbilical vein in fifty cases in which the infant was not suspected of having syphilis. These have proved to be negative in every instance to microscopic test and to subsequent clinical investigation.

It is perhaps worthy of note that spirochetes were demonstrated by dark-field examination in only two cases in which over two months of antepartum treatment had been given, twenty-three (92 per cent) of the positive results having been obtained in cases in which little or no treatment was given (table 4). The average duration of treatment in the group in which positive evidence was obtained was three weeks as compared to nine in the infants in whom the dark-field examination was negative. There is a noticeable tendency for the percentage of syphilitic children detected to decrease as the amount of antepartum treatment increases. It is probable, therefore, that the amount of treatment which the mother receives prior to delivery forms a definite restriction to this method of diagnosis. This method is of greatest value when delivery takes place at the height of the spirochetal invasion of the fetus.

TABLE 4—Results of Antepartum Treatment as Shown by Examination of the Umbilical Vein of Eighty-Seven Living Offspring of Syphilitic Mothers

Duration of Antepartum Treatment Months	Examination of Umbilical Vein			Offspring		Percentage of Syphilitic Infants Showing Positive Dark Field Examination	
	Positive Results	Negative Results	Percentage of Positive Results	Syphilitic	Non syphilitic	Syphilitic, Percentage	Dark Field Examination
None	4	5	44	6	3	67	67
Less than 1	8	16	35	14	9	61	57
1 to 2	5	16	24	9	12	43	56
3 to 4	2	17	11	5	14	26	40
More than 4	0	15	0	1	14	7	0
Total	19	68	22	35	52	40	54

SUMMARY

In this series of cases dark-field examination of the umbilical vein has been instrumental in detecting syphilis in nineteen (21.8 per cent) of the eighty-seven living offspring of syphilitic mothers on whom it was tried, with an accuracy which might be considered 100 per cent, and at a time in the infant's life when most other clinical criteria and laboratory aids are unsuccessful. Since thirty-five of the living infants studied, however, were actually proved by observation to have syphilis, it is needless to say that a negative dark-field examination does not rule out syphilis in the child but merely indicates the necessity of studying the infant by other methods. The fact that in 54 per cent of the diseased children the diagnosis was made within a few hours after birth seems to indicate that this method has a diagnostic value which somewhat overshadows its clumsiness. It is truly impractical to examine a specimen of the cord obtained at every delivery in a large maternity service, but, when the diagnosis of syphilis is made in the mother, as it should be, before delivery takes place, then the suspected syphilitic specimens can be examined without placing too great a burden on the physicians in charge, and the diagnosis of congenital syphilis can be established immediately in a limited number of cases.

100 Summit Street, Chestnut Hill

THE DIAGNOSIS OF CONGENITAL SYPHILIS

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AND

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CHICAGO

A large number of infants born of mothers known to be syphilitic show no clinical symptoms of the disease during the first weeks of life. Likewise a comparatively large number give negative serum reactions. Roentgenologic evidence of bone lesions characteristic of congenital syphilis is the only other known diagnostic sign of the disease. How reliable this sign is,

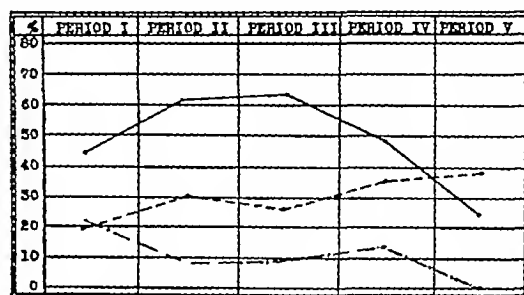


Chart 1—Graphic comparison of the relative value of the three diagnostic methods in cases in which records of examinations were complete. Straight line indicates roentgenologic, broken line clinical, dots and dashes serologic.

compared to the clinical and serologic evidences in the diagnosis, was the question we hoped to answer when we started the work on which this report is based.

We studied a series of infants born of mothers known to have syphilis by making periodic clinical, serologic and roentgenologic examinations during the first year of life.

Our material comprises 104 consecutive infants born at the Cook County Hospital during the two year period from the autumn of 1928 to the autumn of 1930. A careful physical examination was made during the

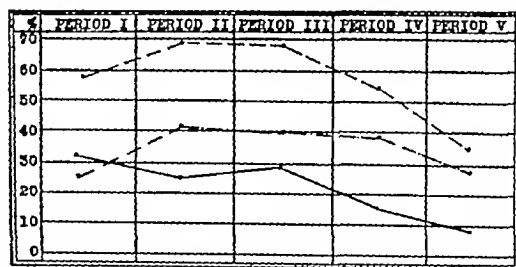


Chart 2—Probabilities for diagnosis of congenital syphilis at the various periods during the first year. Straight line indicates definite, dots and dashes, suggestive, broken line, total.

first few days of life, blood was drawn for Wassermann and Kahn tests, and roentgenograms were made of the long bones. The same procedure was followed at 6 weeks, at 3 months, at 6 months and at 1 year. Owing to various reasons, the records in some cases are not complete, therefore we have included in our comparative statistics only those cases with recorded observations on all three types of examinations.

Read before the Section on Pediatrics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

From the departments of pediatrics of Rush Medical College of the University of Chicago and of the University of Illinois College of Medicine and from the Cook County Hospital, Chicago.

Under the heading "clinical" are included those signs and symptoms usually referred to as suggestive of congenital syphilis enlarged spleen, rhinitis, marked desquamation of the palms and soles, pustular or macular rashes, pseudoparalysis and the like. Since these symptoms can rarely be considered diagnostic without the support of other evidence, they are here designated "suggestive observations." Very few infants in this group had clinical manifestations sufficiently marked to warrant a diagnosis without support from other diagnostic aids. With this explanation it is evident that in the charts and table the importance of clinical symptoms is more apparent than it is real.

The accompanying table is a statistical summary of the study as it relates to the comparative diagnostic value of clinical, roentgenologic and serologic observations at the various periods studied. Chart 1 shows this comparison in graphic form.

These statistics show in a striking manner the predominant importance of the roentgenologic evidence of

conclusions as to the relation of these factors to the incidence of or the degree of severity of infection in the infant. However, 83.7 per cent of the infants studied in this series showed either definite or suggestive evidence of infection at some time during the first year. Sixty-seven cases, or 64.4 per cent, were considered positively infected. In 95 per cent of these sixty-seven positive cases a diagnosis could be made

Summary of Cases in Which Records of Examinations Were Complete

Periods	Cases	Roentgenologic		Clinical		Serologic	
		No Positive	Per Cent Positive	No Positive	Per Cent Positive	No Positive	Per Cent Positive
I	79	35	44.3	15	18.98	18	22.8
II	60	37	61.66	18	30.0	5	8.33
III	35	22	62.85	9	25.71	3	8.57
IV	23	11	47.82	8	34.78	3	13.04
V	8	2	25.0	3	37.5	0	0

osseous syphilis in the diagnosis of congenital syphilis during early infancy. During the new-born period there was suggestive clinical evidence of infection in 19 per cent of the cases, serologic evidence in 23 per cent and roentgenologic evidence in 44 per cent, at 6 weeks the figures are 30 per cent, 8 per cent and 61 per cent, and at 3 months 25.7 per cent, 8.6 per cent and 63 per cent respectively.

Chart 2 is suggestive of the probabilities for the diagnosis of congenital syphilis during the first year of

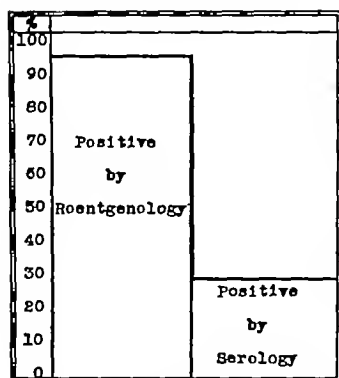


Chart 3—Relative value of roentgenology and serology in the diagnosis of sixty-seven definitely infected infants during the first year

evidence of infection in the first year. The degree of fixation of the virus in the mother probably determines the occurrence of symptoms and signs in the offspring.

We were unable to get either satisfactory data concerning the time of the mother's infection or accurate enough information about her treatment to draw any

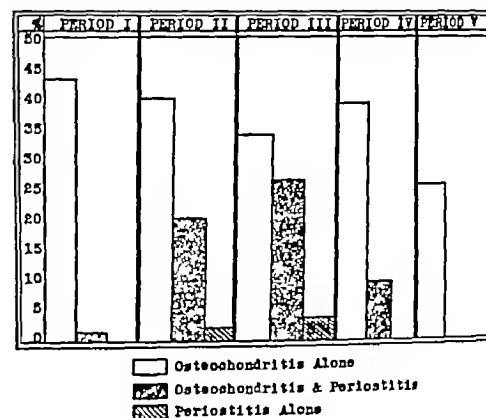


Chart 4—Relative incidence of osteochondritis alone, both osteochondritis and periostitis and periostitis alone in the various periods

through the evidence of osseous lesions as revealed by roentgenograms. Only 29 per cent of these sixty-seven cases gave positive serologic tests.

The changes that occurred in serum reactions deserve some attention. In seven infants the Kahn reaction was 1 plus and in four it was 2 plus, with a negative Wassermann reaction in the first period, they all had negative Kahn reactions in the second period. Three infants who had 2 plus Kahn and 2 plus Wassermann reactions and one who had a 4 plus Kahn and a 4 plus Wassermann reaction in the first period were Kahn negative and Wassermann negative in the second period. Of three infants whose serum reactions were negative in the first period, two gave 4 plus reactions in the second period and one in the fourth period. One infant with a 1 plus Kahn and a negative Wassermann reaction in the first period had a 4 plus Kahn and a 4 plus Wassermann reaction in the fourth period, and another with a 2 plus Kahn and 1 plus Wassermann reaction in the first period had a 4 plus Kahn and a 4 plus Wassermann reaction in the third period. These observations indicate that too much reliance on the serum reactions during the new-born period may lead to errors in diagnosis.

No attempt will be made in this report to discuss the bone changes in congenital syphilis, but in chart 4 we show graphically the relative incidence of osteochondritis occurring alone, of osteochondritis and periostitis occurring together, and of periostitis occurring alone in the various periods of the first year.

Periostitis is almost never present in the new-born. It becomes moderately frequent by the sixth week and is present in more than half of the cases showing osteochondritis by the third month. It is extremely rare for periostitis to occur as the only change in the bones of syphilitic infants.

COMMENT

The frequency of the occurrence of pathologic changes of the bone in congenital syphilis has been common knowledge among pathologists for many years.

As early as 1778 Nils Rosen¹ called attention to the frequency of bone lesions in congenital syphilis and emphasized the value of skeletal examination in these cases. In 1864 Ranvier² mentioned arrest of ossification as a paramount manifestation of congenital syphilis. The observations of Wegner³ were published in 1870 and those of Parrot⁴ in 1871-1873. Fränkel⁵ emphasized that bone lesions are most pathognomonic of congenital syphilis in 1873.

With the development of roentgenology it became possible to visualize the pathologic lesions in the osseous system. The first demonstration of roentgenograms of syphilitic lesions of the bones in congenital syphilis was made by Hochsinger⁶ in 1900. In 1907 Oluf Thomsen⁷ of Denmark pointed out that the roentgen ray offers the best method of discovering congenital syphilis in new-born infants otherwise showing no evidence of the disease. The German and French literature of the last twenty years contains much important information on this subject. Among the outstanding contributions are those of Eugen Frankel,⁸ Bela Alexander,⁹ Hans Wimberger,¹⁰ and M. Pehu¹¹. Thus the significance of bone lesions in congenital syphilis has been much stressed in Europe, but until Stafford McLean¹² published his thorough and exhaustive studies in 1931 the American literature contained very little on the subject.

Our purpose in this report is to call attention once more to the overwhelming significance of osseous lesions as revealed by the x-rays in the diagnosis of congenital syphilis.

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ABSTRACT OF DISCUSSION

DR. JOSEPH YAMPOLSKY, Atlanta, Ga. With the intensive antepartum treatment of syphilitic mothers given in most of the clinics it is becoming apparent that the diagnosis of congenital syphilis will have to be made less on clinical signs and more through serologic and roentgenologic methods of examination. Between 50 and 60 per cent can be diagnosed at birth. Careful monthly serologic follow ups will probably by the fourth month determine all syphilitic cases, as it has been proved by other writers that, if the Wassermann reaction is negative after the fourth month, it is probable that an infant although born of a syphilitic mother probably does not have syphilis. It has been interesting to note that an infant whose spinal Wassermann reaction is positive and whose mother is definitely syphilitic is usually syphilitic in character. Some may not be syphilitic,

as has been proved by Dunham, who demonstrated that the Wassermann reaction in these cases becomes negative later. She states that this phenomenon is due to the fact that the complement fixing substance of the mother's blood is transmitted to the infant, in whom it remains for a few weeks and then disappears. In a study of 1,372 living babies by McCord, 114 per cent of full term babies later demonstrated a positive serologic reaction and 28 per cent of premature babies showed the same evidence. When no antepartum treatment was given, 221 per cent of the patients demonstrated a strongly positive reaction, as against 2 per cent in whom sufficient antepartum treatment had been administered. There is no doubt in my mind that the roentgenologic examination of the new-born is an efficient method for the determination of syphilis. In 309 dead infants, McCord demonstrated roentgenologically syphilitic bone changes in 623 per cent. It may be interesting to note that in the same patients the organism of syphilis was found in 61 per cent, demonstrating that the results of roentgenologic examination were favorably comparable with the finding of the organisms. In another study of seventeen cases treated with acetarsone at the ages of from a few months to 12 years it was possible to demonstrate roentgenologic changes in fourteen, and therefore I agree with the authors that roentgenologic examination is important in the diagnosis of early congenital syphilis and that the typical observations will be those of osteochondritis, or of osteochondritis and periostitis occurring together in early infancy, and of periostitis occurring alone in the various periods only after the first year of life. I do not wish to go into the diagnosis of the demonstration of congenital syphilis through the examination of the mother's placenta, as antisyphilitic treatment of pregnant women has a definite influence on the histologic appearance of the placenta. I doubt that correct diagnosis can be made in that manner.

DR. H. HARRIS PERLMAN, Philadelphia. Diagnosis of prenatal syphilis in the early stages has become decidedly more difficult within the past decade, because of the intensive campaign that is being waged with unrelenting seriousness in antepartum clinics. This serious drive has resulted in a scarcity of clinical material to a degree so marked that the Sigma Clinic of the Children's Hospital, with an average weekly attendance numbering eighty or more patients, has been handicapped in presenting to our postgraduate students infants and children demonstrating the classic signs of so-called congenital syphilis. Contrast this situation with that which prevailed only ten or fifteen years ago. From the academic point of view the problem in prenatal syphilis today is particularly one of early diagnosis. The roentgenogram has been invaluable in demonstrating indisputable signs of prenatal syphilis when evidence of this disease is lacking in the new-born, when a history of syphilitic infection in either parent and other members of the family is indefinite or of doubtful value, and when criteria for the diagnosis of prenatal syphilis in the infant yield presumptive evidence alone. A diagnosis of syphilis on purely roentgenologic evidence without serologic or other confirmation, however, must be considered of doubtful value unless the roentgenologic signs are interpreted by an expert. It is a matter of routine at the Sigma Clinic of the Children's Hospital to have roentgenograms of the skeletal system taken in all infants under 1 year of age. Needless to state, a positive diagnosis of prenatal syphilis is frequently made by roentgen examination alone when other diagnostic means, including the blood Wassermann and Kahn reactions are negative. Dennie emphasizes the importance of the roentgenologic examination of the long bones in the following words: "The roentgenologic view is diagnostic in that the worm eaten areas can be seen between the epiphysis and the diaphysis and often the capsular portion fits like a cork in the end of the shaft." It is generally believed that the bones are more likely to be involved in prenatal syphilis than in acquired syphilis. Usually several of the bones are involved. Epiphysitis shown as a marked rarefaction or destruction at the epiphysal line of the long bones is seen in from 70 to 90 per cent of cases of prenatal syphilis during the first three months of life. Periostitis is a later manifestation and is demonstrable as a thickening along the entire shaft of the bone. Findlay, in his series of cases, found an incidence of bone lesions of 25 per cent. Dennie, in a study of fifty cases, stated that 40 per

1. Rosen, N. R. *Traité des maladies de l'enfance*. Paris: P. G. Canelier, 1778, cited by McLean.¹²
2. Ranvier, L. A. *Syphilis coëgénitale*. *Gaz. méd. de Paris* 39: 596, 1864, cited by McLean.¹²
3. Wegner, G. *Ueber hereditäre Knochensyphilis*. *Virchows Arch. f. path. Anat.* 50: 305, 1870, cited by McLean.¹²
4. Parrot, J. M. *Sur une pseudoparalyse causée par altération du système osseux chez les nouveau-nés atteints de syphilis héréditaire*. *Arch. de physiol.* 4: 319, 470 and 613, 1871. *Syphilis osseuse des nouveau-nés*, Paris 48, 92, 1873, cited by McLean.¹²
5. Fränkel, E. *Ueber Placentarsyphilis*. *Arch. f. Gynäk.* 5: 1, 1873, cited by McLean.¹²
6. Hochsinger, C. *Studien über hereditäre Syphilis*. Vienna: Franz Deuticke, 1904, vols. 1 and 2, cited by McLean.¹²
7. Thomsen, Oluf. *Abstr. from Daouish in Jahrb. f. Kinderh.* 68: 125, 1907, cited by McLean.¹²
8. Frankel, Eugen. *Die angeborene Knochensyphilis im Roentgenbild*. *Fortschr. a. d. Geb. d. Röntgenstrahlen* 1911 supplement, vol. 26, cited by McLean.¹²
9. Alexander, Bela. *Die ostealen Veränderungen bei kongenitaler Syphilis*. Leipzig: Johann Ambrosius Barth, 1915, cited by McLean.¹²
10. Wimberger, Hans. *Klinisch radiologische Diagnostik von Rachitis, Scrophul und Lues congenita*. *Ergebn. f. inn. Med. u. Kinderh.* 28: 264, 1925, cited by McLean.¹²
11. Pehu, M., cited by McLean.¹²
12. McLean, Stafford. (a) I. *The Roentgenographic and Pathologic Aspects of Congenital Osseous Syphilis*. *Am. J. Dis. Child.* 41: 130, 152 (Jan.) 1931. (b) II. *The Correlation of Roentgenologic and Pathologic Aspects of Congenital Osseous Syphilis*. *ibid.* 41: 363-395 (Feb.) 1931. (c) III. *Correlation of the Roentgenologic Picture with the Gross and the Microscopic Examination of Pathologic Material in Congenital Osseous Syphilis*. *ibid.* 41: 607-675 (March) 1931. (d) IV. *The Correlation of the Clinical Picture with the Osseous Lesions of Congenital Syphilis as Shown by the X-Rays*. *ibid.* 41: 887-922 (April) 1931. (e) V. *The Osseous Lesions of Congenital Syphilis: Summary and Conclusions in One Hundred and Two Cases*. *ibid.* 41: 1411-1418 (June) 1931.

cent had no other syphilitic signs than the bone lesions. In a survey of thirty early cases of prenatal syphilis by Broomer, fourteen showed no evidence of any bone lesions, osteochondritis and periostitis were present in twelve, dactylitis in one and Parrot's node was discovered in one. In most instances the blood serologic examinations have paralleled the roentgenologic and clinical observations.

DR. A. H. PARMELEE, Oak Park, Ill. I was afraid that nobody would believe the figures that I gave today. In fact, I was astounded at them myself. I think that they show two things: first, that serologic tests are not reliable during the early months of the first year in the diagnosis of congenital syphilis, and second, that physicians must learn to make their own roentgenologic interpretations. I am convinced that, if these films had been sent to the roentgenologist for his interpretation alone, unless he was one who had had special training in the recognition of osteochondritis, perhaps half of them would have been returned as negative. My appeal is that every pediatrician should become familiar with the early evidences of syphilis as revealed by roentgenology. The worm eaten appearance is not an early manifestation. The earliest manifestation is the thickened epiphyseal line with a narrow zone of rarefaction immediately shaftward in the metaphysis. One does not find periostitis in the new-born. It is found after six or eight weeks or later. My purpose in this paper primarily is to show that in the general run of practice, when physicians examine children physically, send the blood specimen to a laboratory for Wassermann and Kahn tests and examine the roentgenologic films of the long bones, they will find a very small number that show physical signs of syphilis and a surprisingly small number that will give positive serologic evidence of syphilis, but, if physicians become familiar with the roentgenologic signs of syphilis, they will find a surprisingly large number that do show some evidence of syphilis.

JUVENILE DEMENTIA PARALYTICA

WITH SPECIAL REFERENCE TO ITS TREATMENT WITH MALARIA

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AND

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Up to 1917, when Wagner-Jauregg presented his remarkable results in the treatment of dementia paralytica with malaria, the prognosis was extremely poor. This new form of treatment was soon instituted by others, who corroborated his observations as the years went by. O'Leary and Welsh¹ reported similar results at the Mayo Foundation. One of us,² reporting the observations in this clinic, found similar results.

The prognosis in juvenile dementia paralytica has been considered more unsatisfactory than in dementia paralytica. Almost as soon as malaria and other forms of fever therapy were used in adult dementia paralytica, it was tried in the juvenile type. O'Leary and Welsh¹ reported little if any improvement. Though the consensus is that the prognosis in the juvenile type is almost as poor today as it was before 1917, very little has been written on the malaria treatment of this condition.

There were seen in this clinic 1,040 cases of congenital syphilis from Jan. 1, 1925, to March 1, 1932, of

which thirty-one cases were juvenile dementia paralytica. A presentation of these cases with special reference to a comparison of those treated with malaria and those treated without malaria will be presented in this paper.

OBSERVATIONS

Sex—For every case of adult dementia paralytica in the female, about seven are diagnosed in the male. The protective effect of sex and pregnancy being eliminated in juvenile dementia paralytica, it would be expected that a larger proportion of females would be diagnosed than was found in the case of adult dementia paralytica. Most other writers state that juvenile dementia paralytica is about equally divided between the sexes, however, in this series twenty-three, or 74.2 per cent, were males and eight, or 25.8 per cent, were females. It could possibly be deduced from this that the protective influence of sex, though a factor, is of less importance than is that of pregnancy.

Age of Onset—The youngest patient to be clinically diagnosed as having juvenile dementia paralytica was 2 years of age and the oldest was 31. In most of the patients symptoms developed between the ages of 6 and 9 years. It was uncommon before 5 years or after 20 years in this series.

History of Parental Syphilis—Owing probably to incomplete observation of the families of these patients, a definite diagnosis of syphilis in the parents was made in but a few cases. Eight mothers and six fathers were so diagnosed. A suggestive history in the form of miscarriages or stillbirths was obtained in nine other mothers. In only one of these cases was the central nervous system involved in a parent. This was a father who died of dementia paralytica in a state hospital. Others report a common involvement of the central nervous system in the parents. Amelian reports six cases in which both parents had dementia paralytica. In Frolich's³ cases dementia paralytica existed in 16.4 per cent of the parents, in an additional 13 per cent, tabes or cerebrovascular syphilis was demonstrated. Klauder and Solomon⁴ in twenty-three cases found neurosyphilis in three parents.

Syphilis in Siblings—In only two cases was definite evidence of hereditary syphilis found in a living sibling. A history of miscarriages and stillbirths was very common in this series. In no case was even suggestive evidence of involvement of the central nervous system found in a sibling. Klauder and Solomon⁴ in their series had a brother and sister with juvenile dementia paralytica.

Symptomatology—The symptoms that caused these patients to come to the hospital were much the same as those mentioned by other writers. The symptomatology in patients at the adolescent age was similar to that found in adults. In the younger group, that is, the preadolescent, the symptoms were in many ways unlike those in adult cases. Epileptic seizures have been recorded as common occurrences by others in juvenile dementia paralytica. They were not common in this series, being found in only five cases. Twenty-five of the patients were markedly disoriented or demented, five were mildly so, and one showed no mental change at the time of diagnosis. The various symptoms, such as hallucinations, euphoria, delusions and irritability, as found in adult dementia paralytica, were found in most

Studies and Contributions from the Department of Dermatology and Syphilology, University of Michigan Medical School, service of Dr. Udo J. Wile.

¹ O'Leary, P. A., and Welsh, A. L., Treatment of Neurosyphilis with Malaria. *J. A. M. A.* 104: 498-501 (Aug. 12) 1933.
² Wile, U. J., The Adequacy of Treatment in the Control of Syphilis. *J. A. M. A.* 103: 648-651 (Sept. 1) 1934.

³ Frölich, W., Ueber allgemeine progressive Paralyse der Iren vor Abschluss der körperlichen Entwicklung. *Diss.* Leipzig 1901.
⁴ Klauder, J. V., and Solomon, H. C., Juvenile Paresis. *Am. J. M. Sc.* 166: 545 (Oct.) 1923.

of those cases, especially in those showing marked degeneration. Disturbances of memory and retardation in school were outstanding symptoms.

Objective Signs—The following changes were found in these cases. Changes in the retina were present in eleven, chiefly in the form of disseminated choroiditis, with optic atrophy in four. Hyperactive reflexes, especially the knee jerks and achilles jerks, were found in most cases, the Babinski sign in four, evidence of an old hemiplegia in two, and incontinence of urine and feces or both in five cases. Though the speech could not be accurately tested in many because of the age, a defect was noted in twelve cases. This varied from a mild slurring of the r's to complete inability to speak.

Klauder and Solomon⁴ mention that the stigmas of congenital syphilis were rare in their cases. In this group stigmas were fairly common. Sixteen of the patients had one or more of the Hutchinson triad. Thirteen had hutchinsonian teeth and four had or had had interstitial keratitis, but eighth nerve deafness was not noted in any case. Nearly all the other patients had one or more suggestive stigmas such as prominent bossae, anterior bowing of the tibia, high arch palate, and minor stigmas.

Laboratory Studies—The blood serologic reactions were strongly positive in all thirty-one cases. The spinal fluid serologic reactions were strongly positive in all cases in which a spinal fluid examination was made. The one case in which a spinal puncture was not done was clinical dementia paralytica. A colloidal gold curve in the paretic zone was found in twenty-six cases, a tabetic type of curve was found in four, and in one no colloidal gold test was made, owing to a bloody tap. The last case was without doubt dementia paralytica. The cases presenting curves in the tabetic zone were all clinical dementia paralytica. Juvenile dementia paralytica seems to differ in this series from dementia paralytica in adults, in which the spinal fluid almost invariably gives a curve in the paretic zone.

TABLE 1—Follow Up with Regard to Deterioration at Time of Diagnosis

	Deterioration		
	Marked	Mild	None
Number	24	6	1
Died	6	1	0
Definitely alive	13	4	1
No trace	6	1	0
Same	6	1	1
Worse	6	2	0
Better	1	1	0
Institution...	5	0	0

Results with Therapy—Answers were received to twenty-four of the thirty-one queries sent out. Seven of the patients, or 29.1 per cent, were dead, seven, or 29.1 per cent, had an unchanged condition, eight, or 33½ per cent, were worse, and two, or 8.3 per cent, were improved.

From table 1 it will be seen, as would be expected, that the results were more unfavorable in patients showing marked involvement at the time of diagnosis.

From table 2 it will be seen that slightly better results were found in patients over 20.

Most of the fifteen patients who did not receive malaria therapy were treated with the heavy metals. Most of those who received malaria also had the benefit

of heavy metal therapy. Of those who received malaria an answer was received from fourteen, two, or 14.2 per cent, were dead, four, or 28 per cent, were unchanged, six, or 42.6 per cent, were worse, and two, or 14.2 per cent, were improved. Of the fifteen who did not receive malaria, an answer was received in ten cases, three, or 30 per cent, were unchanged, two, or 20 per cent, were worse, and five, or 50 per cent, were dead. The group that received malaria were in somewhat better mental condition at the time of diagnosis,

TABLE 2—Follow Up According to Age at Onset

	Age				
	0 to 5	6 to 10	11 to 15	16 to 20	20+
Number	1	13	8	7	3
Died	0	2	2	2	1
Definitely alive	1	0	0	0	0
No trace	0	4	2	1	0
Same	1	2	3	1	1
Worse	0	4	1	8	0
Better	0	1	0	0	1
Institution	0	2	0	0	0

which may account for some of the statistical improvement. Only one patient is now able to cope with his environment at this time, a man aged 26 at the time of diagnosis in 1927. He had diagnostic evidence of congenital syphilis in the form of Hutchinson teeth, prominent bossae, anterior bowing of the tibia, and a high arched palate. Clinically and by laboratory studies he had dementia paralytica in 1927. He had had considerable intravenous and intramuscular therapy in 1919. When the diagnosis of juvenile dementia paralytica was established in 1927, he received sixteen malaria chills and began to improve shortly thereafter. He was able to return to work and has been working up to the present time with only a small amount of subsequent therapy in the form of potassium iodide by mouth and mercury rubs. The spinal fluid has remained four plus, though the colloidal gold curve has changed from a paretic to a tabetic type.

All the others about whom a report was received are dead, are living a vegetative existence in an institution or at home, or are so mentally or physically retarded as to be almost a total loss to their families and to society at large.

It is difficult to decide from such a small series what cases should be selected for this form of treatment, if any. The cases suitable for malaria treatment are those, it would seem, in which the diagnosis is made by a routine spinal fluid examination before any clinical symptoms or signs have appeared, or those in which the mental changes are very mild and have come on fairly late in adolescence or early adult life. Such cases in the juvenile type are rare.

CONCLUSIONS

1 The prognosis in juvenile dementia paralytica has been changed little if at all by the advent of malaria and other forms of fever therapy.

2 Malaria therapy prolongs life in juvenile dementia paralytica in some cases. It seems to retard the progressive dementia in a few.

3 The slight improvement that is found in a few cases does not raise these unfortunate patients to the level of social and intellectual usefulness and only adds to the burden the family or society or both must bear.

4 Malaria therapy adds very little to the prognosis in the large majority of cases and should not be used except in the rare selected cases.

MENINGOCOCCIC MENINGITIS IN CHILDREN

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Meningococcic meningitis in nonepidemic periods is essentially a disease of childhood. During epidemics and sharp outbreaks, the age incidence is considerably higher. The reason for this I do not know. Table 1 shows the age incidence in more than 1,300 cases of meningococcic meningitis. The distribution by age and etiology of the other more than common forms of meningitis is also shown. Table 2 shows the distribution by age and etiology of more unusual types of meningitis. Table 1 shows that by far the largest number of these cases of meningococcic meningitis occurred in the first year of life. It is at this age that the diagnosis is most difficult in the early stages of the disease and the case fatality is the highest. The same statement applies in a modified degree to children in the second year of life.

The clinical picture in older children follows closely that in adults. This is so familiar that no extended discussion is necessary. It may be well to point out, however, that in these older patients the disease may be divided into three types:

1. The usual type, in which there may be a transient bacteremia indicated by a petechial or even macular rash, which appears early and soon fades but in which a positive blood culture is only rarely obtained.

2. The septicemic type, in which a septicemia precedes the meningitis by a varying length of time and may persist after the meningitis has developed. In this type of case, the hemorrhagic rash shows a tendency to persist and recur in crops, and a blood culture can be obtained.

3. The fulminating type, in which there is an unusually violent onset with an overwhelming infection, usu-

TABLE 1—Meningitis Age and Etiology

	Men ingo coccus	Pneu mo coccus	Strep- to coccus	Bacillus Influ enzæ	Mls Tubercle cells Bacillus neous	Total
1-2-3 months	44	10	13	3	4	68
4-5-6 months	84	6	10	13	27	160
7-12 months inclusive	95	17	4	24	107	263
Total under 1 year	223	33	27	40	135	508
1-2 years	96	14	5	36	189	350
2-3 years	61	11	12	16	113	221
3-5 years	156	19	23	21	165	397
5-10 years	247	33	94	14	142	569
10-20 years	273	29	33	7	103	455
Over 20 years	291	60	39	8	123	621
No age stated	11	6	5		13	39
Total	1,358	235	238	142	986	3,178

ally both of the blood stream and of the meninges. In this type, death may occur within a few hours. Reference must also be made to meningococcic septicemia occurring without meningitis. This discussion applies particularly to older children and adults.

In the first and even in the second year of life, it is my impression that the fulminating type is rather uncommon, and so also is septicemia. The early symptoms in infants do not as a rule suggest an involve-

ment of the central nervous system. The onset, while usually sudden, is not so abrupt as in older patients. There are almost always signs of involvement of the gastro-intestinal tract, vomiting being common and greenish, slimy stools almost constantly present. There is an irregular fever higher than one would expect in gastro-enteritis. Convulsions may occur at the onset but not more frequently than at the beginning of other acute infections in infants. There is usually a tension or bulging of the fontanel. A Brudzinski sign may

TABLE 2—Unusual Types of Meningitis Age and Etiology

	Staphylococcus	Bacillus Coll.	Actinomyces	Bacillus Pyo- cyanus	Friedlander's Bacillus	Torula	Typhoid Dysentery	Meningococcus Catarhalis	Sporotrichum	Mixed Infections Kind Not De- termined	Total
13 months		5								5	11
4 through 6 mo							1	1		2	10
7 through 12 mo	12	1	2		1					4	21
Under 1 year	12	6	2		1		1	1		8	45
1-2 years	1							1		1	20
2-3 years	1				1					2	8
3-5 years	3		1		1					3	13
5-10 years	4	1	1	1			1			3	29
10-20 years	7					2			1	7	40
Over 20 years	15	1	2	2	3	1				5	41
No age given										4	4
Total	33	8	9	4	5	3	2	2	1	26	219

sometimes be elicited rather early. Usually it is not until the disease is fairly well advanced that there develop stiffness of the neck and back or opisthotonos, changes in the reflexes, strabismus or severe convulsions. Debre once said "In times of epidemic think of meningitis and do a lumbar puncture in every infant sick without apparent cause." This advice, it seems to me, is even more applicable in times when there is no epidemic, for at these times, in my experience, meningitis is more likely to occur in young infants and the consideration of a diagnosis of meningitis is not so likely to occur to the physician.

There are many conditions and diseases in which signs and symptoms develop resembling a meningitis. It can be determined whether or not meningitis is present only by a lumbar puncture and the examination of the spinal fluid. If meningitis is present, the kind can be determined only by a cultural examination of the spinal fluid, except in the case of tuberculous meningitis. In this disease the diagnosis may be established by the demonstration in the smear of acid-fast bacilli. Table 3 shows the characteristics of the spinal fluid in the various forms of meningitis and in certain diseases in which a differential diagnosis must be made.

It is important to emphasize that every spinal fluid withdrawn should be completely examined. Smears from clear fluids should be stained by the Ziehl-Neelsen method, smears from cloudy fluids by the Gram method, and smears from hazy fluids by both methods. In the case of purulent meningitis, only a tentative diagnosis can be made from the examination of the stained smear, as the organisms in spinal fluids are occasionally pleomorphic and the gram-positive organisms may decolorize. A careful study of the cultures is therefore necessary. This should be made on a variety of media, including those suitable for anaerobic growth. Cultures are not to be considered negative until they have been incubated for at least two weeks. All cultures isolated should be thoroughly studied to determine as nearly as possible their exact classification and type.

It has recently been shown that the tubercle bacilli in spinal fluids may be successfully cultured on Bordet-Gengou medium, even when they are so few in number that they cannot be demonstrated in the smear. This method is more satisfactory than the inoculation of guinea-pigs. The strains of the meningococcus have been variously grouped by different workers. Generally, Gordon's division into four groups has been followed. Groups 1 and 3, which are most commonly present, at least in New York City, show more or less close relationship by agglutination and absorption. There are always a certain number of strains that do not fall definitely into any one of these groups. For these reasons, a polyvalent serum is more satisfactory than a monovalent serum.

In purulent meningitis the cell count is of doubtful value. In the first place, it is difficult to obtain a uniform mixture of the cells through the fluid, as the cells settle out rapidly. Again, if the fluid is collected in successive tubes there is a marked variation in the cell count in the different specimens. For these reasons, comparisons of the cell count on succeeding days are

If the patient is not of the septicemic type with a positive blood culture, we think serum is indicated only intraspinally. Patients suffering from meningitis are acutely ill and deserve to be disturbed as little as possible. Serum is a foreign protein, more or less toxic, and the injections of unduly large amounts may have distinctly unfavorable effects on the patient. For these reasons, we are opposed to the indiscriminate administration of serum intravenously and intramuscularly and to the intraspinal administration of the serum every twelve to eight and even every six hours, as is sometimes advocated. It is not known in exactly what way the serum acts. It is not bactericidal and it probably functions mainly by increasing the phagocytic power of the cells. It can do this in quite low dilution. It has been shown that serum injected intraspinally is not entirely eliminated for about twenty-four hours. It therefore seems likely that, when too frequent lumbar punctures are done, cells at the maximum of their fighting power are removed and the purpose of the treatment is defeated. It is our custom, whenever a lumbar puncture reveals a cloudy or hazy spinal fluid, to give

TABLE 3—*Characteristics of the Spinal Fluids in Various Conditions*

Meningeal Condition	Amount Cc	Appearance	Cytology	Bacteriology	Albumin	Globulin	Sugar
Normal	5-10	Clear	5 to 10 cells mononuclears	Negative by smear and culture	±	±	Normal
Meningism	20-50	Clear	5 to 10 cells occasionally more mononuclears	Negative by smear and culture	± to +	± to +	Normal
Poliomyelitis and encephalitis	15-35	Clear or slightly hazy fibrin web may form	15 to 1 000 cells mononuclears usually predominate rarely polynuclears at any stage	Negative by smear and culture	+ to ++	+ to ++	Normal or high
Tuberculous meningitis	20-50	Clear to hazy fibrin web	50 to 300 cells usually mononuclears rarely polynuclears	Tubercle bacilli by smear and culture on Bordet Gengou medium	+ to +++	+ to +++	Rarely normal usually decreased
Serous meningitis	15-35	Hazy to cloudy	Up to 1 000 or more usually polynuclears	Negative by smear and culture	+ to ++	+ to ++	Normal
Purulent meningitis	20-60	Hazy to purulent	Indefinitely high polynuclears	Infecting organism by smear and culture	+ to ++++	+ to ++++	May be normal at onset decreases as disease advances

likely to be of no value and even misleading. The protein requires no discussion. The sugar content is important. Early in meningococcic meningitis the sugar may be normal, as the disease progresses it becomes decreased or even absent. If the patient improves, the return of the sugar to normal usually parallels the improvement in the patient's condition. A fall in sugar content not infrequently foretells an exacerbation.

The value of serum in the treatment of meningococcic meningitis has been generally accepted for nearly thirty years. In spite of this, there is still a wide divergence of opinion in regard to its proper administration. Certain factors contribute to the confusion of ideas. In the first place, no absolutely uniform rules can be laid down for treatment, since the disease varies so widely in its manifestations in different outbreaks and at all times in individual patients. Secondly, there is, unfortunately, no absolutely reliable laboratory test for the therapeutic value of the serum. For this reason, at times serum of poor quality has been used with resulting failure of proper response on the part of the patient. Under these conditions, in desperation physicians have resorted to larger and larger quantities of the serum in the hope of obtaining better results.

From an experience covering nearly twenty-five years, my associates and I are convinced that the best results are obtained by moderation in the use of the serum

immediately antimeningococcus serum intraspinally. Further administration will depend on the examination of the spinal fluid, but all cases are treated on the assumption that they are meningococcic meningitis until some other organism is isolated. We inject antimeningococcus serum intraspinally about once in twenty-four hours after thoroughly draining the subarachnoid space. It occasionally may happen that the spinal fluid is under so greatly increased pressure that a lumbar puncture may have to be performed more often than once in twenty-four hours for relief of pressure. In this condition, of course, serum must be given following each puncture. The dose of serum is usually about 20 cc if as much or more fluid has been withdrawn. Occasionally a larger dose than this is used. The serum should be warmed to body temperature and administered slowly by gravity. The daily administration of the serum is continued until at least two successive fluids show no organisms by smear or culture. If at this time the patient is fairly well clinically, the administration of the serum is stopped, at least temporarily. The lumbar punctures are continued every twenty-four or forty-eight hours for a varying length of time to relieve the pressure and to make sure that the fluid is sterile.

If block develops—complete or partial—the subarachnoid space must be drained and the serum administered either by cisternal or by ventricular puncture. If the

fontanel is still open, ventricular puncture is to be preferred to cisternal, as it is safer and more effective, since the block may be high. Sometimes block may be relieved by the cautious injection after lumbar puncture of air, physiologic solution of sodium chloride, or serum. After this method of treatment is begun, lumbar punctures should be performed at intervals to see whether the block has been relieved. In the septicemic type of case, serum should be administered intravenously as well as intraspinally. Daily injections of from 50 to 100 cc of serum diluted with an equal amount of physiologic solution of sodium chloride should be made. This should be done very slowly by gravity. A daily blood culture should be made preceding the injection of the serum so that the treatment may be discontinued when the blood stream is sterile. Occasionally, one sees cases of meningococcic septicemia without meningitis. These should be treated by the intravenous administration only of serum.

I have had very little personal experience with the new Parke Davis antitoxin for the treatment of meningococcic meningitis. The clinical picture of certain cases of meningitis indicates a rather severe toxemia. It would seem, therefore, that a serum with a high antitoxic content may be of great value, especially in this type of case.

The use of autogenous vaccine in prolonged cases of meningitis, and in the few cases which are or have become intolerant to serum, has seemed to be of value in certain instances. This vaccine should be administered both subcutaneously and intraspinally. The subcutaneous injections may begin with a dose of from 100 to 250 millions and are repeated every three or four days, the dose being gradually increased to a billion or more. The intraspinal administration should be done daily, beginning perhaps with a dose of 50 million diluted in physiologic solution of sodium chloride or in serum, if the patient is not intolerant to serum, and increasing by 50 million each day. The whole question of dosage is empirical.

We have never tried forced spinal drainage in meningococcic meningitis. We have used it in other forms of purulent meningitis but our own results have not been particularly encouraging.

Complications must be treated as they arise. Perhaps the only complication that can be successfully treated by serum is the purulent arthritis which occasionally develops. This usually subsides under symptomatic treatment, but in some instances it may be necessary to aspirate the joint and inject the serum.

Recently it has happened that a very few patients have died soon after lumbar puncture and the administration of serum. At necropsy it was found that an acute hydrocephalus had developed, so that when the equilibrium of the spinal fluid was disturbed by the withdrawal of fluid there had been a herniation of the cerebellum with compression of the medulla. In these cases there had been unusually excruciating headache with or without indications of papilledema. In such instances it is advisable to give a hypodermic of 3 grains (0.2 Gm) of caffeine preceding the spinal tap. This will reduce the extreme intracranial pressure, as shown by Foster Kennedy and his collaborators, and tend to prevent this occurrence.

General treatment of meningococcic meningitis is that of any severe acute infection. It is important that the patient have adequate rest, and for this purpose sedatives must be given as indicated. Morphine hypodermically should not be used, as it increases the intra-

cranial pressure. A sufficient amount of nourishment must be given, preferably in small amounts at frequent intervals. The fluid intake must be maintained by clysis if necessary. The fluid should be of such a nature as to overcome the tendency to acidosis. Care must be taken to see that retention of urine is not neglected. Proper elimination by the bowels may be accomplished by small doses of magnesia magna combined with enemas.

While the case fatality in children of the first or even the second year of life is high, that between the third and fifteenth year is the most favorable of any age group. I would emphasize again the importance of a conservative method of administering the serum. This opinion is based not only on our own experience but also on that of a number of hospitals that have followed this method.

Foot of East Fifteenth Street

ABSTRACT OF DISCUSSION

DR. BRONSON CROTHERS, Boston. There are one or two points that seem to me worth thinking about. Dr. Neal says that ventricular puncture is more effective and less dangerous and is also higher than cisternal puncture, that is the assumption is made that the serum in the ventricle is above that put into the cistern. Anatomically, that is correct, but it does not enter the subarachnoid space any higher than that put into the cistern. I think that cistern puncture is extremely dangerous in meningitis, because it is very difficult to tell where the needle is. However, I think one gets the serum where one wants it rather better by the cisternal than by the ventricular route, provided one can get in. That brings up one other point. If neither the cistern puncture nor the ventricle puncture throws the serum into the supratentorial space, it does seem to me logical in occasional cases to introduce the serum into the supratentorial subarachnoid space. Another point is the question of using intraspinal vaccine. I am not expert in this matter, but it seems to me illogical in theory. I should like to know from Dr. Neal whether she feels that the results are so good that she is willing to keep on with that with some enthusiasm in spite of its apparently illogical character.

DR. EMILY P. BACON, Philadelphia. The high incidence of meningococcic meningitis in infants in Dr. Neal's series shows that there were four and one-half times as many cases in infancy as in older children. Early diagnosis and treatment are exceedingly important, but, as in many other diseases of infants, it is exceedingly difficult because early symptoms and signs are not typical. Dr. Neal has stressed that neurologic symptoms are often absent early and that symptoms common in gastro-enteritis are often present, such as vomiting, slimy stools, high fever and marked distress. But there are points of differentiation that help in making the early diagnosis. The seasonal incidence is apt to be different and the fever in gastro-enteritis is usually not so high as in meningococcic meningitis, and yet the baby is much sicker, is more toxic, and dehydrates earlier. Also, the fontanel is depressed in gastro-enteritis, whereas almost always in infants with meningococcic meningitis the fontanel is at least tense. However, if one is in doubt, a lumbar puncture must be done to exclude meningococcic meningitis. Another condition in infants that is difficult to differentiate at times from meningococcic meningitis is infection of the upper respiratory tract with symptoms of vomiting, fever, red throat and red ears. I have recently seen these symptoms in two cases in which it was difficult to decide whether they denoted an infection of the upper respiratory tract alone or whether they were coincident with meningococcic meningitis and of minor importance. In one child, a baby of 6 months, the ears were opened three times and pus was obtained once. Lumbar puncture was not done until the tenth day, because no neurologic sign was present, except a little tenseness of the fontanel. The spinal fluid was reported to be clear but was not examined further. Three days later neurologic symptoms were more definite, the puncture was repeated, and meningococci were found in the spinal fluid.

Treatment was instituted too late. The child is developing hydrocephalus, and prognosis for cure is poor. As to treatment, most are agreed that serum is at present the best therapeutic agent and that intrathecal treatment given every twenty-four hours is best for the patient as a rule. If the infant is seen early in the disease, associated intravenous therapy is indicated, provided there is available a doctor skilled in intravenous therapy in infants.

DR. JOSEPHINE B. NEAL, New York. I have practically nothing to say in closing except with regard to the point Dr. Crothers brought up. The vaccine is still being used in some of the chronic cases and in cases in which intolerance to serum has developed. My idea in giving vaccine intraspinally was to get a reaction intermediate between the slow response that is obtained when vaccine is given subcutaneously and the rather severe reaction that is obtained when vaccine is given intravenously. It is known that laboratory animals can be immunized by vaccine given either subcutaneously or intravenously. While I do not think that it is at all sure that those patients who recovered following this method of treatment recovered on account of it, I am still continuing to use it. Perhaps sometime there will be enough patients with sufficiently definite results to make certain whether or not it does do any good.

CLINICAL SIGNIFICANCE OF CHOREA AS A MANIFESTATION OF RHEUMATIC FEVER

A STUDY IN PROGNOSIS

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The occurrence of uncontrolled and purposeless movements in childhood involving primarily the extremities but affecting in severer grades voluntary muscles elsewhere, and for which there exists no demonstrable neurologic or psychologic background, is accepted as so-called Sydenham's chorea. The close association between this symptom complex, known as chorea, and rheumatic fever has been recognized for many years. Not only the frequency of choreiform movements in patients exhibiting symptoms and signs of rheumatic fever but also the high familial incidence of the two, together with the similarity in seasonal variation to be commented on later, is sufficiently striking to suggest a close interrelation between these two conditions. Furthermore, the frequent association between chorea and heart disease of the rheumatic type lends additional supporting evidence that Sydenham's chorea is probably a manifestation of rheumatic fever. Proof of this relationship, however, must await the establishment of the etiology of the two. It is our purpose in this paper to present certain data that we believe are important in an evaluation of the clinical significance and prognostic implication of this as yet imperfectly understood symptom complex, together with a consideration of the apparent discrepancies between the present study and previously published reports.

Many authors state definitely that, omitting habit spasm and purposeless movements of evident neurogenic origin, it is safe to consider choreiform movements as a part of the rheumatic syndrome. Coombs,¹

Poynton and Schlesinger,² and Findlay³ have expressed this opinion. Concerning the exact role, however, which chorea plays as a manifestation of rheumatic fever, there has been no general agreement. The literature is voluminous and the scope of this paper such that an exhaustive review is not indicated. Only the more commonly accepted opinions will be reviewed.

An interesting comment concerning the status of chorea was written by Bouteille⁴ in 1810:

Tout est extraordinaire dans cette maladie, son nom est ridicule, ses symptômes singuliers, son caractère équivoque, sa cause inconnue, son traitement problématique.

An extensive monograph on the subject was written by Osler⁵ in 1894. His review of the knowledge concerning not only chorea minor or Sydenham's chorea but also other types of choreiform movement is excellent, and his teachings are well known to students of the disease as well as to many practicing physicians. In the forty years since the publication of his treatise there has been little added to the more fundamental knowledge of this distressing condition. Osler⁵ left little to the imagination concerning the importance of chorea in the development of heart disease of the rheumatic type, as is clearly shown in the following quotation:

The extraordinary frequency with which mitral valvulitis is met with in fatal cases is remarkable. There is no known disease in which endocarditis is so constantly found, post mortem, as chorea, it is exceptional to find the heart healthy.

An abundance of clinical material to support this thesis was presented, a criticism of which will be presented later. Relatively the same opinion was also expressed recently by Swift,⁶ who stated that "chorea is one of the grave manifestations of rheumatic fever in childhood."

Mackie⁷ from an analysis of 393 cases of rheumatic fever and eighty-nine cases of chorea found that there was no significant difference between these two types of rheumatic infection as far as subsequent heart disease was concerned. Strong⁸ reported a slightly higher incidence of rheumatic heart disease in cases of chorea than in cases of rheumatic fever. He also collected 2,359 reports of cases of chorea from the literature, in 953, or 40.3 per cent, of which rheumatic heart disease was noted. The incidence of heart disease in his own series was 45 per cent, while that for rheumatic fever was 38 per cent, a figure which may well be considered low in view of a large literature to the contrary.

A less drastic view was expressed by Coombs,¹ who found rheumatic heart disease in only 44 per cent (at the time of onset) of patients with chorea as opposed to 75 per cent in rheumatic subjects who exhibited joint pains. He further stated that, of the subjects whose first manifestation of rheumatic fever was chorea, only about 3 per cent failed to survive the first decade. But when the average duration of cases that have ended fatally is considered, figures relative to heart disease are practically the same as those for the group of patients whose condition began with rheu-

2 Poynton F. J. and Schlesinger Bernard. Recent Advances in the Study of Rheumatism. Philadelphia P. Blakiston's Son & Co. 1931.
3 Findlay Leonard. The Rheumatic Infection in Childhood. New York, William Wood & Co. 1932.

4 Bouteille, E. M. Traité de la chorée ou danse de St. Guy. Paris. Vingard 1810.

5 Osler William. On Chorea and Choreiform Affections, London, H. K. Lewis & Co. 1894.

6 Swift H. F. in Cecil R. LaF. Text Book of Medicine ed. 2, Philadelphia W. B. Saunders Company 1931.

7 Mackie T. T. Rheumatic Fever. Analytical Study of 393 Cases of Rheumatic Fever and 89 Cases of Chorea. Am. J. M. Sc. 172: 199 (Aug.) 1926.

8 Strong G. F. Chorea with Particular Reference to Cardiac Complications. Canad. M. A. J. 13: 92 (Feb.) 1923.

From the House of the Good Samaritan.
The expenses of this study have been defrayed by a grant from the Commonwealth Fund.
Read before the American Society for Clinical Investigation Atlantic City N. J., May 6, 1935.
1 Coombs C. F. Rheumatic Heart Disease. New York. William Wood & Co. 1924.

matic fever Coombs¹ stated that chorea usually occurs in cases of the mildest grades of rheumatic infection. As a result of an analysis of the records of 180 children with rheumatic infection, Marshall⁹ expressed the opinion that in many patients with severe chorea with frequent recurrences carditis never develops, and "one sometimes wonders if this is due to a different causative agent." Findlay,³ in a recent monograph in which he gave his observations over a period of years on 701 rheumatic children, expressed much the same opinion. He did not find rheumatic heart disease so commonly in patients with chorea (50 per cent of hospitalized patients with chorea) as in those with arthritis (75 per cent). He further stated that he had never seen a child die of chorea in whom the heart was not affected, and in those cases he blamed the myocardium for the fatal issue. In discussing the differences between the cases of rheumatic infection characterized by arthritis and those characterized by chorea (chiefly in considering the relative rarity of pericarditis and subcutaneous nodules in patients with chorea), this author expressed the opinion that "either all cases of Sydenham's chorea are not rheumatic in origin or different strains of the rheumatic virus are responsible for the two manifestations."

Such are a few of the varied opinions that have been expressed regarding the relationship between chorea and rheumatic fever. It is evident that there are differences of opinion, but there is general agreement that the relationship is more than coincidental. Hence any one observing a considerable number of instances either of rheumatic fever or of chorea will frequently encounter the other condition. The only exception to this association occurs in the older group of patients with rheumatic fever after the second decade, in whom chorea is uncommon.

At the present time one rarely observes a case of the violent chorea which gave rise to the term chorea insaniens, and the exhaustive features of the condition are not encountered as commonly as a decade or two ago. Even omitting this violent but rare form of the symptom complex, it is difficult to evaluate the rôle of chorea itself as regards its effect on the heart. In the reports in the literature there have been frequent failures to dissociate the effects of chorea alone in contrast to the effect of chorea plus other evidence of rheumatic fever in the consequent development of heart disease. The case reports cited are so brief that it is difficult to conclude whether or not chorea was an important factor in the development of the pathologic condition of the heart. As may be seen from the discussion of the literature just given, the earlier observers felt that chorea was very conducive to the development of endocarditis, especially of the mitral valve, while more recent writers tend to question the seriousness of this manifestation.

Since 1921 the House of the Good Samaritan has given long bed care to more than 1,200 subjects with various manifestations of rheumatic fever (including chorea) and it has been possible to follow the course of this large group during the subsequent years. Without discrimination, any patient having any evidence of rheumatic fever or chorea has been eligible for admission. In this respect the series observed is representative of rheumatic fever and chorea in the general region of Boston. The only limitation has been

that relatively few older patients with severely damaged hearts have been admitted because of the evident poor prognosis, and there has been a preponderance of females over males (few males over 12 years), the House of the Good Samaritan having for years limited the scope of its work to the treatment of women and children.

The clinical impression of a staff of six experienced observers has been that the patients with chorea have a better prognosis than those with other manifestations of rheumatic fever. The common experience has been that many patients with chorea exhibit no evidence of rheumatic fever other than purposeless choreiform movements. Fever, elevation of the pulse rate, elevation of the white blood count and an increase in the sedimentation rate of the red blood cells have frequently been absent. It was observed that chorea could and did occur without other clinical or laboratory evidence of rheumatic fever. The appearance of other manifestations was considered indicative of generalized rheumatic fever. This idea was stressed by Finlayson¹⁰ in 1890, who suggested that short febrile attacks during chorea are due to endocarditis. Osler⁵ stated that fever is rare, save in maniacal cases, and Findlay³ noted the absence of fever in uncomplicated cases of chorea. This author further cautioned that "fever during chorea should raise the suspicion of its rheumatic origin."

MATERIAL

The data presented in this study are the result of an analysis of 1,000 consecutive cases of rheumatic fever and chorea observed for considerable periods of time at the House of the Good Samaritan in which the patients were followed for an average period of eight years from the time of the onset of the disease. There have been numerous readmissions, and two thirds of the follow-up work has been carried out by us in cardiac clinics of the House of the Good Samaritan and the Massachusetts General Hospital. The larger part of the remaining patients have been followed by Dr. Paul W. Emerson of the Children's Hospital, to whom we are indebted for data. The information on a smaller number of cases has been obtained from the Boston City Hospital and through the courtesy of private physicians. The scope of this report deals only with that portion of the data which is pertinent to chorea. Analysis of the series as regards rheumatic fever will be presented at a later date.

There has been a decided effort to omit all cases of choreiform movement other than those of the Sydenham type. While this may be difficult in certain cases, it is our opinion that this series represents as true a group of patients with Sydenham's chorea as is possible with the present diagnostic knowledge. While it is admitted that there may be a small percentage of error, it is not sufficiently large to render the data unreliable. As seen in chart 1, the seasonal variations of the onset of chorea and of rheumatic fever in this series exhibit a comparable similarity. The use of data assembled from seasonal variations alone may be fallacious with regard to the question of etiology, but the similarity here exhibited, in addition to other data to be presented, warrants consideration of some similar factor common to the two groups. The graph shown is very similar to that published by Findlay,³ despite the fact that the seasonal incidence of such rheumatic manifestations in

9 Marshall, Robert. Review of 180 Children Suffering from Rheumatism, Chorea and Carditis. *Arch. Dis. Childhood* 3: 28 (Feb.) 1928.

10 Finlayson, James. On Obscure Febrile Attacks in the Course of Chorea. *Referable to Endocarditis*. *Arch. Pediat.* 7: 497 (July 28) 1890.

Great Britain is different from that in the United States. The age of the patients herewith reported was largely from 8 to 16 years (although a small percentage were older). In chart 2 are given the data regarding the duration of observation following the onset of symptoms in 482 cases.

Chorea has been considered in this analysis as a single manifestation of rheumatic fever. Fever, save during periods characterized by violent choreiform movements, frequent nosebleeds, joint pains, pericarditis, subcutane-

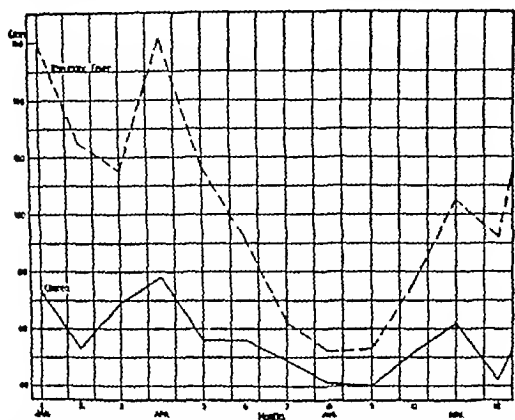


Chart 1—The seasonal variations in the onset of chorea and of rheumatic fever, including recurrences in 671 instances of chorea and 1,209 instances of rheumatic fever.

ous nodules, erythema multiforme, and various laboratory evidences of infection have been considered as other manifestations of rheumatic fever. We believe that it is only after detailed studies of large groups of cases have been carried out over a considerable period of observation that the true significance of chorea as a manifestation of the generalized disease rheumatic fever can be evaluated.

ANALYSIS OF DATA

As just stated, chorea has been analyzed as a single manifestation of rheumatic fever. For the purpose of this study the patients who have had chorea are grouped in three main divisions:

GROUP 1—Chorea. Here are included all the patients observed over an average period of eight years who have exhibited frank choreiform movements. As may be seen from chart 3, this is a large group (482) consisting of nearly 50 per cent of the total series of 1,000 rheumatic patients. This is not surprising, since chorea is a common condition, and indeed it has been commented on by Osler,⁵ Coombs,¹ Findlay,³ and others as being the most common single manifestation of rheumatic fever.

GROUP 2—Chorea Associated with Other Manifestations of Rheumatic Fever. Over a period of eight years nearly three fourths (348, or 72 per cent) of all the patients with chorea at some time exhibited other manifestations of rheumatic fever. This group will be subdivided later for further consideration.

GROUP 3—Chorea Not Associated with Other Manifestations of Rheumatic Fever. While it is difficult to be absolutely certain that no other manifestations of rheumatic fever occurred during an eight year period, the search has been as exhaustive as possible. A number of admissions both at the House of the Good Samaritan and elsewhere have been reviewed and in

most instances frequent and detailed histories were taken. If actual low grade rheumatic fever was present at any time, we believe that it did not reach a clinical level. We are cognizant that such conditions are occasionally present and recognize the fact that rheumatic heart disease does develop in the absence of a history of rheumatic fever. In this group of slightly over one fourth (134, or 28 per cent) of the total group of patients with chorea no frank evidence of other manifestations of rheumatic fever could be elicited.

INCIDENCE OF HEART DISEASE

Some indication that chorea may not be readily associated with the development of rheumatic heart disease is obtained from chart 4. Rheumatic heart disease was found in 54 per cent of the patients with chorea (259 of 482). This figure is in general agreement with statistics found in the literature. Osler⁵ found this incidence to be 51 per cent, Marshall⁶ 60 per cent, Mackie⁷ 51.5 per cent, Poynton¹¹ 50 per cent, and Findlay³ 50 per cent. Strong⁸ (45 per cent), Wallace¹² (41.5 per cent), and Abt and Levinson¹³ (32 per cent) reported slightly lower figures. As previously noted, in 2,359 instances of chorea collected from the literature by Strong,⁸ heart disease was present in 953, or 40.3 per cent. It is difficult to determine from the published reports the period of observation of many of these studies. Coombs¹ reported that eventually rheumatic heart disease developed in 76 per cent of his patients with chorea, but again the period of observation was not given. In our series the incidence of heart disease in a comparable sized group (518) of patients with rheumatic fever without chorea over a similar average period of eight years was 86 per cent (447 instances). The criteria for the diagnosis of rheumatic heart disease were those advocated by the American Heart Association.¹⁴ Throughout these studies and in the accompanying charts the term potential rheumatic heart disease is used to denote the absence of clinically demonstrable heart disease in a patient who has had either rheumatic fever or chorea. This differ-

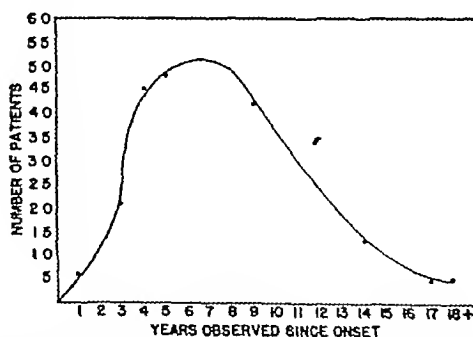


Chart 2—Duration of period of observation from the onset of chorea or of rheumatic fever for the 482 patients with chorea. The average duration in this group was eight years.

ence between 54 and 86 per cent is striking and indicates definitely a lower incidence of rheumatic heart disease when chorea is a part of the syndrome of rheumatic fever. Since the incidence of heart disease in

11 Poynton F J. Rheumatic Infection in Childhood. Early Diagnosis and Preventive Treatment, Brit. M. J. 2: 788 (Oct. 31) 1925.
Poynton, F. J., Paterson, Donald and Spence, J. C. Acute Rheumatism in Children. Lancet 2: 1086 (Nov. 27) 1920.

12 Wallace, H. L. Chorea. Short Study of 200 Cases, Edinburgh M. J. 40: 417 (Sept.) 1933.

13 Abt, I. A. and Levinson, Abraham. A Study of Two Hundred and Twenty-Six Cases of Chorea. J. A. M. A. 67: 1342 (Nov. 4) 1916.

14 Criteria for the Classification and Diagnosis of Heart Disease. New York, American Heart Association, 1929.

the patients with rheumatic fever compares favorably with that in numerous series as reported by capable observers, the percentages in both groups must be given serious consideration

In an attempt to evaluate this seeming discrepancy between the groups of patients with chorea and those with rheumatic fever, the incidence of heart disease was determined in those with chorea who had also exhibited other manifestations of rheumatic fever. As shown in chart 4, the group consisted of 348 subjects and heart disease was found in 255, or 73 per cent, of the group. It is clear that manifestations of rheumatic fever other than chorea influence strongly the development of rheumatic heart disease. The discrepancy then in the incidence of heart disease in the patients with rheumatic fever (86 per cent) as compared with the patients with chorea (54 per cent) seems to be largely in those patients of the latter group whose only rheumatic manifestation has been chorea, instances of the so-called pure chorea. Further analysis proves this to be correct.

INFLUENCE OF CHOREA ON THE DEVELOPMENT OF RHEUMATIC HEART DISEASE

Of the 482 subjects observed to have had chorea, 318 (66 per cent) exhibited only chorea as a manifestation of rheumatic fever at the onset, an average of eight years prior to this analysis. The analysis of this group, shown in chart 5, from the point of view of the influence of chorea on the development of rheumatic heart disease further stresses the importance of manifestations of rheumatic fever other than chorea. In this group 134 (42 per cent) who exhibited only chorea as evidence of rheumatic fever at the onset were found at the end of eight years to have exhibited no other evidences of rheumatic fever. In this group there is a striking absence of rheumatic heart disease. For

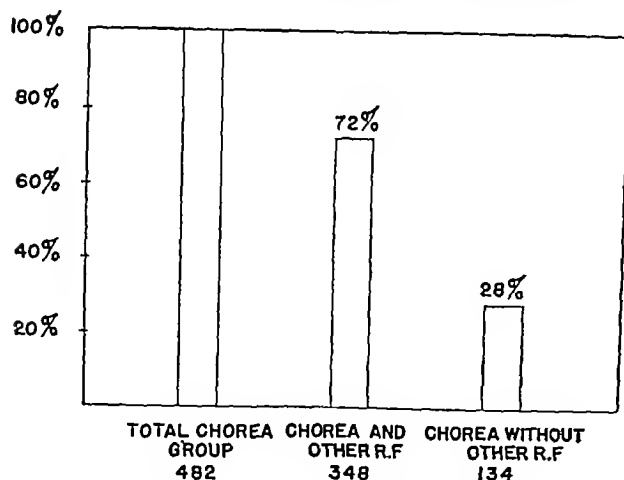


Chart 3—Analysis of group of patients with chorea

the sake of clarity in the subsequent discussion, and in the absence of a better term, we have designated this as the group of patients with "pure" chorea. In only four instances (3 per cent) was rheumatic heart disease found, and in view of the frequency with which one encounters heart disease of the rheumatic type in adult life without a previous history of rheumatic fever, it is surprising that the incidence here is not higher. As will be discussed later, a number of these patients had more than one attack of chorea, and despite this there remains the surprisingly small percentage with heart

disease (3 per cent). Among the 184 subjects (58 per cent) in whom other manifestations of rheumatic fever developed subsequent to chorea, the incidence of rheumatic heart disease was 80 per cent (147), a figure which approximates the incidence (86 per cent) of rheumatic heart disease in the group of patients with rheumatic fever uncomplicated by chorea (chart 4). It may be well to point out that it is in this group (chorea and subsequent rheumatic fever) that one finds

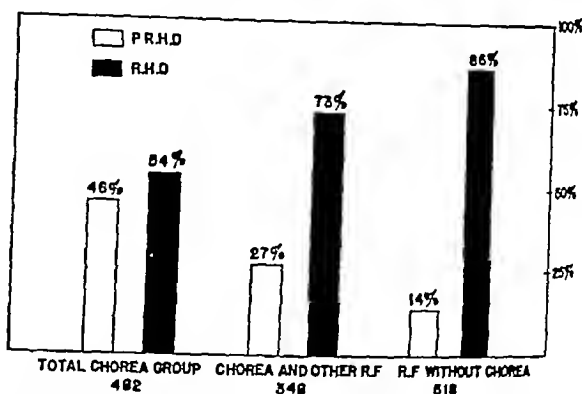


Chart 4—Incidence of rheumatic heart disease following chorea and rheumatic fever. The white columns indicate the cases of potential rheumatic heart disease and the black columns the cases of rheumatic heart disease. The term potential rheumatic heart disease is used to denote the absence of clinically demonstrable heart disease in a patient who has had either rheumatic fever or chorea.

the severer manifestations of rheumatic fever. This suggests that when manifestations of rheumatic fever occur subsequent to chorea, the patient is very liable to follow the usual course of the subject with rheumatic fever alone.

In the remaining 164 (34 per cent) of the group of 482 patients with chorea, heart disease was found in 66 per cent (108 instances). This group represents those patients in whom chorea occurred subsequent to the onset of rheumatic fever. In other words, chorea occurring during the course of rheumatic fever is not so commonly associated with the development of rheumatic heart disease as is the case when only other manifestations of rheumatic fever are present. It seems then that chorea is more commonly found during the course of mild rather than of severe rheumatic fever. This feature will be discussed in more detail later.

Thus, as a factor in the development of rheumatic heart disease it appears that other manifestations of rheumatic fever are far more important than chorea. Uncomplicated chorea seems to play but a small part, whereas the combination of other evidences of rheumatic fever in addition to chorea results in a lesser incidence of heart disease than is found in patients with rheumatic fever uncomplicated by chorea. It is little wonder, therefore, that some observers, as previously reported, have questioned the rheumatic origin of chorea or have felt that more than one agent may be involved.

RELATION OF THE NUMBER OF ATTACKS OF CHOREA TO THE DEVELOPMENT OF RHEUMATIC HEART DISEASE

If chorea is one of the grave manifestations of rheumatic fever and definitely conducive in its own right to the development of rheumatic heart disease, one would expect the number of attacks definitely to increase the likelihood of the occurrence of rheumatic heart disease. In discussing this feature, Findlay³ noted

that choreiform movements were not of serious prognostic importance. Marshall⁹ also noted the failure of the number of attacks to influence appreciably the development of rheumatic heart disease. In table 1 may be seen the analysis of our series of cases in this regard. While the patients with clinically demonstrable heart disease show a slightly higher percentage of instances in which there was more than one attack of chorea than do the patients without heart disease, the differences are not sufficiently striking to be given serious consideration. This is especially true since it has been clearly demonstrated in this series that the other manifestations of rheumatic fever far overshadow chorea as the important factor in the development of rheumatic heart disease.

Further analysis of the comparative number of recurrences or recrudescences of rheumatic fever and of chorea has been made of the 348 subjects comprising the group of patients with chorea and other manifestations of rheumatic fever. This is shown in table 2. When chorea has been more frequent than other signs and symptoms of rheumatic fever, rheumatic heart disease and potential rheumatic heart disease are found with the same frequency (34 per cent as opposed to 35 per cent), when there is the same relative number of recurrences of each, the incidence of potential rheumatic heart disease is somewhat higher (41.9 per cent in contrast to 34.9 per cent). As might be expected, rheumatic heart disease is found slightly more frequently (30.9 per cent as compared with 22.5 per cent) when the recurrences of rheumatic fever outnumber those of chorea. Here again, as is true of the influence of the number of attacks of chorea on the development of rheumatic heart disease, no striking variations are noted. These results strengthen our belief that the severity of rheumatic fever is the principal factor of importance in the development of rheumatic heart disease.

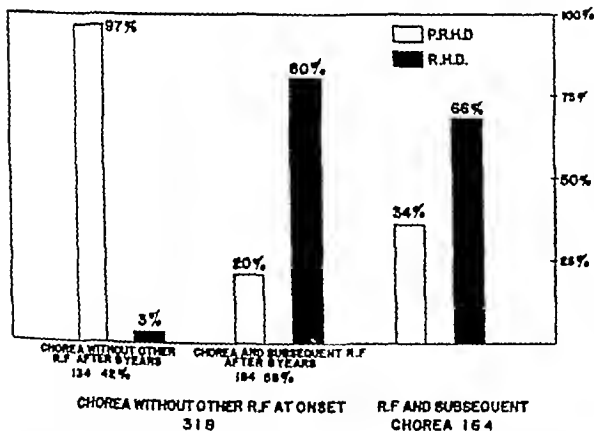


Chart 5—The influence of chorea (with and without other manifestations of rheumatic fever) on the development of rheumatic heart disease

COMPARISON OF FREQUENCY OF SEVERE MANIFESTATIONS OF RHEUMATIC FEVER

Little explanation is needed other than to comment on the evident variation found between the patients with rheumatic fever (518), and those with chorea and other manifestations of rheumatic fever (348), concerning the frequency of the manifestations as shown in chart 6. Precordial pain (with omission of the mild pain often found associated with an effort syndrome) congestive failure and pericarditis are man-

ifestations of rheumatic fever that have serious prognostic importance. It is significant that these three manifestations of perhaps gravest import are found only half as often in patients with rheumatic fever who have had chorea as compared with the patients who have had rheumatic fever unassociated with chorea. This alone is sufficient to warrant the assumption that chorea is a relatively mild manifestation of rheumatic fever. Further, the greater number of these severe

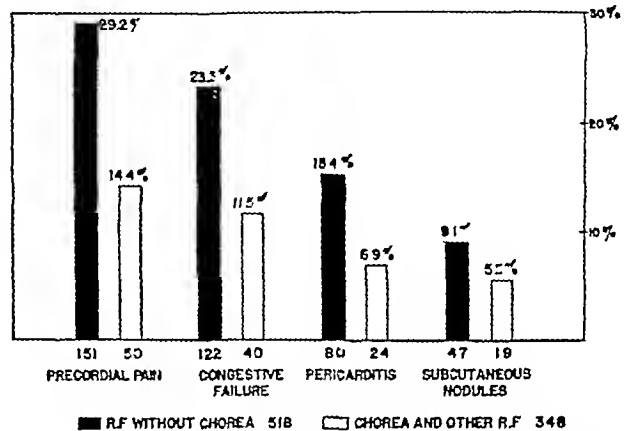


Chart 6—Comparison of the frequency of occurrence of severe manifestations of rheumatic fever in patients with rheumatic fever without chorea (black columns) and patients with chorea and other manifestations of rheumatic fever (white columns)

manifestations of rheumatic fever are found in that group of patients having only chorea at the onset, and subsequently becoming more definite rheumatic subjects. The fact that pericarditis is rarely seen in cases of chorea was commented on by Osler.⁵ More recently there has been expressed a distinct impression that the association is not uncommon. The literature has been reviewed and criticized by Findlay,³ who failed to find this frequent association. In our experience pericarditis has rarely been associated with chorea.

Subcutaneous nodules are generally acknowledged to be a manifestation of severe rheumatic fever. While we do not agree entirely with the expressions found in the literature of the necessarily serious prognostic importance of the appearance of these nodules, it must be admitted that they usually do occur in cases of severe rheumatic fever. We have observed the appearance of nodules on rare occasions in patients without rheumatic heart disease, as has also Poynton.¹¹ It is not surprising then that nodules are more common in the patients with uncomplicated rheumatic fever.

The frequency of auricular fibrillation may also be cited, but it is not included in the chart. The frequent association of this arrhythmia with mitral stenosis is well known. Here again the incidence was low in the patients with chorea and rheumatic fever, being found in only sixteen patients (4.6 per cent) as opposed to forty-five patients (8.7 per cent) with rheumatic fever only.

Prolongation of the auriculoventricular conduction time as noted in electrocardiograms is commonly found during the course of rheumatic fever. It is not necessarily a severe manifestation but is usually considered to indicate the presence of active cardiac disease. The frequency with which this is found depends largely on the diligence with which it is searched for in cases of rheumatic fever. Tracings have been made (only during the past four years of observation) in much the same routine manner in the two groups. The fig-

ures, which will be cited presently, are hence comparable for the groups considered but do not express the true incidence of this abnormality in the series. It is interesting that the patients with rheumatic fever without chorea showed this abnormality twice as often (forty-three instances, 8.3 per cent) as the patients with chorea and rheumatic fever (thirteen instances, 3.7 per cent).

Since the group of 134 patients with uncomplicated chorea failed to exhibit any of these severe manifestations of rheumatic fever, this group does not appear in chart 6.

It is our opinion that these observations strongly indicate that if chorea is found in association with other evidences of rheumatic fever the rheumatic fever is likely to be mild. Conversely, in cases of general rheumatic fever without chorea the rheumatic fever is more frequently severe, and the severe manifestations of rheumatic fever are twice as likely to occur in the absence of chorea.

PROGNOSTIC SIGNIFICANCE OF CHOREA

After an average period of eight years 28 per cent (134) of the group of patients with chorea have remained free from rheumatic fever. Further, as has been shown (chart 4), 46 per cent of this total chorea group failed to exhibit clinical evidence of rheumatic heart disease. In this group the factor of importance has been demonstrated to be the presence of manifestations of rheumatic fever other than chorea (chart 5). In addition those subjects with chorea and other manifestations of rheumatic fever have severe manifestations of rheumatic fever only half as often as the patients with rheumatic fever without chorea (chart 5). This forces us to conclude that chorea cannot be of as serious prognostic importance as other manifestations of rheumatic fever. This is also shown in chart 7, which gives the death rates of the entire group of 1,000 subjects. Under three headings the comparative percentages of fatal cases are listed. Deaths which were not in any way referable to chorea, rheumatic fever or rheumatic heart disease have been omitted.

1 In the group of patients having chorea without other evidence of rheumatic fever (134), only one death occurred as a result of rheumatic heart disease.

TABLE 1—Relation of the Number of Attacks of Chorea (482 Patients) to the Development of Rheumatic Heart Disease

Number of Attacks	Rheumatic Heart Disease		Potential Rheumatic Heart Disease	
	Number of Patients	Percentage	Number of Patients	Percentage
1	113	43.6	12	2.0
2	69	26.0	60	26.9
3	38	14.7	17	7.6
4	15	5.9	12	5.4
5	11	4.2	7	3.1
6 or more	13	5.0	2	1.0
Totals	259		223	

In that patient heart disease developed without there being at any time definite evidence of rheumatic fever other than chorea. Death resulted suddenly probably from a cerebral embolus, permission to perform an autopsy could not be obtained. Three other deaths occurred (not shown in the chart: two the result of pneumonia and the third from postpartum hemorrhage). In the three latter cases there was no evidence of rheumatic fever or rheumatic heart disease at the time of death.

2 In the group of patients with chorea and other manifestations of rheumatic fever (348) fifty (14 per cent) died of associated causes. Death resulted in forty-six cases from rheumatic fever, in three from subacute bacterial endocarditis, and in one from acute bacterial endocarditis. Four further deaths resulted from unassociated causes (one automobile accident, one by drowning, one due to pneumonia and one due to encephalitis).

TABLE 2—Comparison of the Number of Attacks of Rheumatic Fever and of Chorea in the Same Patient Relative to the Development of Rheumatic Heart Disease (348 Patients)

	Rheumatic Heart Disease		Potential Rheumatic Heart Disease	
	No. of Patients	Percentage	No. of Patients	Percentage
More attacks of chorea than of rheumatic fever	87	34.2	33	35.3
Same number of attacks	89	34.9	29	41.9
More attacks of rheumatic fever than of chorea	79	30.9	21	22.5
Totals	255		83	

3 In the group of patients with rheumatic fever (518) there were 166 deaths (32 per cent) from causes associated with the disease. The large majority of these deaths (140) resulted from rheumatic fever. In eight instances death resulted from subacute bacterial endocarditis and in three from acute bacterial endocarditis. Six patients died suddenly of cerebral embolism; four died after the age of 40 of congestive failure without clinical evidence of active rheumatic fever, and in five the cause of death could not be definitely determined, though it was said to be due to heart disease. Seven further deaths occurred from unassociated causes and are not listed (two from automobile accidents, one following a ruptured appendix with generalized peritonitis, one of brain abscess, one at the time of cesarean section and two of pneumonia).

These death rates seem to present incontrovertible evidence that chorea per se does not indicate a serious prognosis. Other manifestations of rheumatic fever seem to be the determining factor as regards both the development of rheumatic heart disease and the ultimate prognosis. It may be pointed out here that those patients with chorea and other manifestations of rheumatic fever exhibiting the three more severe manifestations of rheumatic fever (pericarditis, congestive failure and precordial pain) are in the majority of instances dead. In no instance among the fifty deaths in this group was chorea present during the terminal illness (or last recurrence of rheumatic fever). This confirms our clinical impression that the severity of rheumatic fever is the prognostic point of importance in a group of young patients with rheumatic fever.

COMMENT

The prognostic significance of chorea as a manifestation of rheumatic fever has evidently been exaggerated in the past. We believe that the association between true Sydenham's chorea and rheumatic fever is too close to warrant a separation of this symptom complex from the syndrome of rheumatic fever. The statistics herein presented, as well as the voluminous literature, render this evident. Further, because of the various observations presented in some detail in this communication, we believe that chorea is evidence of the presence of mild rheumatic fever. In the absence

of other evidences of rheumatic fever, either by clinical signs and symptoms or by laboratory observations chorea seems to play but a small role in the development of heart disease of the rheumatic type

This point of view may seem at variance with established conceptions of chorea, but the data as presented confirm our contention. As mentioned previously several authors have noted the fact that in patients with chorea the prognosis is better than in those with arthritis or carditis as evidence of rheumatic fever. It is generally noted, also, that rheumatic heart disease is not as commonly associated with chorea as with the other manifestations of rheumatic fever. The separation and analysis of choreiform movement aside from other evidences of infection have been neglected in reports in the literature, and it is usually impossible from the data presented to separate the groups as we have done in this study. It is necessary to have a large group under prolonged observation and to study them from clinical and laboratory standpoints in order to evaluate the manifestations of rheumatic fever. It is probable that, if similar criteria had been used in previously reported studies, figures comparable to ours would have been obtained.

Of the seventy-three patients cited by Osler³ (many of the reports having been collected from the literature) thirty-nine definitely had rheumatic fever according to his criteria, ten others had fever, six pericarditis, two infarcts, and one nephritis. These last nineteen subjects were not considered by Osler to have had rheumatic fever, but fresh mitral valvulitis was found post mortem. On the basis of our criteria we should consider this latter group of nineteen patients as having rheumatic fever. Thus, rheumatic fever may be considered as accounting for fifty-eight rather than thirty-nine of the seventy-three deaths reported. Further cases were examples of chorea insaniens and other cases had a fatal outcome as the result of pneumonia, peritonitis and unrelated infections. By reevaluating the data presented by Osler, it is seen that rheumatic fever and not chorea seems to be the important factor in his series also.

Chorea insaniens is not commonly encountered today and in this presentation it is not considered. One occasionally sees a patient with protracted exhaustive chorea, but on the whole even this is rare and in our experience has not been conducive to the development or progression of rheumatic heart disease in the absence of other manifestations of rheumatic fever.

We are cognizant of the fact that chorea without other manifestations of rheumatic fever may have a separate etiology. This is evident from the data presented. It is also evident that in a large group of patients exhibiting choreiform movements, other manifestations of rheumatic fever are common over a period of eight years. Gerstley and his associates¹⁵ recently stated that "chorea should not be taken as an indication of rheumatic infection without other rheumatic manifestations." While this may be plausible, the answer to this difficult problem must remain indefinite until more knowledge concerning the etiology is available.

SUMMARY AND CONCLUSIONS

1 An analysis of the prognostic significance of chorea as a manifestation of rheumatic fever has been made in a group consisting of 482 patients with chorea

These patients have been compared with 518 patients presenting manifestations of rheumatic fever other than chorea

2 Over an average period of eight years, 72 per cent of the patients with chorea exhibited other manifestations of rheumatic fever while in 28 per cent only chorea was found

3 The incidence of rheumatic heart disease in the groups of patients studied was 86 per cent in the group of patients with rheumatic fever without chorea, as compared with an incidence of 54 per cent of the patients with chorea. When the group of patients with chorea was further analyzed into (1) those with chorea and other manifestations of rheumatic fever and (2) those with chorea but no other manifestations of rheumatic fever (so-called pure chorea), the incidence of rheumatic heart disease was found to be 73 per cent and 3 per cent respectively.

4 That the presence of chorea alone does not greatly influence the development of rheumatic heart disease is shown by the fact that, of 134 patients with chorea only, the incidence of heart disease was only 3 per cent, of 184 subjects who showed other evidence of rheumatic fever subsequent to chorea heart disease

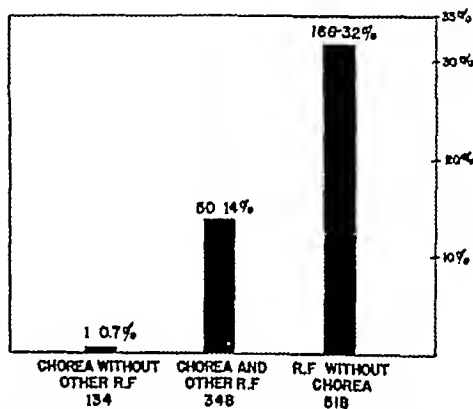


Chart 7—Number of deaths in a series of 1 000 patients (in three groups) over an average period of eight years directly due to rheumatic fever (including chorea) and rheumatic heart disease

was found in 80 per cent (147), and of 164 subjects who had chorea subsequent to rheumatic fever, heart disease was found in 66 per cent (108). Thus, manifestations of rheumatic fever other than chorea are important factors in the development of rheumatic heart disease.

5 The number of attacks of chorea does not appear to influence significantly the development of rheumatic heart disease.

6 The severe manifestations of rheumatic fever (especially precordial pain, pericarditis and congestive heart failure) occur twice as frequently in patients having rheumatic fever as in those having chorea in addition to rheumatic fever.

7 Death occurred in only 0.7 per cent of the patients with uncomplicated chorea, in 14 per cent of those with rheumatic fever and chorea, and in 32 per cent of those with rheumatic fever only. Thus, the death rate is seen to increase noticeably in the groups of patients exhibiting more evidence of rheumatic fever than chorea.

8 Therefore, chorea is considered to be a mild manifestation of rheumatic fever and one in itself not especially conducive to the development of rheumatic heart disease.

25 Binney Street.

15 Gerstley J R, Wile, S A, Falstein E I and Gayle May
Chorea Is It a Manifestation of Rheumatic Fever J Pediat 6: 42
(Jan) 1935

TETRA-ETHYL LEAD INTOXICATION AND POISONING BY RELATED COMPOUNDS OF LEAD

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Increases in recent years in the quantities of tetra-ethyl lead manufactured for use as an antidetonant, together with the now almost universal employment of this compound in ethyl and Q fluids throughout the world has greatly enlarged the scope of the industrial hygienic problem associated with the control of the hazards accompanying its manufacture and blending into motor fuel. Since tetra-ethyl lead added to gasoline in the maximum proportion (1:1,260) now allowed by the purveyors of the compound has been demonstrated to be free from harmful effects as far as any potential hazard resulting from the lead compound is concerned,¹ the hygienic problem is limited to those men who work with the compound prior to its addition to gasoline, and to those who may be exposed to the products of decomposition formed under certain conditions, which will be described presently. In view of the fact that in several reports in the literature no differentiation has been made between actual poisonings which occurred as a result of exposure to concentrated tetra-ethyl lead and the theoretical dangers which have been assumed to be associated with lead-treated gasoline it is well to emphasize that the cases reported in this paper, together with the accompanying symptoms, refer only to poisoning produced in the manufacture or handling of concentrated tetra-ethyl lead and its products of decomposition. Although little has been added to the symptomatology of encephalopathy due to lead poisoning since the descriptions of Tanquerel des Planches and the more recent writings of Sir Thomas Oliver in relation to exposure to the inorganic compounds of lead, the immediate connection between exposure to the volatile organic compounds and the development of characteristic acute cerebral symptoms has been so regularly observed as to justify consideration of this type of encephalopathy as a distinct clinical entity. The purpose of the present publication is to review the history of tetra-ethyl lead poisoning and its associated products of degradation and to define, on the basis of experience with seventy-eight cases, the clinical concept and the circumstances associated with its occurrence.

HISTORY

Though tetra-ethyl lead has been the subject of experiment since its discovery by Lowig² in 1852, no cases of poisoning due to it were reported in the literature until October 1924, some months after manufacture of the compound in commercial quantities was begun, when Eldridge³ referred to a series of cases reported to him by Thompson and Schoenleber. A total of 138 cases were included in their series comprising forty-nine cases seen by Kehoe in Dayton, Ohio, and seventy-one in Bayway, N. J., the remainder being seen in Deepwater, N. J. There were thirteen deaths in

these series. In July 1925 Kehoe⁴ reported a series of nonfatal cases, describing the symptomatology and clinical features in some detail from the point of view of the differential diagnosis. Shortly afterward there appeared a report by Norris and Gettler⁵ in which the results of necropsy and the chemical examination were given in four cases. These represent the first and to date the sole publications in the medical literature in which original observations have been reported. Several reports⁶ in the foreign literature have been made on the subject, but all of those writers depended for their clinical information on the aforementioned reports, some of the articles have given rise to confusion, owing to the failure on the part of the reviewers to differentiate between actual poisonings that occurred as a result of exposure to concentrated tetra-ethyl lead and the theoretical dangers accompanying the use of leaded gasoline.

Reynolds⁷ in 1928 reported a case in which there had been three weeks' exposure to tetra-ethyl lead at a manufacturing plant. At the time of examination the patient presented a parkinsonian syndrome with mental lethargy, which had developed gradually after the termination of the period of exposure. In the absence of complete information as to the clinical picture and the chemical observations at the time of onset, one hesitates to exclude encephalitis as a possible cause of the syndrome seen, particularly since this case would constitute an isolated instance of neurologic sequelae of tetra-ethyl lead intoxication.

PHARMACOLOGY

The study of the pharmacologic action of the organic compounds of lead, begun in 1878 by Harnack,⁸ is far from complete. The occurrence of poisonings due to tetra-ethyl lead in 1924 prompted investigations by Eldridge³ and later by Kehoe,⁹ who reported the toxicity of tetra-ethyl lead to be a function of its lead content rather than a characteristic of the compound. This has been held to be true of all organic compounds of lead, although Buck and Kumro¹⁰ found the minimal lethal dose for tetramethyl lead to be from 70 to 100 mg per kilogram for rats when administered intraperitoneally as compared with 10 mg per kilogram for tetra-ethyl lead and from 2 to 3 mg per kilogram for tributyl and tripropyl lead chloride. However, the vehicle used with the trialkyl lead compounds was a dilute alcoholic solution, while the tetra-ethyl and tetramethyl lead were administered in solution in olive oil. The authors reported that the absorption was slow when the material was injected in a solution of olive oil, making it difficult to compare the results. They investigated selected ionized divalent lead compounds, slightly ionized salts, complex salts, diaryl lead salts and trialkyl and tetra-alkyl salts of lead. It was noted

From the Kettering Laboratory of Applied Physiology, University of Cincinnati.

1. Kehoe, R. A., Thammann, Frederick, and Cholak, Jacob. Appraisal of Lead Hazards Associated with Distribution and Use of Gasoline Containing Tetra-Ethyl Lead. *J. Indust. Hyg.* 16: 100 (March) 1934.

2. Lowig, C. *J. prakt. Chem.* 60: 304 (1853).

3. Eldridge, W. A. A Study of the Toxicity of Lead Tetra-Ethyl. Chemical Warfare Service, Edgewood Arsenal Medical Research Division, report 29 Oct. 5, 1924.

4. Kehoe, R. A. Tetra-Ethyl Lead Poisoning. Clinical Analysis of a Series of Nonfatal Cases. *J. A. M. A.* 85: 108 (July 11) 1925.

5. Norris, Charles and Gettler, A. O. Poisoning by Tetra-Ethyl Lead. Postmortem and Chemical Findings. *J. A. M. A.* 85: 818 (Sept. 12) 1925.

6. Zangger, H. Eine gefährliche Verbesserung des Automobilbenzins. *Schweiz. med. Wchnschr.* 55: 26 (Jan. 8) 1925. Borda, F. Le plomb tétraéthyle comme antidétonant. *Ann. d'hyg.* 11: 669 (Dec.) 1933.

7. Reynolds, P. E. Neuro-psychiatric Disease with History of Onset Following Exposure to Tetra-Ethyl Lead. *U. S. Vet. Bur. M. Bull.* 4: 147 (Feb.) 1928.

8. Harnack, Erich. Ueber die Wirkung des Bleis auf den thierischen Organismus. *Arch. f. exper. Path. u. Pharmacol.* 9: 152, 1878.

9. Kehoe, R. A. On the Toxicity of Tetra-Ethyl Lead and Inorganic Lead Salts. *J. Lab. & Clin. Med.* 12: 354 (March) 1927.

10. Buck, J. S., and Kumro, D. M. Toxicity of Lead Compounds. *J. Pharmacol. & Exper. Therap.* 38: 161 (Feb.) 1930.

that the first three types of compounds behaved similarly in producing plumbism, and the trialkyl and tetraalkyl salts were again similar but differed from the first three in their tendency to produce encephalopathy.

Other investigators,¹¹ stimulated by the hope of finding a lead compound of efficacy in the treatment of malignant tumors, have studied the toxicology and pharmacology of lead triethyl acetate, hydroxide, chloride and sulphate and numerous tetra-alkyl and diaryl salts of lead.

In general the physiologic response is similar in all animals studied, including the frog, pigeon, rat, rabbit cat and dog, when fat soluble organic compounds of lead are used. Symptoms on the part of the central nervous system are striking and out of proportion to the manifestations by other systems as might be expected from the oil-soluble nature of the compound. Norris and Gettler reported the recovery of volatile lead from the brains of two of four men who died as a consequence of poisoning mainly due to the vapors of tetra-ethyl lead. In addition to volatile organic lead unusually large amounts of nonvolatile lead were found suggesting the possibility of the decomposition of tetra-ethyl lead *in situ*. Kehoe¹² was unable to find any volatile lead in the brain three and twelve hours after the application of tetra-ethyl lead to the skin of rabbits although small amounts of volatile lead were found in the blood of one and the livers of three animals. The change in composition accompanied by a loss of volatility appears to occur in a relatively short time, as for man, in two of Norris's⁶ cases in which the patients died after seventy-two hours no volatile lead was found in the brains, whereas in the two men who died within twenty-four hours the brains contained significant amounts of volatile lead. The actual time required for the degradation to occur would be expected to vary with the dosage, with the mode of administration and to a certain extent with the animals. Kehoe¹² estimated the time required for the complete decomposition and redistribution in a fashion similar to that found after exposure to water-soluble, nonvolatile lead compounds to be from three to fourteen days.

The action on the central nervous system is one of irritation. In animals restlessness and irritability are marked, combativeness may be evidenced, incoordination, ataxia and twitching occur, followed in fatal cases by convulsions and death. Sensation and consciousness are not lost except just before death.

Weakness and a fall in blood pressure have been noted. Harnack⁸ attributed the weakness to the action of lead on striated muscle, the circulatory change to action on the heart. He observed no effect on the smooth muscle of the vessels or intestine. Mason,¹³ however, attributed the changes in the blood pressure and the respiratory rate noted by him—an initial fall in blood pressure and bradycardia with an increased respiratory rate—to stimulation of the vasodilator centers and end-organs. The locus of the action of organic lead compounds in producing the fall in blood pressure which usually follows their administration has not yet

been clearly established. An increase in the respiratory rate accompanying the early stages of excitement has been noted,⁹ generally followed by a slowing, particularly in the case of rabbits, although the converse is also reported.¹⁴ Effects on the gastro-enteric tract of organic lead compounds administered parenterally are variable. Most observers, however, have noted hypermotility with a tendency to diarrhea rather than the constipation usually associated with chronic plumbism. No significant effects on the urinary tract have been noted and no experiments have been carried out to determine the possible effects on fertility. Bischoff and his associates¹¹ found tetra-ethyl lead to be no more toxic to pregnant than to nonpregnant rabbits, but a high mortality in the young was noted as a result of single large doses administered from the sixth to the fifteenth day of pregnancy. Though the progeny was weakened, no specific effect on the chorionic villi was observed following the administration of tetra-ethyl lead.

ETIOLOGY

While it is true that tetra-ethyl lead is not unique in its pharmacologic action or ability to produce a characteristic type of poisoning in man but shares this property with other organic compounds of lead which have similar physical and chemical properties, from a practical point of view it is the only compound of lead of its type in general commercial use today. Consequently the present considerations will be limited to tetra-ethyl lead or to the products of its decomposition.

Tetra-ethyl lead is a colorless oily liquid (specific gravity, 1.659) with a sweetish odor. It has an appreciable vapor pressure at ordinary temperatures, 1 liter of air at usual temperatures containing 5 mg of the material when saturated. It is insoluble in water, soluble in alcohol and acetone, and miscible with fats and oils. It is the latter property that makes available an important avenue of absorption (the skin), and the permeability of the pulmonary epithelium to the material is marked. Although the triethyl lead hydroxide and triethyl lead salts, which are the initial products of decomposition, are in the main not fat soluble, they appear to be susceptible of rapid absorption through the lungs. Considerable nasal and ocular irritation is evidenced by persons exposed even to minimal quantities of dusts of the latter compounds. Absorption from the gastro-enteric tract is variable and delayed but did occur in two cases included in this study. Vomiting and purgation were prompt.

A relatively small industrial group is potentially exposed to the hazards of the concentrated material in the form of ethyl or Q fluids. These are mixtures of tetra-ethyl lead with a halogen-containing compound such as ethylene dibromide and are in all cases colored by the addition of dyestuff to permit ready recognition of the fluid. Pure tetra-ethyl lead constitutes about 60 per cent by weight of ethyl and Q fluids. Approximately 300 to 600 men are employed in the manufacture of the fluid or in maintenance operations on the equipment in the one plant where it is now being manufactured. These men are under careful medical supervision, and exceptional precautions are taken to prevent cutaneous contact or inhalation of vapor. As a consequence, only four incipient cases with no fatalities have developed since the institution of the present

¹¹ Bischoff, Fritz, Maxwell, L. C., Evans, R. D. and Nuzum, F. R. Studies on the Toxicity of Various Lead Compounds Given Intravenously. *J. Pharmacol. & Exper. Therap.* 34:185 (Sept.) 1928.

¹² Kehoe, R. A. and Thammann, Frederick. The Behavior of Lead in the Animal Organism. II. Tetra Ethyl Lead. *Am. J. Hyg.* 13: 478 (March) 1931.

¹³ Mason, E. C. The Pharmacologic Action of Lead in Organic Combination. *J. Lab. & Clin. Med.* 6:427 (May) 1921.

¹⁴ Mason, E. C., Sayers, R. R., Fieldner, A. C., Yant, W. P. and Thomas, B. G. H. Experimental Studies on the Effect of Ethyl Gasoline and Its Combustion Products. Report of U. S. Bureau of Mines to the General Motors Research Corporation and the Ethyl Gasoline Co. 1927.

regimen in 1925. Another group of about 1,700 men is engaged from time to time in blending the tetra-ethyl lead-containing fluids into gasolines in various refineries in the United States. This group has been under the supervision of the medical department of the Ethyl Gasoline Corporation and has shown no cases of lead poisoning. In fact, recent studies by Kehoe¹⁵ have shown that the mean excretion of lead of these men is not significantly different from that of other men in industry not specifically exposed to lead. The latter group and in addition a variable number of employees in general refineries may at intervals of from one to two years be engaged for a few days in cleaning storage tanks that have contained gasolines to which lead has been added. While it is true that at the present time hygienic measures are in effect similar to those for the protection of the men engaged in the blending process and that there is no possibility of significant exposure provided the precautions are observed, the hazards are real and the safety of the men depends on constant vigilance. It may be expected, therefore, that exposure and illness will occur if the safety measures are improperly carried out or temporarily relaxed. After long standing in storage tanks, tetra-ethyl lead in commercial concentration in gasoline may undergo partial decomposition, with the formation of a variety of compounds, such as triethyl lead bro-

of the response. Alcoholism and debility may be expected to increase the likelihood of illness following a given exposure just as they influence the response to other noxious agents, but in the present group no specific susceptibility was apparent on the part of those addicted to the use of alcohol. To date, chronic intoxication resulting from exposure to tetra-ethyl lead has not been seen, consequently one can only surmise that the factors concerned with the development of plumbism from inorganic lead compounds might operate similarly in the production of chronic plumbism from the volatile organic compounds. Proper hygienic precautions and medical supervision have undoubtedly been largely responsible for the prevention of chronic plumbism, yet there is some evidence that the rate of excretion of tetra-ethyl lead is higher than that of inorganic lead compounds. Kehoe¹² found a greater proportion of the lead retained in rabbits after administration of lead chloride than after tetra-ethyl lead, indicating a greater rate of loss for the latter compound. While it is true that this higher rate would have physiologic significance only during the period preceding the decomposition of the quadrivalent compounds, it would nevertheless be of importance, as has been established for the pentavalent and trivalent compounds of antimony.

PATHOLOGIC OBSERVATIONS

Specific pathologic changes attributable to exposure to tetra-ethyl lead are not seen. Generalized visceral congestion, more marked in the brain and lungs, where it is usually associated with hemorrhage and edema has been described in rabbits by Kehoe.⁹ Those animals, as well as the dogs that were used by Eldridge,³ showed a more marked congestion in the enteric tract with frank hemorrhage. For the most part the hemorrhages are found in the duodenum and proximal jejunum in rabbits, the lymphatic aggregation in the lower ileum being most affected in dogs. In view of the fact that hemorrhages into the gastro-enteric tract have not been seen in man, that lesion must be considered characteristic only for the animals in which it has been described. Man, like animals, shows no specific lesion at necropsy. There is, however, a characteristic distribution of the severe congestion, edema and hemorrhage. Predominant lesions occur in the white matter of the brain, the vessels are engorged, in many instances seemingly blocked by an accumulation of erythrocytes that may be definitely altered, showing loss of eosinophilic stainability. Norris⁵ reported accumulations of eosinophilic material about these cellular thrombi, although scattered and partly localized degeneration of the white matter may occur without being accompanied with any cellular infiltrations or leukocytic aggregations in contiguous vessels. A second characteristic site of damage is the lung. Congestion is marked, and frank hemorrhage may occur accompanied by varying degrees of edema. Occasional hyaline thrombi are seen, with numerous accumulations of hyaline material in the interstitial stroma. Alteration of the blood occurs in some of the vessels, and accumulations of pigment laden leukocytes are common. Changes in the bronchi are not usual. There is general visceral congestion with edema except in the liver, which, however, may show degenerative changes. Degenerations of varying degree occur in the secreting tubules of the kidney, the glomeruli participate in the general vascular engorgement. The changes in the liver and kidneys, as in the heart, pancreas, adrenals and other organs represent a more or less uniform type of response to a

TABLE 1—Incidence of Lead Poisoning

	Number of Cases	
	1925 to 1930	1930 to 1935
Manufacturing operations	61	4
Tank cleaning	0	11
Accidental ingestion	0	2
Laboratory work	0	0
Blending	0	0
Total	61	17

mid or hydroxide and diethyl lead salts. These compounds are in general of low volatility but may be dispersed as fine dusts when the storage tanks are dried before being cleaned. In eleven of the cases under observation, exposure occurred during tank-cleaning operations of this sort. Aside from evidences of irritation to the eyes and upper respiratory tract during the period of exposure, there were no differences in the apparent toxicologic action or clinical behavior in those cases as compared to others in which the exposure was to pure tetra-ethyl lead, tetra-ethyl lead mixed with ethylene dibromide, and other lead compounds.

Another group of men of varying number who may be exposed from time to time are the chemists, laboratory workers and other investigators who prepare or handle small amounts of organic lead compounds for experimental use.

Table 1 gives the incidence of poisoning in the various groups in the period from 1925 to 1930 and since 1930. Accurate figures on the incidence of poisoning prior to 1925 are not available.

The persons affected were all white men; consequently there was little opportunity for evaluating the factors of race or sex. The condition of two Italians in this series gave no indication of increased susceptibility on the part of their race. The average age of seventy-two patients was 29 years, the oldest being 55 and the youngest 16, but no difference in reaction attributable to age was noted. Variations in the magnitude of exposure almost entirely determined the severity

general noxious agent and cannot be considered characteristic. In fact, it is extremely doubtful whether one would be justified in drawing any specific conclusions as to the cause of death from the necropsy in a case of tetra-ethyl lead intoxication in spite of the somewhat characteristic localization of changes in the brain and lungs. A history of exposure to concentrated fat-soluble lead compounds together with the finding of significant amounts of lead in the central nervous system and elsewhere is essential for such a diagnosis.

SYMPTOMS AND SIGNS

The process of absorption of tetra-ethyl lead is not usually accompanied with any symptoms except perhaps a degree of nausea due to the sweetish odor of the compound. Exposure to and absorption of trialkyl compounds of lead, on the other hand, are associated with a marked degree of irritation of serous and mucous membranes. In either event the onset of symptoms of intoxication is delayed somewhat, usually for from one to three hours in the case of tetra-ethyl lead, somewhat less in the case of triethyl lead salts. As is the case with many other general poisons, the interval between exposure and the onset of symptoms varies inversely with the dose, a person in whom well marked symptoms have developed within an hour after exposure may be assumed to have had a more significant exposure than another patient in whom no definite illness develops until four or even twelve hours has elapsed. This delay in onset of symptoms is the result of at least two factors: (1) the decomposition of lead within the body with the liberation of water-soluble lead compounds and (2) the delayed absorption from either the pulmonary epithelium or the skin. Delayed absorption from the enteric tract may also occur, but this is less likely to happen because of vomiting and purgation.

A prodromal period preceded the onset of severe, acute symptoms in all cases, its duration ranged from eighteen hours to eight days, varying inversely with the magnitude of the exposure and the severity of the poisoning as did the latent period. For example, in one severe case definite symptoms of intoxication developed within an hour, progressing steadily to mania in eighteen hours. In another milder case symptoms first developed from ten to twelve hours after exposure, moderate definite symptoms were manifested for eleven days and then mania developed, this constituting the longest interval between exposure and the onset of severe symptoms seen among these patients. In this case, as in all others in which severe symptoms developed, no period of normality or significant regression of symptoms was noted prior to the onset of the severe symptoms, although slight day-to-day variation in intensity was seen. The symptoms of the prodromal period are those of the acute stage in a less serious form. In contrast to infectious lesions, little variation in the early clinical picture is seen and focal symptoms do not develop. The stimulation of the central nervous system results in insomnia, which is uniformly present, sleep is difficult broken and restless, and wild and terrifying dreams are constant. During the waking state pallor and an anxious expression are usually seen, the patient is irritable and nervous and may give evidence of delusional interpretations or a depressive mood, or his state may simulate an anxiety neurosis. Mental excitement may be marked, headache is usual and often severe, and vertigo is frequent. Evidences of meningeal irritation are absent, the spinal fluid may at times be under

increased pressure but is otherwise not remarkable. Changes interpreted as a result of alteration or damage to the peripheral nervous system were not observed, subjects able to cooperate in a neurologic examination were found to have a normal sensorium influenced somewhat toward an exaggerated response associated with the heightened general psychic irritability accompanying this there is a general increase in reflex response of the tendon and superficial reflexes being hyperactive or even exaggerated. No change in the responses of the autonomic nervous system has been noted. Reflexes not normally present were not elicited in any case. Babinski and Oppenheim signs were normal. Difficulty of vision was an occasional complaint, it appeared in all cases to be due to weakness of the extrinsic muscles of the eye. The eyegrounds were not remarkable. Anorexia, nausea and vomiting or gastric disturbance were the most constant symptoms attributable to the gastro-enteric tract, tending to be most marked in the mornings. Diarrhea occurred more often than constipation, although neither disturbance was regular or frequent. A metallic taste was complained of by many. The circulatory system is profoundly affected, the pulse rate is slow, in some cases the rate being reduced to between 52 and 56, and even in those cases in which there was marked mental excitement it did not exceed a rate of 100. Both the systolic and the diastolic blood pressures are lowered, falling in some cases as low as 80 and 40, respectively. The average systolic pressure in this series was 104, the average diastolic pressure 62, representing an average depression from the normals of 20 and 16, respectively. The maximum depressions were 53 systolic and 36 diastolic.

Weakness, tremor, muscular pains and ease of fatigue were regular or frequent complaints. Weakness was in some instances so distressing as to be made the chief complaint, only two of thirty-nine patients examined did not note it specifically. It was in all cases accompanied by ease of fatigue. Tremors, which were noted in more than half the cases, were for the most part limited to the extremities, more especially the upper extremities, although there were occasional patients with labial and lingual tremors as well. Well defined tremors were coarse and jerky, of an intention type aggravated by effort, unusual movements or attempt at control. They were not present during sleep or repose, when the activity responsible for them was manifested by twitching, choreiform or localized convulsive movements. Myotactic irritability was usually present and sometimes marked, in one patient with pronounced muscular hyperirritability to mechanical stimulation Chvostek's sign was elicitable at a time when the blood calcium level was normal. Symptoms referable to the respiratory or the urinary system are not usual at that stage.

A subnormal temperature is a customary observation, the morning temperature is at times as low as 96 F, and the temperature remains subnormal throughout the day. On the other hand, normal temperatures or even 0.1 to 1 degree of fever have been noted in patients with pronounced mental excitement, and one patient exhibited a sudden elevation of temperature to 106 F at a time when he appeared to be moribund. Some loss of weight is usual, beginning early it may persist for the entire course of the illness and result in losses as great as 25 pounds (11 Kg). The average loss of weight in the series studied was 9.3 pounds (4 Kg).

from an average weight of 157 pounds (71 Kg). Early in the disease and in the milder cases the blood changes are not significant. In table 2 the occurrence or nonoccurrence of the foregoing symptoms is noted. The symptoms noted are interpretations of the descriptions given by patients, not responses to leading questions, consequently the regular occurrence of several lends them considerable diagnostic importance. As far as time of appearance is concerned, it is generally true that the symptoms that appear most frequently make their appearance earliest and are the most severe and persistent.

When the exposure has been slight and brief, an exposed person exhibiting the aforementioned symptoms may have a recession of symptoms after a few days and may make a complete recovery in from two to three weeks. In most cases insomnia, dreams and muscular weakness are the most persistent symptoms and the progress of the case and recovery can be gaged by their course. If a marked depression in blood pressure occurs during the course of the disease, it will usually persist, as well as the symptoms previously

TABLE 2—Symptoms According to the Reports of Seventy-Eight Patients

Symptoms	Number of Patients Presenting Symptoms	Number of Patients Without Symptoms	Number of Patients with Questionable Symptoms
Insomnia	68	2	3
Mental excitement	23	1	
Disturbing dreams	38	2	
Ease of fatigue	40	2	
Weakness	37	2	
Headache	30	4	
Muscle pains	14	2	
Gastric disturbance	40	0	
Dizziness	22	4	
Anxious expression	0	2	
Anorexia	40	14	
Breakfast anorexia	42	13	1
Mental lethargy	13	3	1
Metallic taste	12	6	
Tremor	22	17	2
Vomiting	21	17	1
Constipation or diarrhea	11	9	2
Incoordination	0	4	
Impaired vision	1	0	
Tinnitus	2	7	

mentioned. Kehoe,⁴ in his study of cases from Dayton, Ohio, many of which are included in this study, found that even in his moderately severe cases all symptoms had disappeared in from six to ten weeks.

In the more severe and acute cases following greater exposure the symptoms are present in greater number and may increase steadily in intensity. This is particularly true in the case of symptoms attributable to injury of the central nervous system, so that in the well developed severe case the mental manifestations dominate the clinical picture, completely overshadowing the changes in other systems. An exception is the occasional case in which the most marked changes are exhibited in the neuromuscular and circulatory systems. These will be described later. In the usual case several types of symptom complex can be distinguished: the delirious, manic, confused and schizophrenic. This division is essentially arbitrary and not fixed for any stage of the disease or for any individual patient, in fact, in any case there may be a fluctuation between periods of confusion and maniacal excitement or, after an episode of excitement, a period of schizophrenia may be noted accompanied with active hallucinations and delusions. In general, however, a given patient will manifest a type of mental response characteristic for

him, and not related to the severity of his illness or its stage, but apparently dependent on his mental background.

The delirious type of response does not differ markedly from other toxic deliriums. The patient is greatly depressed physically and is obviously sick, tremor is marked and the mood is one of fear or apprehension, though to a lesser degree than is usual in cases of delirium tremens. The patient seems to be completely dissociated from his surroundings, his attention is poor and his response to questions is often irrelevant or erratic, influenced considerably by the amnesia for recent events, which is uniform. Terrifying dreamlike experiences are carried over, hallucinations are common though less consistently so than in cases of alcoholic delirium. Misidentification of persons and places is usual and disorientation is frequently complete. Episodes of acute terror may lead the patient to attempt escape, every patient must at all times be restrained and under constant supervision to keep him from leaping from a window. Despite the great mental excitation and constant exaggerated muscular activity the pulse rate is relatively slow (less than 100), the temperature is characteristically normal or subnormal and sweating is profuse. In the greater proportion of cases there was delirium of the type just described, and it persisted for from a few hours to as long as four or five days responding well to treatment, however. Brief tonic convulsions may occur.

Patients exhibiting the manic type of response are not clearly differentiated from those having episodes of maniacal delirium. Symptoms of each type of response may be present and combined, indicating that the differentiation of type is a consequence only of relative degrees of emphasis on what are essentially mutual symptoms. However in two of the cases the mental manifestations were sufficiently characteristic to give the impression of maniacal excitement rather than delirium. Consciousness was somewhat clouded, less so than is usual in the delirious patients, the flight of ideas was marked almost to absolute incoherence, and transitory hallucinations were strikingly in evidence. Emotional exaltation was not noted, although it might be expected to be present in cases in which such marked psychomotor activity is seen, in fact, the tendency was toward depression with great restlessness. In both cases delirious mania developed with aggravation of all symptoms, and restraint was required. The somatic symptoms were in both cases similar to those previously described.

A state of confusion may precede, follow or intervene between attacks of mania or delirium. These patients will show little evidence of psychic irritability other than insomnia, restlessness and disturbed sleep. Motor unrest, muscular twitchings and exaggerated responses may be noted in this group as in the cases just described, and occasional hallucinations and delusional interpretations are seen. The patient for the most part is apathetic or depressed and is unconscious of or indifferent to his environment. A certain degree of perplexity is usually seen, especially in reference to the immediate environment and to orientation. Lucid intervals of from a few minutes to several hours may intervene, with improvement in orientation and insight, the amnesia for recent events not being improved greatly, however. A marked sensitivity to light was observed in one case. Prior to the onset of developing delirium or mania, there is a gradual increase in the

evidences of cerebral irritation. The expression becomes more anxious, restlessness increases, insomnia is intolerable and motor unrest is increased. These symptoms usually increase gradually over a period of from three to eight hours before the acute delirium supervenes, giving opportunity for intensive treatment in an attempt to abort the impending symptoms.

The schizophrenic type of response is by far the most confusing, particularly so in that in the two cases in which it appeared there was a history of behavior tending to indicate the likelihood of the occurrence of such a phenomenon without the supervention of the accident of tetra-ethyl lead intoxication. The mode of onset, initial behavior and general symptomatology did not differ in any essential from those of the other patients up to the time of the development of acute mental symptoms; there was a gradual increase in intensity of typical general symptoms over a period of from one to two weeks culminating in fairly acute psychic disturbance. The initial symptoms in both cases simulated the episodes of catatonic excitement seen in cases of dementia praecox, psychomotor activity was

counterpart does not develop. On the other hand the muscular weakness and ease of fatigue are pronounced and muscular pains and cramps are severe. No paralysis, anesthesia or other localized evidences of peripheral neuritis are to be seen, but the general muscle tone may be so lowered and fatigue so easily induced that work is impossible. A five minute walk may be sufficient to produce marked weakness in the legs requiring a correspondingly long period of rest. Finer movements are not interfered with and there is no true ataxia, but the rapid fatigue and muscle weakness may produce a type of poorly coordinated activity that simulates atactic movements. The tightly flexed biceps are doughy and yield to pressure, and there is moderate generalized tenderness of all muscles. The pulse rate is very slow and the temperature is definitely subnormal. The blood pressure is lowered to a point well below the average for other types. The tendon reflexes are hyperactive, no abnormal responses are noted and the sensorium is not affected.

In cases in which violent cerebral manifestations appear these may be terminated after a few hours or

TABLE 3—*Excretion of Lead in Fourteen Cases*

Case	Exposure	Type of Case	Interval Between Exposure and Collection of Samples	Milligrams of Lead per Liter of Urine	Milligrams of Lead per 100 Grams of Feces	Stippled Cells per 50 Fields	Recovery Completed After
C. A.	Accidental ingestion	Severe with three periods of mania, one convulsion	6 days	1.60	7.92	0	8 weeks
F. R.	Manufacture	Definite mild delirium	3 days	0.93	8.42		2 weeks
E. M.	Accidental ingestion	Severe, two periods of mania	15 days	0.54	9.88	0	10 weeks
L. D.	Tank cleaning	Severe, two periods of mania	16 days	0.52	4.83		10 weeks
J. B.	Tank cleaning	Moderately severe	16 days	0.37	0.79		5 weeks
J. L.	Manufacture	Mild intoxication	6-14 days	0.34	7.00	20	6 weeks
L. C.	Tank cleaning	Mild intoxication	5 days	0.34	3.15	0	1 week
B. R.	Manufacture	Mild intoxication	5 weeks	0.31	2.62	23	0 to 8 weeks
P. Z.	Tank cleaning	Severe with delirium	15 days	0.28	1.67	0	6 weeks
G. O.	Manufacture	Moderately severe	1 week	0.27	4.22	150	Complicated by chroole intoxication
O. A.	Tank cleaning	Mild intoxication	5 days	0.27	1.80	0	1 week
W. J.	Tank cleaning	Mild intoxication	5 days	0.24	3.36	0	1 week
T. M.	Tank cleaning	Mild intoxication	5 days	0.25	1.76	0	1 week
M. W.	Tank cleaning	Mild intoxication	5 days	0.19	1.68	0	1 week

increased, and the patients were impulsive, excessively talkative, noisy and destructive. There was complete sleeplessness and a marked lack of coherence with prominent hallucinations and delusions, the latter being fairly well formulated and organized. One patient was greatly depressed and fearsome with systematized self-accusatory, quasireligious delusions. His hallucinations and delusions were fairly well related to occurrences during the time of his youth. In the other patient periods of delirious excitement alternated with definite symptomatic paranoid states accompanied by delusions of persecution and auditory hallucinations. Both patients maintained psychomotor activity and were strikingly manneristic. Coarse tremors were generalized. The facies was empty and dull. Orientation and judgment were poor. Insight was lacking. The emotional poverty and inadequate emotional response were striking. The somatic symptoms were similar to those seen in other types.

In a type of case occasionally seen—two such cases were studied—the mental symptoms are not prominent, though evidences of cerebral irritation can be elicited, the predominant symptoms are neuromuscular or neuro-circulatory. Anorexia, restlessness, insomnia and dreams are present, in fact, insomnia may be so severe as to prevent sleep for days, yet the delirium or its

days and a subsequent decline in all other symptoms may occur, to be followed by an uninterrupted convalescence. The delirium may however decline in intensity to a level at which the patient requires no restraint and then, after a period of as long as two or three days, recur. It is to be noted in these cases that in the intervals between periods of delirium the improvement in the remaining symptoms, particularly the somatic symptoms, does not progress, instead the condition remains more or less stationary, with a decline prior to the recrudescence.

Clinical laboratory observations are of little diagnostic significance. A marked drop in the hemoglobin value, which occurred in one case immediately following exposure, was not maintained. The urine is in nearly all instances acid to methyl red, in addition, particularly during periods of delirium, it may contain albumin and sugar. Occasional casts may be seen. Records of but six spinal fluid examinations are available. None were remarkable in an uncomplicated case. During the delirium the pressure was slightly increased but in two patients who were allowed to become dehydrated the pressure was subnormal. All counts and the globulin and chloride values were within normal limits. The sugar content of the spinal fluid was in two cases over 80. The gold curves in two cases were negative.

Chemical examination of the urine, feces and blood yields evidence of a definite character in relation to the patient's exposure to lead. The rapid rate of absorption and excretion of many of the organic compounds of lead results in the appearance in the urine during the period immediately following exposure of quantities of lead materially greater than those seen at a corresponding period in plumbism from other lead compounds, and completely at variance in amount from the quantities normally excreted. Table 3 gives the results in fourteen cases of examination of the urine and feces in relation to the period following exposure.

DIAGNOSIS

The diagnosis rests on the history of a significant exposure to organic compounds of lead, the observance of symptoms and physical observations consistent with those just described, and the finding of amounts of lead in the urine and feces of the order of magnitude of those found in the cases described. (Only in certain cases have the chemical analyses of the blood and spinal fluid revealed amounts of lead that could be considered significant, but the limits of normal variation are so poorly defined at present as to make questionable any interpretations based on these results.) The interpretation of a significant exposure must depend on a knowledge of circumstances under which such exposure occurred and on the knowledge that similar exposures have been significant and have led to poisoning in other instances. A variety of conditions may offer difficulties in differentiation. Delirium tremens and toxic delirium from other causes, such as drugs, bromides, carbon monoxide and mercury, offer the greatest problem, particularly if they chance to occur in a worker who has had in addition a potential exposure to tetra-ethyl lead. Mental symptoms due to acute uremia, pellagra, the delirium of acute infectious diseases as well as those psychoses with delirium associated with organic brain disease, such as epidemic (lethargic) encephalitis may be confusing to the examiner. Low grade infections associated with chronic ill health are often accompanied with such symptoms as hypopnea, disturbance of sleep, anorexia and weakness. The differentiation of such a case from incipient cases of intoxication can be accomplished when an adequate history is given. In some instances in which a history cannot be obtained the diagnosis must rest entirely on the distribution and nature of the chemical observations. Most patients, however, will not present any great problem in diagnosis, particularly if one keeps in mind the limited groups of persons who may be exposed, the direct relation between exposure and illness, the continuity of symptoms and the essentially general nature of the cerebral manifestations. The coincidence of tetra-ethyl lead intoxication and other diseases has been seen. One patient having a history suggesting the possibility of developing dementia paralytica and for whom the spinal fluid showed a typical gold curve and the serologic tests were positive for syphilis had superimposed a mild intoxication. All symptoms disappeared during convalescence, antisyphilitic therapy having been instituted as soon as the acute symptoms of intoxication began to subside.

COMPLICATIONS AND SEQUELAE

In mild and moderately severe cases in which there were brief periods of delirium no complications developed. As a consequence of circulatory weakness and exhaustion in severe or fulminating cases a variety of complications may conceivably develop such as acute

cardiac dilatation, cerebral edema, pulmonary edema or similar lesions associated with terminal states. No complications occurred in the present series, however.

Sequelae have not been seen. Convalescence may be protracted with symptoms persisting as long as from eight to ten weeks, but no residual symptoms or evidences of damage have been observed. A group of fourteen patients not included in this series have been under medical observation at monthly intervals continuously since the time of intoxication in 1925 and have not given any evidence of subnormality, physical alteration or increased susceptibility to intoxication. They have been continuously at work in the manufacturing operation, the majority of them having been in supervisory positions during the past two years where the exposure is often greater than that experienced by day workmen. Such evidence plus the absence of focal brain lesions at necropsy, indicates the reversible nature of the injury from tetra-ethyl lead and reduces the likelihood of damage from cumulative subclinical exposures.

TREATMENT

Prophylaxis consists in having the manufacture handling and blending of these compounds carried out in closed systems. Where this is not feasible, as in laboratory operations, the use of impervious gloves and respirators is indicated. The results obtained through the exercise of precautionary measures in the manufacturing processes have been given in a recent article by Kehoe.¹⁶

In mild cases little symptomatic treatment is required. Termination of the exposure, light outdoor exercise and a normal diet with a high intake of water are all that is usually necessary. Small doses of pentobarbital sodium or paraldehyde will usually control the insomnia. The bowels should be kept open, preferably by the use of saline cathartics. In severe cases more vigorous treatment is indicated. Maintenance of an adequate intake of fluid is a major problem in delirious patients, the voluntary intake in such cases being nil and the losses excessive. The intravenous administration of from 500 to 1,000 cc of physiologic solution of sodium chloride or a 5 per cent solution of dextrose in physiologic solution of sodium chloride as often as every eight hours may be necessary, and the response is usually favorable. The delirium may be controlled by the intravenous administration of from 2 to 4 Gm of magnesium sulphate in 2 per cent solution accompanied by doses of pentobarbital sodium up to 15 grains (1 Gm) daily by mouth. Calcium lactate and viosterol may be given to maintain an adequate intake of calcium. Saturated solution of magnesium sulphate given in from 4 to 6 ounce (120 to 180 cc) doses as a retention enema had a noticeably quieting effect in three cases in which the patients were able to retain it. The treatment of the acute stage was essentially symptomatic and supportive. Adequate calcium and phosphorus were assured and no attempts were made to facilitate the storage or to expedite the excretion of lead. Calcium chloride and gluconate, as well as sodium thiosulphate have been administered in the usual doses intravenously without influencing the course of the disease. Light ether anesthesia was induced in two patients without apparent subsequent harm.

During convalescence the problem of deleading arises. It is generally recognized that acute infections, metabolic

¹⁶ Kehoe, R. A. Thammann, Frederick and Cholak, Jacob. Lead Absorption and Excretion in Certain Lead Trades. *J. Indust. Hyg.* 15: 306 (Sept.) 1933.

upsets or alteration in the calcium and the phosphorus metabolism¹⁷ may profoundly affect the storage, mobilization and excretion of lead, and the dangers of attempting to expedite the excretion of lead are well known. Too little information is available, however, to justify the use of deleading procedures as a routine measure in diagnostic or therapeutic practice. Moreover it has been shown¹⁸ that abnormal amounts of lead are excreted naturally over a period of from twelve to eighteen months. As none of the patients in the present series manifested sequelae or delayed recurrences attempts to promote excretion were not made.

Clinical Notes, Suggestions and New Instruments

TETANUS TETANUS ANTITOXIN OR PHENO- BARBITAL DEAFNESS

EMIL ANDERG, M.D. AND ROBERT S. HEWITT, M.D. DETROIT

C. S., a youth, aged 17 years, a patient of Dr. Glenn Stockwell, entered Harper Hospital Oct. 29, 1934. The patient had run a thorn in his right heel October 21, while hunting. For several days there had been a small localized inflammatory area at the site of the wound. About thirty-six hours before admission there was noticed some difficulty in opening the jaws. Physical examination revealed that the neck was somewhat rigid. The lower jaw was drawn back slightly and the patient was unable to open it. The abdominal muscles were very rigid, and all reflexes were extremely hyperactive. There was a definite ankle and patellar clonus. Until November 3 heavy doses of tetanus antitoxin were given. November 3 at 3 a. m. the patient became very cyanotic. Respirations were of Cheyne-Stokes type. The temperature was 103 F. November 5 there was severe urticaria over the entire body. November 6 the condition was not improved. The pulse was very rapid. The nurses were unable to count the number. Edema of the face and hands was very severe. The patient was rational at times. Apparently total deafness was first noted November 9. November 16 the patient complained of noises in both ears. The sounds were described such as those of a trolley car or of a meat grinder. The patient heard no sounds when a Bárány noise apparatus was put to either ear. The fundi were normal. There were no vestibular disturbances. The patient had continually talked in a very loud voice since the onset of the deafness. November 21 the hearing test was repeated. The patient stated that the noise was louder when a tuning fork was applied over the mastoid area than when it was applied over the forehead.

From October 29 to November 3 the patient received 120,000 units of tetanus antitoxin intraspinally, intravenously and intramuscularly in doses of 20,000 units. October 29 phenobarbital, one-half grain (0.03 Gm.), was given every three hours. October 30 phenobarbital, 1 grain (0.065 Gm.), was given every three hours when the patient was awake. November 1 the medication was the same. November 9 it was discontinued. November 3, one ampule of coramine was given. November 7, one ampule of coramine was given. November 1 and 4, sodium amytal, 3 grains (0.2 Gm.), was given. Dextrose was administered. Saline solution was administered repeatedly. November 9 a retention enema was given (chloral hydrate, 20 grains, or 13 Gm. and sodium bromide 30 grains or 2 Gm.). November 5, epinephrine was given for itching 3 minims (0.2 cc.) when needed.

The patient came to the office March 8, 1935. Examination revealed no particular abnormality of the drum membranes. He appeared to be totally deaf. The Edelmänn a-1 fork, the

Dench loaded low fork and the 4,096 fork were not heard in either ear. May 21, tuning forks at 96, 128, 256, 512, 1,024, 2,048 and 4,096 vibrations were not heard in either ear, but the "toy clicker" was heard in the left ear in a distance of 7½ inches (19 cm.) and in the right ear in a distance of about 1 inch (2.5 cm.), while the noise apparatus sounded in the left ear. Politzer's audiometer was not heard when applied to either ear. We found only collateral reference by Dr. O. Benesi of Vienna in his contribution "Neuritis toxica nervi octavi" in the Handbook of Neurology of the Ear, page 814. He mentions under "bacterial toxins" "We are oriented concerning the influence of bacterial toxins by virtue of animal experimentation. Naturally, there are scarcely any clinical observations." C. Hirsch, for instance, reports an isolated neuritis vestibularis after immunization for typhoid. Moos has described ecchymoses in the acoustic nerve in diphtheria. Our patient received numerous doses of phenobarbital. Benesi (p. 799) reports the history of a patient who had taken large doses of phenobarbital (from 4 to 5 Gm.) and became totally deaf on the right side while he could hear the whispered voice on the left side at a distance of 3 meters. He also suffered from vertigo and fell to the right backward.

CONCLUSION

Our patient suffers from almost total deafness in consequence of either tetanus, tetanus antitoxin or, possibly, phenobarbital.

Further observations in other patients may establish a more definite etiology.

662 Maccabees Building

PAROXYSMAL HYPERHIDROSIS IN A DIABETIC PATIENT WITH REMISSION UNDER AMYTAL THERAPY

EDGAR HULL, M.D. AND PAUL B. CAMERON, M.D.
NEW ORLEANS

M. B., a Negro woman, aged 40, first came under our observation in July 1934. She was ushered rather dramatically into the diabetic clinic, staggering on the arm of the attendant. She was gasping for breath and unable to talk. Her clothing was drenched with sweat, huge beads poured from her face and neck, and from her dependent fingers drops fell with regular frequency, forming a pool on the floor. She had been sitting quietly on the bench awaiting her turn to be seen when this attack occurred. Since we believed this to be an insulin reaction, she was immediately given orange juice, and in a few minutes she was herself again, except for the drenched clothing. We were amazed to learn that she had taken no insulin and to find that these attacks had recurred at intervals of approximately two hours for the past nine years, day and night. The nocturnal attacks would awaken the patient from a sound sleep, and they necessitated changing the bedclothing.

Her past history revealed that she had had a normal childhood and adolescence. She married in 1910 and a normal child was born the same year, there had been no miscarriages. In 1914 she had what was apparently hydrarthrosis of the knees, with spontaneous subsidence, and later that year jaundice for a few weeks. In 1915 a pelvic operation was performed ostensibly a unilateral salpingo-oophorectomy, and in 1921 it was necessary to repair a hernia at the site of the operation. In 1925 the sweats began, occurring every two hours, but in a mild form. Since then the severity had increased. In 1926 a physician, consulted for the relief of pruritus vulvae, found glycosuria and instituted a regimen. This was apparently not followed as in 1928 she was brought to this hospital in diabetic coma. An irritative vulvitis found at this time was incorrectly diagnosed syphilitic condyloma, as it disappeared with control of the diabetes. Casual mention was made in this and subsequent histories of the paroxysmal sweats, but no investigation was made.

The family history was without significance.

After close observation in the hospital for several weeks, all her statements were verified. The sweats recurred with

17 Aub, J. C., Fairhall, L. T., Minot, A. S. and Reznikoff, Paul. Lead Poisoning in Medicine. Baltimore, Williams & Wilkins Co. 1926, vol. 7.
18 Kehoe, R. A., Thamann, Frederick and Cholak, Jacob. Lead Absorption and Excretion in Relation to the Diagnosis of Lead Poisoning. J. Indust. Hyg. 15: 320 (Sept.) 1933.

From the Departments of Medicine, Louisiana State University Medical Center and the State Charity Hospital of Louisiana.

regularity every ninety to 120 minutes, throughout the twenty-four hours. Emotional upsets appeared to shorten the inter-sweating period. Reading for more than a few minutes caused an interval of, roughly, ninety minutes but the disturbance at visiting time in the ward had no effect. A definite premonition or aura preceded the actual diaphoresis by two or three minutes, and the height of sweating was marked by a feeling of faintness, thoracic oppression, palpitation and dyspnea, and disappeared on cessation of the attack, leaving weakness and lethargy for ten or fifteen minutes longer. Actual sweating lasted about ten minutes on the average.

Weighing the patient before and after sweats, as well as weighing bedclothing before and after, indicated a weight loss of from 180 to 300 Gm during the paroxysm.

The blood pressure varied from 90 systolic, 70 diastolic and thereabouts without change during the attacks.

The temperature taken over several hours at ten minute intervals, during which more than one sweat occurred, showed no fluctuation at all. The patient's temperature varied from 97 to 98 F and did not vary during the cycle.

The basal metabolism readings have been 0 and —3 per cent. A roentgenogram of the skull shows a slight erosion of the sella, which has remained constant for the past year. The fundi and visual fields are normal.

Analysis of the sweat showed not more than 3 mg of dextrose per hundred cubic centimeters, 351 mg of chlorides, 387 mg of ammonia and 21.5 mg of urea nitrogen.

Results of the examination of the blood are given in the accompanying table.

Blood Analysis

Blood	Nonprotein Nitrogen	Urea	Sugar	Chlorides
30 minutes before sweat	37	16.8	200	468
At beginning	38	17.4	220	455
At height	39	18.2	246	436
At end	38	17.2	240	447
30 minutes after sweat	35	17.2	240	454
One hour after			230	462

It is seen that all constituents of the blood tested remained practically unchanged with the exception of the sugar. The patient had a high threshold, and several times glycosuria was noted immediately following the paroxysm. At times the sugar has risen more than 60 points.

The diabetes is becoming more and more severe. On the admissions in 1928 and 1930 it was possible to keep the patient sugar free and with a normal or nearly normal blood sugar, with 20 units daily on a low carbohydrate diet. At the present time, on a diet of 150 Gm of carbohydrate, 60 Gm of protein and 80 Gm of fat, she maintains her weight and shows traces of sugar on 70 units daily, but shows persistently high sugar, from 200 to 240 mg.

All manner of drugs were tried, with little or no effect. At the suggestion of Dr. Wilder of the Mayo Clinic, who had seen a similar case at Rochester, Minn.,¹ sodium amytal was given with startling results. This drug in doses of from 3 to 6 grains (0.2 to 0.4 Gm) nightly, enabled her to sleep through the night, and although sweats took place she was unaware of them. She has been discharged from the hospital and observed carefully at frequent intervals. At the present time she takes 3 grains morning and night. Sweating occurs, but the amount of sweat has diminished markedly and is scarcely enough to dampen a handkerchief. Whereas formerly she had to sit down during an attack and was rendered gasping and speechless, now she is able to carry on a conversation and vows she experiences no subjective symptoms. The attacks are becoming less and less severe, and the patient feels confident of ultimate recovery. Cessation of the drug causes the attacks to recur with their former severity. Curiously enough the patient states that she does not feel sleepy even when taking from 12 to 15 grains (0.8 to 1 Gm) daily.

¹ Hines, E. A. and Bannick, E. G. Intermittent Hypothermia with Disabling Hyperhidrosis. Proc. Staff Meet. Mayo Clin. 8:705 (Nov. 21) 1934.

SUMMARY

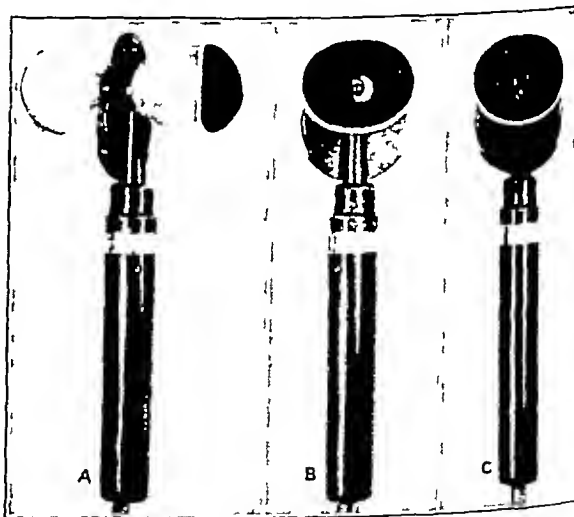
We have no explanation to offer for this case of paroxysmal hyperhidrosis in a diabetic patient. The first diagnosis of hysteria seems to be disproved, in spite of the strong emotional influence on frequency and severity, as shown by reading or by the appearance of off-schedule attacks during staff ward rounds or amphitheater demonstration of the patient. Other conditions considered have been so-called epileptic equivalents: low-grade encephalitis, syphilis, because of the somewhat suggestive past history, and intracranial tumor, because of the eroded sella. None of these seem disproved, and very little definite evidence has been brought out in favor of them. Many of the objective and subjective phenomena occur with over dosage of epinephrine, and a disturbance of the sugar metabolism during the attacks favors the hypothesis of derangement of the epinephrine balance, the exact nature of which we are not in a position to state.

We have been able to find one similar case,¹ with remission under amytal. Our patient does not show the subnormal temperature described in the Rochester case.

A MINIATURE DARK ROOM DEVICE FOR OPHTHALMOSCOPES

CHARLES POSNER, M.D., PASADENA, CALIF.

Every physician who makes a practice of including a retinal study in the general physical examination of his patient has probably, like myself, been troubled by the necessity of converting the patient's room into a dark room for a satisfactory study of the eyegrounds. In order to overcome this difficulty it occurred to me that I could convert my ophthalmoscope into a miniature dark room. This was accomplished, as shown in the illustration, by attaching an aluminum eyecup to both sides of the revolving lens system of the instrument. The inside of



A side view B front view and C rear view of miniature dark room.

the cups was painted with a dull finish black paint, which absorbs the side reflections from the wheat gram bulb, so that there is less reflected light to dazzle the eye of both the patient and the examiner. Furthermore, extraneous light is cut off when the eyecups are applied to the eyes of both the examiner and the patient. In order to reduce further side emanations of light from the wheat bulb, I found it a good plan also to coat the sides of the bulb lens with dull finish black paint.

The device described was arranged as illustrated on my Weisch Allen ophthalmoscope, which is of the direct illuminating type. With a little practice one can easily adjust oneself to the new arrangement. I hope that this idea will be of benefit to those physicians who wish to improve their eye examinations in the patient's home.

871 East Washington Street

Special Articles

TREATMENT OF DIABETIC COMA

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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CLEVELAND

Diabetic coma presents a major medical emergency. Like any major emergency it must be dealt with promptly, efficiently and adequately. These are the three cardinal axioms if life is to be saved.

The first clinical description of diabetic coma was given by Stosch in 1828, referred to by Warburg.¹ A German, von Dusch, and a Scotsman named Marsh described it again in 1854.

Coma is not merely the result of intoxication with ketone bodies, but other thus far unknown acids are

Such then is the picture which the patient presents. Fortunately it is a picture that is easily recognizable but one must be on guard concerning the diagnosis. The points that are helpful in establishing the diagnosis are as follows:

1. A history of diabetes, the type of onset of coma and the presence of infection. Coma, however, may be the first clue that the patient is diabetic.
2. Glycosuria, ketonuria and an odor of acetone on the breath.
3. High blood sugar and low carbon dioxide determinations.

These three points practically cover the field. A diabetic patient usually drifts into coma slowly over a period of two or three days, although there may be exceptions, especially if infection is present. As acidosis develops it is easy for him to forget about the necessity of taking insulin, since his mental faculties are dulled and his family often know little or nothing about his condition.

TABLE 1—Differential Diagnosis of Coma

	Eyes	Breathing	Glyco- suria	Blood Urea Content	Blood Sugar Content	Onset	Head ache	Acetone	Carbo- dioxide Combining Power	Comment
Diabetic coma	Soft eyeballs	Kussmaul	Marked	Normal or high	Normal or high	Rapid or gradual	Present	Present to breath urine and blood	Low	Low blood pressure vomiting often present
Nephritic coma (uremia)	Pupils usually dilated, albumi- nuria, retinitis edema	Stertorous	Usually present but may be absent	High	Normal or slight rise	Gradual	Present	Present to breath urine and blood	Normal	Pressure on lumbar puncture but clear fluid, high blood pressure
Cerebral hemor- rhage	Pupils dilated and unequal conjugate deviation	Stertorous and slow spitting relaxed and foam-covered lips	Usually present but may be absent	Normal	Normal or slight rise	Rapid	Present		Normal	Unequal resistance of limbs on lifting high blood pressure
Fracture of skull	Early dilatation of pupils		May be present	Normal	Normal or slight rise	Rapid	Present		Normal	Roentgen examination of skull will establish diagnosis
Brain tumor	Choked disk changes in visual fields	Normal	None	Normal	Normal or slight rise	Slow	Persistent or paroxys- mal often violent		Normal	Apathy, projectile vomiting at its maximum in a m
Meningitis	Pupillary changes dilated or unequal pupils	Rapid	Present	Normal	Normal or slight rise	Sudden	Present		Normal	Koenig sign, lumbar puncture, leukocy- tosis, fever
Insulin reaction	No changes in eyes	Normal	Absent after second catheteri- zation	Normal	Low though a high figure may be en- countered	Sudden	None	May be present	Normal	

liberated in the blood and the urine in coma. Their identification will eventually throw a great deal of light on the problem. Clinical observations and, as Allen and Wishart have shown in their extensive studies on dogs, experimental evidence indicate that this fatal disorder is due rather to some metabolic derangement of which the chemical manifestations are only a superficial and variable expression.

The picture of a patient in coma is that of a very sick person which even a layman can appreciate. There is unconsciousness, labored breathing, a dry, parched mouth and a tongue covered with dry, encrusting debris, which is often discolored. One appreciates that the body is markedly dehydrated. There may or may not be vomiting. The odor of acetone can be detected on the breath, the cheeks are usually flushed, although pallor in the early stage is often present. The pulse rate is rapid and the blood pressure low.

One should bear the following conditions in mind in making a differential diagnosis: hypoglycemia, acute infections in nondiabetic children, meningitis, uremia, brain tumor, thrombosis and embolism (table 1).

If one tries to visualize the physiologic upset that accompanies a state of coma, the treatment is easy and obvious. Three primary factors must be dealt with (table 2):

1. The diabetic complex of hyperglycemia, an excess of ketone bodies circulating in the blood stream and damaging the organism, and a low alkali reserve. The administration of insulin rectifies these three abnormalities.

2. The tissues are depleted of water because of the increased excretion of water due to the high blood sugar content. The body tries, so to speak, to wash out the excess sugar from its tissues, and water unfortunately goes with the sugar, leaving the body in a sad state of dehydration. This in turn means a reduced blood volume and low blood pressure. The blood is concentrated and shows a high red cell count and high hemoglobin value. The blood urea content is high prob-

Read before the General Scientific Meeting of the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1935.
1. Warburg, E. Diabetic Coma with Uremia. *Hospitalist* 67:841, 864, 1924.

ably for the same reason and because of the deranged metabolism and the blood chloride value is low. It is obvious what will rectify this part of the picture—an abundance of fluid and salt given by hypodermoclysis or intravenously.

3 The tissues are unable to utilize carbohydrates adequately because of a lack of insulin, a lack of water and poisoning by ketones. All three of these conditions

TABLE 2—*Diabetic Coma*

1 Diabetic complex	} Rectified by insulin
Hyperglycemia	
Excess of ketone bodies	
Low alkali reserve	} Rectified by abundance of fluids hypodermoclysis or intravenously
2 Dehydration complex	
Tissues depleted of water	
Low blood volume and pressure	} Rectified by insulin fluids and alkalis in small quantities
Concentrated blood	
(a) High hemoglobin value and erythrocyte count	
(b) High blood urea value	}
(c) Low blood chloride value	
3 Tissue starvation (all these factors exhaust the energy reserve)	
Inability to utilize carbohydrates due to	}
(a) Lack of water in tissues	
(b) Lack of insulin	
(c) Poisoning by ketosis	

exhaust the reserves of energy. Insulin fluids and alkalis administered in small quantities will rectify these abnormalities.

The causes of coma most frequently encountered are inadequate treatment, omission of insulin, infection, neglected diet or dietary indiscretion, hyperthyroidism, a simple operation and nervous shock.

ROUTINE TREATMENT OF COMA

The rational treatment of diabetic coma depends on two main aids (1) insulin and (2) fluids. To these can be added other accessory items—dextrose, alkalis, fruit juices and general care.

How rapidly should insulin be administered? No definite rule can be established in this regard, as each patient presents a unique problem. While one patient may require as little as 25 units of insulin, another may need as much as 1,200 units during the first twenty-four hours. There is more danger of using too little than too much insulin. I usually start with 40 or 50 units given intravenously and follow this with 20 units every half hour until the blood sugar level reaches about 250 mg per hundred cubic centimeters of blood. From then on, insulin is given every hour or two in the same dosage. If dextrose or physiologic solution of sodium chloride is given, the insulin is incorporated in the solution.

As I look over my charts on cases of coma I see that such a rapid and continuous dosage of insulin brings results in from six to ten hours. A slower administration of insulin with intervening periods of several hours takes longer to bring the patient out of coma, and I think that it weakens him. Chart 1 gives data recorded during a period of coma in a girl aged 2 years. The initial blood sugar value was 500 mg and the carbon dioxide-combining power 13 cc per hundred cubic centimeters. I gave at first but 5 units of insulin every half hour, as this was my first case of coma in an infant, increasing this later to 10 units every half hour. A total dosage of 125 units of insulin was given before the child came out of coma, which lasted for nine hours. In contrast to this is shown chart 2, which represents the data in a case of coma in a woman 45 years old. The initial blood sugar value

was 894 mg and the carbon dioxide-combining power was 109 cc. This patient received 650 units of insulin in the course of twelve hours together with three doses of a 10 per cent solution of dextrose intravenously before the coma was under control.

The total amount of insulin administered to the grown person seems large in contrast, but if the dosage per hour per pound of body weight in the child and in the adult is computed it is found to be 0.5 unit in the child and 0.3 unit in the adult. Such a comparison, however, will not hold in all cases, for an obese person would naturally show a low ratio of insulin with a dosage of 650 units.

The treatment of diabetic coma is simple when one has free access to a laboratory and can ascertain the patient's condition from hour to hour. One should be able to work fast and with precision. But how about the care of the patient in coma who is at home where none of these facilities exist? That often is the case. I can best answer this question by citing a parallel problem. What should the physician do out in the country if he is confronted with an acute case of appendicitis and has insufficient instruments with him? Should he perform an emergency operation or put an icebag on the patient's abdomen and take him to a hospital where adequate facilities are available? There is no question about the answer, for medical men have been trained for surgical emergencies and they are being trained for the emergency of diabetic coma. The comatose patient

TABLE 3—*Changes in the Blood Sugar Content After the Intravenous Administration of Dextrose in Fifty-Four Cases of Diabetes*

Case	Changes in Blood Sugar Content, Mg per Hour			Case	Changes in Blood Sugar Content, Mg per Hour			
	Fall	No Change	Rise		Fall	No Change	Rise	
1	22			23			22	
2	21			24			14	
3	60			25	23			
4	33			26	25			
5	19			27	11			
6	38			28	10			
7	28			29	8			
8	34			30	14			
9	10			31	208			
10	26			32	6			
11	47			33	3			
12		38		34			5	
13		18		35	4			
14	39			36	4			
15	68			37	9			
16	24			38	18			
17	18			39	22			
18		0		40			0.3	
19		0		41	38			
20	28			42	50			
21	84			43	24			
22	10			44	16			
23	26			45	22			
24	47			46	23			
25		33		47	61			
26		20		48	33			
27				49	19			
28	1.8			50				
					1,287.8	2	153.3	

Of the fifty-four patients 81.5 per cent showed a fall in the blood sugar content, 3.7 per cent showed no change, 14.8 per cent showed a rise. The average fall in the blood sugar content was 29 mg per hour; the average rise was 19 mg per hour.

should be given from 20 to 40 units of insulin hypodermically and sent to a hospital where he can obtain adequate help. The preliminary dose of insulin is to the patient in coma what the icebag is to the patient with acute appendicitis—it slows up the disease process and gives the patient a chance.

The importance of fluids is equal to that of insulin. A body that is dehydrated must have the 10 to 20 per cent loss of water replenished if the individual cells are to work efficiently. A motor will not operate on

gasoline alone oil and water are also essential. Fluids are supplied to the diabetic patient by means of physiologic solution of sodium chloride given by hypodermoclysis, intravenously and later orally. A good way to supply a portion of the fluids is at the end of gastric lavage, after the washings come clear, to leave from 300 to 400 cc of water in the stomach. I use slightly alkalinized water quite warm, for this purpose. The question of the use of alkalis has its supporters² as

well as its antagonists³. I think that the main argument is against the excessive use of alkalis as it is apt to upset the stomach and also it often brings on edema. Murdfield⁴ even reported a case of rupture of the stomach following the use of sodium bicarbonate.

Another way in which a patient can receive a portion of the fluids is by the intravenous administration of a 10 per cent solution of dextrose made up in physiologic solution of sodium chloride. I use this frequently, though not always, and my impression has always

been that these patients have improved faster. One can readily see that a patient in coma, who has gone through acidosis into coma, has not had any food for from one to three days. He needs food and liquids. The liver is glycogen poor or glycogen free and it needs replenishment. It is true that the blood sugar value is high and therefore there should be no need to crowd in more sugar. However, the height of the blood sugar level is but one link in the entire chain. If the patient is given 250 cc of a 10 per cent solution of dextrose he receives 25 Gm of dextrose. Normally 12 units of insulin should take care of this, but I give from 30 to 50 units of insulin in this solution. This means that a hotter carbohydrate flame is created which helps to consume

the ketones that are damaging the body, and the increased volume of liquid helps to wash out the rest through the kidneys. A normal animal can rebuild its glycogen reserves from added dextrose and burn the fatty acids, and a patient in coma also will if given dextrose, water and insulin. That there is no appreciable rise in the blood sugar content following the administration of dextrose (in fact most of the time there is an appreciable fall in the blood sugar value), I⁵ have shown in previous publications and I am reproducing the figures here in table 3. There has always been a fear of causing a rise in the blood sugar level in the diabetic patient, but in reality a rise does not occur. I learned to appreciate the value of the intravenous administration of dextrose to nondiabetic patients during the war when I used it extensively in cases of pneumonia⁶ and other conditions, and when years later I was confronted with cases of diabetic coma I applied the same measures with equal success.

The use of intravenous injections of dextrose has many advocates⁷. As much as from 100 to 200 Gm of dextrose can be administered in this manner so that when it burns up it can create an antiketogenic action. In this manner the incomplete combustion of fatty acids is reduced to a minimum and the production of ketone is thus limited and the combustion of ketones already present in the blood and the tissues is aided. The answer which Petren² gave to this question of the intravenous administration of dextrose was that of thirty-eight patients in coma to whom he gave dextrose thirty-seven recovered.

If a patient has been vomiting he has lost a great amount of chlorides in this manner and the supply therefore needs replenishment. Physiologic solution of sodium chloride will take care of this either when given by hypodermoclysis or intravenously as dextrose in physiologic solution of sodium chloride. While the ketones can be eliminated by the use of dextrose, insulin and water, still a relative alkali-

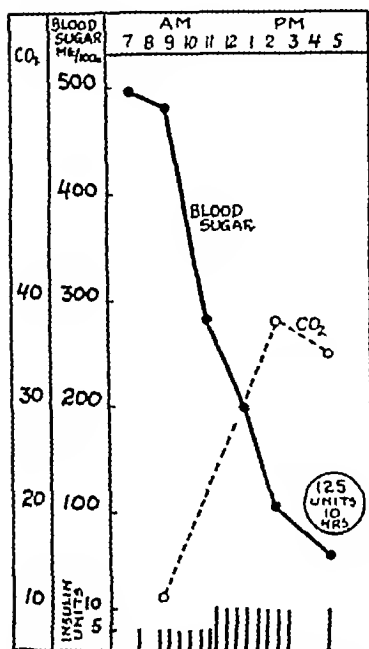


Chart 1—Record of a case of diabetic coma in a girl aged 2 years

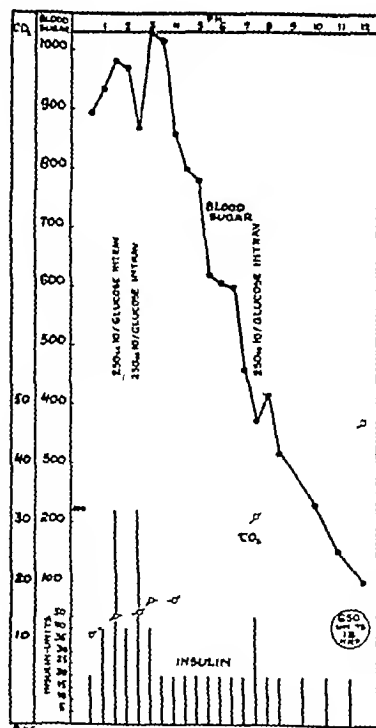


Chart 2—Record of a case of diabetic coma in a woman aged 45

2 Petren Karl. Glukose oder nicht bei Behandlung von Koma diabeticum? Acta med. Scandinav. 1926 supp 16 p 455. Allan F N. Diabetic Acidosis and Coma. M Clin North America 16: 1277-1287 (May) 1931. Campbell W R. Acidosis, Coma and Infections in Diabetes Mellitus. Internat. Clin 4: 3 (1926). Lawrence R D. The Treatment of Desperate Cases of Diabetic Coma. Brit. M J 1: 690 (April 12) 1930. Bowen B D and Helmsman Ivan. Diabetic Coma. A Report of Eighty One Instances. Ann. Int. Med 3: 1104-1111 (May) 1930. Hartmann A F and Darrow D C. Chemical Changes Occurring in the Body as a Result of Certain Diseases. J Clin Investigation 6: 257-276 (Oct) 1928. Coburn A F. Diabetic Ketosis and Functional Renal Insufficiency. Am J M Sc 180: 178 (Aug) 1930. John H J. Diabetic Coma. J A M A. 93: 425-430 (Aug 10) 1929.

3 Joslin E P. The Treatment of Diabetes Mellitus. Philadelphia Lea & Febiger 1928. Lemann I I. Futility of Alkali Treatment in Diabetic Coma. Am J M Sc 180: 266 (Aug) 1930. Adams S F. Complications of Diabetes. Proc Staff Meet Mayo Clin 4: 192-193 (June 19) 1929. Brown F A. The Management of Diabetic Coma. West Virginia M J 27: 350 (Aug) 1931. Lorient J S and Froehlich E. Effect of Intravenous Injections of Dextrose on Ketonuria in Diabetes Mellitus and Coma. Klin Wchnschr 9: 213 (Feb 1) 1930. Bishop L F and Applebaum E. A Coma Routine. New York State J Med 25: 1382 (Nov 15) 1929.

4 Murdfield P. Acute Rupture of the Stomach After Ingestion of Sodium Bicarbonate. Klin Wchnschr 5: 1613 (Aug 27) 1926.

5 John H J. The Use of Intravenous Glucose in Diabetic Patients. Surg. Gynec. & Obst 50: 769-773 (April) 1930.

6 John H J. Glucose as an Adjunct Measure in the Therapy of Pneumonia. Am J M Sc 160: 542 (Oct) 1920.

7 Lande Herman. The Uncontrollable Causes of Death in Diabetic Coma. J A M A 101: 914 (July 1) 1933. Foster N B. Diabetic Coma. Ibid. 84: 719-722 (March 7) 1925. Elias H. Das Koma diabetikum. Wien klin Wchnschr (supp 27) 39: 1 (1926). Hartmann A F. Pathogenesis and Treatment of Acidosis and Alkalosis. South M J 22: 517-521 (June) 1929. Parsons J P. Acetonemia—Acidosis—Alkalosis. J Michigan M Soc 22: 383 (Sept) 1923. Schiassi F. Coma from Interruption of Insulin Treatment. Riforma med 41: 990 (Oct 19) 1925. Petren² Campbell John² Lemann² Brown².

losis is created, as indicated in chart 3, which was constructed after that of Hartmann and Darrow. From this it is clear that the administration of physiologic solution of sodium chloride is important in order to reestablish a normal physiologic equilibrium.

Having discussed the two main aids in the treatment of diabetic coma, insulin and fluids, which are of primary importance, I shall next consider the following accessory items, which are also of great importance:

- 1 Absolute rest with plenty of warmth to the body
- 2 Gastric lavage
- 3 Cleansing of the intestinal tract
- 4 Adequate nursing and medical care
- 5 Support of the circulation
- 6 Nourishment citrus fruits
- 7 Alkalis

The absolute rest is automatically taken care of because the patient is unconscious. The saving of energy to the body by the use of plenty of warmed blankets next to the body and hot water bottles so as to prevent any unnecessary dissipation of heat means much to the patient.

The clearing out of the stomach of undigested food is of importance, for food which the patient ate from

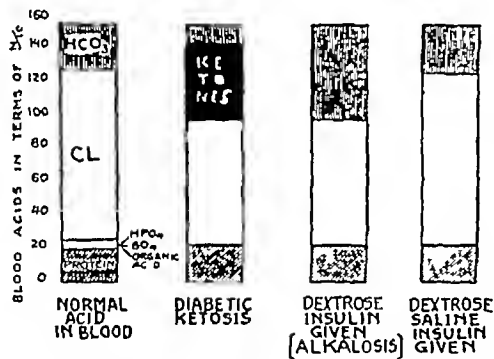


Chart 3—A schematic representation of diabetic ketosis and the changes after the administration of dextrose and insulin and after the administration of dextrose, insulin and physiologic solution of sodium chloride (reconstructed after Hartmann and Darrow).

twenty-four to forty-eight hours previously often lies undigested in the stomach. This must all be washed out until clear fluid returns from the lavage. It is well to use slightly alkalinized water, quite warm, for this purpose. When the fluid comes clear it is well to leave the last 300 to 600 cc of alkalinized fluid in the stomach. Also a dose of castor oil can be given through the tube into the stomach in order to ensure a complete evacuation of the bowel. If castor oil is used, one can well wait an hour or so before giving an enema. This makes it possible to administer dextrose by hypodermoclysis or intravenously without loss of time. If no cathartic has been used, then a saline enema is given as soon as possible.

Washing out of the stomach is an important procedure. I know of one death that occurred because this was overlooked. The patient was brought out of the coma chemically so that the blood sugar value and the carbon dioxide-combining power were normal, but suddenly she became cyanotic and the respirations ceased though the heart kept on beating. Artificial respiration was resorted to and breathing started but after a while ceased again. Artificial respiration was resumed and a Drinker respirometer used but to no avail, the patient died. This presented a problem as to what was the cause of death since the patient had been brought

out of coma chemically and death in coma presents a cardiac not a respiratory failure. Autopsy cleared up the problem. While the patient had been brought out of coma, the general weakness had still been marked. The stomach contents had been regurgitated and had trickled down the trachea and choked her. I am therefore emphasizing the point of gastric lavage, as one lesson should be enough to prevent similar accidents. It is better to perform a few unnecessary lavages and be on the safe side than to lose a patient because of their omission.

The importance of the nursing and the medical care is obvious. There is no other emergency in medicine which requires a closer supervision day and night until the patient is out of danger and for some time after that for a relapse may occur in a few hours if treatment is not sustained. To care for a patient in coma is not a matter of a few hours but a continuous day and night problem until the patient is safe. There is where laboratory data enable one to proceed with safety and assurance by eliminating all guesswork.

Circulatory stimulants are indicated. Caffeine sodium benzoate, from 6 to 9 grains (0.4 to 0.6 Gm.) at a time, may be incorporated into the solution of sodium chloride and dextrose given intravenously. However, it must be remembered that the restoration of the volume of blood through hypodermoclysis or the intravenous administration of dextrose with insulin is one of the best cardiac supports that can be given the diabetic patient in coma. Most of the time this is all the support that needs to be supplied. Clearing the circulation of the concentrated ketone bodies relieves the heart of an irritating and weakening factor and gives it a chance. One should bear in mind, however, that a patient who has just been brought out of coma to consciousness is like a patient who has just recovered from typhoid fever or pneumonia. The heart is weak and needs protection. I saw one patient years ago who came out of coma and seemed to be doing nicely, but the mere strain on a bed pan and being in an upright position brought on a fatality. One cannot be too careful of these patients and caution is necessary.

When the patient can take liquids by mouth, this helps to reduce or to eliminate the required amount of exogenous liquids. Citrus fruits are the best to use at the beginning, as they tend to bring about the swing toward the alkaline side and thus partly counteract the acidosis. Lemon and grapefruit juice are the best. I have found that when there is a tendency to nausea the patient does not tolerate orange juice well. It is apt to bring on vomiting and that weakens the patient. If orange juice is used at all, it should be well diluted with water. A weak lemonade or grapefruit-ade is preferable. This can soon be followed by a soft diet, starting with oatmeal gruel, milk toast and buttermilk.

The use of alkalis is much disputed. It has many adherents² and many opponents.³ The truth lies probably somewhere in the midground. Alkalis should be used sparingly and as such can do no harm and are often of help. The easiest way of furnishing alkalis is, as previously mentioned, through the gastric tube after lavage at the beginning of the treatment. This probably will suffice, but the carbon dioxide values will indicate any further need for this.

MORTALITY STATISTICS

The mortality in diabetic coma is still high. One needs but to glance over the world literature to be convinced of this. According to data given by sixteen

authors on 424 cases of coma the mortality was 19.2 per cent. This is a high average ratio and time will no doubt improve it. Mortality figures as given range from 0 to 55 per cent.

There is one way of bringing about a better result and that is by early treatment. Adequate treatment comes next in importance. However, adequate early treatment presents an entirely different picture from that of adequate treatment late in the condition, there will be two entirely different sets of figures no matter who takes care of the patients. The main effort should be made to lose no time in starting treatment. If one sees a patient in coma at his home or if one has a telephone call from the family physician and the diagnosis is reasonably certain, give or direct to be given 40 units of insulin immediately, before the patient is taken to the hospital thus saving the loss of at least an hour. If a patient must be brought from any distance, have 40 units given at first and then 20 units every half hour thereafter until he reaches the hospital. Many lives will be saved in this manner. I noticed that in the last review of my cases of coma Joslin classified some of these as cases of acidosis, since he differentiates coma from acidosis merely by the carbon dioxide values. The higher carbon dioxide values that I reported were obtained when the patient reached the hospital and after he had had the preliminary dose of insulin on the way. These were cases of coma and not mere acidosis. It is more important to start treatment at once and obtain the laboratory data later than the reverse. Laboratory data are to be used merely as a guide and all statistics must be interpreted with caution.

Death in coma is often due to vasomotor collapse, septicemia, uremia, aspiration of gastric contents into the trachea or terminal hyperpyrexia.

HYPOGLYCEMIA

Hypoglycemia as brought about by the excessive use of insulin is still dreaded by many physicians. The fear of hypoglycemia was instilled by some early writers following the discovery of insulin. It was an unwise warning, which did much harm and cost many lives. The general practitioner was literally afraid to use insulin, and many are still afraid to use it and advise their patients that insulin is only the last resort in the treatment of diabetes. It will take time and a great deal of educational work to counteract this fear.

The best illustration I* can give that the general practitioner is actually afraid of insulin is my own experience in cases of coma in children. In my series of 218 cases of diabetes in children over a period of thirteen years there were fifty cases of coma. Of these fifty patients I treated thirty-one and the remaining nineteen were treated by the family physician during the emergency. Of the thirty-one whom I treated, five died one in the preinsulin era and three one hour after admission, having been in coma for a long time before reaching the hospital and arriving in a moribund state. Of the nineteen patients treated by the family physician, sixteen died. I feel that the fault lies not so much in the physician as in the early writings on insulin, which frightened him so that he will not use insulin except as a last resort, when it is obviously too late to accomplish anything. This should be a lesson to all.

One thing to bear in mind in cases of coma is that insulin does not exert the same action per unit as it does in a noncomatose patient. It takes a great deal

more insulin to bring about the same results. Large doses should be used at the beginning. If studies of the blood sugar content are not available, one must depend on catheterized urine as a guide.

Is there any great danger from hypoglycemia? I feel convinced that, barring old arteriosclerotic patients or patients with cardiac damage, there is but little or no danger. Furthermore, hypoglycemia is easy to counteract. A few cubic centimeters of a solution of dextrose intravenously will correct the condition in a few minutes. When I see the numerous nondiabetic patients who have chronic hypoglycemia, with values ranging in the thirties and forties for over long periods of time, I fail to be convinced that hypoglycemia lasting for a few minutes in a case of coma jeopardizes the patient's life. The danger is more from too little than too much insulin. I do not mean that insulin should be used promiscuously without any consideration for the patient. It should be used wisely, but to use it wisely one needs laboratory data and experience.

The symptoms of hypoglycemia have been described so often and so thoroughly that I need not dwell on

TABLE 4—Acidosis and Alkalosis

	Acidosis	Alkalosis
Headache	+	+
Mental depression	+	+
Thirst	+	+
Anorexia	+	+
Polyuria	+	+
Polydipsia	+	+
Diarrhea	0	?
Dehydration	+	+
Asthenia	+	+
Muscular twitching	0	+
Delirium	0	+
Coma	+	+
Concentrated blood, high erythrocyte and hemoglobin values	+	+
Carbon dioxide-combining power, mg	10 to 25	80 to 100
Increased nonprotein nitrogen value	+	+
Chlorides, mg	500 to 600	500 or less
Low blood pressure	+	+
Urine	Acid	Alkaline
Treatment	Sodium chloride Insulin Dextrose	Sodium chloride Ammonium chloride

them here. Usually profuse perspiration, a rapid pulse rate and a certain type of pallor are indicative of this condition.

OTHER MANIFESTATIONS

Acidosis and Alkalosis.—As acidosis leads up to coma, one is therefore apt to see the patient in the precomatose stage of acidosis. There is another condition which one should bear in mind in the differential diagnosis which is very similar and for that reason I am stressing it. This condition is just the opposite of acidosis, namely, a condition of alkalosis. Table 4 shows how similar these two conditions are.

Coma Without Acetone in the Urine.—Acetone in the urine, while an almost constant accompaniment in diabetic coma, may not be present during this emergency, as there are many cases of this type on record in the literature.⁹ It is the same with this as any other diagnostic problem in medicine—no one sign needs to be present in all cases and it is apt to be lacking in any given case. Because acetone is not found in the urine, one must not be misled.

9 Borg, J. F. Diabetic Acidosis: Etiologic Factor in Production of Auricular Fibrillation. *Minnesota Med.* 11:580 (Sept.) 1928. John H. J. Diabetic Coma Complicated by Acute Retention of Urine. *J. A. M. A.* 84:1400-1401 (May 9) 1925. Joslin, E. P. and others. Diabetic coma. *N. Clin. North America* 13:11 (July) 1929. Foster, Hartmann, John Campbell.

* John H. J. Diabetic Coma in Children. *Am. J. Digest. Dis. & Nutrition* 1:569-574 (Oct.) 1934.

COMPLICATIONS IN COMA

There are several complications that may arise during the progress of the emergency of diabetic coma. The foremost is perhaps cardiac embarrassment. Bowen² reported two cases in which clinical paroxysmal auricular fibrillation developed during coma. Both patients recovered. Borg⁹ reported a case in which several attacks of diabetic acidosis and coma occurred, the last two attacks being accompanied by auricular fibrillation. The case is indicative of the etiologic relation of acidosis to auricular fibrillation and to ensuing myocardial insufficiency. Insulin relieved the auricular fibrillation. Caffeine, epinephrine and digitalis administered intramuscularly are recommended by various authors. In cases of profound cardiac collapse, strophanthin, $\frac{1}{120}$ grain (0.5 mg.), should be given intravenously.

Anuria and oliguria have been reported as occurring during a state of coma.¹⁰ This must be dealt with promptly. I have seen but two patients with this type of case and in both the use of Fischer's solution intravenously cleared up the condition.

When a patient is unconscious, one must watch for distention of the bladder, which will occur periodically and require catheterization.

Infections of various kinds—otitis media in children, mastoiditis, acute appendicitis—are apt to be present, for these often lead up to coma and must not be missed. In fact an acute abdominal condition is often present and I do not know of a harder problem to solve. One can never be absolutely certain whether one is dealing with merely a comatose state with abdominal symptoms or coma plus acute appendicitis. When a problem like that is presented, one should share the responsibility with a surgeon so as to play safe with the patient as well as with oneself. Many a patient has been operated on for acute appendicitis and a normal appendix has been found, to the great chagrin of the surgeon. However, when there is any doubt and the diagnosis seems reasonably certain, an operation should be performed. It is a serious matter, however, to operate on a patient in coma, and the closest supervision is necessary on the part of the physician. Thus far, fortunately, I have not encountered such an emergency, although I have seen many patients in coma with signs of appendicitis.

SUMMARY

1 Diabetic coma presents a major medical emergency, which must be dealt with promptly, efficiently and adequately.

2 The treatment rests on two main aids—insulin and liquids. These are of primary importance. There are other accessory aids.

3 The outcome in cases of diabetic coma depends largely on how early the treatment is started. The longer treatment is delayed, the poorer the patient's chance for recovery.

4 Coma still presents a high mortality rate, the average as given in the literature being in the neighborhood of 20 per cent.

5 Complications during coma, such as cardiac embarrassment, anuria, overdistention of the bladder and infections, may arise, and they should be dealt with promptly.

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GLANDULAR PHYSIOLOGY AND THERAPY

THE THYMUS GLAND

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NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. The last will appear in the next issue. When completed the series will be published in book form.—Ed

Uncertainty has characterized our knowledge of the thymus gland from ancient down to modern times, its function has remained a riddle. Despite the fact that the gland occurs in all higher animals and in lower orders down to primitive fishes, its nature is not understood. By some it is considered a gland of internal secretion, by others a part of the lymphatic system or a vestigial structure. Though epithelial in origin, the gland becomes lymphoid in character at birth or with advancing years. Pappenheimer¹ regards it as an epithelial rather than as a lymphoid organ, an assumption that has not been proved. Cowdry² states that "the thymus undergoes lymphoid transformation as vestigial structures, i.e., the vermiform appendix, have a tendency to do."

The thymus together with the parathyroids arises from the third and sometimes from the fourth branchial clefts, the thymus from the ventral and the parathyroids from the dorsal diverticulum. The thymus and parathyroids, therefore, are intimately associated in their development, and recent work would seem to indicate that they may possibly share some functions in common. Parathyroids are frequently embedded in the thymus gland. The thymus anlage descends in the neck, the gland locating finally in the lower part of the neck or upper part of the thorax. The thymus usually consists of two adjacent lobes. In some animals it presents the so-called neck and heart thymus. Under the microscope it is seen to consist of a cortex and a medulla. Within the medullary portions are concentrated the well known but little understood characteristic structures called Hassall's corpuscles. These are considered by some as epithelial in type and by others as reticular cells capable of phagocytosis. A secretory function has not been established. Obviously ignorance prevails.

Careful studies on the growth and development of the thymus gland have been made by various workers by Hammar³ (1906 to 1929), by Bratton⁴ (1925) and by Young and Turnbull⁵ (1931) of the Status Lymphaticus Committee working under the auspices of the National Research Council of Great Britain. It is obvious that knowledge of the normal development is

This work has been aided by a grant from the American Philosophical Society.

1 Pappenheimer A. M. The Effects of Early Extirpation of the Thymus in Albino Rats. *J. Exper. Med.* 19: 319 (1914). Further Experiments on the Effects of Extirpation of the Thymus in Rats with Special Reference to the Alleged Production of Rachitic Lesions. *ibid.* 20: 411 (1914). Recent Advances in Thymus Research. *Ann. Med.* 9: 212 (1914).

2 Cowdry E. V. *Special Cytology* ed. 2 New York, Paul B. Hoeber Inc. 1932.

3 Hammar J. A. Zur Histogenese und Involution der Thymusdrüse. *Anat. Anz.* 27: 23 (1905). Die Funktion der Thymusdrüse im Lichte der Organreaktionen unter normalen Körperverhältnissen. *Klin. Wochenschr.* 8: 2313 (Dec. 10) 1929. Asserted Nonexistence of Age Involution of Thymus Gland. *Endocrinology* 11: 18 (Jan. Feb.) 1927.

4 Bratton A. B. The Normal Weight of the Human Thymus. *J. Path. & Bact.* 28: 609 (Oct.) 1925.

5 Young M. and Turnbull H. M. Status Lymphaticus. *J. Path. & Bact.* 34: 212 (March) 1931.

10 Begg, A. C. Anuric Diabetic Coma. *Lancet* 2: 69 (July 11) 1925.
Imrie C. G. and Skinner E. F. Diabetic Coma with Anuria. *ibid.* 1: 14 (Jan. 5) 1924.
Foster John. Bowen. Joslin.

essential to recognition of the abnormal development of the thymus gland. It is unfortunate, therefore, that no general agreement has been reached concerning the weight of the thymus in infancy and early childhood, that is, at the age when status thymicolymphaticus is most prevalent. Hanmar found the thymus weight at birth to be 12 Gm., at 5 years 23 Gm., at 10 years 26 Gm., at puberty 37.5 Gm., at 20 years 25 Gm. Young and Turnbull, however, give the average weight of the thymus at birth as 21.3 Gm. and find a gradual increase until puberty to 34 Gm., after which the weight gradually diminishes so that at midlife it is in the neighborhood of 15 Gm. Despite failure to establish an accepted weight in the first years of life, it seems to be proved that the thymus is relatively and absolutely largest during the period of greatest growth, and that the gland begins involution at puberty and thereafter diminishes in size.

Although the literature on the thymus is unusually voluminous, little is known at present concerning its function. Hoskins⁶ states that "more and more research of recent years has continued to cast doubt upon the thymus as a member of the endocrine congregation." Information concerning the function of the thymus is gleaned from two sources: physiologic studies in the laboratory and clinical observations on patients together with correlated observations at autopsy. Physiologic investigations on the thymus gland comprise chiefly the effects of its removal at different ages and of the administration of thymus extract or of the feeding of thymus substance.

Friedleben⁷ in 1858 carried out extensive studies leading to the belief that the thymus is not indispensable but that it has an important bearing on blood formation and on nutrition and growth. Basch⁸ (1902) emphasized its importance in the young, claiming that thymectomy in the young results in a form of osteomalacia or rickets. He believed that the thymus was concerned in some way with growth and with the calcification of bones. Its relation to calcium metabolism has also been suggested by the work of Hewer⁹ (1914) and Nitschke¹⁰ (1929), as well as the work on eggs, which will be commented on later. The work of Basch was followed by that of Klose and Vogt¹¹ (1910 to 1914). According to their observations, thymectomy in the young was followed by a latent period, then adiposity and finally a period of cachexia, in which nutritional disturbances and spontaneous fractures occurred followed by death. Next came the excellent, careful criti-

cal review by Park and McClure¹² (1919) of the work on the thymus from the time of Restelli¹³ (1845) down to the year 1919. These investigators also recorded their own experiments, which led them to the opinion that extirpation of the thymus probably does not influence growth and development. They concluded that:

- 1 The thymus gland is not essential to life in the dog.
- 2 Extirpation of the thymus produces no detectable alteration in the hair, teeth, contour of the body, muscular development, strength, activity or intelligence of the experimental animal.
- 3 Extirpation of the thymus probably does not influence growth and development. The possibility that it may cause retardation in development and delayed closure of the epiphyses, however, cannot be excluded absolutely.
- 4 Extirpation of the thymus probably produces no alterations in the organs of internal secretion. It is possible that it produces well marked changes in the organs of internal secretion in the period immediately following thymectomy, which was not covered in our experiments.

Work on birds has furnished some interesting considerations. Soli stated in 1910 that thymectomy in pullets results temporarily in the laying of eggs without shells. Oscar Riddle¹⁴ found that pigeons occasionally lay eggs deficient in shell and at autopsy these birds showed defective thymus glands. Dried thymus substance fed by him to such pigeons led to the laying of normal eggs.

As a result of feeding thymus glands to tadpoles, Gudernatsch¹⁵ found in 1913 that they grew more rapidly and some reached enormous size prior to metamorphosis. This led to the thought that thymus furnishes an important growth stimulus. These results were subsequently confirmed by Uhlenhuth,¹⁶ who explained them on an entirely different basis, i. e., one of nutrition. Gudernatsch accepted the explanation that the results were due "merely to thymus diet as food."

Probably the most important and convincing work yet reported is a series of investigations carried on in Asher's laboratory.^{16a} Wiktor Nowinski¹⁷ administered an aqueous thymus extract called "thymocrescin" to rats and found that, given daily, it overcame the loss of weight of animals incident to a vitamin-free diet. The extract stimulated growth, overcame vitamin deficiency and increased the size of the gonads.

Despite all these experiments and thousands of others which for lack of space cannot be quoted, doubt has continued to exist relative to the function of the thymus gland in the minds of most physiologists, endocrinologists and clinicians. It may be said with truth that physiologic studies have in no way affected modern medical practice so far as thymus therapy is concerned.

Clinical studies have also contributed something to our knowledge of the thymus. The gland varies greatly in size in various conditions. There is enlargement in exophthalmic goiter, Addison's disease, acromegaly and status thymicolymphaticus, and supposedly in certain cases of myasthenia gravis and rickets. The enlarge-

6 Hoskins, R. G. *The Tides of Life*, New York, Macmillan Company, 1933.

7 Friedleben, A. *Die Physiologie der Thymusdrüse in Gesundheit und Krankheit vom Standpunkte experimenteller Forschung und klinischer Erfahrung. Ein Beitrag zur Lebensgeschichte der Kindheit*, Frankfurt a. M. Literarische Anstalt, 1858.

8 Basch, K. *Ueber Ausscheidung der Thymusdrüse*. Verhandl. d. Gesellsch. deutsch. Naturf. u. Aerzte Leipzig, 1902. *Wien klin. Wchnschr.* 16: 893. 1903. *Bemerkungen zu Rudolf Fischla's Experimentelle Beiträge zur Frage der Bedeutung der Thymusextirpation bei jungen Tieren*. Ztschr. f. exper. Path. u. Therap. 2: 195, 1905. *Beiträge zur Physiologie und Pathologie der Thymus*, Jahrb. f. Kinderh. 68: 668, 1908. *Zur Thymusextirpation beim jungen Huhn*. Monatsschr. f. Kinderh. 7: 541, 1908.

9 Hewer, E. E. *The Effect of Thymus Feeding on the Activity of the Reproductive Organs in the Rat*. J. Physiol. 47: 479, 1914. *The Structure of the Thymus Gland and of the Reproductive Organs in White Rats, Together with Some Observations on the Breeding Capacity of These Animals*. *ibid.* 50: 434, 1914.

10 Nitschke, A. *Darstellung zweier wirksamer und spezifischer Thymussubstanzen, ihr Einfluss auf Kalk und Phosphatgehalt des Knochenmarkes*. Ztschr. f. d. ges. exper. Med. 65: 637, 1929. *Die Beeinflussung des Grundumsatzes durch Thymus und Milzextrakt (P. Substanz)*. Monatsschr. f. Kinderh. 47: 530, 1930.

11 Klose, H. and Vogt, H. *Klinik und Biologie der Thymusdrüse mit besonderer Berücksichtigung ihrer Beziehungen zu Knochen und Nerven*. Beitr. z. klin. Chir. 69: 1, 1910. Klose, H. *Ueber Thymusextirpation und ihre Folgen*. Arch. f. klin. Chir. 92: 1125, 1910.

12 Park, E. A. and McClure, R. D. *The Results of Thymus Extirpation in the Dog*. Am. J. Dis. Child. 18: 317 (Nov.), 1919.

13 Restelli, D. A. *De thymo observationes anatomico-physiologico-pathologicae*. ed. 4. Ticini: Regii ex topog. Fnsi et soci. 1845.

14 Riddle, Oscar and Krizenecky, Jaroslav. *Extirpation of Thymus and Bursa in Pigeons with a Consideration of the Failure of Thymectomy to Reveal Thymus Function*. Am. J. Physiol. 97: 343 (May), 1931.

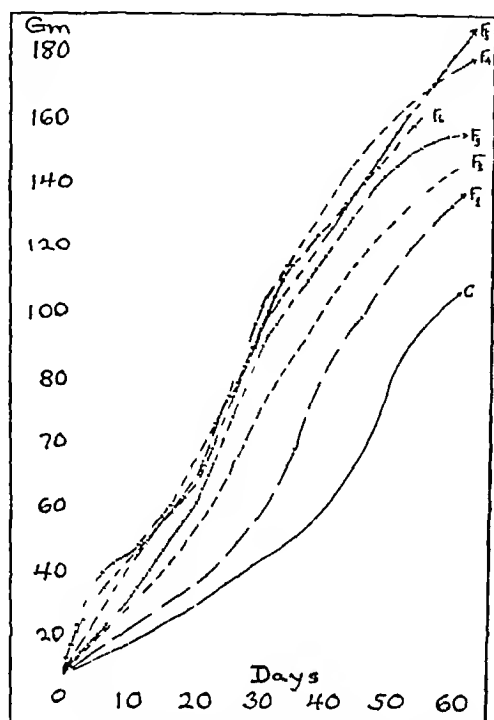
15 Gudernatsch, J. F. *The Growth and Age Involution of the Thymus in Male and Female Pigeons*. *ibid.* 71: 413 (Jan.), 1925.

16 Uhlenhuth, E. *Feeding Experiments on Tadpoles*. Am. J. Anat. 15: 431-478, 1913.

16a Asher, L. *Der Einfluss der Thymus auf das Wachstum und die Herstellung eines wirksamen Thymusstoffes Thymocrescin*. Endokri. 7: 321 (Nov.), 1930.

17 Nowinski, Wiktor. *Fortgesetzte Untersuchungen über den Einfluss des Thymocrescins auf das Wachstum*. Biochem. Ztschr. 249: 421, 1932.

ment in exophthalmic goiter is considered by some authorities to be in the nature of a compensatory hypertrophy. There is also enlargement after hypophysectomy and adrenalectomy. It is persistent in eunuchs and its involution is delayed in victims of early castration. The gland is diminished in size after puberty, this fact led Swale Vincent to propose the hypothesis that nor-



Weight curves of thymus test rats and their controls. C controls, F₁ second generation of test rat, F₂ third generation, F₃ fourth generation, F₄ fifth generation, F₅ sixth generation, F₆ seventh generation.

mal involution of the thymus is due to the development of the reproductive organs. The thymus diminishes in size in starvation, inanition, marasmus and wasting diseases generally, a fact too often overlooked. Its enlargement in Addison's disease and exophthalmic goiter constitutes an exception to this rule. The gland is subject to inflammation and infection and to syphilis and tuberculosis and is occasionally the seat of tumor formation.

Enlargement or hypertrophy of the thymus is frequently diagnosed. This has been considered of great importance because it is supposed to have led to many tragic deaths in infants and children, an association first noted by Bichat. According to Osler and McCrae¹⁸ enlargement of the thymus may be associated with (a) thymic stridor, seen commonly at or shortly after birth, (b) thymic asthma, a more exaggerated and more persistent form of stridor and (c) status thymicolymphaticus.

Status thymicolymphaticus is defined as "a condition in childhood of hyperplasia of lymphatic tissues and of the thymus in association with a flabby fat overgrowth of the body and hypoplasia of the heart and blood vessels. Pathologic examination discloses overgrowth of the body and relatively large heads, hyperplasia of the lymph glands and structures of the tonsillar ring, moderate enlargement of the external and internal lymph

glands and hyperplasia of the solitary and agminated follicles of the small and large intestine" and atrophy of the adrenals.¹⁹ "The thymus is enlarged, swollen and soft, the bone marrow is hyperplastic and in young adults the yellow is replaced by red marrow, a small heart and small aorta and peripheral vessels have been found at times and an associated condition of rickets." Osler says that "what has called special attention to this condition is the tragedy of sudden death following trifling causes, the prick of a hypodermic needle, a sudden plunge in cold water but much more often in anesthesia either ether or chloroform, when an amount has been given not in itself lethal." He advances two explanations, the mechanical and the hormonal. Recently doubt has been cast on the very existence of this disease by Young and Turnbull of the British commission, appointed in 1931 for the study of status thymicolymphaticus. The sudden death that is said to characterize this condition has never been proved to be due to an excess of thymus secretion. However, the poorly developed gonads and adrenals and hypoplasia of the cardiovascular system that are found in this condition do exist at times and may have some relation to the enlargement of the thymus.

My own studies on the thymus gland have been carried out in the Philadelphia Institute for Medical Research in the Philadelphia General Hospital, in conjunction with Dr. J. H. Clark and Mr. Arthur Steinberg of Philadelphia and Dr. A. M. Hanson of Faribault, Minn.²⁰ In 1930 Dr. Hanson prepared an extract from the thymus which he called "karkimolysin" for use in the treatment of cancer. We undertook to determine its physiologic and biologic effects on rats. Dr. Hanson's thymus extract is an acid aqueous extract of the neck thymus of young calves from 2 to 6 weeks of age (the heart thymus has not yet been studied). It is a stable preparation preserved with chlorbutanol and represents 0.6 Gm of raw thymus per cubic centimeter. Locally it is nonirritating on parenteral administration and nontoxic to rats in amounts up to 5 cc.

Comparison of Thymus Treated Rats with Controls

	Average Birth Weight, Gm	Ears Open Days	Teeth Erupted Days	Hair Appeared Days	Eyes Opened Days	Testes Descended Days	Vagina Opened Days
Controls	4.6	2.5-4	9-10	14-17	14-17	30-40	60-70
F ₁	5.0	2	4-7	10-14	12-16	15-23	35-45
F ₂	5.2	1.2	1-2	4-6	4-6	5-9	25-31
F ₃	5.7	1	1	4	4-5	4-6	21-25
F ₄	5.7	1	1	3	3	4-5	18-19
F ₅	5.74	1/2-1	1/2-1	2	2	4-5	15
F ₆	4.7	At birth	At birth*	1-2	1.5-2	2-4	15

* On first inspection or within 24 hours

Hanson believes that the active substance represents a product of the epithelial and not of the lymphatic cells.

In our work, white rats of the Wistar strain have been injected intraperitoneally daily for sixteen months with an extract of the thymus prepared by Hanson.²¹ In the first generation (F₀) treated test animals were heavier, bred more frequently and had larger litters of

19 Aschoff Ludwig. Lectures on Pathology. New York, Paul B. Hoeber Inc. 1924.

20 Rowntree L. G., Clark J. H. and Hanson A. M. The Biological Effects of Thymus Extract. *Am. J. Physiol.* to be published. The Biological Effects of Thymus Extract (Hanson). *Science* 80: 274 (Sept. 21) 1934. *J. A. M. A.* 103: 1425 (Nov. 10) 1934.

21 My collaborators and I have been fortunate in having available a large supply of thymus extract of apparently uniform potency, this was prepared by Dr. A. M. Hanson in 1930 and was bottled in special molded resistance glass having a low alkali content.

heavier average weight per rat. Little of note appeared in the second generation in the first six litters cast, but in the later litters (the seventh to the eleventh) precocity appeared. In the tenth and eleventh litters the animals were larger than normal, teeth erupted on the second day and the eyes opened on the tenth day.

In the animals of the third to seventh (F_2 to F_6) generations, striking and accruing precocity, acceleration in growth and development, were noted in the offspring of each succeeding generation under treatment. The normal rate of growth and development and the precocity resulting from continuous administration of thymus extract through succeeding generations is shown in the accompanying table. The increasing growth as indicated in the weight curve is shown in the accompanying chart. Similar effects were not observed from thymus feeding.

Because of the astounding precocity, a study of the chemistry of the rats' blood was undertaken, which revealed definite changes in the calcium and phosphorus content. Whereas in our control rats the calcium content was from 9 to 11 and the phosphorus from 3 to 4 mg per hundred cubic centimeters of blood serum in the thymus test animals from the second to the fourth generation the blood serum calcium increased to from 11.4 to 13.3 with an average of 12.3, and the inorganic phosphorus reached from 4 to 7.5 with an average of 6.1 mg per hundred cubic centimeters. This would seem to have some definite bearing on the rapid skeletal development observed in the young. A study of hemoglobin content and of red and white cell counts by Dr. Lansbury²² showed no deviation from normal.

Roentgen studies of the skeleton made at weekly intervals in collaboration with Dr. L. Einhorn and Dr. B. P. Widmann revealed marked differences between the skeletons of the controls and those of the seventh generation of thymus treated rats. In the test animals (1) there is an increase in all dimensions, particularly in the length of the diaphyses of the long bones for the actual age of the animals, (2) the centers of ossification of the epiphyses of the long bones are visible earlier, (3) the centers of ossification of the epiphyses of the long bones and the vertebrae calcify and unite earlier.

The effects of thymus extract on the heart, studied in conjunction with Dr. McMillan, Dr. Bellet and Mr. Steinberg, revealed the facts that small doses have little or no effect on the cardiac action and that large doses depress blood pressure and cause death through inducing complete auriculoventricular heart block. This may be of interest perhaps in relation to sudden death in status thymicolymphaticus.

It is doubtful whether our work has progressed sufficiently far to throw any light on the question of status thymicolymphaticus. Suffice it to say that the continuous administration of thymus extract (Hanson) results in marked precocity in the offspring of treated parents after the second generation. The young show increased growth and development, especially marked in the glandular structures of the intestine but they show no susceptibility to sudden death from fright, the use of the hypodermic needle, immersion in cold water or from operation or anesthesia. So far as we are concerned the condition status thymicolymphaticus is still *sub judice*.

²² Lansbury J. J., Clark J. H. and Rowntree L. G. Lesions of the Thymus Gland as noted in 25,000 Autopsies unpublished paper.

From the foregoing it is apparent that there is still a state of ignorance rather than of enlightenment relative to the thymus gland. More work is necessary on the thymus from the standpoint of biology, embryology, histology, physiology, pathology, pediatrics and clinical medicine.²³ Our own work indicates that thymus extract, when administered continuously through successive generations of parents leads to striking, accruing precocity in the growth and development of successive generations of young. Thymus extract increases the fertility of adult rats. The young of the third and succeeding generations grow and develop physically, sexually and psychically at an unbelievable rate. They do not, however, become giant rats, as the rapid rate of growth decreases from the second month on. From our experimental studies it would seem desirable to consider the thymus gland clinically in conditions involving problems of fertility in adults and of growth and development in infancy, and in early childhood, probably also in disturbances attending puberty. A clinical trial in these fields is being made at the present time.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed

THERAPY OF URTICARIA AND OF ANGIO-NEUROTIC EDEMA

OUTLINE BY DR. THEODORE CORNBLEET

Urticaria is a symptom complex the characteristic lesion of which is the wheal. The lesion is fugacious and itches. There may be other symptoms and signs, but generally these are less significant.

The diagnosis of urticaria is just the beginning of the consideration of the case, as this is not a disease in itself but merely visible evidence that the subject is reacting to something to which he is hypersensitive. Urticaria can be produced not only by substances taken into the body but also by things that are touched, that are inhaled or that come close to the patient. And, in addition to these, agents may be present in the subject's body or be elaborated there which produce urticaria. Thus the list may include substances as far apart as foods or drugs, materials or objects one works with, harbored parasites such as tapeworms, a sinusitis or other focus of infection, a constitutional ailment such as leukemia, infectious processes such as septicemia, hypersensitiveness to some physical agent such as cold, or even emotional disturbance. The list of possibilities is indeed bewildering, unless one adopts a systematic evaluation of all of them in any given case. This systematic consideration of the possibilities must be tailor made to fit the individual. To the extent that

²³ In work carried on with Dr. A. H. Einhorn retardation of growth in the offspring has been encountered following thymectomy in successive generations of parents.

the search is done in a routine way, there will be a saving of time, money and trouble, and greater assurance of success. Foremost among all measures in apprehending the cause of the urticaria is a good physical examination of the patient and the obtaining of a history by logical, common sense questioning.

As there is a considerable difference between the treatment suitable to acute and to chronic urticaria, this will form the basis of its division.

ACUTE URTICARIA

1 *Causal Treatment*—Evacuation (a) Emesis induced shortly after the ingestion of the offending or suspected food (e g, shellfish, strawberries) will remove that which may still be in the stomach. In children, this is preferably secured by Syrup of Ipecac, a teaspoonful or two followed in ten minutes by a large draft of lukewarm water and, if there is no emesis, another dose of syrup in another ten minutes, continuing in that way until evacuation of the stomach has occurred. For adults, one might prefer a hypodermic injection of Apomorphine Hydrochloride, 5 mg, which usually does not produce emesis earlier than ten minutes after the administration.

(b) Cathartic. A saline should be preferred because of its rapid action, e g, a tablespoonful or two of Magnesium Sulphate, which might be administered, for best possible disguise, in effervescent ice-cold lemonade. For children, Solution of Magnesium Citrate in wine-glassful doses every two hours, until the effect is secured, might be preferable.

Diet (a) No food should be allowed the first day, and beef tea and hominy the following day, with rice and next oatmeal gruel being added to the diet on succeeding days. Salt, sugar and gelatin (which have never been reported to cause allergy) may be admitted freely as desired. Bacon, dates, lentils and kidney beans, spinach, parsnips, rhubarb and brussels sprouts may also be admitted early, as these are among the foods to which people seem to be least sensitized. Foods that most commonly cause allergy are wheat, eggs, milk, chocolate, tomato, cabbage, orange and potato. Hence these should be added last, best successively, to enable one to scrutinize the effect of each addition.

(b) In cases with an obstinate tendency to relapses, it might be well to start out with an absolute milk diet. One should give milk, buttermilk or cream and seltzer water (equal parts) every two hours for three days. This may make the patient worse if he is hypersensitive to milk, whereupon it and its derivatives will have to be rigidly excluded from subsequent diets. If he is not hypersensitive to milk, it will make the planning of the diets much easier.

(c) One may then resort successively to allergy diagnosis diets (Rowe's "elimination diets"), carefully observing the effect of each change in diet.

ALLERGY DIAGNOSIS DIETS (ROWE'S "ELIMINATION DIETS")

DIET 1—*Rice and Lamb*—Absolutely no foods other than those specified in this diet are to be used. If the patient is not sensitive to milk, he may have it in addition to the other articles prescribed in this diet.

Prescribed fruits can be used in drinks, salads, and for dessert, jams and sauces. Calories must be increased by plenty of sugar, oil and the type of starch allowed.

Gravies and sauces can be thickened only with the flour prescribed as, for instance, rice flour in this diet.

The rice must not be fried with butter, lard or any other fat except the one specified, which is olive oil in this diet.

Bread is not permitted in this diet.

Illustrative Menu—Breakfast Rice boiled, natural or fried in olive oil and served with sugar or preferably maple syrup, also peach or pear may be used.

Coffee without milk or cream, unless the patient is found not sensitive to these.

Pears and peaches, fresh or canned, a large helping.

Lemonade with plenty of sugar.

Milk, if permitted, as much as desired.

Dinner and Supper Soup Lamb broth with rice, carrots, spinach, lettuce or rhubarb.

Salad Lettuce with pears, peaches, unstuffed olives, olive oil, lemon juice.

Meats Roast lamb, broiled or fried lamb chops with rice flour and olive oil (Gravy as desired, but must be thickened with rice flour only).

Vegetables Spinach, carrots, lettuce, rhubarb, large helpings.

Dessert Lemon gelatin, pear or peach, as much as desired. Filbert nuts as desired or rhubarb sauce sweetened with sugar or maple syrup.

Drinks A lemonade with plenty of sugar, black coffee milk, if permitted.

Miscellaneous As much as desired of sugar, salt, olive oil, gelatin, maple syrup, olives (black or green, but unstuffed).

DIET 2—*Rice, Rye and Fish*—No meats are allowed in this diet, fish is used instead, if the patient is sensitive to fish but not to eggs, substitutions are indicated. The only bread allowed is Rye-Rice or Ry Crisp Rye-Rice bread is made as follows: one-third cup rye flour, two-thirds cup rice flour, 6 level teaspoonfuls Royal Baking Powder (which does not contain any egg), 4 level teaspoonfuls sugar, one-fourth teaspoonful salt, two-thirds cup water, one-half teaspoonful shortening. This recipe makes eight small muffins.

Illustrative Menu—Breakfast Cereal rice boiled, natural, served with apricot, pear or sugar, or fried in olive oil and served with molasses.

Bread Rye-Rice or Ry-Crisp.

Fruits Pineapple, prunes, apples, large helpings.

Drinks Tea, milk if tolerated, juices of the fruits already mentioned.

Dinner or Supper Soup Vegetable soup of lettuce, carrots, peas, beets, rhubarb.

Bread As for breakfast.

Salads Lettuce, beets, pineapple, olives (unstuffed), prunes with olive oil.

Vegetables Lettuce, carrots, peas and beets, rhubarb with rice, if wanted.

Dessert Pineapple gelatin or prunes, apples, large helpings.

Filberts if desired. Rhubarb and apple sauce sweetened with sugar or molasses.

Miscellaneous Sugar, salt, gelatin, olives, molasses and filberts.

DIET 3—*Tapioca, Rice and Beef*—Butter, lard or other fats must not be used except the one specified, which is Wesson Oil in this diet. Bread is not yet permitted.

Illustrative Menu—Breakfast Cereal Rice boiled, natural, served with peaches or pear juice or sweetened with sugar or maple syrup, may be fried with Wesson Oil. Tapioca baked with peaches and sugar or maple syrup and flavored with grapefruit juice.

Fruits Grapefruit, pears or peaches, liberal helping, also apples.

Drinks Grapefruit juice sweetened with plenty of sugar, coffee, milk (if permitted).

Dinner and Supper Soup Beef broth with rice, string beans, celery.

Salad Tomatoes, celery, string beans, peaches, grapefruit, pears sweetened with sugar and sprinkled with Wesson Oil.

Meats Roast or broiled beef with gravy or rice flour fried with Wesson Oil if desired
Vegetables String beans, sweet potatoes, celery and rhubarb
Dessert Grapefruit, gelatin or peaches, pears Filbert nuts as desired. Apples or rhubarb sauce sweetened with sugar or maple syrup
Miscellaneous Sugar, salt, Wesson Oil, gelatin and maple syrup

DIET 4—Corn and Chicken—Gravies and sauces may be thickened only with the flour prescribed, as for instance, corn-starch in this diet. The corn must not be greased or fried with any butter, lard or any other fat except the one specified, which is Mazola Oil in this diet.

Bread is not permitted yet, unless one wishes to use corn pone, which is made with corn meal and water or corn meal mush fried in maize oil or bacon fat, which may be eaten with prune or apricot juice or plain sugar syrup.

Illustrative Menu—Breakfast Cereal Corn, fresh or canned, taken with milk if allowed or may be fried with maize oil, salted, or sweetened with sugar and served with pineapple, apricots or prunes, cornflakes are allowed. Bacon, if desired. Molasses preferred to sugar.

Bread Corn pone as described.

Fruits Pineapple, apples and prunes as much as desired.

Drinks Pineapple or prune juice sweetened with plenty of sugar, tea with milk if allowed.

Dinner and Supper Soup Chicken soup with corn, peas, artichokes or asparagus.

Salad Artichokes squash, asparagus with pineapple, prunes and apples sprinkled with Mazola Oil.

Meats Chicken, boiled or fried with bacon fat or Mazola, gravy thickened with cornstarch, bacon as desired.

Bread Corn pone as described.

Vegetables Asparagus, squash, peas, rhubarb artichokes, large helping.

Dessert Pineapple, gelatin or prune or apples with filberts. Apple with rhubarb sauce sweetened with sugar or molasses.

Drinks Same as for breakfast.

Miscellaneous Sugar, salt, Mazola and molasses.

2. Alterative Treatment—Under the term "alterative" may be classed any remedy that, without producing symptoms of its own, corrects phenomena of disease. Such therapy is most likely to be resorted to in conditions of altered susceptibility such as "allergy," a condition in which with the present ignorance of the essential nature of the altered reactivity of the system one must necessarily blunder along with remedies "until one succeeds."

PRESCRIPTION 1—Calcium Lactate

R	Calcium lactate	30.00 Gm
	Lactose	30.00 Gm
Mix label	Teaspoonful in water every four hours on arising at bedtime and midway between meals	

(a) As there is a strong suspicion that abnormal calcium metabolism has something to do with transudative phenomena, the administration of calcium may seem rational. If it is to do any good, it must be administered freely and continued for a considerable time after improvement has set in, for increase of the quantity of ionized calcium in the blood by means of calcium administration is rather difficult to attain and when attained it is but transient. As one calcium salt is as poorly absorbed as another, Calcium Lactate (prescription 1) is the most eligible, because less irritative and not so unpleasant as Calcium Chloride (prescription 2), unless the desire to exert also an acidic influence leads one to prefer the latter. In some cases calcium seems to act very well. It is, however, frequently disappointing.

(b) Acids, as they tend to increase the ionization of calcium, might conceivably be useful, e. g., Diluted Hydrochloric Acid 2 cc given in lemonade, which is to be sipped through a tube during and after meals.

(c) Alkali is, curiously enough, more frequently and perhaps more successfully employed. It must be remembered, in possible explanation, that alkali likewise modifies calcium metabolism by causing a tendency to precipitation of the ionized calcium and that in certain

PRESCRIPTION 2—Calcium Chloride

R	Calcium chloride	15.00 Gm
	Syrup of glycyrrhiza	250.00 cc
Mix Label	Tablespoonful in half glassful of water every hour or two until relieved then teaspoonful four times daily	

cases it might be such precipitation—let us say in the capillary endothelium—that may be desirable modification. While intestinal acidity favors absorption of calcium its utilization by the tissues may be favored by alkali. It is indirect alkali, such as Potassium Citrate (prescription 3) that should be used for this purpose rather than bicarbonate, which, by its alkalinity may lessen calcium assimilation. It must be remembered, however, that urticaria may be caused or aggravated by citrate.

PRESCRIPTION 3—Potassium Citrate

R	Potassium citrate	30.00 Gm
	Syrup of orange	60.00 cc
	Water	to make 120.00 cc
Mix Label	Teaspoonful in water every two to four hours	

From what has been said, it will be understood that it is entirely rational to use calcium, acid and alkali therapy in succession to each other until the desired result has been secured.

3. Symptomatic Treatment—Lessening vagotonia

(a) Epinephrine is almost as valuable a remedy for urticaria as it is for asthma. Solution of Epinephrine Hydrochloride is injected intramuscularly in doses of from 0.5 to 1 cc. It acts promptly, but its benefits are likely to be gone in fifteen or twenty minutes. Massage of the place of injection may reintroduce some of the epinephrine into the circulation and renew the effect. It may be injected as often as required.

(b) Ephedrine Sulphate (0.06 Gm capsules, one three times daily) may lessen the necessity for the frequent injection of epinephrine.

(c) Atropine Sulphate in 0.5 to 1 mg doses, up to tolerance, may accomplish a similar result in a different way.

Analgesics also act as systemic antipruritics. Probably the most useful are (a) Salicylates, e. g., Phenyl Salicylate 0.3 Gm capsules, of which two may be taken after meals and at bedtime, (b) Acetanilid 0.20 Gm tablet every two to four hours as required. Opiates are contraindicated in this condition, as they make the itching worse.

PRESCRIPTION 4—Phenol Calamine Lotion

R	Phenol	2.50 cc
	Calamine lotion	250.00 cc
Mix Label	Dab on affected part as frequently as required to avoid scratching	

Local antipruritics must be used as required to prevent scratching. (a) Lotions. Sponging the affected part with an alkaline solution (e. g., 4 per cent sodium bicarbonate) as hot as can be borne and followed, without drying, by dusting with talcum powder, is one of the simplest procedures. Sometimes an acid lotion is more effective, e. g., vinegar 1 part to water or alcohol 2 parts. Calamine lotion combines the cooling effect of fluid with the protectant action of a powder application. The addition of 1 per cent of phenol (prescription 4)

increases its antipruritic value. Calamine Liniment, possibly with phenol, might be preferable if the skin is harsh and dry. To prescribe it, one simply substitutes the word "liniment" for "lotion" in prescription 4. Coal Tar lotion may be secured by prescribing Solution of Coal Tar, which is to be diluted 1:20 or even 1:10 or by ordering it ready for use (prescription 5). This is an intrinsically antipruritic application admissible if there are no lesions due to scratching.

The chief value of any one of these applications is to prevent scratching, which not only brings out new wheals but also inflicts damage to the skin, which on healing provokes renewed itching and scratching, a vicious circle.

(b) Baths. These are indicated if the eruption is generalized. A warm alkaline bath is prepared by dissolving a cup of sodium bicarbonate in the bath water. The addition of a demulcent makes this even more

PRESCRIPTION 5—Coal Tar Lotion

R Solution of coal tar 12 50 cc.
Water to make 250 00 cc.
Mix. Label: Sponge itching part as required (Contraindicated if there are many lesions due to scratching)

soothing, particularly if there is secondary irritation from scratching. For this purpose two or three cupfuls of cornstarch may be stirred in after the sodium bicarbonate. Instead of the cornstarch, one may use bran or oatmeal, boiled to a soft consistency, placed in a muslin bag and this squeezed out into the bath, the bag to be used also to mop the lesions with. Acid baths, though generally less effective than the alkaline baths, are sometimes useful. They can be prepared by adding a cup or two of vinegar or 15 cc of hydrochloric acid to the bath. Following the bath, the skin should be patted with a soft towel to remove excess of moisture, not rubbed dry, and dusted with talcum or other powder.

PRESCRIPTION 6—Mentholated Talcum

R Menthol 0 25 Gm
Alcohol 5 00 cc
Talcum 50 00 Gm
Mix. Label: Dust freely on itching part.

(c) Powders. Sprinkling liberally with an antipruritic powder is sometimes sufficient. A simple one as good perhaps as any, is 0.5 per cent Menthol in Talcum (Prescription 6).

CHRONIC URTICARIA

1 *Causal Treatment*—It is in chronic cases that a most exhaustive study may be required to determine the fundamental nature of the patient's dyscrasia. Among the means to locate the cause must be included blood examination for syphilis, malaria and leukemia, examination of the stools for parasites, and examination of the urine for hematoporphyrin. Treatment addressed to the underlying disease, arsphenamine if there is syphilis or quinine if there is malaria, may cure an otherwise baffling case. A basal metabolism test may lead to the administration of thyroid with decided benefit. Roentgen and other examinations may lead to the discovery of a pathologic condition in the lungs or in the sinuses. In addition, the diagnostic procedures of allergy (q.v.) may succeed in shedding light on the case, although great caution is necessary in interpreting the results, for in a patient with urticaria any injury to the skin is likely to be followed by a wheal. The foregoing allergy test diets may help in arriving at a diagnosis, although dietary regulations are, as a rule, less successful in chronic urticaria than in the acute form.

2 *Alternative Treatment*—In chronic urticaria, alternative treatment aims at desensitization. This may be specific, if the exciting cause can be determined and is of such nature as to render exposure to it unavoidable. More commonly it must be nonspecific.

(a) Peptone (prescription 7), administered perorally, is no doubt the simplest method of attempting non-specific desensitization.

PRESCRIPTION 7—Peptone Capsules

R Peptone 15 00 Gm.
Divide into thirty capsules
Label: Take one capsule an hour before meals

(b) Calcium gluconate (10 cc of 10 per cent solution) injected intravenously every other day, or, indeed, the intravenous injection of almost any other fluid, even of 1 cc of Distilled Water or of Physiologic Solution of Sodium Chloride, may suffice to induce a "colloidoclastic crisis" in these allergic individuals with their delicate systemic colloid balance, producing a change that may have a satisfactory therapeutic result but that may also be followed by a very disagreeable "reaction" without the desired relief.

(c) Autohemotherapy, which consists of injecting into the gluteal muscles from 5 to 10 cc of the patient's own blood withdrawn just previously from the cubital vein, is another measure of this kind.

(d) Typhoid vaccine injected intravenously (see Iritis) is a still more powerful appeal of this kind.

3 *Symptomatic Treatment*—The symptomatic treatment of chronic urticaria is very much like that found useful in acute urticaria.

ANGIONEUROTIC EDEMA (GIANT URTICARIA)

Angioneurotic edema, a localized form of acute transitory edema, is considered to be a special form of urticaria. The pathology of it is a mere exaggeration of that found in ordinary urticarial lesions. If the swelling occurs in loose tissues, such as those below the eye, few subjective symptoms occur. If tissues that are more bound down are affected, such as those of the hands, the symptoms are quite intense, the patient complains of a feeling of tightness, burning and itching.

Like other allergic conditions, angioneurotic edema runs in families so that it is apt to be found in several related persons. The most important thing to watch for in treating a patient with angioneurotic edema is edema of the glottis. The patient should be warned about the possibility of this dangerous condition occurring at any time in the future. He should be told to seek aid immediately if any symptoms or signs occur in his throat, even though these are very mild and just beginning. He should be warned not to wait, because the swelling comes on very rapidly with possibly disastrous results if not taken care of immediately. The mortality rate in angioneurotic edema is quite high, owing to death from edema of the glottis with strangulation.

Treatment of edema of the glottis consists of intubation of the larynx. Of course, if something more immediate is required and an extreme emergency exists, one is justified in doing a tracheotomy.

The treatment of angioneurotic edema otherwise resolves itself into that used in urticaria. The immediate measures are the same as those used in acute urticaria (q.v.). If the swelling involves a mucosa, an astringent lotion may be used with advantage. For this purpose Solution of Aluminum Subacetate may be used, one part to eight parts of water.

Focal infection, such as in the sinuses, gallbladder or appendix, has apparently been the basis of a goodly number of cases, so that one does well to hunt for these possibilities in all cases of chronic angioneurotic edema

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
PAUL NICHOLAS LEECH Secretary

DIGITOL-MULFORD (SHARP & DOHME, INC.) REACCEPTED

Digitol Mulford (Sharp & Dohme Inc) has recently been before the Council, since the three year acceptance period for inclusion in New and Nonofficial Remedies has expired, reacceptance of this product has been made by the Council on Pharmacy and Chemistry every three years since its original inclusion in New and Nonofficial Remedies in 1912. There was published a Notice of Judgment (N J 22335) in which it was charged that a shipment of Digitol was found to have almost double the potency represented by the company—"Tincture Digitalis U S P Strength". In view of this, pharmacologic assays were made during the spring of 1935.

Specimens of Digitol were purchased from retail drug stores in four widely separated parts of the country and submitted to a well known pharmacologist.

Results By comparison with the fatal dose of ouabain, 0.0005 mg per gram, the fatal dose of three specimens of Digitol were 0.0052 cc., 0.0063 cc and 0.0065 cc. The fatal dose of the fourth specimen, standardized Dec 22, 1928, was 0.0075 cc., i. e., about 15 per cent too weak. As the corresponding fatal dose of tincture of digitalis U S P is from 0.0055 cc to 0.0065 cc per gram of frog, Digitol was found to be neither weaker nor stronger than the U S P tincture.

In the routine examination of the material for Digitol submitted by Sharp & Dohme, Inc, the labels, carton and circulars were found to be satisfactory. The Council voted that the product be reaccepted for New and Nonofficial Remedies.

HO-MO-SOL NOT ACCEPTABLE FOR N N R

Ho-Mo Sol, said to be identical with Sanizone, is a solution of sodium hypochlorite and sodium carbonate with a claimed content of 1 per cent available chlorine. Both products are marketed by the Sanox Company of Toledo, Ohio, and the former, proposed for lay distribution, was presented to the Council.

The following is the account of the discovery of Ho-Mo-Sol, as stated in the folder, which is intended for public distribution.

Long ago the sponsors of HO-MO SOL sensed the need of a DIFFERENT and a BETTER Antiseptic Deodorant to effectively replace those previously marketed and accepted only because men of Science had been unsuccessful in perfecting the Germicidal Agent that carried no harsh irritants to the skin and other delicate membranes. They sought to create a Formula superior in quality to any previously employed—a Germicide that would find employment in all phases of Surgical and other Hospital irrigations, general home and industrial usage, and particularly to the field of Feminine Hygiene—one that left no unsightly stains when applied to cuts or abrasions—in short a Sanitant and Deodorant of chemical purity and crystal clarity that would effectively assist Nature in healing and cleansing by completely arresting germ growth.

A further statement in the folder is

HO-MO SOL is a Hypo-chlorite embracing an Oxygen-carrying principle hitherto unknown.

It is difficult to understand in what way this formula is superior to the well known standard chlorinated soda solution and in fact, no proof of such superiority has been submitted. Hypochlorite solutions are well known under nonproprietary names, there is no warrant for the application of a proprietary name, nor can there be any valid reason for marketing the same product under two different names each equally noninformative.

The therapeutic claims for Ho-Mo-Sol are exaggerated to an unwarranted degree. The product is recommended in "Athlete's foot," burns, cuts and abrasions, feminine hygiene, insect bites, poison ivy, prickly heat, sunburn, and as a nasal spray, gargle and mouth wash, and vaginal douche. Comment seems trite that possible errors in self diagnosis among such a widely varied group of indications might lead to grievous or serious misuse of the product in lay hands, this without consideration of whether or not hypochlorite solutions are particularly effective in all the conditions enumerated. Certain it is that, in many instances, other preparations or modes of therapy are, ordinarily, distinctly more efficacious and; therefore preferable.

A detailed discussion of the fallacies involved in the unstinted use of hypochlorite for many of the recommended conditions would be beyond the scope of this report, but it may at least be said that the habitual or repeated use of 1 per cent solutions of positively charged chlorine can produce a significant degree of local tissue damage, every surgeon is familiar with the chemical debridement accomplished by the Carrel-Dakin routine.

The Council declared Ho-Mo-Sol not acceptable for New and Nonofficial Remedies because it is an unessential modification of a standard hypochlorite solution, marketed under a non-informative, proprietary name and promoted among the laity with therapeutic claims beyond those allowed by the Council in connection with antiseptics.

CORRECTION

Ephedrine Sulphate—In New and Nonofficial Remedies, 1935, page 203 under the standards for ephedrine sulphate (sixth paragraph, giving the tests for limit of chloride) for 'dissolve 0.005 Gm of ephedrine sulphate' read "dissolve 0.5 Gm of ephedrine sulphate."

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
RAYMOND HERTWIG Secretary

NOT ACCEPTABLE

VELVETEX—BART'S CREAM BREAD

The Bart's Bakery, Inc., Savannah, Ga., submitted to the Committee on Foods "Velvetex—Bart's Cream Bread Sliced," a white bread prepared by the sponge dough method, containing patent flour, water, sucrose, vegetable shortening, powdered skim milk, yeast, sodium chloride, malt extract, a yeast food containing calcium sulphate ammonium chloride, sodium chloride and potassium bromate, and acid calcium phosphate.

Discussion of Name and Advertising—The name "Velvetex"—Bart's Cream Bread implies the presence of cream in substantial quantity in the baking formula, sufficient to give the bread qualities and nutritional values not possessed by the usual white bread, cream is not an ingredient and skim milk is the only milk product constituent. The name is inappropriate and misleading.

The advertising contains such claims as

"Not only is Bart's Cream Bread a health food. You tune into mealtime healthfulness with Bart's Cream Bread because it's healthful. It's the pure health-giving ingredients in every loaf that gives you the vitamins necessary to develop healthy bodies."

This bread is not a "health food," its ingredients are not health giving. No one food nor even the entire well balanced diet can give health. Many factors other than foods are necessary for health. The bread does not give the vitamins necessary to develop healthy bodies and in fact contains insufficient vitamin content to warrant mention. There is no justification for advertising of this character misinforming the public.

The manufacturer was advised of the recommendations of the Committee but has not demonstrated compliance. This product will therefore not be listed among the Committee's accepted foods.

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SATURDAY, AUGUST 24, 1935

THE SOCIAL SECURITY ACT AND THE MEDICAL PROFESSION

The Social Security Act is now law. Physicians, but only as employers and employees, will be directly interested in its provisions relating to unemployment compensation and taxes imposed on employers and employees. Hospitals and laboratories, operated for the financial benefit of their owners and shareholders, will be interested likewise in those provisions. Physicians who are in need and who are more than 65 years old may have an interest in the provisions of the act for the relief of the aged. Other provisions of the act, however, are of immediate and special interest to all physicians, such as the provisions relating to federal subsidies to enlarge and make more efficient the public health activities of the states and to aid the states in financing certain medical work.

Under the Social Security Act, a federal appropriation of \$8,000,000 annually is authorized, for allotment by the Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, to states, counties, health districts and other political subdivisions, to aid them in establishing and maintaining adequate public health services. This appropriation is to be supplemented by another, amounting to \$2,000,000 annually, to cover the pay, allowances and traveling expenses of personnel of the Public Health Service detailed to cooperate with health authorities of any state and for the investigation of disease and problems of sanitation. Of this supplementary appropriation, the amount available for the investigation of disease and problems of sanitation will obviously be only so much as remains after deducting the authorized expenses of the personnel detailed to state work. The Social Security Act expressly provides, however, that personnel of the Public Health Service shall not be detailed to cooperate with the health authorities of any state except at the express request of the proper authorities of that state.

For allotment to the states by the Secretary of Labor, the Social Security Act authorizes the appropriation of

\$3,800,000 annually, to assist the states in promoting the health of mothers and children, especially in rural areas and in areas suffering economic distress, but allotments by the secretary can be made only on the basis of plans approved by the chief of the Children's Bureau, and the work in each state must be done by or under the supervision of the state health agency.

In addition to authorizing appropriations for the health activities described, the Social Security Act authorizes annual appropriations to aid states in carrying on certain medical activities.

On the basis of plans approved by the chief of the Children's Bureau, the Secretary of Labor is authorized to distribute annually among the states appropriations of \$2,850,000, to enable them to extend and improve, especially in rural areas and in areas suffering from severe economic distress, services for locating crippled children and for providing for children who are crippled or who are suffering from conditions that lead to crippling, medical, surgical and corrective and other services and care, including facilities for diagnosis, hospitals and after-care. No plan for this work is to be approved by the chief of the Children's Bureau unless it is to be administered or supervised by a state agency and provides for cooperation with medical, health, nursing and welfare groups and with organizations and state agencies charged with the administration of state laws providing for vocational rehabilitation of physically handicapped children.

For the blind, the Social Security Act authorizes annual appropriations of \$3,000,000, to be expended under the direction of the Social Security Board. These annual appropriations are to be used to aid states to furnish financial assistance to needy individuals who are permanently blind and are to be distributed on the basis of state plans approved by the Social Security Board. Not to exceed \$1,500,000 of this appropriation may be used, to the extent that it is matched by an equal amount by the states, to aid in locating blind persons, diagnosing the eye conditions from which they suffer and employing such persons. Plans submitted by the states for activities in this field, in order to permit approval by the Social Security Board, must contain definitions of blindness satisfactory to the board.

From the point of view of hospitals and scientific educational and charitable institutions and organizations, particular interest attaches to those provisions of the Social Security Act that exempt from liability for taxes corporations, community chests, funds or foundations, organized and operated exclusively for charitable, scientific or educational purposes, no part of the net earnings of which inures to the benefit of any private shareholder or individual. Correlated with this exemption, however, is the provision that excludes from the old-age benefits of the act employees of such corporations, community chests, funds and foundations and permits their exclusion also from the

benefits conferred by state unemployment compensation acts. Whether these exemptions will work to the advantage of the organizations that are supposed to benefit by them can be determined only on the basis of experience, for their employees may demand higher wages or more liberal terms of employment because they are denied the benefits of the act.

For the administration of certain provisions, the Social Security Act creates a new independent federal agency—the Social Security Board. The board is to consist of three members, appointed by the President by and with the advice and consent of the Senate, not more than two members of the board being members of the same political party. Other than this political limitation, the act does not provide specific qualifications for the members of the board. The primary functions of the Social Security Board seem to relate to the administration of the provisions of the act relating to old-age assistance, old-age benefits, unemployment compensation and the relief to the blind. It is charged also, however, with the duty of studying and making recommendations as to the most effective methods of providing economic security through social insurance and as to legislation and matters of administrative policy concerning old-age benefits, unemployment compensation, accident compensation and related subjects. The board must report annually to Congress on the administration of the functions with which it is charged. The absence of a specific reference to health insurance need not be construed as relieving the board of authority to investigate that matter, since health insurance falls within the meaning of the term "social insurance," which the board must investigate and with respect to which it must make recommendations.

Other provisions of the act, no less important than those which have been discussed, are of general interest but have no direct relation to health or medical activities. These include provisions for old-age benefits and grants to the states for old-age assistance, unemployment compensation, aid to dependent children, child welfare services and vocational rehabilitation, and pensions for Indians. The act imposes a graduated and increasing income tax on the wages of employees, to be paid by the employees themselves, and graduated and increasing excise taxes on employers, based on the wages paid employees but to be paid by employers.

The Social Security Act is designed to work a revolution in the social and political relations of the people and of the several states to the federal government. To what extent it is constitutional and to what extent unconstitutional is a question that *THE JOURNAL* cannot decide. Fortunately, it is not called on to do so. The sooner the question is decided by the courts, however the better it will be for all concerned. In carrying out the provisions of the act in the fields of medicine and public health, the officers charged with that duty are certain to find themselves handicapped by the scarcity of competent skilled and experienced assistants

and workers in practically every grade of service called for. But the law is now an actuality and the medical profession may be confidently expected to do its part toward carrying it into effect.

PASTEURIZATION OF CERTIFIED MILK

A significant development of interest to physicians as well as to all consumers of milk took place at the annual meeting of the Certified Milk Producers Association of America, meeting jointly with the American Association of Medical Milk Commissions at Atlantic City at the time of the annual session of the American Medical Association. A symposium was presented under the title "The Next Step in the Progress of Certified Milk." This subject, which anticipated permissive pasteurization of certified milk, was discussed from various points of view by a municipal milk inspector, a secretary of a medical milk commission, a metropolitan health commissioner, a state health officer, a representative of the United States Public Health Service and representatives of the medical profession, educators and the public. The outcome of the meeting was the adoption of a resolution¹ by which pasteurization of certified milk was endorsed but such pasteurization was not made mandatory.

The medical profession has long been interested in the purity and safety of milk purveyed to the public. Medical milk commissions sponsored by numerous local medical societies were the creation of the medical profession, stimulated by its interest in safe milk for baby feeding. The American Medical Association, through a resolution² adopted at Portland, Ore., in 1929, supported the efforts of public health authorities to provide safe milk for human consumption. This resolution by implication endorses pasteurization, which has been strongly favored by the American Public Health Association³ and the Conference of State and Provincial Health Authorities of North America⁴. Direct endorsement of pasteurization is embodied in a decision of the American Medical Association Committee on Foods⁵. The sponsorship by the medical profession of raw certified milk on the one hand and pasteurized milk on the other was not inconsistent. The value of certified milk has been great, even to those who have never used certified milk. Through the experience developed by methods of certification, the general level of sanitation in milk production has been raised. Producers of certified milk have furnished invaluable leadership in the dairy industry. At the same time the

¹ Minutes Annual Conference American Association of Medical Milk Commissions and the Certified Milk Producers of America Inc. 1933.

² Resolution on Insuring Safety of Milk Proceedings House of Delegates American Medical Association 1929 p. 40.

³ Resolution Regarding Pasteurization of Milk Am. J. Pub Health December 1924 p. 1069.

⁴ Proceedings 49th annual meeting Conference of State and Provincial Health Authorities of North America 1934, p. 69.

⁵ The Pasteurization of Milk General Decisions on Foods and Food Advertising Committee on Foods of the American Medical Association March 1935 p. 33.

necessarily high cost of certified milk, which rendered it inaccessible to most consumers, made necessary the availability of a supply of milk that could be relied on for safety and yet could be supplied at much less expense. Pasteurization furnished the answer to the latter need. Now that the producers of certified milk and the medical milk commissions have adopted permissive pasteurization, there should be benefit to all interested groups. Physicians desiring the highest quality of pasteurized milk for their patients will be able to prescribe pasteurized certified milk, producers of certified milk will be able to offer their customers a pasteurized product, public health authorities will be aided in their program of universal pasteurization, and milk consumers will have a wider choice among desirable milk supplies.

THE PATHOGENESIS OF GOUT

Although the association of gout with a disturbance of purine metabolism has been known for a long time, this relationship has recently become the subject of further investigation. Hench and his co-workers,¹ who compared 100 cases each of gout, rheumatic fever and infectious arthritis, point out that the first difficulty encountered in the study of gout is the correct diagnosis. The criteria for the diagnosis of gout in their study were a history of joint disease together with 5 mg or more of uric acid in each hundred cubic centimeters of blood or in tophi or both. According to these observers the clinical course of gout differs from the other disorders in that it is marked by paroxysmal and intermittent attacks associated with complete remissions before the stage of chronic gout is reached. The appearance of the objective signs of gout is so inconsistent and may be so delayed that the characteristic clinical history often affords the earliest basis for the differential diagnosis. Another difficulty in making a satisfactory diagnosis is the question of the reliability of the methods of uric acid estimation and the significance of high values sometimes found apart from gout.² Obviously a necessary preliminary to the study of gout is a redefinition and the establishment of recognized principles of diagnosis in doubtful cases.

It is encouraging to note the point of view expressed in three recent studies. Talbott, Jacobson and Oberg³ investigated the electrolyte balance in two cases during various phases of acute gout. One of the patients was under observation for twenty-two months, during which time he had fifty attacks of acute gout, twenty-one of which occurred while he was on a metabolic regimen. It was found that a diuresis began before any clinical or subjective evidence of gout became manifest

and that a negative sodium and chloride balance accompanied the diuresis. Coincident with the diuresis there was an increased excretion of potassium, calcium, ammonia, titratable acid, phosphate and urate. A diuresis from transient disturbance of purine metabolism was not excluded. Certain purine bodies are known to possess a diuretic action, and one or more of these might be formed in sufficient amounts before the attack of gout to produce an increased urinary output. This explanation would associate the diuresis intimately with the generally assumed pathogenesis of the disease. They conclude, however, that the metabolic processes associated with acute gout are not adequately defined by a description of uric acid metabolism alone.

In another series of studies of gout,⁴ diets high in fat were administered to four gouty patients. In two patients such extreme pain developed that discontinuance of the diet was necessary. In the two other patients the diets were taken for fairly long periods and in their blood the amount of uric acid was markedly higher than it had been at first. This result resembles that found in nongouty persons. In the gouty patients however, the return to normal blood uric acid levels following the discontinuance of the high fat diets was delayed as compared with that in normal persons or in other forms of joint disease. Lockie and Hubbard therefore propose the addition of the following test for differentiating gout from various forms of chronic arthritis: "Feed a diet consisting of from 250 to 350 Gm of fat, 50 Gm of protein and from 30 to 50 Gm of carbohydrate for a period of from five to seven days. If, within that time, pain in the joints has developed or if existing mild joint pains have markedly increased in severity, a diagnosis of gout must be carefully considered."

Gudzent,⁵ who has long been a student of joint disease, recently observed a patient who had a severe attack of gout every time he took milk and yet this patient tolerated meat very well. Gudzent reviewed a larger number of patients with gout and reached the conclusion that the acute attack has no connection with sudden deposits of uric acid but is an allergic reaction to a gout toxin. A number of such patients, and those with certain other forms of rheumatism, reacted to skin tests with fish, eggs, milk and other substances with wheal formation, and abstinence from these foods resulted in improvement.

Just what part these studies will play in elucidating the gout problem is uncertain. It is generally known that what is called gout is not a rare condition and that it is possibly increasing in frequency. With the refinements in technic in the study of metabolites, diet and allergic diagnosis, the knowledge of so called gout should rapidly advance.

1 Hench P S Vanzant Frances R and Nomland R. Basis for the Early Differential Diagnosis of Gout. A Clinical Comparison of One Hundred Cases Each of Rheumatic Fever Infectious Arthritis and Gout. Collected Papers of the Mayo Clinic 20 790 1928.
2 Jordan E. P. and Gaston Dorothy. Blood Uric Acid in Disease. J Clin Investigation 11 747 (July) 1932.
3 Talbott J H Jacobson B M and Oberg S A. The Electrolyte Balance in Acute Gout. J Clin Investigation 14 411 (July) 1935.

4 Lockie, L. M. and Hubbard R. S. Gout. J A M A. 104: 2072 (June 8) 1935.
5 Gudzent F. Testung und Heilbehandlung von Rheumatismus und Gicht mit spezifischen Allergenen. Deutsche med. Wchnschr. 61 901 (June 7) 1935.

Current Comment

SKIN IRRITANTS IN ADHESIVE PLASTER

The occurrence of skin reactions following the use of adhesive plaster is by no means uncommon, indeed, the statement has been made that approximately 1 per cent of all normal individuals show the phenomenon. According to the current opinion, two types of reactions may occur. One is simply the result of mechanical trauma by the adhesive plaster and it disappears within a short time after the removal of the plaster. The other type of reaction is a true allergic response to substances present in the adhesive base. Such reactions often increase in severity after removal of the plaster and may persist for many days. Obviously, little can be done to decrease the incidence of the reactions due to tissue trauma, however, the occurrence of the allergic manifestations might be lessened if the nature of the irritating substances were known. A recent investigation on this problem¹ has yielded interesting information. The effects of the various constituents of several different makes of adhesive plaster were determined in twenty-one subjects who had previously been shown to react to the mixture of substances present in the original tape. Eleven ingredients, namely, three kinds of rubber, pine wood rosin, "Burgundy" pitch (a mixture of resins), olibanum (a gum resin), beeswax, zinc oxide, wool fat, starch and orris root, were tested. They were applied to the skin of the arm or the back. A large number of skin reactions resulted from the application of rosin, "Burgundy" pitch, and the smoke-cured wild rubber. Reactions to the other constituents were fewer and less pronounced. Therefore it appears that the substances responsible for the allergic reactions are chiefly the resins and the wild rubber. These observations should stimulate research in the industries for the purpose of finding nonirritating types of resins and rubber to replace those now used in the manufacture of adhesive plasters.

Association News

NEW A M A RADIO PROGRAM

Beginning October 1 at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) the American Medical Association with the cooperation of the National Broadcasting Company will begin a new series of programs under the same title, "Your Health," that has previously been used for the National Broadcasting Company broadcasts. This series will differ radically from any programs which the American Medical Association has ever broadcast before. Instead of fifteen minute talks, the program will be thirty minutes in length and will consist of vivid dramatizations of medical emergencies and how they are met. Into each program will be woven a short talk by Dr. Morris Fishbein or Dr. W. W. Bauer emphasizing the points illustrated in the dramatizations. Incidental music will accompany the programs. Scripts and production are being provided by the National Broadcasting Company under the supervision of the American Medical Association. Further announcements will appear in *THE JOURNAL* and in *Hygieia* and will be furnished to state medical journals and county bulletins.

¹ Schwartz, Louis, and Peck, S. M. The Irritants in Adhesive Plaster. *Pub. Health Rep.* 50: 811 (June 14) 1935.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

New Requirements for Foreign Medical Graduates—The California State Board of Medical Examiners announces that after September 14 graduates of foreign medical colleges must show the following requirements, in addition to those contained in the standard application for a license to practice medicine in California:

- 1 A license to practice medicine and/or surgery in the country wherein is located the medical school which granted them their diploma.
- 2 One year internship served in an approved hospital in the United States after fulfillment of condition number 1 or
- 3 Completion of the senior course in an approved medical school in the United States in lieu of requirement number 2.

Immunization Campaign—A six weeks campaign for immunization against diphtheria and smallpox will be opened in San Francisco, August 26, under the auspices of the county medical society and the department of health. After school opens each child who does not have a positive record of immunization will receive a circular addressed to his parent stressing the importance of this procedure and urging him to consult the family physician. The health department will furnish postcards to physicians for reporting the completion of each immunization and vaccination. Physicians will follow up their own patients for return appointments for injections of toxoid and vaccination but will send back to the health department the cards of those who fail to return after four weeks. Physicians have agreed to give the treatments free to those who cannot pay, the department to furnish the serum without charge through distribution centers.

COLORADO

State Medical Meeting at Estes Park—The sixty-fifth annual session of the Colorado State Medical Society will be held at the Stanley Hotels, Estes Park, September 4-7, under the presidency of Dr. Nicholas A. Madler, Greeley. Out-of-state speakers will include Drs. Edwin P. Sloan, Bloomington, Ill., on "Diseases and Dysfunctions of the Thyroid Gland," Rosco G. Leland, Chicago, "Changes Confronting Modern Medicine," Joseph R. Plank, New Orleans, "Postoperative Treatment Based on Physiologic Principles," and Emsley T. Johnson, Kansas City, Mo., "Liver Damage Due to Synthetic Drugs, with Clinical, Postmortem and Experimental Studies." Dr. Austin A. Hayden, Chicago, will show a motion picture of the activities of the American Medical Association. Other speakers on the program will include the following physicians:

- Harry L. Baum, Denver, Treatment of Various Streptococcal Infections by Means of Human Convalescent Serum.
Ralph H. Verploegh, Denver, Immune Blood Serum in Treatment of Measles, Scarlet Fever and Septicemia.
Osborne S. Philpott, Denver, Use of Serums in Treatment of Erysipelas.
Charles O. Giese, Colorado Springs, Diagnosis of Cancer of the Lung.
Philip Work, Denver, Nonoperative Care of Head Injuries.
Joseph E. A. Connell, Denver, Surgery in Severe Head Injuries.
Robert M. Lee, Fort Collins, So-Called Subdeltoid Bursitis.
George A. Unfug, Pueblo, The Painful Shoulder. X-Ray Interpretation.
Thomas D. Cunningham and John C. Mendenhall, Denver, The General Practitioner and Allergy.
Duval Prey, Denver, Newer Concepts in the Treatment of Furunculosis.
Gerald M. Frumess, Denver, Scope and Limitations of the Term Eczema.
William M. Bane, Denver, Modern Treatment of Convergent Strabismus.
Lawrence D. Dickey, Fort Collins, Elliott Treatment in Pelvic Inflammations and Dysmenorrhea.
Thomas E. Carmody, Denver, Relation of Oral Pathology to General Disease.
Duane F. Hartshorn, Fort Collins, Better Psychiatry by the General Practitioner.

There will be symposiums on chronic arthritis, in which Drs. Thaddeus P. Sears, Constantine F. Kemper, Kenneth D. A. Allen, John G. Ryan and Charles E. Sevier, all of Denver, will participate, and one on hematuria, presented by members of the Denver Urological Society. There will be two clinical pathologic conferences. The annual golf tournament will be held at the Estes Park Country Club, Friday. A new feature of the program this year is the "social hour," held from 5 to 6 p. m. each day. Thursday evening there will be a stag smoker at the Estes Park Chalets.

IDAHO

Personal—Dr Kenneth H Collins, Craigmont, has been appointed physician and health officer of Lewis County, succeeding Dr Eli Taylor, Nez Perce, resigned

Society News—The Panhandle Medical Association was organized at a meeting in Spirit Lake, July 15, Dr John W Schori, Spirit Lake, was elected president, and Dr Alexander Barclay, Coeur d'Alene, secretary. This meeting followed a heart clinic held in the afternoon at Spirit Lake Hospital, under the auspices of the Kootenai County Medical Society and a banquet at the Spirit Lake Hotel. Dr George H Anderson, Spokane, conducted the clinic, with the assistance of Dr Arthur Betts. The new society will hold monthly meetings, membership is open to members of the state medical society in good standing.

ILLINOIS

New Standards for Milk Pasteurization—Principal features of the recently revised minimum sanitary requirements of milk are announced by the state department of health as follows:

1 The short time high temperature method of pasteurization is legalized. This method requires that milk be heated to not less than 160 F and held at that temperature for not less than fifteen seconds.

2 Plans for contemplated pasteurization plants must be submitted to the state department of public health and plans must be approved and a certificate of approval issued before pasteurized milk can be legally sold or distributed.

3 Pasteurized milk must not be delivered to consumers in any container except that in which it left the pasteurization plant. This makes illegal the retailing of dipped milk bought in bulk from pasteurizing plants and sold as a pasteurized product. Hotels and restaurants that serve milk to customers are considered consumers under the law.

4 The state department of health is required to set up and enforce the minimum sanitary requirements for downstate pasteurization plants.

5 Representatives of the department are permitted to enter and inspect any pasteurization plant at any time.

The new standards eliminate the requirement of filtering milk prior to pasteurization and prohibit filtration through cloth or wire after pasteurization. They also require the heating of foam on milk in the pasteurizing vaults to pasteurization temperatures.

Chicago

Society News—Dr Harold O Jones was chosen president-elect of the Chicago Gynecological Society at the annual meeting, June 7, and Dr Edward L Cornell was installed as president.

KANSAS

Personal—Dr Clay E Coburn, Kansas City, was elected president of the Kansas State Board of Health at Topeka, June 28.—Dr Murray C Eddy, Hays, has been named health officer of Ellis County.

Society News—Care of the indigent was discussed by Dr Forrest L Loveland and Clarence G Munns, executive secretary, Kansas Medical Society, both of Topeka, before a meeting of the Osborne County Medical Society recently. These speakers presented the same subject before the Reno County Medical Society in Hutchinson, July 18.—Speakers before the Rush-Ness County Medical Society and the Rush-Ness Public Health Council in Ness City, June 25, included Dr Murray C Eddy, Hays, on "Intestinal Obstruction."—Dr John N Sherman Chanute, was chosen president of the Southeast Kansas Medical Society at a meeting in Pittsburg in June.—Speakers before the Tri-County Medical Society (Barber, Harper and Kingman counties), included Drs Albert R. Hatcher, Wellington on appendicitis, and Fred J McEwen, Wichita, the irregular heart.

LOUISIANA

Tulane Celebrates Centennial—Tulane University of Louisiana observed its centennial anniversary in connection with its commencement, June 12. Coincident with this celebration were the special exercises of the medical department, organized in 1834 as the Medical College of Louisiana. The medical program was made up of special clinics, ward rounds and addresses by members of the faculty, June 11, and in the evening the alumni banquet was held. The program June 12, included the following speakers:

Dr Rudolph Matas, professor of general and clinical surgery emeritus at the school Contributions of Louisiana to the Surgery of the Blood Vessels.

Dr John M T Finney, professor emeritus of surgery, Johns Hopkins University School of Medicine, Baltimore, Reminiscences of the Progress of Surgery During the Last Fifty Years.

Dr George H Whipple, Rochester, N. Y., dean, University of Rochester School of Medicine, The Production and Storage of Blood Serum Proteins and Hemoglobin.

Dr James M Mason, Birmingham, Ala., A Series of Arteriovenous Aneurysms.

Dr Finney delivered the commencement address on "Medical Progress During the Past Fifty Years." The honorary degree of doctor of science was conferred on Dr Mason, and that of doctor of laws on Drs Whipple and Finney. The first lecture at the school was given on the first Monday in January 1835 and the first class graduated in 1835. The institution became the University of Louisiana Medical Department in 1847 and the Tulane University of Louisiana Medical Department in 1884. Its name was changed in 1913 to Tulane University of Louisiana School of Medicine.

MASSACHUSETTS

Personal—Dr Richard P Strong, professor of tropical medicine, Harvard Medical School, delivered the Maiben lecture in medicine before the American Association for the Advancement of Science, Minneapolis, June 25, his subject was "The Importance of Ecology in Relation to Disease."—Dr Riley H Guthrie, formerly on the staff of the Monson State Hospital, Palmer, has been appointed assistant commissioner of the state department of mental diseases.

Changes at Boston University—Announcement has been made recently of the following changes in the faculty of Boston University School of Medicine:

PROMOTIONS

Dr Leroy M S Miner to be professor of stomatology
Dr Edwin W Smith, professor of obstetrics
Dr Burnham S Walker, professor of biochemistry
Dr Clarence Wesley Sewall, associate professor of obstetrics
Fredrick F Yonkman, Ph.D., associate professor of pharmacology
William C Boyd, Ph.D., assistant professor of biochemistry
Dr John C V Fisher, assistant professor of obstetrics.

APPOINTMENTS

Richard H Norton, D.M.D., assistant professor of stomatology
Dr Phillips L. Boyd, assistant in anatomy
Dr Welman B. Christie, assistant in surgery
Dr Lucian Curtis Foye, assistant in pediatrics
Dr Thomas R. Mansfield, assistant in surgery
Dr Anthony Macaluso, assistant in ophthalmology
Dr Barnett H. Rosenfield, assistant in gynecology
Dr Carl E. Trapp, assistant in neurology.

MICHIGAN

Wayne County's Golf Tournament—The Wayne County Medical Society, Detroit, will hold its sixth annual golf tournament at the Oakland Hills Country Club, August 28. The prizes include a number of five and ten dollar checks and purchase orders.

Hospital News—The state administrative board has authorized immediate construction of a tuberculosis sanatorium in Gaylord, to cost \$250,000.—An arthritis clinic was recently organized at the University of Michigan Hospital, Ann Arbor, patients may be referred to this clinic for consultation.

Personal—Dr Thomas E Gibson, Mount Pleasant, has been appointed health officer of Genesee County, succeeding Dr Leslie A Lambert, Flint, who resigned.—Dr Duncan A. Cameron observed the completion of fifty years' service in Alpena, July 19.—Dr Floyd R. Town, who recently resigned as health officer of Jackson after sixteen years' service to become health commissioner of Isabella County, was the guest of honor at a dinner given by members of the health department staff, July 13.—Dr Edward A. Schulz, Grand Ledge, has been appointed a member of the state council of health to succeed Dr William E. McNamara, Lansing, and U. G. Rickert, D.D.S., Ann Arbor, to succeed the late Chalmers J. Lyons, D.D.S.

Dr Patten Appointed Professor of Anatomy—Bradley M. Patten, Ph.D., assistant director of medical sciences of the Rockefeller Foundation, has been appointed professor of anatomy and director of the anatomic laboratories of the University of Michigan Medical School, Ann Arbor, succeeding Dr Gotthelf Carl Huber, who died last December. Forty six years of age, Dr Patten received his degree in doctor of philosophy from Harvard University in 1914. He was assistant in zoology at Harvard from 1912 to 1914, going in the latter year to Western Reserve University Medical School, Cleveland as instructor in histology and embryology. He advanced through the teaching ranks until he became associate professor in 1921 and continued in this capacity until 1934, when he was appointed assistant director for medical sciences of the Rockefeller Foundation. He has written books on embryology, two of which are widely used textbooks, and contributed to zoological and medical journals. His investigations have been concerned chiefly with the development of the heart, the initiation of the heart beat and the changes of the vascular system at birth.

MINNESOTA

Hospital News—The new \$250,000 Indian tuberculosis hospital constructed by the federal government adjacent to the state hospital at Walker has been opened for patients, according to the *Journal-Lancet*.

Society News—*Minnesota Medicine* announces the organization of the Dakota County Medical Society. Dr L D Peck Hastings, was chosen president. The new society is the thirty-fourth component of the state organization.

Layman Abortionist Sentenced to Four Years—Peter H Nellessen, St. Paul, 64 years of age, was sentenced to four years at hard labor at Stillwater, July 25, following a plea of guilty to a charge of performing an abortion. The state board of medical examiners reports that Nellessen formerly for eight years a male nurse at the Soldiers Home at Minnehaha Falls, had been engaged in performing criminal abortions, according to his own statement, over a period of forty years. He stated that he had performed about 100 abortions during the past year. His arrest followed the discovery of a grave in the back yard of a home in St. Paul where an abortion had been performed on a sixteen year old girl.

MISSISSIPPI

No Enrolment of Freshmen—The board of trustees of the University of Mississippi adopted a resolution, July 18 instructing the school of medicine not to enroll a first year class for the session 1935-1936. This school was dropped from the approved list of the Council on Medical Education and Hospitals, July 1, 1934 without prejudice to the students then enrolled.

New County Health Officers—Appointment of the following physicians as health officers of the counties indicated is announced:

W S Martin Carthage, Leake County
William A McMahon Union, Newton County
Albert P Alexander Como, Panola County
George Lacey Biles Sumner, Tallahatchie County
Homer B Watkins, Noxapater, Winston County
Frank L McGahey Calhoun City, Calhoun County

NEW YORK

Society News—Speakers at a meeting of the Steuben County Medical Society, Bath, June 13, were Drs Heywood H Hopkins, Rochester, on "Low Back Pains", Joseph Boch, Burlington, Vt., "Bronchial Asthma Differentiated from Cardiac Asthma", and Valentine Uhjely, "Influence of Emotions on Metabolism".

New York City

Personal—Six physicians were made honorary surgeons in the police department July 18. They were Drs Erastus M Hudson, Fred S Dunn, David J Kaliski, Harold D Meeker, Andrew M Gillen and John J Cahill. There are now sixty-three honorary surgeons in the department. Dr Joseph W Miller was recently reappointed—Dr Simon R Blatteis has been appointed chief of the department of medicine at the Jewish Hospital of Brooklyn.

Approved Clinical Laboratories—Nearly 200 clinical laboratories operating under permit of the department of health are listed in a recent bulletin of the department. The list includes private laboratories, those in voluntary, private and proprietary hospitals doing work for other than hospital patients. It gives the name of the director, address of each laboratory and the type of work each is authorized to do. Laboratory permits are issued for one year.

Annual Reports of Hospitals—The Society of the New York Hospital reported recently that its net deficit for 1934 was \$756,455 which was \$178,701 less than the deficit for 1933. The operating expenditure was given as \$2,390,697 an increase of 5.5 per cent over 1933 and the operating income, exclusive of investment, was \$1,337,878 an increase of 23 per cent. A total of 64,101 patients was cared for an increase of more than 12,000—Mount Sinai Hospital reported that 14,762 patients were treated in 1934 compared with 14,335 in 1933 in the outpatient department 319,003 were treated as compared with 289,649 the previous year. Expenditures amounted to \$1,790,376.93 of which \$216,316.47 could not be covered by receipts applicable to current expenses.

A Campaign Against Noise—A concentrated attack on the din of New York will be made, it was announced August 11. Mayor La Guardia, acting on the evidence furnished by an eighteen months survey made at his request has ordered police to put on a special campaign against night noise during October. The motorcycle and traffic squads will turn their attention in November to day noises. Persons who blow automobile horns needlessly, apartment dwellers who run their radios at high pitch and shipping concerns that use trucks with

solid tires will be warned to moderate their noise-producing apparatus. By December 1 the mayor hopes to have antinoise laws drafted and offenders will be arrested. Noises made by apparatus belonging to the city will also be dulled. Fire and police cars will use their sirens only when making calls, not when returning to stations. Muffling devices will be placed on the trucks of the sanitation department until they can be replaced with noiseless equipment. A test made, August 13, with a noise meter showed that certain spots designated as the noisiest in the city in a survey in 1930 have changed little in the interim. Manhattan Bridge at Canal Street and the Bowery was found to be the noisiest spot in both surveys, with Herald Square and Times Square coming close behind. The general trend of intensity was downward, however.

NORTH CAROLINA

Society News—Dr David L Beers, Asheville, addressed the Buncombe County Medical Society, July 15, on "Circulatory Failure".—At a meeting of the Wake County Medical Society, Wake Forest, July 11, Drs Herbert M Vann, George C Mackie, Edward S King and Coy C Carpenter presented a symposium on the kidneys.

Symposium on Poliomyelitis—The Fourth District Medical Society met at Rocky Mount, July 12 to hear a symposium on poliomyelitis presented by Drs William Lloyd Aycock, Boston, Alexander G Gilham of the U S Public Health Service, Joseph C Knox, Raleigh, state epidemiologist, Carl V Reynolds, state health officer, and John H Hamilton Raleigh, head of the state laboratory.

Advisory Board on Workmen's Compensation—Governor Ehringhaus has appointed an advisory medical committee to the state industrial commission in accordance with an amendment to the state workmen's compensation law making occupational diseases compensable. Dr Samuel B McPheeters, Charlotte, is chairman, and Drs John Donnelly Huntersville, and Gibbons W Murphy, Asheville, are the other members.

NORTH DAKOTA

Personal—Dr Ira D Clark, Fargo, has been appointed to the staff of the Grafton State School, an institution for the mentally deficient, to succeed Dr Arthur S Needles who resigned. Dr Mary E W Soules, Dickinson, was added to the staff as physician for women and children.

OHIO

Floods Cause Emergent Health Situation—A critical health situation developed in Belmont County following torrential rains July 4. All water supplies, derived from 840 shallow dug wells, were contaminated by the flood waters, which had swept away sanitary facilities. There were four cases of typhoid in the area at the time the flood came. The county has not had a health commissioner since April 1934. When the emergency arose, the county sanitary inspector was empowered by the county board of health to handle the situation, but he had no funds or personnel. *Ohio Health News* reports. Two representatives of the state board of health went to Belmont County with typhoid vaccine. The sanitarian had begun chlorination of wells distributed instructions against using well water and arranged with physicians to administer typhoid vaccine. Since their visit it has been reported that 1500 persons have been inoculated and all wells have been chlorinated.

PENNSYLVANIA

Society News—Dr Frank H Lahey, Boston, addressed the Harrisburg Academy of Medicine, June 18, on exophthalmic goiter.—A symposium on syphilis was presented at a meeting of the Dauphin County Medical Society, Harrisburg, June 4 by Drs Walter D Hawkins, Robert Denison and Louis W Wright.—Dr Jesse O Arnold, Philadelphia, addressed the Fayette County Medical Society, Uniontown, August 1 on Heat Therapy—Indications and Methods of Application.—Dr Henry Harold Gelfand, New York, addressed the Wayne County Medical Society, Honesdale, July 18, on "Hay Fever Present-Day Concepts, Diagnosis and Treatment."

Philadelphia

Children Immunized—Approximately 9,000 children under 6 years old were immunized against diphtheria in a campaign sponsored by the Philadelphia Department of Public Health, June 3-21. Alum-precipitated toxoid in one dose was used. It is estimated that 50 per cent of the children under school age and 75 per cent of the school children have now been immunized. In the last ten years the death rate from diphtheria in Philadelphia has been reduced from 1610 per hundred thousand of population to 109.

SOUTH CAROLINA

Society News—Dr Carlos I Green, Orangeburg, addressed the Edisto Medical Society, June 6, on "Differential Diagnosis of Appendicitis, Salpingitis and Pyelitis"—Drs Walter J Bristol and Benjamin Rubinowitz, Columbia, addressed the Columbia Medical Society, June 10, on the hard of hearing and diagnosis of anorectal diseases, respectively

Personal—Drs Nathaniel B Heyward, Columbia, and John C Caldwell, Chester have been reappointed to the state board of medical examiners for four year terms—About 500 persons attended a reception in honor of the eightieth birthday of Dr Henry Boardman Stewart at his home near Fountain Inn, July 21 Dr Stewart graduated from Emory University School of Medicine, Atlanta, in 1879 and has practiced in the community surrounding his home for fifty-six years

WEST VIRGINIA

Reorganization of Medical School—The West Virginia University School of Medicine, Morgantown which was disapproved by the Council on Medical Education and Hospitals of the American Medical Association in February without prejudice to the students enrolled, is undergoing a complete reorganization Plans are largely matured and are being carried out as rapidly as possible in an attempt to maintain a school of small size and high standards

GENERAL

News of Epidemics—Seven cases of diphtheria were reported from the village of Toland, Pa., July 31—Nearly 400 members of a Civilian Conservation Corps camp near Clinton, Conn., were quarantined, July 30 when a case of scarlet fever was found in the barracks—Thirty-two army officers became ill of food poisoning, August 10 after eating cream pie left over from the day before, at Fort Knox, Ky

Change in Examination Date—The American Board of Ophthalmology has canceled its examination that was to have been held in Cincinnati, September 17 because of a conflict in dates and announces that the examination will be held in St. Louis, November 18, at the time of the meeting of the Southern Medical Association Applications must be filed sixty days before the meeting with the secretary, Dr William H Wilder, 122 South Michigan Avenue, Chicago

Society News—The Mississippi Valley Medical Society, including the states of Iowa, Missouri and Illinois, will hold its first annual session in Quincy, Ill., October 2-4 The plan to organize the society was approved by the Adams County Medical Society and the Marion-Ralls County Medical Society and formal organization took place, April 8, in Quincy Speakers at the coming session include Drs Isaac A Abt Chicago, William Wayne Babcock, Philadelphia, Hugh Cabot and William C MacCarty, Rochester, Minn and Albert Soland Los Angeles In addition, a clinical lecture course will be conducted during the three days

Sydenstricker Made Scientific Director of Milbank Fund—Edgar Sydenstricker, statistician of the U S Public Service and for several years director of research for the Milbank Fund, has been appointed scientific director for the Milbank Fund He will be in charge of the scientific work. Mr Sydenstricker was born in China in 1881 and came to the United States in 1896 He was educated at Washington and Lee University, Johns Hopkins and the University of Chicago From 1908 to 1915 he served as special investigator in charge of industrial community studies for the U S Immigration Commission and the U S Commission on Industrial Relations In 1915 he was appointed statistician to the U S Public Health Service and has been statistical consultant since 1928, when he was appointed director of research for the Milbank Fund In the year 1923-1924 Mr Sydenstricker served as chief of the service of epidemiologic intelligence and public health statistics for the League of Nations, helping to initiate the statistical work of the International Health Organization.

Medical Bills in Congress—*Changes in Status* S 2047, providing for the general welfare of the Indians of the state of Oklahoma, has been reported to the Senate (Senate Rept. 1232) This bill among other things proposes to authorize the erection of additional hospitals for the protection of the health of the Indians of Oklahoma S 3334 has been reported to the Senate, providing for the care and treatment of members of the National Guard, Organized Reserves Reserve Officers Training Corps and Citizens' Military Training Camps who are injured or contract disease while engaged in military training (Senate Rept 1231) H R 4513 has passed the Senate,

authorizing payment of claims for unauthorized emergency treatment rendered to World War veterans *Bills Introduced* H R 9104, introduced (by request) by Representative Rankin, Mississippi, proposes to establish a permanent medical service in the Veterans' Administration H R 9116, introduced by Representative Rankin, Mississippi, proposes to extend the provisions of veterans' laws and regulations to persons who served in Russia during the World War, and their dependents.

Poliomyelitis Outbreaks—Troops of the National Guard of the District of Columbia and Virginia have been barred from training in Maryland and Pennsylvania because of the outbreak of infantile paralysis in their home areas, according to newspaper reports, August 13 and 12, respectively In Virginia, twelve new cases reported to the state health department, August 13, brought the total since July 1 to 391 In North Carolina, where the outbreak seems to have originated, 534 cases of the disease have been reported since the first of the year During the week end of August 10, 133 new cases of infantile paralysis had been reported to the New York City Health Department Although this is the largest number of any week since the epidemic of 1931, it was stated, "there is no indication that the disease is assuming epidemic proportions" Dr Leslie L Lumsden of the U S Public Health Service was in Louisville, Ky, August 12, studying twenty cases of infantile paralysis which had occurred within the past two months In Massachusetts, one death and sixteen additional cases reported during the week end of August 10 brought the total number of cases to 176

American Child Health Association Disbands—At a meeting in New York, August 13, the American Child Health Association voted to discontinue its activities The aims and purposes for which the association was formed have been in large part accomplished, Dr Samuel M Hamill, Philadelphia, president, declared in an address at the meeting, and the expenditure of large sums of money to maintain a separate organization is no longer justified Dr Philip Van Ingen, New York, secretary, pointed out in a letter sent to members that there are now few organizations interested in health or the fighting of disease in whose programs the child does not occupy a prominent place The association was formed in 1923 by a merger of the American Child Hygiene Association and the Child Health Organization of America. Former President Herbert Hoover was president, and vice presidents were Drs. L Emmett Holt Jr, Baltimore, Livingston Farrand, Ithaca, N Y, and Thomas D Wood, New York Mr Hoover directed the policies until he went to the White House and has since been honorary president Dr Samuel J Crumline, New York, has been general executive since 1925

Malpractice Suits Delayed by Patient's Minority, a Remedy—The New York Law Revision Commission has under consideration the advisability of recommending that the New York legislature abolish the rule that permits a person to sue at any time before he is 22 years old for damages for alleged malpractice that occurred at any time during his minority If New York abolishes this rule, it will be easier for other states in which it prevails to do so Concrete evidence of the injustice arising out of the rule will make it easier to procure its abolition Prof Victor Levine professor of law, Syracuse University College of Law, Syracuse, N Y, who has been asked by the New York Law Revision Commission to draft a proposed revision of the New York statute of limitations, requests therefore that physicians report to him cases of which they have knowledge in which suits based on alleged malpractice inflicted on minors have been unreasonably postponed, to the detriment of physicians Doubtless many such cases have been settled out of court or decided in trial courts, without appeal of which Professor Levine cannot learn except as physicians who have knowledge of the circumstances report them to him

Death Rates in Large Cities—The New York City Department of Health has compiled the death rates for 1934 of twenty-eight large cities in the United States with a combined population of 27,417,026 giving comparative figures for various causes of death The crude death rate for all the cities was 11.42, as compared with 10.95 in 1933 Milwaukee had the lowest death rate, 8.16 per thousand of population, Detroit came second with 8.79 Washington D C, had the highest rate 16.72 Chicago had the lowest infant mortality rate among the five largest cities, 47.7 per thousand live births, San Francisco's, 33.2 was the lowest among the twenty-eight cities, that of New Orleans, 87.1 the highest Milwaukee also led with the lowest death rate from automobile accidents 13.7 per hundred thousand of population and New York City was second, with 15.3 Cincinnati's rate 47.9, was highest among

automobile fatalities. The general birth rate calculated for all the cities was 14.81 per thousand of population, with San Francisco's the lowest, 10.43, and Washington's, 20.25 the highest. The diabetes death rate varied from 9.7 per hundred thousand in Houston to 41.5 in Boston, the general rate was 28.5. Tuberculosis rates ran from 12.1 in Minneapolis to 106.4 in New Orleans. Louisville, Ky., had the highest death rate from diphtheria, 9 per hundred thousand and San Francisco the lowest, 0.1.

FOREIGN

British Medical Election—At the annual representative meeting of the British Medical Association in London July 19 Sir James W. Barrett, Melbourne, Australia, was elected president of the association for 1935-1936 to take the place of the late Sir Richard R. Stawell, Melbourne. Sir E. Farquhar Buzzard, regius professor of medicine, University of Oxford, was elected president for 1936-1937. The scientific session will be held in Melbourne, beginning September 10.

Personal—Dr. Edward Mellanby, secretary of the Medical Research Council of England has been appointed Fullerian professor of physiology at the Royal Institution.—Dr. Karl F. Wenckebach, Vienna recently received the Karl Ludwig medal presented by the German Society for the Study of the Circulation.—Dr. Arthur Salusbury MacNalty is chief medical officer of the British Ministry of Health and of the Board of Education, succeeding Sir George Newman, who retired in March.

Exposition of Medical Books—During the month of October there will be an exposition of medical books in Bologna, Italy, under the auspices of the city in connection with a number of medical congresses to be held there. The exposition will be in two parts, ancient books up to the seventeenth century and modern books published since the war. All publishing houses in the world are invited to send their books, which must arrive in Bologna before September 10. The committee on the exposition has its headquarters in the Palazzo d'Accursio, Bologna.

Government Services

New Hospital Beds for Veterans

More than 11,000 new hospital and domiciliary accommodations are to be provided for veterans at a cost of approximately \$20,000,000 under the terms of the Deficiency Appropriation Bill, which became a law August 12. Of this number about 8,800 are new and the remainder replacement of existing unsuitable facilities. Nearly 7,000 of the additional accommodations will be for veterans suffering from mental disorders. The Veterans' Administration issued the following list of projects and their estimated costs:

Tuskegee, Ala.	350 neuropsychiatric	\$300,000
Whipple, Ariz.	300 replacements, tuberculosis,	\$676,000
Los Angeles	150 neuropsychiatric	400 domiciliary (350 replacements), \$835,000
Livermore, Calif.	30 tuberculosis	\$75,000
Fort Lyon, Colorado	296 neuropsychiatric,	\$345,000
Newington, Conn.	administration building	35 general medical \$80,000
Bay Pines, Fla.	administration building	290 general medical 400 domiciliary \$1,185,000
Lake City, Fla.	80 general medical	\$150,000
Atlanta	80 general medical	\$180,000
Marion, Ind.	134 replacements neuropsychiatric	\$400,000
Knoxville, Iowa	300 neuropsychiatric (new boiler plant)	\$725,000
Lexington, Ky.	306 neuropsychiatric,	\$600,000
Alexandria, La.	100 general medical	\$100,000
Togus, Maine	350 replacements, domiciliary	\$350,000
Perry Point, Md.	164 neuropsychiatric	\$300,000
Bedford, Mass.	328 neuropsychiatric,	\$600,000
Northampton, Mass.	200 neuropsychiatric	\$250,000
Custer, Mich.	164 neuropsychiatric	\$300,000
St. Cloud, Minn.	328 neuropsychiatric	\$600,000
Biloxi, Miss.	350 domiciliary	\$400,000
Gulfport, Miss.	164 neuropsychiatric	\$300,000
Jefferson Barracks, Mo.	50 general medical beds and other buildings	\$195,000
Lyons, N. J.	628 neuropsychiatric	\$1,200,000
Batavia, N. Y.	administration building and	35 general medical \$80,000
Canandaigua, N. Y.	639 neuropsychiatric	\$1,200,000
Northport, N. Y.	800 neuropsychiatric	\$1,500,000
Chillicothe, Ohio	328 neuropsychiatric,	\$600,000
Dayton, Ohio	176 general medical and 750 domiciliary (700 replacements),	\$1,210,000
Roseburg, Ore.	350 domiciliary converted to neuropsychiatric	\$100,000
Coatesville, Pa.	314 neuropsychiatric	\$600,000
Columbia, S. C.	405 general medical	\$430,000
Hot Springs, S. D.	100 general medical	\$170,000
Waco, Texas	164 neuropsychiatric	\$300,000
Hampton, Va.	500 general medical replacements	\$750,000
Roanoke, Va.	492 neuropsychiatric	\$900,000
Milwaukee	300 replacements	\$350,000
Wisconsin site undetermined	236 neuropsychiatric	\$944,000
Cheyenne, Wyo.	125 tuberculosis 125 general medical	\$750,000

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 27, 1935

Report of British Medical Association on Immunization

More than a year ago, the British Medical Association appointed a committee consisting mainly of health officers and pathologists to prepare a scheme for informing the public regarding the protection afforded by the various methods now available of immunization against diseases. The committee's report has now been published. It deals with the diseases against which specific immunization may be widely applied—diphtheria, scarlet fever, measles, the typhoids and smallpox.

DIPHTHERIA

The committee states that diphtheria is not less prevalent than formerly but is less fatal. Isolation and sanitary measures have failed to control it, and it accounts for 3,000 deaths annually. Active immunization is confidently advocated. In children under the age of 8 years the preliminary Schick test may be omitted, since the great majority may be assumed to be susceptible but as a test of success should be performed from one to three months after the immunizing course. For children any of the preparations known as toxoid, toxoid-antitoxin mixture, toxoid-antitoxin floccules and alum toxoid may be safely used, but for adults preference is expressed for toxoid antitoxin mixture or floccules. On the average, 95 per cent of immunized persons are still Schick negative from three to five years after immunization.

SCARLET FEVER

Scarlet fever still presents difficulties in preventive medicine. The death rate has fallen remarkably, although the incidence has altered little. The Dick test is held to be very reliable. Immunization should at present be reserved for hospital staffs and children in a residential school where an outbreak has occurred. Two methods of immunization are used. 1. In England most workers use weekly or fortnightly injections of 500, 1,000, 5,000, 10,000 and 20,000 skin test doses. 2. In recent years the tendency has been to use a higher dose. In the United States the Dicks and others give doses running up to 80,000 or 100,000. By slow graduation of dose, reactions may be almost entirely avoided. Probably from 2 to 10 per cent of the immunized revert to the Dick-positive state within a year.

MEASLES

Passive immunity to measles can be produced by the use of convalescent serum or blood and by adult serum or blood. It may be used for postponing the danger of infection to a more opportune time or for mitigating the attack. Convalescent serum is the material of choice and should be given in the first five days after exposure for complete protection. Administration between the fifth and ninth days, or half dosage during the first five days, is used for modifying an attack.

TYPHOID

The work of Wright and Leishman during the war resulted in the production of a typhoid vaccine widely and successfully used. In the years that have followed, modifications have been introduced into the technique of manufacture. Saline suspensions have replaced broth emulsions. Work in the department of pathology at the Army Medical College has resulted in the production of a vaccine containing 1,000 million B. typhosus, 750 million each of B. paratyphosus A and B. paratyphosus B in 1 cc. of 0.5 per cent phenolated saline solution. Adults are given 0.5 cc. followed after ten days by 1 cc. Children between 12 and 15 are given half the dose and younger children one

fourth. Reactions are minimized by giving inoculations subcutaneously before the patient goes to bed and by avoiding alcohol

SMALLPOX

In this country vaccination against smallpox has greatly declined. Exemptions are so easily obtained that their percentage has risen from 5 in 1898 to 47.5 in 1932. On the other hand, only variola minor has been prevalent, with a mortality of only 3 per thousand. The committee holds that the retention of the present vaccination acts, from which exemption is so easily obtained, serves no useful purpose and only arouses opposition to other forms of vaccination. The practice officially recommended to public vaccinators (since 1929 because of the occurrence of vaccination encephalitis) of making only one insertion, instead of the previous four, is likely to result in an earlier loss of immunity

CONCLUSION

It is extremely unlikely that immunization against each disease, as it becomes practicable, can be made compulsory in this country. The proper course is to inform the public as to what can be achieved by immunization, that it is the controlled application, with infinitesimal risk, of a process that is going on continuously in a haphazard fashion, leaving behind a trail of suffering and death

Rockefeller Scholars in the United States

The Medical Research Council, on behalf of the Rockefeller Foundation of New York, has made the following award of fellowships tenable in the United States: D. F. Anderson, professor of midwifery and gynecology, Anderson College of Medicine, Glasgow; N. R. Barrett, demonstrator of anatomy and chief assistant to the surgical unit, St. Thomas's Hospital; A. C. P. Campbell, clinical tutor in medicine, Royal Infirmary, Edinburgh; and assistant lecturer in the department of pathology, Edinburgh University; D. H. K. Lee, Sharpey scholar in the department of physiology at University College, London; J. E. A. O'Connell, demonstrator of anatomy, St. Bartholomew's Hospital Medical School; Robert Walmsley, assistant in anatomy, University of Edinburgh.

The Diabetic Association: A Holiday for Diabetic Children

In a previous letter the formation of the Diabetic Association under the presidency of H. G. Wells, the writer, was reported. The association consists of patients with diabetes who have united in order to assist one another with their various experiences and to promote the interests of sufferers from the disease. Its latest activity is the provision of a holiday for diabetic children, a thing peculiarly difficult and in the case of those whose parents are not in comfortable circumstances practically impossible. The Diabetic Association is planning to take a number of children to the country for August. A suitable home has been found in pleasant country about an hour's journey from London and a number of helpers have volunteered their services. A skilled dietitian will be in attendance and a trained nursing staff will administer the treatment under medical supervision. Parents in a position to contribute to the scheme will be expected to do so, but not others.

Immunization Against Influenza

At the congress of the Royal Sanitary Institute, Prof. W. C. Topley, who occupies the chair of bacteriology and immunology at the London School of Tropical Medicine and Hygiene, said that two strains of influenza virus were being propagated in ferrets and mice and that before long it would be possible to immunize effectively against the disease. This would be one of the major victories of preventive medicine. He said that vaccination against a virus disease tended to be far more effective than vaccination against a bacterial disease.

PARIS

(From Our Regular Correspondent)

July 12, 1935

Unusual Intestinal Infarcts

At the Dec. 19, 1934, meeting of the Société de chirurgie, Raymond Grégoire reported a case of infarct of the small intestine in which the etiology was obscure. Moulouguet was the first to direct attention to a type of infarct in which the mesenteric vessels are not occluded and which he termed "inexplicable infarct." In all, fifteen such cases have been reported. Grégoire's patient was a man 62 years of age who was taken suddenly ill with symptoms of intestinal obstruction. When first seen by Grégoire, the clinical picture was that of shock. The temperature was subnormal, the pulse was almost imperceptible, the extremities were cold, the superficial veins of the legs were distended, and the nails and hands were cyanosed.

On operation, 20 cm. of the lower ileum was found distended, black in some places and greenish in others, with yellowish free fluid in the peritoneal cavity. It was impossible to feel any pulsation in the larger or smaller mesenteric arteries. The veins were distended with dark noncoagulated blood. On account of the patient's poor general condition, resection was deemed inadvisable. A hypodermic injection of 1 mg. of epinephrine was given and immediately the loop of intestine (6 feet long) changed from black to red, the intensity of which color increased after some warm saline solution was poured over the exposed loop of ileum. The radial pulse immediately became perceptible, and the now quite well vascularized loop was replaced and the parietal incision was closed. Uneventful convalescence followed. Grégoire asks what this strange disease can be which gives rise so suddenly to such grave symptoms and yet subsides with equal rapidity.

There is in these cases the same clinical picture of anaphylactic shock that one observes in animals. Laubry and Franck maintain that the veins and capillaries of the body form a sort of peripheral motor force, which has its insufficiencies or asystoles the same as does the central motor, or heart, in distributing the blood throughout the body.

Such an asystole of the "peripheral heart" is seen in all severe intestinal infections such as typhoid or cholera, in peritonitis, in acute adrenal insufficiency and in severe nervous or toxic shock. Lumière stated that such a stasis of the capillovenous system is at its maximum in anaphylactic shock. Richet, Faure-Beaulieu and Villaret have observed in animals the distention of the abdominal vessels, especially the portal system. Such a stasis is greatly ameliorated by the administration of epinephrine.

Grégoire believes that such cases as his own can be best explained as being due to some form of anaphylactic shock. Clinically they are characterized by sudden pain, fall in blood pressure, abdominal stasis and hemorrhage from one or several of the viscera. One observes infarcts of the uterus, tubes, ovaries and pancreas to which a similar explanation of anaphylactic shock may be applied.

At the May 1 meeting of the same society, Grégoire and Binet (professor of physiology) reported the results of their work on dogs in attempting to reproduce experimentally an intestinal infarct of the type encountered clinically by Grégoire. Local anesthesia of the abdominal wall was employed instead of a general anesthetic. In the first series a generalized anaphylaxis was produced by injecting from 10 to 15 cc. of horse serum over a period of at least four weeks. A coil of small intestine was brought into the incision and a solution of heterogenous albumin was injected into the mesenteric vessels. The injections into the veins, against the vascular current, were without effect, but those into the veins were followed by a spasm of the vessels, lasting from 30 to 40 seconds but

without the production of an infarct. Injections into the wall of the coil of intestine were followed by the appearance of a round or ringlike plaque dark blue and rising slightly above the level of the adjacent serosa. In a second series an attempt was made to reproduce the Arthus phenomenon. Injections into the mesenteric vessels failed to yield any information but those into the intestinal wall were markedly positive. In animals that had not been prepared, four injections of 2 cc each of horse serum were injected on the anterior and posterior surfaces of the intestine. Eight days later the same coil was isolated and the same technic employed. This was repeated after another eight day interval and was followed by the symptoms of a generalized anaphylaxis. Locally the mesenteric arteries ceased to pulsate and the veins became distended with dark blood. Simultaneously the coil of intestine assumed a violet color and in places became black. Only two or three minutes elapsed between the time the generalized symptoms of anaphylactic shock and the signs of an intestinal infarct appeared. The authors believe that among the causes of "unexplained infarcts" such as Gregoire observed clinically there are a certain number which are due to anaphylactic shock, as their second series of experiments demonstrated. One should suspect such an etiology of intestinal infarct when the symptoms of collapse are the principal feature at the onset. At operation one finds but little mesenteric infiltration and mesenteric vessels that are not occluded. How should one treat such cases? If the vitality of the coil that presents signs of an infarction is still good and if the infarction does not involve too many coils and is recent, every effort should be made to combat the generalized anaphylaxis. It will be recalled that the local evidences of infarction receded rapidly during the operation in Gregoire's case, following the subcutaneous administration of epinephrine. If the exposed coils of intestine do not change in color in spite of all treatment directed against the generalized anaphylaxis, one will be forced to choose between exteriorization and resection of the infarcted portion of the exposed intestine.

Modified Schafer Method of Artificial Respiration

The defects of the Schafer method in cases of asphyxia are pointed out in a paper by Professor Hederer of the French Naval School at Toulon read at the May 14 meeting of the Academie de medecine. The method suggested must be carried out by two persons instead of one, which is its only disadvantage

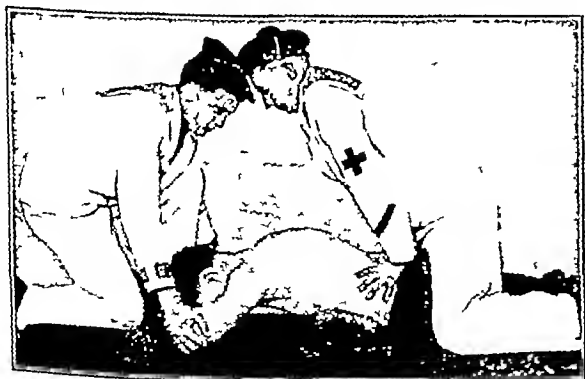


Fig 1—Expiration. One assistant exerts pressure over the lower ribs as in the classic Schafer method. The second assistant grasps both elbows preparatory to making respiratory efforts as shown in figure 2.

over the Schafer method, obligatory in France since 1927. In the latter method the individual to whom artificial respiration is being applied lies face downward with the head turned to one side. By compression of the lower ribs during expiration an attempt is made to stimulate the diaphragmatic reflex. The criticism which Hederer makes of the Schafer method is that the volume of air entering and leaving the lungs is only about

100 to 150 cc, as compared to the normal volume of 500 cc and one of 250 to 280 cc when the Silvester method is used. Another criticism is that the pulmonary circulation is stimulated much less with the Schafer than with the Silvester method. These criticisms are based on laboratory studies in which the two methods were compared. Hederer suggests a method of artificial respiration combining, from a physiologic point of view, the advantages of the Silvester method with the prefer-

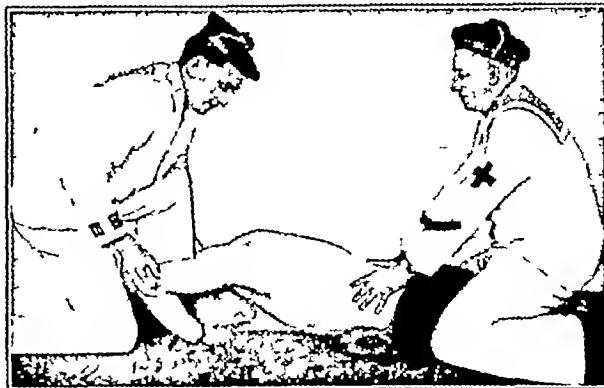


Fig 2—Inspiration. As soon as the compression of the lower part of the thorax has been completed by the first assistant, the arms are pulled upward and brought together in the median line by the second assistant in order to imitate normal inspiration.

able posture of the Schafer method. With the asphyxiated or drowned person in the prone position, one assistant exerts pressure on the last ribs with the fingers of both hands, the thumbs resting near the median line of the back. At regular intervals (Schafer method) expiratory efforts are imitated by pressure on the lower part of the thorax (fig 1). The second assistant, kneeling at the head of the person to be resuscitated, grasps both elbows and pulls the arms upward without changing the position of the head and hands of the subject. Thus inspiratory and expiratory movements are alternately imparted to the thorax by the two assistants (fig 2). The volume of air rises from 100 to 150 cc. to 250 to 280 cc. and the intra-cardiac pressure is greatly increased. It is as easy to teach this method as to teach the Schafer method alone.

Ulcer of Meckel's Diverticulum Diagnosed Before Operation

At the April 10 meeting of the Societe de chirurgie, two cases were reported, one by Deton and one by Huard, in which a preoperative diagnosis of peptic ulcer of Meckel's diverticulum was made and confirmed on examination of the specimen. Deton's patient, a youth of 18, had been operated on for appendicitis thirteen months previously by another surgeon. When seen by Deton the chief complaint was pain in the right iliac region and diarrhea. Roentgen examination of the colon about three months later did not reveal anything except a pericecal inflammation. The pain did not subside but seemed to appear about an hour and a half after eating and subsided following the next meal. Severe intestinal hemorrhages then occurred and a diagnosis of ulcer of Meckel's diverticulum was made. At operation a mass the size of a cherry was found on the upper surface of the ileum close to the mesentery and about 60 cm from the cecum. The coil of ileum with the diverticulum was resected. The specimen showed an epithelial lining of the gastric type and a round ulcer with indurated edges at the junction of the epithelial lining of the diverticulum and that of the ileum. Recovery was uneventful.

Huard was called to see a boy, aged 11 years, who had been taken suddenly ill with colicky abdominal pain and the history of having had several bowel movements containing clots and bright red blood. Palpation revealed slight tenderness a little to the right of the umbilicus. On account of the sudden severe

intestinal hemorrhage without accompanying symptoms, Huard made a diagnosis of bleeding peptic ulcer in a Meckel's diverticulum. Immediate laparotomy revealed a diverticulum the size of an adult thumb, which was resected. An epithelial lining thick and thrown into folds resembling that of the stomach was found. Near the base of the diverticulum was a large ulcer on the floor of which one could see a clot, which, on being detached, was seen to cover an open arteriole, from which the bleeding had its source.

Mondor in the discussion reported having been able to find 120 cases of ulcer of Meckel's diverticulum. Sudden intestinal hemorrhages with or without signs of perforation should always lead one to suspect, especially in children, an ulcer of a Meckel's diverticulum.

BERLIN

(From Our Regular Correspondent)

June 24, 1935

The German Roentgen Society

The Deutsche Röntgen-Gesellschaft convened in Berlin in April, under the chairmanship of Professor Frik of Berlin and Professor Baensch of Leipzig, to celebrate the fortieth anniversary of the discovery of roentgen rays. The chief topic was "Roentgenology of the Cranium." The Göttingen pathologist G. B. Gruber called attention to the destructive action of chordomas and meningiomas on the adjacent cranial bones, also to the important differences in the action of suprasellar and hypophyseal tumors. Stenvers of Utrecht discussed the changes in the cranial bones, due to brain tumors. Many tumors may be brought out directly in the roentgenogram. Speaking of encephalography, Flugel of Leipzig, after observations on about 1,500 patients, brought out that the method constitutes an indispensable addition to the neurologic examination. More than 10 per cent of the tumor cases had shown clinically no pathognomonic symptoms. The method may be regarded as harmless if it is used conservatively. If the technic of the exposures is suitable (five exposures in various head positions, so that the air dome moves about), a few centimeters of air (at the most, 20) applied by puncture of the cisterna will suffice. Lohr of Magdeburg discussed the changes in the arteriogram of the cranium due to brain tumors. He injected thorium dioxide sol, by way of the exposed carotid artery, into the vessels of the brain in more than 1,000 cases, without a fatality. The contrast medium disappears again completely from the brain. Olivecrona of Stockholm emphasized the importance of the roentgenogram in determining the indications and the operative treatment of brain tumors. If the clinical examination fails, one is nearly always able with the aid of ventriculography to determine the exact position of the tumor. To conclude from the roentgenogram what kind of tumor is involved is only conjecture. The procedure whereby, with a tube in motion, only the parts of a certain plane of an object may be roentgenographed, while the parts of all other layers are suppressed, was discussed. Although not new, it has only in recent years been developed to the extent of becoming practical. This method is important, for example, in the diagnosis of lung conditions.

The so-called subtraction procedure, described by Ziedses des Plantes of Utrecht, consists in preparing two roentgenograms of the same object—one before and one after a certain change, for example, of the cranium before and after arteriography, and covering the second roentgenogram with the diapositive of the first. Then everything lying outside the contrast medium is effaced, so that only the picture of the filled arteries remains the advantage being that it stands out distinctly.

K. F. Schultze of Berlin spoke on hysterosalpingography, emphasizing its importance in judging of the need and the results of operative sterilization. Roentgenography with a contrast medium reveals better the functional capacity of the

fallopian tube than actual inspection in connection with laparotomy. A contrast medium should be applied when palpable changes in the adnexa exist and when a married woman has been sterile for years.

A discussion arose on the treatment of malignant tumors with concentrated fractionated close-up radiation. The progress of high tension safety permits the construction of tubes the anticathode of which can be brought within 3 to 5 cm. of the surface of the skin, or, in the case of the vaginal tube, close up to the parametrium.

During the discussion, the results in the simpler skin cancers, which are of course most easily reached, were appraised less highly by Schinz of Zurich than in certain infiltrating inoperable and superficial epitheliomas unsuccessfully treated by other methods.

Organization of Blood Donors in Germany

The organization of blood donors is awakening great interest in Germany. The Städtischer Blutspendernachweis, established in the Rudolf Virchow-Krankenhaus in Berlin, has now 128 donors available, five of whom are women. A donor may furnish blood only once a month, and the amount furnished is restricted to 500 cc. The compensation for loss of time or earning power by reason of a transfusion is 15 marks (\$9). For purposes of general control each donor is provided with a record card the entries on which correspond with the entries recorded in the filing cabinet at the blood donors central. The blood donors central is in a position to furnish within a short time the donor required, previously examined as to blood group.

Since April 1, 1934, Leipzig also has had a blood donors central, which was created at the instance of Professor Morawitz and is under his direction. During the first year, 106 blood donors were furnished. Applicants were not accepted unless they were free from all signs of infectious disease, presented at least 80 per cent of hemoglobin and 4,500,000 erythrocytes, also a normal number of leukocytes with a normal distribution (no shift to the left and no eosinophilia), their veins had also to be adapted to blood transfusion. As Dr. Seggel of the Medizinische Klinik in Leipzig has emphasized, it was found necessary to make careful inquiries in regard to the moral reputation of applicants, since in a few donors greed predominated over moral principle, while occasionally a donor was found to be morally unsound. It is emphasized that "only donors of pure Aryan ancestry are accepted." As a rule they are either students or members of the national-socialist party. For each hundred cubic centimeters of blood (or fraction thereof) 5 marks (\$2) is paid in Leipzig. The Leipzig Krankenkassen do not hesitate to assume these charges. A large percentage of the donors are from the unemployed. In Leipzig the largest amount of blood to be supplied by a donor at one time is ordinarily 400 cc., only in an emergency may a larger quantity be taken. As a rule, if more than 400 cc. is required, two donors must be summoned. In Leipzig also no donor may be used within a month of a previous transfusion. Not only the qualities of the erythrocytes are tested but also the nature of the blood serum. In Leipzig and in Frankfurt-on-Main, donors are reexamined every three months in Berlin and in Vienna every two months. When reexamined the donor must state in writing, on his word of honor, that in the meantime neither he nor any member of his family has been affected with syphilis or other infectious disease. No examination is made immediately before the transfusion; this responsibility, as with the transfusion itself, rests on the physician in charge of the intervention. The Leipziger Krankenhaus which has undertaken the task of organizing the blood donors exacts a fee of 5 marks (\$2) to cover the general expense. During the first year of the activities of the Leipzig blood

donors' central, 420 blood transfusions were performed through its mediation. The group distribution of the 106 donors was as follows: group O, 37.7 per cent, group A, 39.6 per cent, group B, 15.1 per cent, group AB, 7.5 per cent. Of the 420 transfusions, 192, or 45.7 per cent, were performed with blood of group O, 166, or 39.5 per cent, with group A 50, or 11.9 per cent, with group B, and 12, or 2.9 per cent with group AB. Each donor supplied blood, on an average 3.96 times, each donor of group O, 4.8 times, and each donor of the AB group only 1.5 times. The cause for this differentiation does not lie in the fact that frequently unmatched blood was transfused. That occurred in only seven cases (transfusion of O blood to two patients belonging to the A group, two patients of the B group and three patients of the AB group). The donors of the O group were not examined to discover whether they were "dangerous universal donors" with a high titer of agglutinin in their blood serum. If, for some special reason, a physician desires to transfuse blood to other groups he should first convince himself that no danger is associated therewith. In Germany the certification is usually based on uniformity in the grouping of the donor and the recipient. In Paris, however, many universal donors appear to be employed. The total amount of blood involved in the 420 transfusions performed in Leipzig during the first year after the new service was established was 155,000 cc. The average amount of blood with drawn, taking all the transfusions into account was 370 cc. The 420 transfusions were received by 224 patients, 63 per cent of whom received only a single transfusion. The most transfusions (twenty one) were given in a case of panmyelophthisis, the patient, however, succumbed in spite of a total of 8,430 cc. of blood injected. Untoward incidents according to the records in the filing cabinet occurred in Leipzig in thirty cases (7.14 per cent), although the donors and recipients were properly matched. The accidents were for the most part of a mild nature, ranging from a slight to a more violent chill. In two cases the recipient developed icterus in one instance on the day of the transfusion and in another case after from eight to ten days. The causes for these manifestations were not explained. No injuries to the donors were observed in any case.

In Thuringia a group of blood donors has been organized by the Schutzstaffeln, a society formed within the ranks of the national-socialist party. There are now 210 members of this group available, their residences being widely scattered over Thuringia. The division of the blood groups corresponds to that of Leipzig, which in fact may be taken as the norm for Germany as a whole. But, in contrast with Leipzig, the dangerous universal donors of group O whose blood has an abnormally high antibody content, are eliminated by application of Coca's method. The donors in Thuringia are free from tuberculosis and syphilis and have no narcotic or alcoholic addiction. Here also blood donor centrals have been created.

Just recently the commander-in-chief of the German army issued regulations concerning the determination of blood groups in the army. It is being introduced as a routine element of the regular physical examination. For the present, all the soldiers entering military hospitals will be subjected to such a test.

The Danger of Intra-Uterine Pessaries

Recently Dr. Gesenius of the Berlin University Clinic for Women, addressed the Berlin Medical Society on the use of intra-uterine pessaries. The pessaries may be purchased without a medical prescription. Injuries and fatalities have been reported. There are several instances in which the Gräfenberg ring pessary lying in the uterus did not prevent conception. The accidents arising from the use of pessaries are so momentous that the Berlin Medical Society has decided to address a petition to the department of government having such matters

in charge, requesting that the manufacture and sale of pessaries be prohibited. The second Berlin University Clinic for Women also has reported several pregnancies (one a tubal pregnancy) during the use of the Gräfenberg pessary.

VIENNA

(From Our Regular Correspondent)

July 17, 1935

The Location of Carcinomas

The Austrian Society for the Combating of Cancer held recently its annual session. A report was presented by the Austrian representative, Dr. Goldschmidt, on the conference held in Paris to consider the creation of an international organization to combat cancer. The conference dealt also with a report issued by the city of Vienna which had been worked over by the statistical bureau of the city and placed at the disposal of the Austrian society. According to this report,

TABLE 1—Location of Fatal Tumors Occurring in Vienna in 1934

Organ Affected	Men	Women	Total
Face, skin and lips	84	71	155
Larynx, pharynx, mouth, jaws	162	19	171
Tongue	48	1	49
Thyroid, branchiogenic cancer	7	12	19
Mamma	6	233	239
Esophagus	87	11	98
Stomach	208	185	393
Colon	76	64	140
Rectum	100	76	182
Liver and biliary tract	30	69	99
Urogenital tract except uterus	95	158	253
Uterus		581	581
Remaining organs	146	90	236
Totals	1,045	1,560	2,605

2,996 fatal cases of tumor were observed in Vienna in 1934, only 2,605 of which were primary neoplasms. Table 1 shows the localization of these tumors.

In table 2, Dr. Goldschmidt shows what percentage of various tumors observed were amenable to a radical operation. Four groups of tumors are thus tabulated:

The low percentage of cases in which a radical operation appeared worth while is horrifying. Enlightenment of the people and improvement in medical diagnosis, would appear from these figures to be indispensable conditions. In regard to after-irradiation as supplementary treatment following radi-

TABLE 2—Percentage of Various Tumors Observed Amenable to a Radical Operation

Site of Tumor	No. of Tumors	No. Subjected to Radical Operation
Collum uteri	503	228 or 45.3%
Stomach	393	120 or 30.5%
Mamma (female)	233	177 or 76.0%
Rectum	182	87 or 47.8%

cal operations, it is noteworthy that, of 177 breast cancer patients operated on, only eighty-eight, or 50 per cent, received after-treatment with roentgen rays or radium. In view of these facts, the Austrian Society for the Combating of Cancer, in cooperation with the bureau of health of Vienna, and the radium center in the Vienna Municipal Hospital, has organized a depository of records of all cancer cases, which is already functioning in a satisfactory manner. The society plans to develop its activities further, so that a complete record of every patient operated on will be kept on file, in order that all necessary postoperative advice may be given. It was announced also that with the 110 mg. of radium belonging to

the society, which is used at the radium center in Professor Arzt's clinic in the Vienna General Hospital, a total of 15,685 milligram hours was given to cancer patients, last year

Purpura Haemorrhagica Following the Use of Allyl-Isopropyl-Acetyl-Carbamide

Of late, hypnotics and sedatives have shown an increased demand on the part of the public. There are a large number of drugs that are classed as "mild remedies," but that caution must be observed in the use of these remedies is shown by the histories of two cases reported by Dr. A. Vogel at a recent session of the Vienna Medical Society. He observed two similar cases in a man aged 68 and in a woman aged 70, who, following a small dose of allyl-isopropyl-acetyl-carbamide, developed symptoms of an essential thrombopenia, associated with a severe purpura of the skin and all the mucous membranes. There appeared petechiae of the skin, ecchymoses of the tongue, the gums and the buccal and the nasal mucosae, and hemorrhages of the gums and the nose, together with melena and hematuria. There was a complete absence of thrombocytes, and a prolongation of the bleeding time to from twelve to eighteen minutes. Pressure on the skin produced quickly large hematomas. The causal connection with the ingestion of allyl-isopropyl-acetyl-carbamide was particularly clear in the man. He had taken the preparation only twice within a period of five months, and both times, from two to three hours later, the same clinical and hematologic symptoms developed. It is noteworthy that both patients had taken the drug frequently without accident. There had been intervals of considerable length between the administrations, so that a poisoning may be ruled out, and an acquired idiosyncrasy—an anaphylactic condition—may be assumed. The "thrombocytolytic" action of the drug was exceedingly rapid. It happened that, shortly before the described attack, a blood examination of the woman had been made, which revealed the presence of 325,000 blood platelets. Ten hours after the ingestion of the drug, all the platelets had disappeared. The previous long use of the remedy without mishap is not in contravention of the conception that a sensitization had evidently occurred. In both patients the condition continued for three days, but, following two roentgen irradiations of the spleen, the symptoms disappeared completely, which was accompanied by a rapid rise in the number of thrombocytes and a return to normal of the bleeding time (from one to two minutes).

Operative Treatment of Fractures of Neck of Femur

On the basis of ninety-five cases of median fractures of the neck of the femur in which, at the Denk clinic, pegging operations were performed, corresponding lateral fractures have been operated on in a similar manner. At the last session of the Vienna Medical Society, five cases in which pegging had been done with excellent functional results were demonstrated by Dr. Felsenreich. The advantages are (1) early mobilization of all joints in favorable cases after from two to three weeks, complete weight-bearing capacity after six weeks, (2) simplification of the after-care, since, in simple cases, immediately after the operation, and in the more difficult cases three weeks later, all extension bandages may be omitted, (3) freedom from pain a few days after the operation, (4) shortening of the stay in the hospital from formerly ten to twelve weeks to from six to seven weeks at present. The early weight-bearing capacity of the leg, demonstrable in median fractures after from eight to twelve days, is not achievable in lateral fractures of the neck of the femur, because the nails used in these cases do not hold in the neck of the femur. The conception now controlling such cases as arise at the Denk clinic may be tersely expressed thus. The median fracture of the neck of the femur should and the lateral fracture may but need not be, operated on. All purely lateral fractures (that

is, those in which the whole lateral contour of the shaft and half of the distal trochanter region are still of one piece) are suitable for operation. Subtrochanteric fractures are not suitable for pegging, since the nail will not hold in the shattered subtrochanteric area. To be sure, as Prof. Dr. Hass emphasized, in case of mere epiphyseolysis of the head of the femur, bloodless reduction gives excellent results. In more than 100 cases of this kind, Professor Hass was able to restore to its position the detached epiphysis. That applies particularly to young patients. However, an operation will often shorten the duration of the healing process, and that is what Dr. Felsenreich wished to emphasize.

The Birthday of Professor Schnitzler

The seventieth birthday of Prof. Dr. Julius Schnitzler was recently celebrated by a large gathering of his pupils and admirers. Professor Schnitzler was compelled to retire recently because of legislation requiring university professors to be emeritized on reaching the age of 70. He is still in possession of his full bodily and mental vigor. His wit and his lively conversation are proverbial in Vienna. Born in Vienna as the son of the then eminent laryngologist Professor Schnitzler, he devoted himself in Vienna to the study of medicine and soon acquired prominence as a surgeon, being entrusted with the direction of the surgical department at the Vienna Polyclinic and later at the Franz-Josefs-Spital. His training in internal medicine under Nothnagel, and in pathologic anatomy under Weichselbaum, enabled him to make excellent diagnoses, while the surgical technique he learned from Albert gave him a prominent position. In 1904 he was appointed head of the surgical department of the Krankenhaus Wieden, where he remained more than thirty years. He was the first surgeon in "central" Europe ardently to defend the urgent appendicitis operation. He was also an advocate of the early ulcer operation. Surgery of the biliary ducts, of the lungs and of the pancreas is indebted to him for many important suggestions and methods.

Marriages

- THOMAS LUKE GLENNAN, Branchville, S. C., to Miss Margaret Howe of Bartow, Fla., June 14.
FRANCES E. DWORAK, Colorado Springs, Colo., to James Ryder, Ph.D., of New York, June 14.
FREDERICK LEE LIEBOLT, New York, to Miss Edith Eugenia Davis of Kansas City, Mo., May 17.
THOMAS BERNARD CARNEY, Kewanee, Ill., to Miss Katherine Mary Brugge of Chicago, June 29.
HAROLD F. SPENCER, Garnett, Kan., to Miss Margaret Frances Patton of Emporia, Kan., July 3.
PETER VOGEL, New York, to Miss Helen Mandelbaum of Mount Vernon, N. Y., June 6.
HAROLD G. POMAINVILLE, Pittsville, Wis., to Miss Bernice S. Nelson of Madison, June 18.
LEO H. McMAHON, Breckenridge, Minn., to Miss Alice Hartley of Staples, recently.
SAMUEL RAYMOND DEICH, Passaic, N. J., to Miss Helen Sara Geller of Paterson, July 3.
HUGH WILSON EIKENBERRY to Miss Everissa F. Waite, both of Peru, Ind., June 27.
MERWIN O. LANAM to Miss Frances Hobbie, both of Sioux Falls, S. D., May 26.
LEIF H. LOKVAM, Kenosha, Wis., to Miss Marian J. Owens of Madison, June 25.
EDWIN D. N. LUNN to Miss Lillian Robelen, both of Philadelphia, June 29.
THOMAS H. McCONNELL JR., Hutchins, Texas, to Miss Hazel Ditto, June 6.
JOHN A. PAYNE III, Sunbury, N. C., to Miss Mary Mundy, April 30.
LOUIS L. MARCUS to Miss Julia Olah, both of Toledo, Ohio, April 25.

Deaths

Joseph Palmer Sheppard * Little Rock, Ark., Vanderbilt University School of Medicine, Nashville, Tenn., 1900 at various times professor of genito-urinary diseases, clinical instructor in medicine and assistant in medicine University of Arkansas School of Medicine, at one time secretary of the state board of health, on the staff of the Baptist State Hospital formerly physician in charge of the Pulaski County Hospital, aged 60, was killed, July 21, in an automobile accident

Robert Hamilton Hutchinson Jr * New York, Columbia University College of Physicians and Surgeons, New York, 1905, associate professor of clinical oto-laryngology, New York Post-Graduate Medical School of Columbia University, fellow of the American College of Surgeons aged 56, member of the board of directors and on the staff of the Bronx Eye and Ear Infirmary, on the staff of the New York Post-Graduate Hospital, where he died, June 21, of uremia.

Wyman W Andrus, Miles City, Mont., Trinity Medical College, Toronto, Ont., Canada, 1893, member and past president of the Medical Association of Montana member and past president of the Montana State Board of Medical Examiners for ten years mayor of Miles City, formerly member of the state legislature at one time city health officer, on the staff of the Miles City Hospital, aged 76 died, June 17, of erysipelas

Blanton L Hillsman, Richmond, Va., University College of Medicine Richmond, 1898, formerly assistant professor of surgery (minor surgery and orthopedics), and clinical instructor in surgery, Medical College of Virginia, Richmond and associate in surgery, Medical College of Virginia, Richmond served during the World War surgeon of the police department of Richmond, aged 62, died, May 17, of angina pectoris

Franklin Welker * New York University of Pennsylvania Department of Medicine, Philadelphia 1894, president of the Medical Society of the County of New York, fellow of the American College of Physicians, director of medicine Lutheran Hospital, aged 68 died, July 17, at his summer home in Highland, N Y, of heart disease

John Joseph Murphy * Cambridge Mass Harvard University Medical School Boston 1913 fellow of the American College of Surgeons served during the World War, on the staff of the Cambridge City Hospital aged 49 died suddenly July 8 while on a vacation trip in North Conway N H of pulmonary hemorrhage.

Lee McKinstry Bryan, Philadelphia, Georgetown University School of Medicine, Washington D C, 1921 member of the Medical Society of the State of Pennsylvania served during the World War, on the staffs of the Misericordia, St. Vincent's and Delaware County hospitals, aged 43, died July 11, of heart disease

Robert Olin Simmons * Rome, Ga., Vanderbilt University School of Medicine, Nashville, Tenn., 1906 past president and secretary of the Floyd County Medical Society, on the staffs of the Harbin Hospital and the McCall Hospital, served during the World War, aged 51 died, June 29 of cardiovascular renal disease.

William Donnison Swan * Cambridge, Mass., Harvard University Medical School Boston, 1885 for many years medical examiner for the first district in Middlesex County, honorary president of the board of trustees of the Cambridge Hospital, aged 76, died, June 25, of chronic myocarditis and pulmonary edema

William Elmer Montgomery, Kansas City Mo University Medical College of Kansas City 1897 member of the Missouri State Medical Association also a pharmacist veteran of the Spanish-American War aged 61 died July 11 in the Menorah Hospital, of amyotrophic lateral sclerosis with bulbar paralysis

William Julian Spring, New York Columbia University College of Physicians and Surgeons New York 1925 on the staff of the New York State Psychiatric Institute and Hospital aged 32 died July 12 of shock and multiple fractures of the limbs and spine, as the result of a fall from a fifth story window

Harrison Worthington Howell, Wilmington Del Hahnemann Medical College and Hospital of Philadelphia 1896 at one time secretary of the Delaware Homeopathic Medical Society Examining Board formerly mayor of Wilmington served during the World War aged 62 died July 13 of heart disease

Frederick Rigby Barnes Jr * Fall River Mass., University of Pennsylvania School of Medicine, Philadelphia 1913 formerly medical examiner of the Third Bristol District Hospital aged 45, died, July 18, in the Union Hospital

Joseph W Smadel * Vincennes, Ind., University of Louisville (Ky) Medical Department, 1896, formerly member of the Second District Medical Society, member of the board of health, aged 64, died, June 30, in the Barnes Hospital St Louis, of cerebral hemorrhage

David A Beattie * San Jose Calif M.B., University of Toronto Faculty of Medicine 1892, and M.D. Trinity Medical College Toronto, Ont., 1892, medical missionary in China 1892-1894 fellow of the American College of Surgeons aged 66 died, May 26, of polycythemia vera

Maurice Worcester Turner, Brookline, Mass Boston University School of Medicine, 1889 formerly professor of theory and practice at his alma mater, on the staff of the New England Baptist Hospital, Boston, 1900-1916, aged 78, died, June 29, as the result of a fall

Pierre Pearl Burnside, Wichita Falls Texas, University of Texas School of Medicine Galveston 1933 member of the State Medical Association of Texas, formerly on the staff of the Wichita Falls State Hospital, aged 26 died, July 6 of subacute bacterial endocarditis

William Jeremiah Devlin, New Orleans, Tulane University of Louisiana School of Medicine New Orleans 1915 assistant professor of radiology Louisiana State University Medical Center, on the staff of the State Charity Hospital, aged 52, died, June 5

Lawrence Henry Hill * Colorado Springs, Colo Washington University School of Medicine, St Louis, 1907, on the staffs of the Beth-El Hospital, Gloeckner Sanatorium and Hospital and St. Francis Hospital, aged 50, died, June 9, of pneumonia.

John Byron Hull, Williamstown Mass Albany (N Y) Medical College, 1892, chairman of the board of health of Williamstown and school physician on the staff of the North Adams (Mass) Hospital, aged 75, died, July 3, of angina pectoris

Alexander Francis Irwin * Minneapolis University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889, McGill University Faculty of Medicine, Montreal, Quebec, Canada, 1890, aged 69, died, May 10, of coronary thrombosis

Herbert F Saunders, Arcadia, Texas Tulane University of Louisiana School of Medicine, New Orleans 1896 aged 65 died, June 14, in St. Mary's Infirmary Galveston of pneumonia following an operation for intestinal obstruction

Asahel Clarence Lambert, Charleston, W Va Eclectic Medical Institute, Cincinnati, 1909 member of the Radiological Society of North America, on the staff of the Mountain State Hospital aged 56, died, June 8 of pneumonia

John Welch Moss, Seco, Ky, University of Louisville (Ky) Medical Department, 1917 member of the Kentucky State Medical Association aged 41, on the staff of the Seco Hospital, where he died June 30 of pneumonia

James Clyde McKay, Detroit, Vanderbilt University School of Medicine Nashville, Tenn. 1914 also a chemist served during the World War, aged 42 was found dead June 21 of chronic myocarditis and nephritis

Robert Tweedie McGibbon, Saskatoon Sask, Canada University of Glasgow Medical Faculty, Glasgow, Scotland 1919 professor of anatomy, University of Saskatchewan School of Medical Sciences aged 37, died, May 14

Homer E Tuttle, Ithaca, N Y, Chicago Homeopathic Medical College, 1896, member of the Medical Society of the State of New York aged 67, on the staff of the Memorial Hospital, where he died, July 14 of uremia

Oscar H Adamson, Georgetown, Ohio, Cleveland College of Physicians and Surgeons Medical Department of the University of Wooster, 1889, formerly county health commissioner, aged 69 died, June 4, of chronic nephritis

Charles Swenson * Braham, Minn. Hamline University College of Medicine, Minneapolis, 1903, formerly county coroner medical director and owner of the Braham Hospital, aged 58 died June 2, of chronic nephritis

Aaron Jones White, Charleston W Va Tulane University of Louisiana Medical Department, New Orleans 1914 member of the West Virginia State Medical Association aged 48 died July 1 of coronary sclerosis

Ernest William Landgraf, Omaha John A Creighton Medical College Omaha 1919 instructor in surgery at his

alma mater, aged 39, on the staff of St Joseph's Hospital, where he died, June 2, of pneumonia

Jacob Harvey, Masonville, N Y, Columbia University College of Physicians and Surgeons, New York, 1900, member of the Medical Society of the State of New York, aged 60, died, May 26, of angina pectoris

John J Lence, Jonesboro, Ill, University of Louisville (Ky) Medical Department, 1892, Missouri Medical College, St. Louis, 1893, for many years county coroner, aged 66, died, June 28, of cerebral hemorrhage

Sidney Simpson, Brownsville, Ky, Hospital College of Medicine, Louisville, 1905, member of the Kentucky State Medical Association, county health officer, aged 52, died, June 2, in St Joseph's Hospital Louisville

Myer Louis Levin & Newark, N J, University of Vermont College of Medicine Burlington, 1921, member of the board of education aged 37 died June 19, in the Beth Israel Hospital, of bronchopneumonia.

Thomas Henry Remy, Ironton, Ohio, Miami Medical College, Cincinnati, 1895, member of the Ohio State Medical Association formerly county coroner, aged 68, died, June 11, of carcinoma of the stomach

William Henry Laughlin, Milltown, N B, Canada Albany (N Y) Medical College 1893 for many years mayor of Milltown, served during the World War, aged 69, died, May 25 of heart disease

Clarence Henry Burton, Mount Clemens, Mich Detroit Homeopathic College 1901 also a dentist, member of the Michigan State Medical Society, aged 57, died, July 13, in St Joseph's Hospital

Paul Reagan Leathers, Indianapolis Indiana University School of Medicine, Indianapolis, 1927 physician in the nutrition division of the city board of health, aged 43, died, June 21 of heart disease

Thomas Abraham Owens, Toledo Ohio, University of Michigan Medical School Ann Arbor, 1932 on the staff of the Mercy Hospital aged 29, was killed, June 27, in an automobile accident

Michael J Vassel, New York, Faculte française de medecine de l'Universite de St Joseph Beyrouth Syria, 1910, aged 54, died, June 22, in the Bellevue Hospital, of cardio vascular disease

Albert C Kennedy, Patricksburg, Ind, Medical College of Indiana, Indianapolis, 1898, member of the Indiana State Medical Association, Spanish-American War veteran, aged 61, died, June 12

James Elmo Simons, Bay City Texas Kentucky School of Medicine, Louisville, 1893, member of the State Medical Association of Texas aged 65 died, June 30, of angina pectoris

Leonard George Lerner, Orono Fla Hering Medical College, Chicago 1895, served during the World War aged 68, died, June 5, in a hospital at Tampa, of rattlesnake bite

Charles Haddon Shepard, Durham, N C, Leonard Medical School, Raleigh 1901, medical superintendent of the Lincoln Hospital, aged 56 died, May 15, of cerebral hemorrhage

Hubert Wallace Wilson & Twin Falls Idaho, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892 aged 64, died, June 24, of pulmonary embolism

Frank E Wilson, Brooklyn Jefferson Medical College of Philadelphia, 1882, formerly representative in Congress, aged 78, died, July 12, of chronic myocarditis and nephritis

Eugene Wiesner, Staten Island, N Y Deutsche Universität Medizinische Fakultät, Prague Czechoslovakia, 1931, aged 30, died, June 26, of acute dilatation of the heart

Richard Frank Sitar, Minneapolis, Northwestern University Medical School, Chicago 1926 member of the Minnesota State Medical Association, aged 37, died, June 20

Arthur Clifford Johnston, Wyoming Ont., Canada Queen's University Faculty of Medicine Kingston, 1907 died, May 9 of injuries received when struck by a taxi

William P Rowland, Bevier Mo St Louis Medical College, 1888 postmaster of Bevier, aged 74, died, May 5, in the De Paul Hospital St Louis, of uremia

Robert Heber Whallon, Cincinnati Bellevue Hospital Medical College New York, 1886 aged 81 died June 18, in the Longview Hospital of coronary occlusion

Willis Daniel Storer, Los Angeles, Chicago Medical College, 1888 aged 72 died June 27 in the Good Samaritan Hospital of diverticulum of the esophagus

Morris Stark, New York, Columbia University College of Physicians and Surgeons, New York 1901, aged 58, died suddenly, July 18, of cerebral hemorrhage.

John William Whitsett, Hannibal, Ohio, Western Pennsylvania Medical College, Pittsburgh, 1903, aged 59, was killed June 24, when struck by a truck

Edwin Rodelle Moorman, Highland Park Mich, Vanderbilt University School of Medicine Nashville, Tenn., 1890, aged 72, died, June 4, of cerebral hemorrhage

George L Nicklas, Platteville, Wis Hahnemann Medical College and Hospital, Chicago, 1890, aged 72, died, June 21, of influenza and bronchopneumonia

Louis Clovis Mayrand, Deschambault Que., Canada, M.B., Laval University Faculty of Medicine, Quebec 1879, and M.D. in 1880, aged 77, died, March 27

Walter Hodge Sheldon & Madison Wis Rush Medical College Chicago, 1900, aged 60, died, June 10, of septicemia incurred while treating a patient.

James J Murphy & Pontiac, Mich, Detroit College of Medicine, 1897, aged 67 died, July 7, in the Harper Hospital, Detroit, of coronary occlusion

Waterman A Vincent & Three Mile Bay, N Y College of Physicians and Surgeons Baltimore, 1882, aged 78 died July 18 of myocarditis

Walter Harris Lucas, Lakewood, Ohio, Western Reserve University Medical Department, Cleveland, 1893, aged 62, died in July of myocarditis

Georges Bigne, Ste Anne de la Perade Que., Canada School of Medicine and Surgery of Montreal, 1903, aged 58, died, June 2 of pneumonia

John Wash Simmons, Detroit University of Tennessee Medical Department, Nashville, 1893, aged 75, died, June 29 of cerebral hemorrhage.

Elijah A Lambert, Denton, Ga, Atlanta School of Medicine 1909, aged 59 died June 21, in a hospital at Dublin of cardiac insufficiency

John Herschel Lemon, New Albany Ind (licensed in Indiana in 1897), Civil War veteran aged 90, died, July 10 of prostatic infection

Garret A Van Diest, Prairie View, Kan Rush Medical College, Chicago 1899, member of the Kansas Medical Society, aged 61, died June 4

J A Hermenegilde MacKay, Beauport Que., Canada, Laval University Faculty of Medicine, Quebec, 1927, aged 34, died March 17

Joseph Alfred Desrosiers, Bic, Que. Canada Laval University Faculty of Medicine, Quebec, 1915, aged 48 died, March 8

Joseph Holzman & Boston College of Physicians and Surgeons of Chicago 1892, aged 64 died, June 3, of arteriosclerosis

Louise Eastman, Norwood, Ohio Eclectic Medical Institute, Cincinnati, 1898, aged 76 died, June 1, of carcinoma of the lung

John Gay Williams, Los Fresnos, Texas, Miami Medical College, Cincinnati, 1892, aged 66, died, June 30, of heart disease.

Thomas W Thompson, Xenia, Ill, Rush Medical College, Chicago, 1884, aged 77, died, July 5, of cerebral hemorrhage.

George Oliver Dunseth, Tulsa, Okla, Bennett Medical College, Chicago 1910, aged 57, died, May 20, of pneumonia

Edgar O Nash, Pueblo, Colo Pulte Medical College, Cincinnati, 1881, aged 82 died in June of cerebral hemorrhage.

Robert Lee Young, Eutaw Ala, Medical College of Alabama, Mobile, 1889, aged 73, died, June 15 of arteriosclerosis.

Shelby L Wise, Galena, Ohio, Columbus Medical College, 1884, aged 76 died July 6, of arteriosclerosis

Henry Wilson Brown, Haverhill, Mass, Albany (N Y) Medical College, 1889, aged 79 died, June 6

Henry Reiter & New York Baltimore University School of Medicine, 1900, aged 55, died June 14

Alexander Pollock, Yale Mich Detroit College of Medicine 1886, aged 77 died July 11

CORRECTION

Report of Death—Dr Daniel John Townsend of Lohrville, Iowa was erroneously reported to have died in THE JOURNAL, August 10, page 451

Correspondence

PREPUTIAL CALCULUS

To the Editor—To the extensive bibliography of the paper by Dr N R Ingraham Jr, Preputial Calculus, a Clinical Rarity (*THE JOURNAL*, July 13, p 106) I wish to add the case described by D Giordano (*Compendio di Chirurgia Italiana*, Turin, Unione Tipografica Editrice Torinese 2 746, 1911) which, freely translated, reads as follows. I was asked by a colleague to see a clergyman and to be ready, eventually, to perform an amputation for cancer of the glans penis. The foreskin was abnormally distended, showing bluish veins, an extreme phimosis, a muddy fluid of foul odor leaking from the narrow passage. The palpation was painful and impressive of a stony consistency about the glans penis. When the opening was cleaned and the foreskin made to slide in various directions, a whitish surface of calcareous appearance was noticed, against which the probe produced a sound like over a stone. And such it was. A dorsal incision exposed a calcareous formation, several millimeters thick, shaped as a bell encircling the entire glans penis. The same author then quotes two similar cases from Larghi and Aquapendente.

FRANCESCO RONCHESE, M D, Providence, R I

SIROIL

To the Editor—In the Bureau of Investigation department of *THE JOURNAL* of July 27 there is an article on Siroil and in this I am named as one of the directors of the Siroil Laboratories. You no doubt have been misinformed as I have absolutely no connection with that company other than my friendship for Mr Ben Kaufmann, who has been a close friend of mine since we were boys.

About four years ago Mr Kaufmann asked me persistently to try his preparation for psoriasis, and after I saw the formula I decided it could do no harm and tried it out first on small isolated lesions and later in severe cases, with very satisfactory results. Since that time, occasionally a patient went direct to their office, and if diagnosis for psoriasis had not been made they would send the patient to me for diagnosis and would pay the usual fee.

About a year ago Mr Kaufmann in a very casual manner, thinking he was doing something for me said he had put me on his Board of Directors. This I emphatically refused and dismissed the matter from my mind so was greatly surprised to read your article. I got in touch with Mr Kaufmann immediately and he promised to write to you.

Will you please publish this letter? I have practiced medicine twenty-six years and I have yet to commit my first unethical act.

R J McCLELLAN, M D Detroit.

[EDITORIAL COMMENT—The article on Siroil stated that among the directors of Siroil Laboratories Inc there are said to be Frank V Martin Dr R J McClellan and S Meisner. This statement was based on a report from a thoroughly reliable source. In addition to Dr McClellan's letter, the Bureau of Investigation also received a letter dated August 1 from Mr Ben Kaufmann the original president of the Siroil Laboratories, in which Mr Kaufmann states that he substantiates everything that Dr McClellan has outlined in his letter. Mr Kaufmann then added: At the time that I made Dr McClellan a director of this company I did so as a courtesy to him and in recognition of our life-long friendship. I certainly never realized for one moment that this action on my part might result in the embarrassment which is his as a result of my action. I deeply regret this act of mine and I am

rectifying it immediately by withdrawing Dr McClellan's name as a director of our company." It appears therefore that the statement as it appeared in *THE JOURNAL* was technically correct, as Dr McClellan obviously has had his name withdrawn as a director only since the article appeared. Dr McClellan seems to have been the innocent victim of an embarrassing "courtesy"]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

TUBERCULIN TEST

To the Editor—Of what value and reliability is the intradermal tuberculin (or purified protein derivative) test in infancy, youth and adult ages? Does it always show a positive in those who have some lesion no matter how mild e g nearly all adults? What would the test be like in active tuberculosis (lungs glands bone) what in quiescent tuberculosis what in recurrent tuberculosis?

MATTHEW KARASEK M D, Shidler Okla.

ANSWER—The intradermal tuberculin test, whether administered with old tuberculin or with purified protein derivative, is a test for sensitiveness of tissues to tuberculo-protein. Like all biologic tests it is not infallible, and yet it is probably the most reliable of all of them. So far as is known there is nothing that is taken into the human body in nature that results in sensitiveness of the tissues to tuberculo-protein but the tubercle bacillus. Both human and bovine strains of tubercle bacilli when growing in the human body result in a sensitiveness of the tissues. Therefore, when the tissues are sensitive to tuberculin it is good evidence that tubercle formation is present in some stage of its development, that is lesions of the first infection type of tuberculosis are present.

Once such foci of tuberculosis are developed and tubercle bacilli remain alive in or about them the tuberculin test continues to be positive as long as the individual lives. The careful pathologic studies of Robertson (*Am J Path* 9 711, supplement, 1933) have revealed the fact that large numbers of these foci contain living tubercle bacilli throughout the lifetime of the body. It is conceivable that in some instances bacilli are eventually destroyed or die out, after which there is no protein produced to keep up the sensitiveness of the tissues, hence the positive tuberculin reaction disappears. The tuberculin test, therefore is a test for the first infection type of tuberculosis and is diagnostic of that disease. Unfortunately the test gives no evidence as to the location, size or extent of the foci. Moreover, when reinfections develop, whether from exogenous or from endogenous sources, the sensitiveness of the tissues is usually changed little or not at all. Therefore the tuberculin test provides no evidence as to the presence or absence of the reinfection clinical type of disease. The test gives the same information regardless of whether the individual tested is an infant, youth or adult. It does not detect reinfection, clinical forms of the disease, whether acute or chronic, but since these are always preceded by the first infection type of disease, every positive tuberculin reactor regardless of age should be carefully examined by other methods to determine whether clinical forms of the disease are developing.

At one time it was believed that the test is of more value among infants and young children than in later life because it detected the infection nearer the time of its development. However, at that time it was thought that a high percentage of infected infants succumbed to clinical forms of tuberculosis, such as meningitis and miliary disease. Since the test has been administered in a routine way in large groups of infants and young children it has been learned that relatively few of those infected actually fall ill or die from the disease—that is, a high percentage of them tolerate it well and usually without the development of any significant symptoms. Indeed the disease is well tolerated throughout the period of childhood. The great destruction from tuberculosis in the human family begins about the period of adolescence and reaches its height at about the age of 25 years but continues to be a serious menace to health and life throughout the remainder of life's span. Therefore, if one is seeking clinical forms of tuberculosis, the tuberculin test is of greatest value during the period of adolescence and subsequently.

The tuberculin test is no longer positive in nearly all adults. The majority of adults in many parts of the country in the

teens and twenties have not been infected with tubercle bacilli and, therefore, react negatively to the test. As the number of open cases of tuberculosis in man and animals decreases through treatment, isolation, and so on, the greater will be the number of persons who reach adult life without sensitiveness of the tissues to tuberculin.

The tuberculin reaction in active, clinical tuberculosis of the lungs and other organs is not different from that in persons who have only the first infection type of disease, except that in some cases the individual develops such extensive disease and so much tuberculo-protein is liberated that the tissues become desensitized to some degree. Indeed, in some such patients the desensitization is so complete that it can be detected only by the administration of huge doses of tuberculin, but in such cases other phases of the examination usually clearly indicate tuberculosis. This is true also in some cases of acute clinical tuberculosis such as meningitis and miliary disease, even in the bodies of infants. In quiescent and recurrent tuberculosis, the tuberculin reaction does not necessarily change from that of the first infection manifestations, with the foregoing exceptions.

TREATMENT OF PERSISTENT ULCER AFTER BURN

To the Editor—Eight months ago I began treating a severe burn on a man aged 50. His entire back from the neck to the crest of the ilium and the dorsal surface of the left arm and forearm were involved with first, second and third degree burns. Tannic acid treatment was instituted in the usual way and healing progressed nicely for several months when infection occurred below the coagulum. Various methods of producing epithelial growth with marked success were used until at present there is an area over the left scapular region 3 by 6 inches unhealed. This area has a raised glistening surface that exudes a clear serous fluid which turns yellow after the dressings are left on for several hours. The edges are healthy showing no signs of inflammation or induration. Healing has for several weeks been at a standstill and no method of treatment seems to be of any use. I would appreciate advice in treating this area. Grafting has been tried on two occasions without success. Culture shows the exudate negative to bacteria. This red glistening surface is quite painful at times and most relief is afforded by the use of mercuriolate aqueous solution 1:5000. Please omit name.

M. D. Illinois

ANSWER—An ulcer that is the end result of an extensive burn is sometimes very obstinate in healing when epithelization from the edges ceases and skin grafting has been a failure. It may be necessary to resect the entire granulating surface. Following this radical procedure, thorough treatment of the wound should be done with moist dressings of surgical solution of chlorinated soda for three or four days before proceeding with the skin grafting. The preferable method of skin grafting is the Reverdin pinch graft.

A good technic to follow in skin grafting this type of ulcer is to plant the grafts (not full thickness) on the granulating area. Place one layer of very thin mesh gauze, such as the mesh in a gauze bandage, over the grafted ulcer. Gently press the islands with a moist sponge to fix the gauze. Anchor the gauze at the edges with zinc oxide and apply plenty of fluff gauze over this single layer of gauze. Allow the dressing to remain dry for six hours. At the end of this time begin wetting the dressing with surgical solution of chlorinated soda 0.5 per cent, keeping the dressing moist for five days, at which time the first dressing is done. In the event there is evidence of infection manifested by an elevation in temperature and purulent drainage showing through the dressing, the latter may be changed before the fifth day.

HIGH SUICIDE RATE OF CALIFORNIA

To the Editor—Under death rates in large cities (*THE JOURNAL*, Oct. 20, 1934, p. 1243) it is stated that San Francisco has the highest suicide rate. San Francisco has had this unenviable record for many years to my knowledge. A friend of mine much interested in seismology believes it is due to seismic disturbances. I have not been able to account for it on an economic basis for similar conditions prevail elsewhere. Have you an explanation?

HANS SCHROEDER, M.D., New Orleans

ANSWER—It is, of course, true that San Francisco has had an unenviable record with regard to the frequency of suicides for many years past. For example, during the five years 1925-1929 it was the leading city in the United States, with an average death rate of 38.8 per hundred thousand of population. In 1933 as the correspondent noted, it also stood first, with a rate of 37.6. Other California cities, such as Los Angeles, Oakland and San Diego also consistently show high rates. However, there is no evidence that seismic disturbances are the cause of this highly unfavorable showing. Very high rates prevail in other western cities outside the earthquake area, such as Seattle, Portland, Denver, Spokane and Omaha, Minneapolis, Kansas City and St. Louis have also a very high

mortality from suicide. Rates for the white population in some southern cities are likewise high. In contrast, certain eastern cities have suicide rates far below the average for the United States as a whole.

It is difficult to account for the striking geographic differences in the suicide rate in this country. The composition of the population undoubtedly plays a part—its age, sex, color and racial distribution. The large proportion of Teutonic inhabitants, in some of the cities mentioned, undoubtedly contributes to their high suicide rate, for Germanic peoples have long been noteworthy in this respect. This fact alone would lead one to distrust the causal effect of seismic disturbances on suicide. In Europe the highest suicide rates are found in Germany, Austria, Hungary, Poland and Czechoslovakia—countries where earthquakes are practically unknown. On the other hand earthquakes are prevalent in South American countries, and nevertheless Chile has one of the lowest suicide records in the world.

The whole phenomenon of suicide is far too complicated to be explained in so simple a way as the correspondent imagines. Many complex factors are involved—economic considerations, cultural patterns, religious beliefs, and, most important of all, psychologic attitudes that determine the mental and emotional reactions of the individual. It is almost impossible to isolate any one of these and point to it as the causal factor behind the suicide. Instead, one is generally confronted with a combination of circumstances which together serve as motivating forces.

In conclusion the correspondent is referred to Dr. Anita Mühl's interesting analysis of more than 500 suicides that occurred in San Diego, Calif., between the years 1911 and 1927. From a study of these data the author concludes that "this jumping-off place of the United States holds a death lure for individuals with regressive tendencies who have found it impossible to adjust themselves at one level or another." We agree with this view and think that it explains much of the excess in the Pacific Coast suicide rate.

DIABETIC NEURITIS

To the Editor—In answer to a query (*THE JOURNAL*, January 12, p. 140) regarding the treatment of neuritis in an overweight (190 pounds, or 86 Kg.) diabetic patient who has a persistent hyperglycemia, it was suggested that the patient be kept on a moderately high diet well balanced and that the insulin be omitted temporarily. There can be little doubt that if this advice is followed a higher blood sugar will result while it is well known that a normal or nearly normal blood sugar is essential for the relief of a diabetic neuritis. Fat diabetic patients even though the diabetes is mild are relatively resistant to insulin. Large doses affect the level of the blood sugar but little while a restriction of the total calories to approximately 15 or 20 per kilogram of body weight will decrease the blood sugar at a satisfactory rate without insulin. In view of the patient's age 78 liberal carbohydrate—approximately 150 Gm.—is advisable. With this allowance there need be no fear in gradually reducing the blood sugar to normal despite the popular but I believe erroneous belief that a hyperglycemia is advisable in elderly patients with diabetes.

GARFIELD G. DUNCAN, M.D., Philadelphia.

ANSWER—The original answer and the present query are not as mutually contradictory as they appear at first sight. The confusion has probably arisen from the desire of the first writer to be very brief. He undoubtedly meant a moderately high carbohydrate diet suited to the patient's needs, which would of course be a subcaloric diet in view of the patient's overweight.

It is generally agreed that a normal blood sugar is desirable for the relief of diabetic neuritis. However, it is not improbable that in this patient the pain is at least partly on an arteriosclerotic basis. Marked or sudden lowering of the blood sugar in the latter case may aggravate instead of relieve the distress as occurs in the arteriosclerotic heart. Omission of insulin, if possible, was probably advised not only on the foregoing basis but also on the clinical and experimental considerations that insulin itself may have some influence on the muscle of the cardiovascular system. The influence of the available carbohydrate and insulin on the heart have been recently reported.

Soskin, Samuel, Katz, L. N., Strouse, Solomon and Rubinfeld, S. H. Treatment of Elderly Diabetic Patients with Cardiovascular Disease. *Arch. Int. Med.* 51: 122 (Jan.) 1933.

Soskin, Samuel, Katz, L. N., and Frisch, Robert. Dual Nature of the Action of Insulin upon the Heart. *Ann. Int. Med.* 8: 900 (Feb.) 1935.

These papers do not state that hyperglycemia is advisable in elderly diabetic patients with cardiovascular disease. They do show that in some of these cases too great or too rapid reduction of the sugar available to the heart is followed by subjective and objective signs of cardiac distress. Since the amount of sugar in the blood is only a balance between that entering and that leaving the blood at any time, it may be readily understood that a high blood sugar level is not necessarily synonymous with a large supply of available blood sugar. The magnitude of the replenishing source and the rapidity of the exchange are important factors.

POSSIBLE OBSTRUCTION OF COMMON DUCT AFTER
CHOLECYSTECTOMY

To the Editor—An obese woman aged 43 had cholecystectomy nine years ago and seven small stones were found. She now complains of severe pain under the right breast passing around to the right shoulder blade. It lasts two or three days and is associated with great weakness, headaches, pain in the eyes, pruritus and light colored stools with diarrhea. Tenderness is present over the xiphoid process. What procedure for diagnosis and treatment would you suggest? Please omit name.

M D New York

ANSWER.—Local tenderness over the gallbladder, light colored stools, itching and the other systemic symptoms mentioned are suggestive of some obstruction of the common duct.

An icterus index and a van den Bergh test should be made during the attacks. The stool and urine should be examined for bile. Not infrequently an obstructing stone in the cystic duct is squeezed into the common duct or overlooked at the time of the operation. Small stones may pass out of the common duct with symptoms of colic but frequently they must be removed by operation.

Not all painful attacks after operation on the gallbladder are due to overlooked stones. Occasionally some obstruction of the common duct such as inflammation or perhaps spasm of the sphincter of Oddi may be present. Chronic pancreatitis may produce a constriction of the duct. A hepatitis may persist for some time after removal of the gallbladder and be the cause of such symptoms.

One should try medical treatment, including the instillation of a magnesium sulphate solution through a duodenal tube on an empty stomach. A careful regulation of the diet should be observed over a period of several weeks with an effort to spare the liver.

If there is evidence of common duct obstruction and no relief is obtained after a reasonable period of medical treatment, operation should be advised for exploration of the common duct. This may be quite difficult and should be thorough, as a small stone may easily be overlooked. The common duct should be sounded to determine the presence of a stricture if no stone is found. The results will determine the operative indications.

A chronic colitis may simulate these symptoms closely and, among a number of other possible conditions, should be looked for and treated if necessary.

ASPERGILLOSIS

To the Editor—A man aged 25 gives a history of a chronic cough with expectoration of a large amount of foul smelling greenish yellow sputum since childhood. He was susceptible to colds during childhood. He has been working steadily as a baker for the past five years with apparent good strength and not losing any weight. The physical examination is negative except for the presence of a few coarse rales over both bases of the lungs posteriorly. Positive cultures of *Aspergillus niger* were obtained. Roentgenograms showed multiple abscesses of moderate size in both bases of the lungs. There is also evidence of old healed abscesses. Treatment consisted of postural drainage, large doses of potassium iodide 120 grains (8 Gm.) daily for one month ultra violet therapy and small doses of creosote. There has been but little improvement in the roentgenograms since the beginning of the treatment. I have started neopraphenamine and bismuth therapy. What is the accepted treatment and the value of the autogenous vaccine? What is the incidence of aspergillosis? Please omit name.

M D Connecticut

ANSWER.—Pulmonary aspergillosis is rare in this country. Cases have been reported chiefly from France. The disease is found in pigeon feeders, hair sorters and sponge combers. Secondary invasion may occur in pulmonary tuberculosis. The treatment is that of pneumomycosis. In addition to the measures employed, roentgen therapy might be of advantage. It is doubtful whether autogenous vaccine has any value in this condition.

CRANIOTOMY IN FRACTURE OF SKULL

To the Editor—Please state under what conditions if any a craniotomy is indicated in the treatment of a fracture of the base of the skull. What are the usual procedures recommended for use in the treatment of this serious condition? Please omit name.

M D Mississippi

ANSWER.—Fractures of the base of the skull are usually fissures in the bone and are associated with symptoms of severe intracranial injury, such as loss of consciousness, stertorous breathing and marked shock. During the period of shock such supportive measures as elevation of the foot of the bed, application of heat and stimulants such as coffee by proctoclysis should be administered. The intravenous administration of a 20 per cent hypertonic solution of dextrose in amounts of 500 cc. or of a 50 per cent solution in amounts of 100 cc. can

be given not only to improve the condition of the patient but also to prevent or to reduce associated cerebral edema. After recovery from shock, roentgenograms of the head can be taken to determine the amount of injury. If the patient remains unconscious, intranasal feedings can be carried out, and magnesium sulphate retention enemas will tend to reduce the cerebral edema further. A chart should be kept on which hourly readings of the pulse rate, blood pressure and temperature are recorded. Lumbar puncture should be done in suitable cases to relieve intracranial pressure further and to remove any blood from the cerebrospinal fluid. Craniotomy is seldom indicated for fractures of the base of the skull unless there is evidence of intracranial bleeding due to an associated lesion that produces rupture of the meningeal vessels involving the cerebral hemispheres. Another condition that might prevail in which craniotomy would be indicated is increased intracranial pressure due to cerebral edema, under such circumstances, right subtemporal decompression could be done. As a rule, patients who suffer from fractures at the base of the skull and who do not respond to medical measures have usually sustained severe intracranial trauma and operation offers them but little.

HAZARDS OF COPPER PLATING INDUSTRY

To the Editor—Could there be any systemic effect from working in a copper plating department using the following formulas for copper plating steel: First solution sodium cyanide sodium bisulphite sodium thiosulphate and caustic flakes. Cleaning solution lump caustic tri sodium phosphate soda ash and resin. Then sulphuric acid in 10 to 15 per cent solution used in pickling the iron. This solution gives off fumes which at times become very dense like a vapor and the workers feel that they have some effect on their lungs and stomach. Please omit name.

M D Pennsylvania

ANSWER.—In this situation it is probable that the sulphuric acid constitutes more of a practical hazard to systemic disease than any of the other agents specified. Sulphuric acid has the reputation of not evaporating, but, as a result of the countless numbers of bubbles produced in the chemical processes of metal pickling, much sulphuric acid may be thrust into the atmosphere of the plating or pickling room. These acid vapors are the source of irritation in the mouth, respiratory tract and along the gastro-intestinal tract. Gastritis and ulcers of the gastro-intestinal tract are believed to be of higher frequency among plating workers, galvanizers and picklers than is true for the general work population.

Second in importance is the sodium cyanide, which, however, is not so highly toxic as has long been the belief of both the medical profession and the public. Chronic poisoning by cyanogen compounds has been questioned but by others it has been associated with nausea, loss of appetite, gastro-intestinal dysfunctions and albuminuria. Acute and severe poisoning by cyanogen gases constitutes a definite disease entity characterized by impaired respiration, marked slowing of the heart rate, lowering of temperature, dilatation of the pupils and quick loss of consciousness, associated with cyanosis of the skin. In spite of extensive applications of cyanides in industry, cases of industrial poisoning are quite rare. On this account greater significance is attached to the sulphuric acid as a more likely source of abnormalities among the workers in this copper plating department.

SEX OF FIRST BORN BABIES

To the Editor—Are there statistics as to which sex predominates among first born babies? If there are no statistics what is the accepted opinion of the best informed physicians?

COL. ONZ C. NICHOLS, Hollywood Calif

ANSWER.—There is some difference of opinion among statisticians regarding the predominance of male children in first births, but the majority seem to think that the number of boys born to primiparas is larger than in subsequent labors. Bidder (*Influence of Age on Sex of Child, Ztschr f Geburtsh u Gynäk*, 1878) said that more boys than girls are born to primiparas.

Pun. ex. (Sex Determination in Man, *Proc Cambridge Phil Soc* 1915) said the same thing.

Siegel (*Schwankungen der weiblichen Fruchtbarkeit*, Berlin, Springer 1917) found that primiparas have 1117 boys to 100 girls and multiparas 104 boys to 100 girls.

H. D. King (*Studies on Inbreeding, J Exper Zool* 1918) found that primiparous white rats had 1159 males against 1011 subsequently.

Halban-Seitz (1824), in a long discussion of the subject, with much literature cited, shows that during and after the Franco-Prussian War there was no increase in boys but, after the Great War there was a demonstrable increase in their number in Germany, so that the notion that nature tries to replace the soldiers lost in war may have some slight basis in fact.

TOXICITY OF SODIUM THIOCYANATE

To the Editor—I have had a patient on sodium sulphocyanate for about eight months. At the present time he is taking about 3 grains (0.2 Gm) every third day. He has an essential hypertension. He feels fine. The urine is normal on bimonthly examination. Is there any danger from the continued use of the drug? Please omit name.

M D Ohio

ANSWER—The usual therapeutic dose of sodium thiocyanate is from 0.5 to 1 Gm daily, in divided doses. Thus there should be no fear of intoxication from the administration of but 0.2 Gm every third day. It is distinctly dangerous to continue medication of 1 Gm daily, for the drug is slowly eliminated and cumulative effects may occur. Renal functional impairment adds greatly to the risk. The tolerance to thiocyanate salts is not uniform, in certain susceptible individuals even small amounts have been known to induce serious intoxication. In the present instance, however, there appears to be no intolerance and no appreciable renal functional impairment. Therefore continued medication with such conservative doses should be without danger.

The earliest symptoms of thiocyanate intoxication are muscular weakness, dermatitis, nausea and vomiting. With more severe intoxication slight fever, mental confusion and disorientation, delirium, convulsive seizures and coma appear in the order mentioned. The present consensus is that thiocyanate is an active vasodilator but that as a rule clinically effective doses often prove too toxic to be considered safe in hypertensive arterial disease. The query does not state whether the small amounts administered have been adequate to reduce the arterial tension and/or keep it depressed. If these amounts have proved efficacious, there appears to be a wide margin of safety in the regimen as stated.

FINGER PUNCTURE METHOD FOR SEDIMENTATION TEST

To the Editor—Have you Cutler's A Finger Puncture Method for Blood Sedimentation Tests on hand or any material on sedimentation tests?

JOHN F. CAREY, M.D., Joliet, Ill.

ANSWER—The Cutler finger puncture method for determining the sedimentation time of erythrocytes is performed as follows:

Carefully cleanse the distal phalanx of one of the fingers with alcohol, and then rub to induce hyperemia. Puncture on the palmar surface. Collect blood in the collecting tube until about half filled (0.5 cc). The tube must be clean and dry. It is filled with 3 per cent sodium citrate solution and emptied. The citrate solution clinging to the walls is sufficient to prevent clotting. From time to time the finger tip and rim of the tube must be wiped with the citrate solution to remove clotted particles, and the tube shaken. If clotting occurs the test must be repeated.

Shake the tube containing the blood to insure uniform distribution of the blood cells. Then draw blood into the sedimentation pipet. (The tubes and pipets may be obtained from the A. H. Thomas Company, Philadelphia.) The blood is drawn up to the zero mark and then kept there by attaching a spring cap to the bottom of the pipet. Place the pipet in the sedimentation rack and determine the change in velocity by observing the upper level of the column of red blood cells every five minutes for one hour. These observations are recorded on sedimentation charts. Thus a graph is traced which shows the position of the blood cell column at any period during the first hour. This technic is described in Kolmer and Boerner's *Approved Laboratory Technic*, New York, D. Appleton & Co., 1931.

TIGHT SPHINCTER ANI

To the Editor—I find that many patients who complain of constipation and flatulence have an overdeveloped and tight sphincter ani. Is forcible dilation or division under general anesthesia the procedure of choice or will the rubber or glass dilator sets accomplish the purpose in these cases? Please omit name if published.

M D California

ANSWER—An abnormally tight sphincter ani accounts for a certain number of cases of constipation and flatulence. There is another group of cases in which the mucosa in the region of the anal sphincter is inflamed and infected. The heightened irritability in this region seems to increase the normal tendency to a reversal of the gradient of forces in this part of the bowel as a result, gas and fecal material tend to remain in the region of the splenic flexure.

In a number of cases a cure can be worked by the proctologist who will carefully dilate the sphincter under anesthesia. Obviously judgment and experience are required in order not to do too much injury to the muscle fibers.

It seems probable that some relief can be obtained at times with the hard rubber dilators or with the two-bladed apparatus that can be inserted by the patient and then opened up with a screw. At least, some patients state that they have obtained relief through their own efforts at dilation.

In many cases the tight anus appears to be a manifestation or end result of an abnormally tense nervous state, and then one must fear a return of the trouble, even after the most successful operative dilation.

RECURRENT CONJUNCTIVITIS

To the Editor—A man aged 34 since June 1932 has had a bloodshot eye with associated conjunctivitis three or four times a year. An attack comes in one eye and the succeeding attack in the other eye. The condition starts subjectively as an irritation and the eye is bloodshot in four or five hours from the onset of symptoms. In the morning he notices that his eye is stuck shut with a yellowish discharge not noticed during the day at the time of an attack. His eyes are somewhat red after he has taken liquor in excess. None of the attacks have been preceded by the taking of liquor. They never affect the sight or the iris. The condition usually lasts from five days to a week. The present attack has lasted a week and a half. The patient saw an eye specialist about a year ago who said that he had slight astigmatism and gave him glasses. There is no fever or systemic disturbance at the time of an attack. A culture of the discharge from the eye showed on gram staining gram positive bacilli probably diphtheroids and a few gram positive cocci. A culture on Loeffler blood agar yielded micrococci. The patient is in good health, is married and has one normal child. He has worked in a filling station for the past two years.

M D Minnesota

ANSWER—It would appear that the patient suffers from spasmodic attacks of an acute purulent conjunctivitis, evidently of bacterial origin. The attacks are naturally self limited but the conjunctiva does not become free from organisms. It would be well to cleanse the conjunctiva with a bactericidal solution (including washing of the tear sacs) until no further organisms can be found on culture.

MECHANISM OF RELIEF OF PAIN IN ANGINA PECTORIS AFTER TOTAL ABLATION OF THYROID

To the Editor—A local physician who is the victim of angina pectoris has requested me to inquire as to the authenticity of a statement that he has seen recently in the medical literature to the effect that the total ablation of the thyroid gland for angina pectoris is of value only as it cuts the sympathetic nerve to the coronary artery. Can you tell me the source of this statement and what is your opinion on the matter?

F. H. HAGAMAN, M.D., Jackson, Miss.

ANSWER—In a recent publication (*Am. J. M. Sc.* 187:753 [June] 1934) evidence was presented by Weinstein, Davis, Berlin and Blumgart indicating that early relief of pain in a patient with angina pectoris, after total ablation of the normal thyroid gland, was due to the section of nerves during the operation. The more lasting relief of the pain was not thought to be due to the section of these nerves but rather to the diminution of the work of the heart when the basal metabolism gradually fell. The whole question is still somewhat in doubt, and in addition to the foregoing two factors there may be a further effect, namely a diminished sensitivity of the heart to epinephrine that follows the total ablation of the thyroid gland.

SINUS IN GUMS AFTER TRAUMA FROM TOOTHPICK

To the Editor—A man aged 37 while picking his teeth about two years ago ran a splinter from the toothpick into the mucous membrane just posterior to the incisor teeth. He thought he removed the splinter at the time but about two weeks following this the area became swollen and tender and a drainage started which lasted for about one month. He was then symptom free for about one year when again the area became swollen and tender and began to drain. The drainage has continued since that time and the last three weeks has become bloody in character. The patient came to me about a week ago. Examination at that time revealed a small sinus or hole about one-fourth inch posterior to the two incisors in the midline. There is no swelling or tenderness in the area and the soft tissues appear to be normal. By using a fine needle it is possible to probe the sinus which seems to extend into the maxillary bone for approximately one-fourth inch. The patient has no other complaints and examination is essentially negative except for this condition. I am enclosing a roentgenogram which will not need to be returned. I would appreciate any suggestions for diagnosis and treatment which you may give. Please omit name.

M D Nebraska

ANSWER—The case in question shows no gross bone change and one would naturally assume that the trouble is due to the toothpick, which, of course, would not show in the roentgenogram. The facts can easily be determined by raising a mucoperiosteal flap in the anterior portion of the hard palate, which will expose the territory involved. In this way the tract can be explored to its complete depth and whatever is present may be easily removed.

DYE OR LEATHER SENSITIVITY

To the Editor—Kindly inform me regarding the treatment of dermatitis due to black leather dye. I have a patient who bought a black leather strap for a wrist watch. Soon after she started to wear it her wrist became inflamed just where it was in contact with the strap. This has spread in the course of a week to a band about 4 inches wide. There is a small area about an inch in diameter on the other wrist. The inflamed skin is slightly elevated and is bright red and itches intensely. Please omit name if this letter is published.

M D Ohio

ANSWER.—The case described presents two main possibilities in diagnosis. One is that the dermatitis is due to dye sensitivity (or possibly even to leather sensitivity), as the inquirer suggests. The other possibility is that it is due to a ringworm (*Trichophyton*) infection secondary to mechanical irritation. The inflamed skin should be examined carefully for signs of fungus infections, and microscopic examinations of the scrapings made. If it is decided that it is not a fungus infection the further question of etiology could be determined by patch tests. It would appear that the most practical procedure would be to discard the leather strap and to treat the inflamed area with mild lotions and protective ointments.

This case recalls to mind the importance of dyes as irritants, especially in dye industries. In a recent bulletin issued by the U S Public Health Service (*Skin Hazards in American Industry*, Public Health Bulletin 215, October 1934) attention is called to the occurrence of dermatitis in dye manufacturing. Some 400 instances of dye dermatitis are analyzed. The authors conclude also that desensitization is not successful in these chronic cases.

USE OF PERTUSSIS VACCINE

To the Editor—In the use of Sauer's pertussis vaccine for immunization it is recommended that an equal amount be injected in each deltoid region and that each subsequent injection be given in a different site. Would you please explain why the full dosage of an injection say 2 cc should be divided 1 cc in each arm instead of 2 cc in one site, and also why a different site should be used at each subsequent injection? It seems unnecessary to make two injections when one would suffice.

M D Long Island

ANSWER.—This vaccine, used for the prevention of whooping cough, not infrequently causes a transient local reaction. It is used early in life—chiefly between the sixth month and the third year. Its particulate nature (10,000 million bacilli per cubic centimeter) is conducive to slow absorption, and the endotoxin of the vaccine often acts on the subcutaneous capillaries, so that a local induration of the skin or a subcutaneous nodule may often be palpated for a week or more. The intensity of these reactions is reduced when the three doses are given bilaterally, a different site being used for each of the weekly injections. If a 26 gage needle is used, there is scarcely any pain.

ASTHMA FROM SENSITIVITY TO COLD

To the Editor—A woman aged 40 whose general health is good and in whom the Wassermann reaction is negative apparently has an allergy to snow storms and snow. Snowstorms immediately precipitate or bring on severe asthma and air hunger. The patient becomes cyanotic. These attacks are relieved by hypodermic injections of epinephrine, atropine and morphine followed by ephedrine and amylal by mouth. I do not understand why snow precipitates these attacks unless the snowflakes bring down with them pollens or other foreign substances in the air. Do you consider it possible to determine the etiology by the use of capillary tubes? Can the patient be immunized to prevent these attacks? Please omit name.

M D Wisconsin

ANSWER.—This is a typical history of asthma caused by sensitiveness to cold. It can probably be relieved by careful alternation of heat followed by ice rubs, covering a limited area of skin. A discussion of the treatment may be found in an article entitled 'Treatment of Physical Allergy,' by W W Duke (*J Allergy* 3 408 [May] 1932).

CANCER IN ESKIMOS AND CHINESE

To the Editor—Have you any data on the incidence of cancer in general as the cause of death in the Chinese of the interior of China or of the Eskimos in their native state as compared with ours?

HANS SCROEDER M D New Orleans.

ANSWER.—No accurate data on cancer as a cause of death in the Chinese or the Eskimos are available because there are no census reports to show the population, and also no death certificates to show with any accuracy the cause of death in any given district. Physicians working in hospitals in Chinese cities report that they see many cases of cancer among the Chinese, and in a paper by Fibiger (*Ztschr f Krebsforsch* 20 148 [June] 1923), who studied the records of physicians

and hospitals in Greenland, it is shown that cancer was about as proportionally frequent in those Eskimos who came to the institutions as in a similar population elsewhere.

PHENOLPHTHALEIN WITHOUT EFFECT ON BLOOD FORMING ORGANS

To the Editor—Kindly let me know whether phenolphthalein has any effect on the blood stream or blood producing organs. Do you know of a case of agranulocytic angina or neutropenia caused by phenolphthalein?

M D, Texas

ANSWER.—Phenolphthalein has no known effect on the blood stream or the blood forming organs. No case of agranulocytic angina or neutropenia due to phenolphthalein is on record.

BURNS FROM PERMANENT WAVE MACHINE

To the Editor—In *Queries and Minor Notes* in *THE JOURNAL*, July 20 page 223 a question is asked with regard to the treatment of scalp burns from permanent wave machines. The questioner aptly states that these are becoming more frequent since a constantly larger number of women are facilitating the dressing of their more or less unruly hair with the fixation which permanent waving produces.

In undertaking to treat burns resulting from this process, one must take two things into consideration: first that usually the burns are deep (third degree) and, second, that they are frequently infected from the ever present bacteria on the scalp and hair. It is the infection that at times causes considerable trouble not only because it retards healing but because it is not infrequent to find a persistent furunculosis as a sequela on the neck and back or other parts of the body.

The routine that I carry out in treating these patients is as follows:

- 1 The area surrounding the burn is washed well with soap and water.
- 2 An adequate area is shaved around the burn.
- 3 A corrosive mercuric chloride (1:3000) compress is applied and left in place for fifteen minutes every twelve hours.
- 4 Débris is removed without causing bleeding.
- 5 The burn is dressed with a piece of gauze that has been saturated with an aqueous solution of tannic acid 5 per cent. This gauze is held in place with hairpins.
- 6 If the posterior cervical glands are affected (and this is very frequent) and the patient shows any systemic reaction (fever, leukocytosis) she is put to bed. Ice caps are placed over the inflamed cervical lymph nodes for thirty minutes at intervals of an hour.
- 7 If furunculosis develops the patient is treated with an antogenous vaccine.

LESTER HOLLANDER M D Pittsburgh

DIAGNOSIS OF APPENDICITIS

To the Editor—From the list of signs under 'Diagnosis of Appendicitis' (*THE JOURNAL* July 13, p 139) the following were omitted:

- 1 Britton's sign (*Ann Int Med*) Retraction of the right testicle while moderate pressure is made over an inflamed appendix denotes gangrene of the appendix. Retraction of the testicle is not present in the absence of gangrene and disappears after rupture of the appendix.
- 2 Hyperextension of the right thigh with leg extended and patient lying on left side. This is a modification of Cope's extension test which combines with it the mesentery pull sign of Ott.
- 3 Tap on heel. With the patient supine and the legs extended but relaxed a moderately vigorous tap on the patient's right heel will produce pain while a similar tap on the left heel does not.
- 4 Leukocytosis. The white count may be high, low or normal in any stage of appendicitis contrary to the opinion held by many surgeons.
- 5 Temperature. This is as variable as leukocytosis and sometimes as misleading when given too much consideration.
- 6 Localization of tenderness by barium sulphate enema. This increases pain by increase of pressure within the bowel and also allows palpation under fluoroscopic control.

I venture to submit these additions to an already extensive list believing that they come within the definition of Sign, 'any objective evidence of disease.'

RICHARD B STOUT M D Elkhart Ind

EFFECTS OF BELLADONNA ON CHILD

To the Editor—Regarding Effects of Belladonna on Child (*Queries and Minor Notes THE JOURNAL* July 6 p 67) may I call attention to the remarkable fact that children and especially infants are frequently but little affected by belladonna. I have seen a man atropinized by 10 minims (0.6 cc) of tincture of belladonna while his son of 8 years was not affected by the same dose.

In the pylorospasm and habitual vomiting of infants Haas uses from $\frac{1}{30}$ to $\frac{1}{15}$ grain (13 to 2.5 mg) of atropine sulphate daily and has employed up to $\frac{1}{10}$ grain (4 mg). Ochsensins gave $\frac{1}{15}$ grain (0.76 mg) daily to an infant four weeks old and $\frac{1}{30}$ grain (13 mg) to one of 3 weeks. Lundbergh gave up to $\frac{1}{30}$ grain (65 mg) daily to a child of 8 months. These men report no serious untoward effects.

On the other hand Munns, White, Brennenman and others report poisoning in infants from single doses of $\frac{1}{1000}$ to $\frac{1}{500}$ grain (0.06 to 0.04 mg) or from several such doses.

Six minims (0.36 cc.) of tincture of belladonna contains $\frac{1}{40}$ grain (0.12 mg) of total alkaloids equivalent in action approximately to $\frac{1}{40}$ grain (0.13 mg.) of atropine sulphate.

WALTER A BASTENO M D New York.

School	PASSED	Year Grad (1934)	Per Cent
Hahnemann Med College and Hospital of Philadelphia	86 5	88 7	82.8
	91 9	93 4	
	(1935)	88 3	

Kansas June Report

Dr C. H. Ewing, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held in Topeka, June 18-19, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty three candidates were examined, all of whom passed. Twelve physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine		(1934)	89.6
Loyola University School of Medicine		(1935)	88.8
Northwestern University Medical School		(1935)	87.8
Rush Medical College		(1935)	89.2
University of Kansas School of Medicine		(1931)	87.2
(1933) 85.9 86.1 (1935) 80.5 81.8 82.7, 84.1, 84.2			
84.7 85.2 85.2 85.3 85.4 85.5 85.6 85.6 85.6 85.8			
85.8 85.8, 86.2, 86.3, 86.3 86.4 86.6 87 87.1 87.2			
87.2 87.4 87.5 87.6, 87.7 87.8, 87.9 87.9, 87.9, 88			
88.1 88.1, 88.1, 88.1, 88.1 88.3, 88.4, 88.4 88.6,			
88.8 88.9 88.9, 89 89.3, 89.4 89.4 89.5 89.5 89.6			
89.7 89.8, 90 90, 90.1 90.2 90.3 90.4, 90.5 90.9			
92.3			
Harvard University Medical School		(1931)	86.4
Washington University School of Medicine		(1934)	83.1
Univ of Nebraska College of Med (1934)	85.8 88.2	(1935)	86.4
Jefferson Medical College of Philadelphia		(1934)	91.1
Univ of Pennsylvania School of Medicine (1932)	88.2	(1934)	89.1
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Rush Medical College		(1928)	Texas
University of Illinois College of Medicine		(1930)	Illinois
Indiana University School of Medicine		(1915)	Indiana
Drake University Medical Department		(1900)	Iowa
State University of Iowa College of Medicine		(1928)	Iowa
Johns Hopkins University School of Medicine		(1933)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1917)	Montana
Harvard University Medical School		(1923)	Missouri
St. Louis University School of Medicine		(1925)	Colorado
John A. Creighton Medical College		(1908)	Missouri
University of Nebraska College of Medicine		(1933)	Missouri
University of Nashville Medical Department		(1901)	Missouri
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Northwestern University Medical School		(1934)	N B M Ex
University of Minnesota Medical School		(1931)	N B M Ex
University of Nebraska College of Medicine		(1928)	N B M Ex

Book Notices

Practical Endocrinology. Symptoms and Treatment. By Max A. Goldzicher M.D. Endocrinologist Gouverneur Hospital New York. Cloth Price \$5. Pp 326 with 41 illustrations. New York & London D Appleton Century Company Inc 1935

The author presents what appears at first sight to be a plausible discussion of present knowledge of endocrinology applied to clinical medicine. The work is well arranged and fairly well written. However, much of the material does not withstand critical analysis. Many conditions are described as having an endocrinologic etiology for which there is little except a theoretical basis and often not a good theoretical basis at that. Despite this fact, the casual reader may not be aware of the extent to which pure conjecture has served as source material for this book.

The author states, for instance, that the 'function [of the parathyroid glands] with respect to calcium metabolism has been definitely established.' This will be news to the physiologists, the fact that some of the effects of parathyroid extracts on calcium distribution in tissues and body fluids are known does not constitute adequate basis for the foregoing statement. Five hormones are listed as having been 'isolated' from the anterior pituitary. "Isolation" implies separation in pure form, actually, not one of the pituitary principles has yet been obtained in a pure state. The distribution of pigment is said to be under the control of intermedin. Zondek and Krohn have shown that the extract of the pars intermedia of the pituitary, which they call intermedin, is capable of causing the expansion of chromatophores in certain species thus intermedin may control the "distribution" of pigment within the range of expansion of a single chromatophore but not in any other sense, so far as present knowledge goes. The reader is told further that growth of hair and its distribution on the body surface responds to stimulation by the anterior lobe of the pituitary. The role of the pituitary in this respect belongs in the realm of conjecture, the studies so far made on this subject are no more than suggestive.

The author claims that most of the epinephrine entering the blood stream from the adrenals is in the form of "a complex compound which is physiologically inert," it reverts to activity and becomes demonstrable only after separation from its lipid fraction." No evidence is presented for this improbable statement. Perfusion of the frog leg or rabbit ear is presented as a sensitive biologic assay method for epinephrine. Neither of these test objects is suitable for assay, as has repeatedly been demonstrated, the intestinal segment method, which is much superior, is not mentioned. Epinephrine is stated to be the physiological antagonist of insulin", this claim is certainly not supported by adequate evidence. Epinephrine, according to the author, "is looked upon as a general activator of physiological processes and a stimulator of practically all metabolic activities." This too will be important news to the physiologists. If epinephrine does all this, why bother with the other hormones to which the author has devoted the major portion of the book?

The author apparently considers that he is the discoverer of the adrenal cortical hormone, although he has never presented adequate evidence that his extract will support the lives of adrenalectomized animals beyond the maximum survival period of control animals, and the announcement of Rogoff and Stewart supported by convincing evidence, preceded his report by well over a year. The discussion of the physiology of the adrenal cortical hormone is open to severe criticism, but space does not permit detailed consideration of this section. The reader is told that choline becomes a decisive factor in the physiological peristalsis of the intestinal tract." For this statement also there is no adequate evidence.

Thus far this review has been concerned only with the preliminary section on physiology, the remainder of the book is devoted to clinical applications of this dubious information. The ease with which in many cases the author classifies the various syndromes on the basis of a single (alleged) essential glandular disturbance must be amazing to any one acquainted with the complexities of glandular interrelationships. Yet the discussions are written with such easy dogmatism as to take the reader unawares. Detailed consideration of all this material is not feasible, to those sufficiently versed in the rudiments of endocrinology to separate the reasonable from the improbable, some of the material in the section devoted to diagnosis may be useful for reference, to others it cannot be recommended. The nomenclature of the active principles of various glands and of commercial products is confused throughout the book. It is alarming, from the standpoint of rational therapeutics, to note the nature of some of the commercial preparations recommended by the author for clinical use.

The author views with some skepticism, but nevertheless with tolerance, the highly reprehensible practice of subtotal resection or denervation of the adrenals for alleged hyperfunction of these organs in the absence of actual tumor. This practice, in view of the serious hazards to life (or, if the patient survives, to health) and the small likelihood, if any, of therapeutic benefit, deserves condemnation.

Lehrbuch der Krankenernährung. Herausgegeben von Prof. Dr. C. R. Schlayer und Dr. J. Prüfer. Teil 1. Allgemeine und spezielle Diätetik. Bearbeitet von Chefarzt Dr. H. Deicher und anderen. Teil 2. Rezeptensammlung. Von Dr. J. Prüfer und anderen. Cloth. Price 8 marks each. Pp 250 with 3 illustrations. 308. Berlin and Vienna. Urban & Schwarzenberg 1935.

This textbook, written by nine authors, consists of two parts, the first dealing with general and special dietetics, the second composed of recipes and sample menus. As the practical side of the subject forms the scope of the book, theoretical considerations, familiarizing the reader with the underlying principles of scientific dietetics, have been limited to a minimum. Due consideration has been given to the principle of certain flexibility and adaptability of standard diets to individual needs. The first part of the first volume offers a concise review of the physiology of nutrition and of the composition of common food-stuffs. It also describes the general technic of preparation of meals and discusses the problem of organization of diet kitchens in hospitals and clinics. The second part of this volume is devoted to a general discussion of diets indicated in various pathologic conditions such as obesity, undernourishment, diabetes, gastro-intestinal diseases and arthritis. The second

volume also is composed of two parts the first furnishes a detailed composition of the diet under discussion, while the second consists of sample menus and cooking recipes, describing in detail various modes of preparation of meals. The book is highly practical both in plan and in treatment, and its splendid organization makes complete information readily available. Its greatest field of usefulness will probably be among dietitians, but the general practitioner will also find it useful. The only drawback from the standpoint of the American reader is a profusion of recipes not well known or popular in this country.

Physical Chemistry for Students of Biology and Medicine. By David Ingersoll Hitchcock Ph.D. Associate Professor of Physiology in the Yale University School of Medicine (With Laboratory Directions.) Second edition. Cloth. Price \$2.75. Pp. 214 with 28 illustrations. Springfield, Ill. & Baltimore: Charles C. Thomas, 1934.

This book covers the material that has been offered to medical and graduate students at Yale University for some years as a part of the work in physiology. After presenting the most fundamental aspects on the properties of gases and the laws covering them, the author follows with the logical application of these laws to liquids and solutions. In this connection, emphasis is placed on the law of mass action in solutions, the consideration of hydrogen ions, and the theories underlying the indicator and electrometric methods for the pH estimation. Adsorption and the colloidal state are treated briefly but included are membrane potentials and equilibria. A clear and brief chapter on gas equilibria in blood is followed by chapters on kinetics of enzyme action, oxidation-reduction potentials, and the transformation of energy. The new edition includes instructions for twelve laboratory experiments involving the application of the osmotic pressure to cell volume hemolysis and to colloidal solutions and the relations to pH and freezing points, indicator methods for pH estimation, experiments on the iso electric point, cataphoresis, enzyme activity, and reaction velocity. The book is well organized. The references are arranged conveniently and the more prominent authors are honored with brief biographic footnotes. Each chapter closes with a number of problems intended for the application of the principles discussed. The book is stimulating, although probably too difficult and 'too chemical' from the point of view of the majority of medical students. This valuable book might have been made more attractive to the medical student if the application of the science had been emphasized more frequently.

Epidemics and Crowd Diseases. An Introduction to the Study of Epidemiology. By Major Greenwood D.Sc. FRCP. FRS. President of the Royal Statistical Society. Cloth. Price \$5.50. Pp. 409 with 8 illustrations. New York: Macmillan Company, 1935.

This book, by one of the most distinguished English epidemiologists of our day, will be warmly welcomed by American students, who have already had a foretaste of its quality in the three Herter lectures delivered by Greenwood at Johns Hopkins University in 1931 and published in 1932. In the present volume 134 pages is devoted to general principles and methods and the remainder to special illustrations. The statistical method of treating epidemiologic data is emphasized throughout, but most of the book can be read easily and with pleasure by one not versed in the higher mathematics.

The author is refreshingly outspoken on fundamental epidemiologic problems. "We do not really know why the rate of mortality for tuberculosis has fallen as it has, we have not the least idea why scarlet fever, deadly fifty years ago, is now a relatively trivial cause of mortality" (p. 65). "Without doubt, it is idle to speak of the conquest of tuberculosis" (p. 360).

We are entitled to infer that for the scarlet fever of our generation isolation cannot be shown to have conferred any advantage in the way either of prevention of infection or of reducing mortality (p. 222). The subject of experimental epidemiology is condensed into ten pages to satisfy, as the author humorously explains, his sense of proportion. There is a particularly fine chapter on the artificial immunization of man which discusses some of the difficulties encountered in interpreting the results of inoculating large groups of the population. Three chapters on the influence respectively of nutritional, occupational and psychologic factors—which the author

prefers to call procatastic rather than predisposing causes—should be read by all sociologists. The author's point of view is shown by the following (p. 126).

More than seventy years ago Walter Bagelhot in a criticism of Charles Dickens made this comment:

He began by describing really removable evils in a style which would induce all persons however insensible to remove them if they could be has ended by describing the natural evils and hereditary pains of the present state of being in such a manner as must lead to excite discontent and repining. The result is aggravated because Mr. Dickens never ceases to hint that these evils are removable though he does not say by what means. Nothing is easier than to show the evils of anything Mr. Dickens has not infrequently spoken and what is worse he has taught a great number of parrot like imitators to speak in what really is if they knew it a tone of objection to the necessary constitution of human society."

These parrot like imitators have multiplied enormously in the last seventy years and their parrot like insistence upon research into this or that evil of modern life is sometimes a serious obstacle to real research because having no conception of the complexity of the problem of inter related group factors and a simple faith in the doctrine that what is not recorded did not happen they are apt to believe that some particular evil (noise for instance) is both easily remediable and quite new.

In the section on special illustrations, some readers will consider that a disproportionate amount of space (one fourth) is devoted to smallpox, but much can be forgiven for the sake of the amusing chapter on Edward Jenner and Charles Creighton. It is a little surprising to find typhus treated exclusively as a louse-borne disease and to read the statement that the United States "first experienced the disease" cerebrospinal fever in the period 1854-1875 (p. 311). The author's style is clear and readable and only three misprints have been noticed (pp. 42, 47, 317). One rubs one's eyes, however, to find the locution "facts published by Topley and I" (p. 313).

Verlaufsformen der Erkrankungen des Respirationssystems. Mit Anschluss der Tuberkulose. Von Prof. H. von Hoesslin Direktor der Inneren Abteilung des Oskar Ziehen Krankenhauses in Berlin-Lichtenberg. Boards. Price 4.20 marks. Pp. 150. Leipzig: Georg Thieme, 1935.

Professor von Hoesslin presents in this volume the various nontuberculous diseases of the respiratory system. A good discussion is presented on the etiology of acute and chronic bronchitis as well as the treatment of these conditions. Considerable space is given to the diagnosis of bronchial asthma, its cause in each case being sought. The types of bronchiectasis are presented with reference to etiology. In treatment, collapse therapy is given consideration and attention is called to the fact that it is not always possible to bring the disease under control in this manner. The use of neosphenamine is discussed. Tumors of the lung and pulmonary syphilis are emphasized. Throughout the book, cases are cited to illustrate various points in diagnosis and treatment. There are no illustrations and no bibliography.

An Essay on the External Use of Water. By Tobias Smollett. Edited, with introduction and notes by Claude E. Jones. Reprinted from Bulletin of the Institute of the History of Medicine Vol. III No. 1 January 1935. Boards. Price \$1. Pp. 82 with portrait. Baltimore: Johns Hopkins Press, 1935.

In his introduction to this eighteenth century classic in balneology, the editor points out that in Smollett's literary works there is a clear picture of contemporary medicine. Although he took a medical degree (in 1750), served his professional apprenticeship at Glasgow, was warranted surgeon's second mate in the British navy, and cultivated throughout life the friendship of physicians, he devoted himself to literature almost exclusively soon after receiving his medical degree. The adventures of his heroes, and his biographic vignettes, roguish satire and searching observations, are all much concerned with the state of medicine in his time. His comments on medicine include such items as the conduct of medical examinations, the grades in the professional hierarchy and the jealousies existing among their constituents, the dependence on blood letting for any and all of multitudinous ailments, the physical ordeals that try the mettle of the country practitioner, the growing distrust in medication, the avaricious and pretentious charlatan, who will scramble up two pairs of steps for a fee of six lives and who has 'cured many parties that were never diseased' the life of the surgeon's apprentice, who was little more than slave to a pecunious master and the pompous trumpery of doctors who practiced at English spas—fellows bungling in practice but equipped with all the silly accoutrements of the trade. These features and many others are presented in the editor's introduc-

tion, as well as quotations from the adventures of Peregrine Pickle, Roderick Random, Launcelot Greaves and Humphry Clinker

Interest in mineral waters during the eighteenth century was widespread. Smollett ventured into medical writing to improve his reputation. He not only followed a popular trend but discussed a mode of treatment from which he had received great benefit. Smollett's terminology is not that of his distinguished but misdirected predecessors, yet with their concepts his own have much in common. Thus, scrophulous and scorbutic ulcers are cured 'by the aspersion of common well-water,' its pressure 'supports the weakened sides of the capillaries.' The most unyielding tumor may be cured 'by letting warm water fall from a high place, *guttatim*, or drop by drop upon the parts.' The warm bath, Smollett claims, renders the rigid fibers of our body more pliable and washes away the acrid impurities lodged therein. As an habitue of the spa, and protagonist of bathing, Smollett pleads for reform in the management and sanitary arrangements of English baths, he would have the occupants sheltered from inclement weather and diseased persons segregated, and the *bagno* made architecturally pleasant. Smollett would have these salutary springs "the gift of heaven," fully protected, and their usefulness extended.

The volume is attractively bound and contains the portrait of Smollett by Nathaniel Dance. The editor's commentary is supported by references and textual notes. Students of medical history will find it a welcome addition to their libraries.

Konstitution und Tuberkulose im Kindesalter. Von Dr. Kurt Klare. Ärztlicher Direktor der Prinzregent Luitpold Kinderheilstätte Scheidegg. Paper. Price 4 marks. Pp 43 with 32 illustrations. Leipzig: Georg Thieme 1935.

This is an excellent discussion of the relationship of constitutional type to the development of tuberculosis in children. The specialist in tuberculosis now feels that the onset, type and course of a case of tuberculosis are markedly influenced not only by the infection and milieu but also by the constitutional factors. The constitution of an individual consists of a number of influences such as habitus, physiologic properties, reactions, heredity and psyche. Of all these the reaction to various stimuli, exogenous and endogenous, is most important. Two types of children are described: the hypersensitive exudative-lymphatic, and the hyposensitive asthenic type. These are discussed with case illustrations. The booklet should interest physicians engaged in the care of tuberculous children.

Community Hygiene. By Dean Franklin Smiley A.B. M.D. Medical Adviser and Professor of Hygiene in Cornell University and Adrian Gordon Gould Ph.B. M.D. Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University. Second edition. Cloth. Price \$2. Pp 369 with 91 illustrations. New York: Macmillan Company 1935.

This is a revised edition of a work originally published in 1929. In it, certain statistics have been substituted for old ones, some new material has been added, and old material rearranged. Those portions dealing with the problem of the cost of medical care and its causes have been rewritten. A discussion of the recent experience of Chicago in tracing an epidemic of amebic dysentery to defective plumbing is included. The book, in general, presents facts concerning the promotion and safeguarding of public health that are felt to be essential to the mental equipment of every college man and woman. It should make a useful textbook for the teaching of community hygiene.

Docteur Charles J. Finlay. Son centenaire (1933) sa découverte (1881). Par le Professeur Francisco Dominguez, membre d'honneur de l'Académie des sciences médicales de la Havane. Paper. Pp 302 with 8 illustrations. Paris: Librairie Louis Arnette 1935.

Written on the centenary of Finlay's birth, this biography is a sympathetic study of the man and a vigorous statement of the belief that Finlay was the real discoverer of the essential part played by the mosquito in the transmission of yellow fever. Not only does the author give credit to Finlay for originating the hypothesis but he holds that there is abundant evidence that Finlay did actual experimental transmissions of the disease as early as 1881 by mosquitoes that were unquestionably *Aedes aegypti*. Considerable space is given to the elucidation of the exact accomplishments of the American commission headed by

Dr. Walter Reed. The early works of Beaupertuy are extensively quoted and discussed, with the result that much of the glamor usually thrown around this writer is dispersed. This book will be of great value especially to students of tropical medicine and of medical history.

The Woman Asks the Doctor. By Emil Novak M.D. F.A.C.S. Associate in Gynecology Johns Hopkins Medical School. Cloth. Price \$1.50. Pp 189 with 11 illustrations. Baltimore: Williams & Wilkins Company 1935.

The author set out to write a book in such a way as to talk collectively to many women in the manner in which every physician often talks to one woman in his office. The aim has been carried out admirably, as was to be expected because of the author's extensive experience as a gynecologist. As he says, there is not a single subject discussed in the book which he has not many times explained to individual women in his consulting room. Among the chapters are some devoted to superstition and folk lore of menstruation, the cause and significance of menstruation, the glands as related to female functions, puberty, the menopause, the hygiene of pregnancy, the "safe period," sterility, leukorrhea, cancer and the sex life of women. The author does not say much about the sex life because he thinks that this subject is an individual problem which should not be discussed in a popular book. The book is written in a fascinating style with many personal touches. It should be recommended to every female, young and old, for it contains an enormous amount of useful information. Furthermore it will add to the happiness of many women who think they are inferior for one reason or another and it will induce many negligent women to seek medical advice.

A Review of Certain Aspects of a Recently Recognized Disease of the Blood (Agranulocytosis or Agranulecytic Aegria). By E. W. Adams. O.B.E. M.D. Ministry of Health Reports on Public Health and Medical Subjects No. 76. Paper. Price, 6d. Pp 21. London: His Majesty's Stationery Office 1935.

This pamphlet consists of a brief review of the entire question of agranulocytosis, including history, nomenclature, clinical observations, etiology, prognosis, diagnosis and treatment. It was prepared by the author for official use of the Ministry of Health of Great Britain. No new material is presented, but an impartial and accurate summation of the disease is made with particular reference to some of the more controversial questions, such as etiology and methods of treatment. The author accepts the amido-pyrene etiology of many cases of the disease. He deplores the confusion in terminology. Based on his review of the literature, he believes that pentnucleotide therapy is the best available. He states the total number of cases in Great Britain as twenty-two. An interesting record of one recovered patient is presented, showing the profound fall in granulocytes following the administration of a single dose of amido-pyrene. This publication probably represents a general summation of opinions concerning agranulocytosis in Great Britain.

Objective and Experimental Psychiatry. By D. Ewen Cameron M.B. Ch.B. D.P.M. Physician in Charge Reception Service Provincial Mental Hospital Brandon Manitoba. Cloth. Price \$3. Pp 271. New York: Macmillan Company 1935.

This constitutes a brief treatise on many of the most modern concepts regarding psychiatric diseases. It is written clearly and therefore is easy to comprehend. It discusses in a detailed manner experimentation and quantitation in general in relation to psychiatric and psychologic problems. The book also suggests constructive criticisms of its own thought. There is a chapter discussing the adequacy and inadequacy of the tests of intelligence. Introversion and extraversion, word association tests, conditioned reflexes and heredity are discussed concisely. A chapter on statistics has for its conclusion that its chief value is in clarifying classifications and in promoting suggestions. Blood sugar tests, ephedrine and epinephrine, basal metabolism and blood pressure studies in relation to various mental diseases are amply discussed. There is a chapter on sedimentation rate, the hemato-encephalic barrier and its relations to personality. There is a chapter on the pathology of schizophrenia, manic-depressive insanity, epilepsy, senile psychosis, arteriosclerotic psychosis, dementia paralytica and mental deficiency, with a brief review of encephalographic studies in mental diseases. There is an excellent bibliography appended after each chapter which makes the book desirable for all interested in neuropsychiatry.

Medicolegal

Assault and Battery Unlawful Practice of Medicine as Constituting—Lexchin consulted the defendant osteopath relative to a swelling on his right leg near the ankle. The osteopath punctured the swelling. Later the patient consulted other physicians and was taken to a hospital, where his ailment was diagnosed as leukemia, myelogenous type. The patient ultimately died. The plaintiff as administratrix of his estate sued the osteopath. The declaration, in one count, charged the defendant with malpractice, and, in a second count, with assault and battery, based on the contention that the osteopath, in puncturing the swelling, unlawfully practiced surgery. The trial court gave judgment for the osteopath on both counts and the plaintiff appealed to the Supreme Court of Michigan.

There was no evidence of negligence or unskilful treatment, hence the charge of malpractice was not established. With respect to the charge of assault and battery, said the court, the act of the defendant osteopath in puncturing the swelling bore no causal relation to the death of the patient. Furthermore, the court said, the count for assault and battery in puncturing the swelling "fell flat" because the patient consented to the puncture. The plaintiff contended, however, that the consent was given under a misunderstanding of the defendant's right to perform such a surgical operation and, therefore, was void. The liability of the defendant, the court pointed out, for assault and battery cannot be predicated alone on the violation, if any, of a license law, regardless of whether he possessed and exercised the skill and care ordinarily possessed and exercised by surgeons in the community. The court found no occasion to decide whether an osteopath, duly licensed as such, may practice surgery in Michigan, but did observe that the puncturing of the swelling to relieve pressure could hardly constitute a surgical operation. The judgment of the trial court for the defendant was affirmed.—*Lexchin v Mathews (Mich)*, 256 N W 825

Dental Practice Acts Dentistry Not Divisible into Professional and Business Departments—The dental practice act of Wisconsin authorizes the state board of dental examiners on its own motion to make investigations and conduct hearings "in regard to the action of any licensed dentist and dental hygienist or any person who it has reason to believe is acting or has acted in such capacity within the state." Acting under this authority, the board served notices on Painless Parrmer, Inc., and A. J. Rust, a stockholder of that corporation, ordering them to appear before the board on a certain day "to give evidence." Rust and the corporation sought to restrain the board from holding the hearing, and from an adverse decision of the trial court they appealed to the Supreme Court of Wisconsin.

The constitutionality of reasonable regulations over the dental profession has been upheld said the court. The creation of the state board of dental examiners and the conferring on them of the power of investigation and of holding hearings in certain matters specified in the statute are well within the constitutional requirements of an effective law. The legislature may enact legislation designed to accomplish the regulation of matters properly within the legislative field and may authorize an administrative commission, within valid limits, to provide rules and regulations for the administration and enforcement of the law within its expressed general purpose. This includes the right to conduct investigations and hold hearings pertinent to such purpose. The dental practice act in authorizing the board to hold hearings and to subpoena witnesses violated no constitutional rights of the plaintiffs.

The plaintiffs contended, however, that the board was without jurisdiction to hold the proposed hearing because neither of them was licensed to practice dentistry. The fact that the plaintiffs do not actually engage in the performance of dental operations is not controlling, said the court. The law contemplates regulation of the profession to such an extent as to protect the public not only against the unprofessional conduct of licensed dentists but also against other persons who, by management or some other intimate relation, are in charge of those who are practicing dentistry under a single management.

The method of operating a dental corporation, the securing of patients desiring dental treatment by licensed dentists, is a proper subject of regulation under a system which recognizes the practice as a profession. The contract for the dental work is consummated between the plaintiffs and the patient, the advertising by the corporation is also the act of the plaintiffs and in this manner they are holding themselves out as licensed dentists. In the case of *Painless Parker v Board* 216 Calif. 285, 14 P (2d) 67, the court, in answer to the contention that there is a distinction between the practice of dentistry and the purely business side of the practice, stated:

The law does not assume to divide the practice of dentistry into that kind of departments. Either one may extend into the domain of the other in respects that would make such a division impractical if not impossible. The subject is treated as a whole. If the contention of appellant be sound then the proprietor of the business may be guilty of gross misconduct in its management and violate all standards which a licensed dentist would be required to respect and stand immune from any regulatory supervision whatsoever. His employee, the licensed dentist would also be immune from discipline upon the ground that he was but a mere employee and was not responsible for his employer's misconduct whether the employer be a corporation or a natural person. On grounds of public policy such a condition could not be countenanced.

No one would dispute the right of any person to own a dental office equipment. The question most appropriate here is whether the thing owned is used for a given purpose by a person lawfully entitled to use it. Ownership is not the absolute test of the right of use.

The notices that were sent to the plaintiffs, said the court, were lacking in fulness of detail and contained no careful statement of the charges, if any, which the board had under consideration. This fact, however, constitutes no warrant for the granting of injunctive relief. If and when the plaintiffs are accused of violating the provisions of the dental practice act, they will be afforded the opportunity of demanding a proper complaint in that proceeding.

The Supreme Court therefore affirmed the order of the trial court which, in effect, dismissed the action instituted by the plaintiffs.—*Rust v State Board of Dental Examiners of Wis* (Wis) 256 N W 919

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology Cincinnati, Sept. 14-20. Dr. William P. Wherry 107 South 14th Street, Omaha, Executive Secretary.
American Association of Obstetricians Gynecologists and Abdominal Surgeons Sky Top Pa. Sept. 16-18. Dr. James R. Bloss 418 Eleventh Street, Huntington, W. Va. Acting Secretary.
American Congress of Physical Therapy, Kansas City Mo. Sept. 9-12. Dr. Nathan H. Palmer 921 Canal Street New Orleans, Secretary.
American Hospital Association, St. Louis Sept. 30-Oct. 4. Dr. Bert W. Caldwell 18 East Division Street, Chicago Executive Secretary.
American Public Health Association Milwaukee, Oct. 7-10. Dr. Reginald M. Atwater 50 West 50th Street New York, Executive Secretary.
American Roentgen Ray Society Atlantic City, N. J. Sept. 24-27. Dr. E. P. Pendergrass 3400 Spruce Street Philadelphia Secretary.
Association of Military Surgeons of the United States New York Oct. 3-5. Dr. H. L. Gilchrist Army Medical Museum Washington D. C., Secretary.
Colorado State Medical Society Estes Park September 5-7. Mr. Harvey T. Sethman 537 Republic Building Denver Executive Secretary.
Delaware Medical Society of Wilmington Oct. 8-9. Dr. William H. Speer 917 Washington Street Wilmington Secretary.
Indiana State Medical Association Gary Oct. 8-10. Mr. T. A. Hendricks 23 East Ohio Street Indianapolis Executive Secretary.
Kansas City Southwest Clinical Society Kansas City Mo. Oct. 10-12. Dr. Ralph R. Coffey 1103 Grand Avenue Kansas City Mo. Secretary.
Kentucky State Medical Association Louisville Sept. 30-Oct. 3. Dr. A. T. McCormack 532 West Main Street, Louisville Secretary.
Michigan State Medical Society Sault Ste. Marie, Sept. 23-25. Dr. Burton R. Corbus 313 Metz Building Grand Rapids Acting Secretary.
Mississippi Valley Conference on Tuberculosis Madison Wis., Sept. 12-14. Mr. A. W. Jones 613 Locust Street, St. Louis Secretary.
Ohio State Medical Association Cincinnati, Oct. 2-4. Mr. C. S. Nelson, Hartman Theatre Building Columbus Executive Secretary.
Oregon State Medical Society Gearhart, Sept. 19-21. Dr. Blair Holcomb, Stevens Building Portland Secretary.
Pennsylvania Medical Society of the State of Harrisburg Sept. 30-Oct. 3. Dr. Walter F. Donaldson 500 Penn Avenue, Pittsburgh, Secretary.
Southern Minnesota Medical Association Austin Aug. 25-26. Dr. Harold C. Haben 102 Second Avenue SW Rochester Secretary.
Utah State Medical Association, Logan, September 5-7. Dr. George A. Curtis Judge Building Salt Lake City Secretary.
Virginia Medical Society of Norfolk, Oct. 15-17. Miss A. V. Edwards 1200 East Clay Street, Richmond, Secretary.
Wisconsin State Medical Society of Milwaukee Sept. 1-20. Mr. J. C. Crownhart 119 East Washington Avenue Madison Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Digestive Diseases and Nutrition, Chicago

2: 209-274 (June) 1935

- *Intestinal Tuberculosis. Clinical Roentgenologic and Pathologic Study of Two Thousand and Eighty Six Patients Affected with Pulmonary Tuberculosis. E. Granet, New York—p 209
- Stomach Lavage Microscopy as an Aid in Diagnosis of Biliary Tract Disease. H. A. Rafsky, New York—p 214
- Clinical Interpretation of Duodenal Diverticulum. H. H. Riecker, Ann Arbor, Mich—p 217
- Mechanism of Delay in Gastric Emptying Time Caused by Anoxemia. G. Crisler, E. J. Van Lier and I. A. Wiles, Morgantown, W. Va—p 221
- *Quantitative Estimation of Enzyme Concentration in Duodenal Fluids. Practical Clinical Method. C. W. Lueders, Philadelphia—p 224
- Origin and Significance of Blood Serum Enzymes. L. A. Crandall, Jr., Chicago—p 230
- Insulin Glucose Therapy in Heart Disease. E. S. Nichol, Miami, Fla—p 236
- Acid Base Value and Assimilability of Fruit Juices. I. N. Kugelmann, New York—p 242
- *New Concept of Mènière's Disease and Its Response to Antiretentional Therapy. E. Foldes, New York—p 243
- Carcinoma of Body of Pancreas. Clinico-roentgenologic Diagnosis. M. G. Vorhaus, New York—p 248
- Diverticulum of Stomach. E. B. Freilich, G. Danielius and G. C. Coe, Chicago—p 252
- Treatment of Hemorrhage Caused by Peptic Ulcer. G. A. Hendon, Louisville, Ky—p 255
- Factors Pertinent to Reduction of Mortality in Cholecystectomy. M. Behrend, Philadelphia—p 258

Intestinal Tuberculosis—Granet believes that tuberculous enteritis is a common disease and is present in most patients with advanced pulmonary tuberculosis. In an attempt to delimit criteria that would facilitate early diagnosis and better therapeutic results, 2,086 tuberculous patients were studied clinically and pathologically. This study was limited to moderately advanced and advanced nontoxic patients with pulmonary tuberculosis. Roentgenoscopy of the gastro-intestinal tract revealed lesions in 37 per cent. Postmortem check up showed a relatively high degree of accuracy for this method of diagnosis. A history of gastro-intestinal symptoms was found to be unreliable as a diagnostic aid, as symptoms were absent in the majority of positive enteritis cases. Furthermore, the proportion of patients complaining of gastro intestinal symptoms was only slightly greater in the positive enteritis group than in the negative patients. A study of the sputum showed tubercle bacilli in practically all positive enteritis cases. Similarly necropsy revealed pulmonary cavities in almost all fatal cases of enteritis. Sigmoidoscopy revealed rectal involvement in only two of 150 patients examined.

Estimation of Enzyme Concentration in Duodenal Fluids—Lueders describes methods for the determination of trypsin, lipase and amylase in duodenal fluids. The modification by Hollander of his previous methods for the estimation of tryptic and lipolytic activity has proved of distinct value during the last four years of its application. The test for amylase, with but slight modification has proved satisfactory during the last fifteen years. The author states that any clinician trained in the Lyon technic of nonsurgical duodenal drainage should find the methods described simple, rapid and sufficiently accurate. As soon as some such practical procedure for the estimation of pancreatic enzymes in duodenal fluids has been widely accepted as reliable, it may well give fresh impetus to further investigation of secretory dysfunction and diseases of the pancreas. It should also prove a valuable routine addition to the diagnostic survey of patients with any disease involving the gastro-intestinal tract as well as those with disorders of

nutrition, digestion and assimilation. Occasionally, normal values for enzyme concentration were found in one or more of the duodenal fractions of the diseased group, but it was rare to obtain normal concentration of the three enzymes as in the normal groups. In each of five cases of diabetes the pancreatic amylase was low in amount, and in every extraction of duodenal fluid.

New Concept of Mènière's Disease—Foldes says that there seems to be a striking similarity in the pathogenesis of Mènière's disease to epilepsy, eclampsia of pregnancy, eclampsia of infancy, migraine, angina pectoris, bronchial asthma, the allergic diseases and gout. These diseases manifest themselves in the form of attacks which appear to be due to a retention of water and minerals that is local and temporary, rather than generalized and continuous. The attacks cease when the retained liquids disappear from the respective organ. For the treatment of this group of diseases an antiretentional therapy has been developed which employs a diet based on the recognition of the fact that all food elements, such as proteins, carbohydrates, fats, water, minerals and vitamins, influence the water and mineral metabolism. The author found that, while the antiretentional diet in itself, or together with the administration of phenobarbital, is ineffective, the addition of quinine sulphate, phenobarbital and the extract of *nux vomica* to this diet, the protein content of which is slightly lowered, is followed by a complete disappearance of the attacks within a few days with no relapses observed thus far. A complete abolition of the attacks such as he observed in his four cases can hardly be ascribed to the medication in itself. The results observed, he believes, are not attributable to the administration of quinine sulphate by itself but to the concerted action of quinine sulphate and the diet.

American Journal of Medical Sciences, Philadelphia

190: 1-144 (July) 1935

- Basophilic Hyperplasia of Pituitary in Essential Hypertension. I. Pardee, New York—p 1
- Syndrome Simulating Diencephalic Stimulation Occurring in Patients with Essential Hypertension. I. H. Page, New York—p 9
- Effect of Adrenalin Injection on Blood of Patients With and Without Spleens. A. J. Patck, Jr. and Geneva A. Deland, Boston—p 14
- Extreme Tachycardia in the New Born. Report of Case. L. E. Farr, New York and M. E. Wegman, New Haven, Conn—p 22
- Study of Value of Insulin in Undernutrition. R. H. Freyberg, Ann Arbor, Mich—p 28
- Pulminating Hemorrhagic Encephalitis. A. Levinson and O. Saphir, Chicago—p 42
- *Carbohydrate Metabolism in Human Hypothyroidism Induced by Total Thyroidectomy. III. Case of Diabetes Mellitus Treated by Total Ablation of Normal Thyroid Gland. A. Rudy, H. L. Blumgart and D. D. Berlin, Boston—p 51
- Variable Auscultatory Signs of Pulmonary Cavities. R. A. Bendove, New York—p 60
- Pneumonias Due to Pneumococcus Type VIII. J. G. M. Bullowa, New York—p 65
- Giardia Infestation of Gallbladder and Intestinal Tract. R. M. Calder and R. H. Rigdon, Durham, N. C—p 82
- Long Continued Vaccine Therapy as Cause of Amyloidosis. H. A. Reimann and C. M. Eklund, Minneapolis—p 88
- Influence of Muscular Activity on Physiologic Leukocytosis. C. J. Leslie and R. L. Zwemer, New York—p 92
- Schilling Count in Fifty Nine Cases of Chronic Arthritis with Correlated Sedimentation Rate in Thirty Cases. C. L. Steinberg, Rochester, N. Y—p 98
- Incidence of Infection with Intestinal Protozoa in Minnesota. P. Kabler, Minneapolis—p 103
- *Heterophile Antibody Test in Leukemia and Leukemoid Conditions. G. L. Weinstein and T. Fitz-Hugh, Jr., Philadelphia—p 106
- Pernicious Anemia and Malignant Neutropenia. Case Report. R. F. Herndon, Springfield, Ill—p 113

Carbohydrate Metabolism in Hypothyroidism Induced by Thyroidectomy—Rudy and his collaborators cite a case of severe uncontrollable diabetes mellitus complicated by tuberculosis of the lungs, in which total ablation of the thyroid was performed. Before operation, the basal metabolic rate was +7 per cent and the patient showed no evidence of hyperthyroidism. The extirpated thyroid tissue was found normal on gross and microscopic examination. The diabetic condition, which could not be adequately controlled prior to operation under optimal conditions with diet and an average insulin dosage of 95 units daily, was readily controlled by diet and 44 units of insulin daily after hypothyroidism developed. A level of hypothyroid

ism at which the patient remained free from any unpleasant symptoms of myxedema was maintained by small doses of thyroid. The authors suggest that the treatment of hypothyroidism with small doses of thyroid as applied in this patient may be useful also in some patients with diabetes and spontaneous myxedema. As evidence that the reduction in insulin requirements in their patient was due to the hypothyroid state, they found that the administration of thyroid sufficient to restore the preoperative metabolic level resulted in relapse of the patient's diabetic condition to the preoperative status. Total thyroidectomy is not advised in the treatment of diabetes mellitus except in the rare case of severe diabetes that cannot be controlled adequately by the application of all known therapeutic measures.

Heterophile Antibody Test in Leukemia—Weinstein and Fitz-Hugh found the heterophile antibody titer in the serums of sixteen cases of leukemia to be uniformly and repeatedly at a low level (zone 1) regardless of the stage and type of the disease. One case of acute myelogenous leukemia was found to be in zone 2. The patient, however, had received twenty-eight blood transfusions. This constant finding may be of value in ruling out the diagnosis of leukemia in any case in which a high heterophile antibody titer is found. A low or normal titer of heterophile antibody was found also in three cases of Hodgkins disease, five of lymphosarcoma, five of polycythemia vera, four of agranulocytic angina and a number of miscellaneous cases including typhoid simple adenitis, syphilis, tuberculosis and anemia. A high titer (zone 3) was found in serum sickness and acute infectious mononucleosis, thus confirming the reports of Paul, Bunnell, Davidsohn and others. The parenteral administration of horse serum did not produce a rise in the heterophile antibody titer in five cases of chronic lymphatic leukemia. This is in accord with previous evidence. A similar failure of increase of heterophile antibody titer following horse serum injections was found in one case of 'atypical' Hodgkins disease and in two of lymphosarcoma, suggesting the possibility of a biologic relationship of these conditions to lymphatic leukemia. The parenteral administration of horse serum in three cases of chronic myelogenous leukemia produced a marked rise in heterophile antibody titer similar to that occurring in nonleukemic individuals. This is not in accord with previous evidence and suggests the possibility of a real biologic difference between myelogenous leukemia on the one hand and the lymphatic group on the other.

American J Obstetrics and Gynecology, St. Louis

30 1158 (July) 1935

- *Role of Blood Transfusion in Treatment of Obstetric Hemorrhage. W J Dieckmann and E F Daily Chicago—p 1
- Surgical Treatment of Ovarian Dysfunctions. Clinical and Pathologic Study. M R Robinson New York—p 18
- Management of Prenatal and Postnatal Cervix. M A Castallo and T L Montgomery Philadelphia—p 37
- Veratrum Viride in Treatment of Eclampsia. R D Bryant Cincinnati—p 46
- Study of Fetal Mortality in Patients with Organic Heart Disease. H M Teel Boston—p 53
- Hemorrhage in Late Pregnancy. P H Smith Evanston Ill—p 62
- Some Problems in Pregnancy and Diabetes. Analysis of Twenty Pregnancies in Seventeen Patients and Preliminary Report on Two Hundred and Thirty Eight Cases in Literature. D W Kramer Philadelphia—p 68
- Cancer of Uterus in Childhood. H A Lockhart, Cedar Rapids Iowa—p 76
- Mercurochrome to Secure Vaginal Antisepsis During Labor. Report of Six Thousand Cases. H W Mayes Brooklyn—p 80
- *Treatment of Elusive Ulcer of Bladder by Application of Pure Phenol. N P Sears Syracuse N Y—p 85
- Use of Dilaudid in Gynecologic Surgery. T K Brown and H L Kleine St Louis—p 89
- Ectopic Pregnancy. Results of Immediate Operation and Value of Spinal Anesthesia. H Koster and W I Shelnfeld Brooklyn—p 93
- Occiput Posterior. Statistical Study from the Chicago Maternity Center. J G Crotty Cincinnati—p 97
- Cesarean Section. Factors Influencing Mortality. Analysis of Two Hundred and Forty Three Cases. A T Bowers Dayton Ohio—p 103
- Fibromyoma of Cervix Uteri. Report of Case. V S Counsellor and D C Collins Rochester Minn—p 108
- Tubal Gestation. Statistical Study Based on Three Hundred and Nine Cases. C H Tyrone S A Romano and C G Collins New Orleans—p 112
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- Intravenous Anesthesia with Evipal Soluble. A. Holman and A. Mathieu Portland—p 118
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- Observations on Normal Sex Ratio of Albino Rats and Their Artificial Variation. M A Varzhahedian Chicago—p 124
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- Abdominal Pregnancy with Removal After Eighteen Years, of a Six Months Lithopedion. A W Voegelin Philadelphia—p 129
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- Factor of Birth Trauma in Cancer of Uterine Cervix. Catharine Macfarlane Philadelphia—p 133
- Torsion of Pregnant Uterus in Patients with Kyphotic Pelvis. B Rablner Brooklyn—p 136
- Squamous Cell Carcinoma of Cervix. Adenocarcinoma of Fundus of Uterus. M T Goldstine Chicago—p 137
- Full Term Unilateral Tubal Twin Pregnancy. J A Ferguson and I S Otis Meriden Conn—p 139
- New Instrument for Accurate Reading of Measurement of Diagonal Conjugate. R G Douglas New York—p 141
- Sarcoma and Adenocarcinoma of Body of Uterus. Adenocarcinoma of Cervix. M T Goldstine Chicago—p 143
- Nonpolypoid Sarcoma of Cervix Uteri. M T Goldstine, Chicago—p 145
- Bloodless Circumcision of the New Born. H S Yellen, Buffalo—p 146
- New Colposcope. H O Maryan Chicago—p 148

Blood Transfusion in Treatment of Obstetric Hemorrhage—According to Dieckmann and Daily, obstetric hemorrhage is responsible for more than 10 per cent of the maternal deaths. The mortality has not decreased in the last twenty years despite the use of blood transfusions. The mortality rate from obstetric hemorrhage can be lowered only if sufficient blood is transfused to raise and maintain the hemoglobin to approximately 10 Gm per hundred cubic centimeters of blood. The transfusion must be adequate in amount and must be given within a short time after the hemorrhage. Further transfusions may be given within a period of hours or spread over several days, depending on the amount of blood required and the clinical condition of the patient.

Treatment of Eclampsia—Bryant treated 121 cases of eclampsia as follows. From 5 to 15 minims (0.3 to 1 cc.) of an extract of veratrum viride is given hypodermically immediately after the first convulsion. This is repeated as often as is necessary to keep the pulse below 80 or the blood pressure at least 20 mm below the convulsive level. The usual case requires from one to three doses at intervals of from ten to fifteen minutes, then doses every one, two or three hours until the patient is well over the acute stage. Oral administration of slightly larger doses of from 10 to 20 minims (0.6 to 1.3 cc.) may replace the hypodermic injections as the patient recovers. From 10 to 20 cc of a 50 per cent solution of magnesium sulphate is given by deep injection immediately following the first dose of veratrum. This is repeated in smaller doses of from 2 to 5 cc. every six hours, three times a day, and twice a day on successive days as the acute attack subsides. From one-half to 1 ounce (15 to 30 cc.) of saturated solution of magnesium sulphate is given by mouth twice a day. Fluids are forced by mouth as soon as the patient is conscious. In the meantime from 2,000 to 3,000 cc of physiologic solution of sodium chloride is given by hypodermoclysis if the patient is over the convulsive stage but still comatose. Intravenous injection of from 100 to 500 cc. of from 5 to 50 per cent dextrose is frequently used. Alkalies are given by mouth to conscious patients in doses of from 60 to 120 grains (4 to 8 Gm.) from three to six times a day. Fruit juices well sweetened, are administered at frequent intervals. A low protein diet, consisting chiefly of fruit juices, vegetables and bread, is allowed as soon as the patient feels hungry and is apparently in no immediate danger of convulsions. Chloral, bromides or one of the barbiturates is given in appropriate doses to those patients who become restless during recovery from the acute stage. Ether is used sparingly at the time of delivery. In the antepartum case, no attempt is made to induce labor until the patient is well over the acute stage or shows marked resistance to treatment. In the patient who responds to treatment, labor is induced from twenty-four to seventy two hours after the acute attack has subsided. In this series there were seventy-one patients with convulsions before delivery. The usual precautions are used during the convulsions. The patient is not restrained during a convulsion, except so far as is needed to

prevent self injury by falling. No anesthetic is used for the control of the convulsions. In three cases magnesium sulphate solution was injected intraspinally. Two patients received magnesium sulphate solution intravenously. The effect of the hypodermic injection of a therapeutic dose of veratrum viride is startling. The blood pressure falls rapidly, sometimes going as low as 50 systolic. This marked fall is transitory but is followed by a more or less prolonged period during which the pressure is well below the original level. The heartbeat is slowed to 40 per minute in some patients but soon picks up and remains at from 60 to 80 until the effect of the drug has worn off. The pulse rate usually follows the blood pressure level fairly closely. Atropine or morphine or both are antidotes for veratrum viride. Vomiting is an early effect. The degree of vomiting varies with the individual susceptibility of the patient. The respiration is always slowed considerably but never to such a degree as to be harmful. The individual susceptibility to the drug is very marked and for this reason treatment cannot be absolutely standardized. In the author's cases, convulsions occurred before delivery in seventy-one. Of fifty postpartum patients, twenty-three delivered and had convulsions before admission. The total number of maternal deaths was twelve. Of the patients 60 per cent had no convulsions after treatment was started, 15.8 per cent had only one convulsion and 24.2 per cent had more than one convulsion.

Treatment of Elusive Ulcer of Bladder—Sears treated four female patients for elusive ulcer of the bladder with the following technic. Ten per cent cocaine is applied to the urethra for five minutes. The bladder is emptied by catheter, the patient placed in the correct knee chest posture, the vaginal orifice opened to allow air to enter the vagina, and a Kelly cystoscope introduced into the bladder. The lesion is located and studied, and, after aspiration of all the urine from the bladder vertex, is thoroughly swabbed with pure phenol. If any of the solution touches the normal mucosa it is immediately neutralized by an applicator saturated with alcohol. After the ulcer is thoroughly painted the patient remains in the knee-chest posture with the cystoscope in place for a few seconds until the action of the phenol has taken place. As the cystoscope is withdrawn if the trigon and urethra are inflamed, they are painted with 10 and 5 per cent silver nitrate respectively. The air is then allowed to escape and the patient to go about as usual. There is often some increased discomfort for a few days about which the patient should be warned. The lesion is inspected in two weeks and may or may not require more treatment. In all cases thorough swabbing of the ulcer caused but little distress and no complications and was followed by prompt and prolonged relief.

Treatment of Gonorrhea in Women—Notes describes the clinical treatment of 2129 positive cases of gonorrhea of the female genitalia over a period of four years. Positive diagnosis was based on smears with gram-negative intracellular diplococci having the morphology of the gonococcus combined with objective clinical signs. Extracellular gram-negative diplococci were considered suggestive. Each patient was observed two months for recurrence of positive smears. The basis of treatment in the beginning was drainage and antisepsis. In 1931 the antiseptics used in treatment included iodine and compound solution of cresol as douches and by topical applications, and of 384 cases admitted four were discharged. In 1932 the antiseptics used included iodine, compound solution of cresol, mercurochrome and 10 per cent silver nitrate and of 522 patients admitted eighteen were discharged. In 1933 of 546 cases admitted forty-eight were discharged. In August 1933 treatment on the bases of creation of local reaction and drainage with the omission of antiseptics was begun as follows. All cervixes with cervical glands functioning were cauterized one or more times with the electrocautery at intervals of two or more months in order to cause local reaction and to give better drainage of the active focus. The urethral meatus and the cervix were treated weekly with applicators saturated with 25 per cent solution of silver nitrate. Five per cent sodium bicarbonate douches were taken by the patient at home twice daily. Nightly instillations of 1 drachm (4 cc.) of 1 per cent lactic acid jelly were made by nozzle to the vaginal vault in order to promote the normal bacterial flora

and to get rid of secondary invaders, which cause desquamative vaginitis. During the first six months of this period, clinical improvement and increase in negative smears were marked. The author concludes that antiseptics should be abandoned in the treatment of gonorrhea in women.

Annals of Surgery, Philadelphia

102:1160 (July) 1935

- Transplantation of Toes for Fingers O V Labunskaya Leningrad U S S R—p 1
- *Postoperative Pulmonary Atelectasis Report of Eleven Cases H E Snyder Winfield Kan—p 5
- *Ganglionectomy for Hyperhidrosis F L Pearl and N H Shapiro San Francisco—p 16
- *Splanchnic Nerve Section in Juvenile Diabetes II Technic and Post operative Management G de Takáts Chicago—p 22
- Infective Granuloma of Stomach Pseudocancer A. Kolodny New York—p 30
- Fibrosarcoma of Stomach V S Counsellor and D C Collins Rochester Minn—p 34
- Acute Axial Torsion of Uterus C H Hawes Fall River Mass—p 37
- Torsion of Intra Abdominal Testicle A J Beller New York—p 41
- Ruptured Pylorus Complicated by Urethral Stricture J A Lazarus and A A Rosenthal New York—p 49
- Carcinoma of Rectum Predisposing Factors and Diagnosis of Rectal Cancer (Discussion of Allergy) E G Martin Detroit—p 56
- Id Pathology of Intestinal Carcinoma J Felsen New York—p 61
- Id One Stage Abdominoperineal Operation for Carcinoma of Rectum T E Jones Cleveland—p 64
- Id Two Stage Operation for Rectal Cancer F C Yeomans New York—p 68
- Id Gold Radon Seeds in Rectal Cancer G E Binkley New York—p 72
- Id External Irradiation in Rectal Cancer J J Duffy New York—p 77
- Anal Anatomy with Reference to White Line of Hilton and Pecten of Stroud R I Hiller Milwaukee—p 81
- Fracture of Anterior Inferior Spine of Ileum (Sprinter's Fracture) J R Gallagher Pottstown Pa—p 86
- Management of Depressed Fractures of Skull and Old Skull Defects E S Gurdjian Detroit—p 89
- *Fractures of Bodies of Vertebrae K Speed Chicago—p 102
- Arthroplasty of Hip and Preservation of Its Stability F H Albee New York—p 108
- Traumatic Knee Statistical Survey of One Hundred and Forty Six Cases H V Spaulding New York—p 115
- Internal Derangements of Knee W Darrach New York—p 129

Postoperative Pulmonary Atelectasis—Snyder states that it is generally agreed that the determining factor in the production of pulmonary atelectasis is bronchial obstruction by mucus. All conditions that tend to reduce the vital capacity of the lung, or tend to increase the amount or viscosity of bronchial mucus, or hinder its expulsion, predispose to pulmonary atelectasis. In a typical case of severe, massive atelectasis the onset occurs within forty-eight hours of operation. The symptomatology consists in sudden elevation in temperature, pulse and respiratory rate, dyspnea, cyanosis, coughing and severe pain in the chest or in the abdomen. Expansion of the chest is limited or absent over the affected area. Percussion will establish the position of the heart borders displaced to the side of the lesion. Early there is often hyperresonance over the affected lung, but as the bronchioles and alveoli become filled with secretion dullness will be found. At first the breath sounds are absent or diminished and there are no rales but as air again gains access there may be tubular or amphoric breathing and moist crackling or bubbling rales. In the course of a few minutes to many days the lung expands, the heart returns to normal position and breath sounds can be heard over the affected lung with many moist rales. Most cases of pulmonary atelectasis are generally less severe and are not recognized unless the chest is thoroughly studied daily, or twice daily following operation. In severe cases the roentgen observations are elevation of the diaphragm on the affected side, narrowing of the chest on that side, increased obliquity of the ribs, narrowing of intercostal spaces, a displacement of the trachea, heart and mediastinum to the affected side and a variable amount of shadow in the affected lung area. Early there may be little or no increase in density over the lung, later the shadow may be dense and homogeneous. Roentgen examination is not always essential in the diagnosis and treatment of this condition. The author refers to eleven patients four of whom had heart disease. Two patients in the group had syphilis. In seven of the cases atelectasis developed within

the first thirty-six hours. There were three cases following appendectomy, three following cholecystectomy, two following cesarean section, two following hemorrhaphy and one following amputation through the thigh. There were two deaths. The two patients who died had heart disease and a mitral lesion. Local and spinal anesthesia do not decrease the incidence of pulmonary atelectasis. Large doses of morphine and other sedatives before and after operation should be avoided. The operating time should be as brief as possible. Carbon dioxide, 10 per cent and oxygen should be administered at intervals during all spinal anesthetics to avoid acapnia, for five minutes at the end of all local and general anesthetics and for five minutes, three or four times daily, for at least forty-eight hours following all abdominal operations. The patient's position should be changed every three or four hours after operation. Deep breathing at frequent intervals should be encouraged. Dilatation of the stomach should be avoided by using the nasal tube at the first indication of gastric distention. The author's cases were treated by the postural method of Sante. This consists in rolling the patient back and forth on the uninvolved side. Percussion over the involved lung facilitates the expulsion of mucus. The patient is not left in this position for long, as atelectasis may then develop in the other lung. Carbon dioxide and oxygen induce deeper breathing and probably a widening of the lumens of the bronchi and bronchioles. They should be employed only in conjunction with the postural method of treatment. If they are administered with the patient lying on the affected side, it may lead to firmer incarceration of the obstructing mucus.

Ganglionectomy for Hyperhidrosis—Pearl and Shapiro state that conditions of sweating which interfere with the health, occupation and peace of mind or the continued happy existence of an individual justify surgical intervention. Sympathetic ganglionectomy at the proper level will produce a total inhibition of sweating in the desired regions. When anhidrosis is produced, vasomotor paralysis occurs in the identical areas of distribution, as evidenced by a rise of surface temperature. It is impossible to influence separately the fibers for sweating and those for vasoconstriction by surgical means. The accompanying release of normal vasoconstriction gives no uncomfortable symptoms. The authors report a case in which a woman, aged 22, obtained complete relief from excessive sweating following sympathetic ganglionectomy and trunk resection. The left inferior cervical and first, second and third thoracic sympathetic ganglions were exposed by a posterior muscle splitting approach and freed of all connecting branches, and the trunk was removed from above the inferior cervical to below the third thoracic ganglion. There was an immediate rise of surface temperature of the left upper extremity to the normal vasodilatation level and a complete absence of sweating of the left upper extremity and the homolateral half of the head, face and upper part of the thorax, anteriorly and posteriorly. The rise of surface temperature and the absence of sweating persisted in the areas affected until fourteen months after operation. The amount of perspiration of the unaffected regions was greater than before operation. The delineation of areas of anhidrosis was obtained by the application of external heat. Four months after operation cervicodorsal ganglionectomy, ramisection and trunk resection were carried out on the right side to the same extent as on the left. Fourteen months after the first operation, and ten months after the second operation, there has been no perceptible evidence of sweating even after long exposure to external heat.

Splanchnic Nerve Section in Juvenile Diabetes—De Takáts describes a supradiaphragmatic retropleural approach to the splanchnic nerves. With the patient in a semilateral position, a paravertebral incision is made, four fingerbreadths from the midline starting at the level of the angle of the scapula and curving laterally over the tenth intercostal space for a distance of from 5 to 6 cm. The incision transects the long muscles of the back and exposes the tenth and eleventh ribs, which are subperiosteally resected for a length of about 6 cm, the midline being approached as close as possible. To facilitate the approach to the lateral surface of the vertebrae, the intercostal vessels are doubly ligated and cut. The intercostal nerves may be preserved but may also be transected without any harm. The distal stump of the tenth nerve is

transected with a fine suture of black silk and wrapped in a moist gauze compress. The endothoracic fascia, which covers the pleura, is carefully incised and dissected away from the pleura throughout the length of the incision. After the pleura has been stripped away from the proximal stumps of the ribs, the remaining proximal stump and some of the transverse process are removed. The pleura is gently stripped until the thoracic sympathetic trunk appears surrounded by loose connective tissue and fat. The trunk may be identified by the bulbous swelling of its ganglions. On dissection of the pleura farther forward the major splanchnic nerve appears, showing multiple connections with the sympathetic chain. After procaine hydrochloride anesthesia, the thoracic chain and the splanchnic nerve are excised. To prevent regeneration of the major splanchnic nerve, the proximal stump of the nerve is implanted into the distal stump of the tenth intercostal nerve. After complete hemostasis, the pleura is allowed to fall back in place, the muscles are carefully sutured and the skin is closed. No drainage is left in the wound. The operation has been performed by the author so far three times, the patients being young persons with diabetes. An adequate dextrose and fluid intake, which is essential in any operation for diabetes, is carefully maintained. A dextrose solution of 5 per cent is given in a subcutaneous drip, 1,000 cc. in about five hours, which may be started during the operation, and another thousand cubic centimeters in the afternoon. About 2,000 cc. of a 5 per cent dextrose solution will supply 100 Gm of sugar. Another thousand cubic centimeters of Ringer's solution is given during the night, thus furnishing 3,000 cc of fluids during twenty-four hours. Of the author's three cases, only the third is regarded as a thorough test of the value of the operation because of improper selection in one instance and partial technical fault in the second. In the third case a decrease of 50 units of insulin a day was accomplished. A final evaluation of results with respect to the diabetic state of the patients who were operated on is to be made.

Fractures of Bodies of Vertebrae—Speed states that the main mechanism of fracture of the corpus vertebrae is compression. If no flexion accompanies compression, the body is crushed and lessened in height uniformly, the posterior border in lateral view being reduced equally with the anterior border. The corpus tends to broaden laterally and may be separated into two or more fragments, one of which may push back into the canal to compress the cord, while the other may be displaced forward as far as it can go under the restraint of the anterior spinal ligament. If flexion forward and compression act together, a wedge-shaped piece, varying from the size of a pea to nearly the whole anterior portion of the body, is broken off from the anterior superior border of the corpus, the plane of separation extending diagonally down and forward. The main portion of the body, especially the posterior, retains its height or diameter and the spinal canal is protected by the intact posterior longitudinal ligament, while the anterior height is diminished with accompanying displacement forward of the whole spinal segment above. When compression is accompanied by lateral flexion, the amount of comminution may be increased, one side of the body is crushed down more than the opposite side, and displacement laterally into subluxation may be found. The body breaks into fragments easily through its weaker center, the seat of venous sinusoids. Other adjacent bodies may suffer similarly. The first roentgenologic study must compare bodies immediately adjacent above and below the injured segment to search for breaking down of the bone density, suggesting impaction of the cancellous tissue into itself. Later changes in bone density indicate aseptic necrosis or, if accompanied by new bone formation, may require two to four months for roentgenographic demonstration and depend on the amount of blood extravasation at the time of injury. The period of immobilization used in treatment and the secondary postural changes in the spine. All types of reduction by means of hyperextension with any required lateral flexion may be followed by plaster-of-paris dressings. Each fracture of the vertebral body should be studied roentgenologically before reduction to determine whether it was caused by pure compression in the long axis or by compression flexion with a fragment broken off the superior surface of the body and dis-

placed forward and downward. The third class of combined flexion and compression with lateral displacement may be recognized often by graver cord pressure symptoms. If the fracture is the result of compression flexion with a relatively small fragment broken off the upper anterior border of the body, reduction by hyperextension by Jones's method or on a spinal bed that may be rapidly elevated into hyperextension at the site of fracture, followed by an ambulatory plaster-of-paris torso jacket for ten to fourteen weeks, is sufficient treatment. For patients who have sustained great compression with broadening or lateral gross displacement and uniform loss of height of the corpus, reduction by hyperextension plus traction in the long axis of the body is required in most cases. This is best done on a spinal bed with traction on head and feet. A plaster bed or torso corset embracing the thighs may be used, depending on the amount of dislocation laterally. The patients should be kept supine on the plaster for from eight to fourteen weeks. Later they may be fitted with a plaster-of-paris corset or back brace, which is worn until roentgenologic demonstration of healed bone trabeculae has been made.

Archives of Dermatology and Syphilology, Chicago

32:1180 (July) 1935

- *Excretion of Mercury After Clinical Intramuscular and Intravenous Injections. T. Sollmann, Nora E. Schreiner and H. N. Cole in collaboration with J. V. Ambler, J. A. Gammel, R. L. Howard and H. C. Shaw. Cleveland—p. 1.
- Mycostatic Studies on Certain Moniliae and Related Fungi. Paulina Gomez Vega. Bogota, Colombia, South America—p. 49.
- Kaposi's Varicelliform Eruption. Report of Case. W. H. Goeckerman and L. F. Wilhelm. Los Angeles—p. 59.
- Epidemic of Ringworm Due to Epidermophyton Flocosum (Inguinale). S. T. Mercer. Seattle and G. J. Farber. New York—p. 62.
- Effect of Roentgen Rays on Lipids of Epidermis. U. J. Wile, O. J. Cameron and H. C. Eckstein. Ann Arbor, Mich—p. 69.
- Essential Syphilitic Alopecia. Report of Case. L. Hollander. Pittsburgh—p. 73.
- Epithelioma Adenoides Cysticum with Features of Syringoma. A. E. Ingels. San Francisco—p. 75.
- Elephantiasis of Penis and Scrotum. Sequel of Lymphogranuloma Inguinale. G. V. Stricker and B. Ploch. St. Louis—p. 86.
- Psoriasis of Palms and Soles. Report of Four Cases. D. Bloom. New York—p. 90.
- Long Incubation Period of Warts. H. J. Templeton. Oakland, Calif—p. 102.

Excretion of Mercury After Injections.—Sollmann and his collaborators studied the excretion of mercury after the injection of various mercuric compounds and compared the injection method with the oral and inunction methods. They found that the antisiphilitic efficiency of mercurial treatment appears to be conditioned by the continued maintenance of an adequate concentration of diffusible, dissociable mercury. The mercury that is fixed and stored in the tissues does not appear to have therapeutic significance. The urinary excretion of mercury serves as an indicator of the diffusible mercury. The fecal excretion is unimportant, qualitatively and quantitatively, except for injections of flumerin. The urinary curve for excretion ranges from periodic, with the injection of the diffusible organic compounds, to continuously cumulative, with methods employing the less soluble compounds that form absorption depots, including inunctions, oral administration and intramuscular injections of slowly soluble or precipitant compounds. All the effective antisiphilitic methods show the continuously cumulative type of excretion. In accordance with this the closest correlation exists between the antisiphilitic efficiency and the level for daily urinary excretion toward the end of the treatment (the end of the fourth week). All forms of treatment yielding levels below 0.5 mg of mercury daily at the end of the fourth week are clinically ineffective. These include the inunctions with ointments of mild mercurous chloride and with weak (5 per cent) ointments of metallic mercury and mercury oleate, the oral administration of mercuric chloride in doses of 15 mg daily, the intravenous injections of oxycyanide and the intramuscular injections of the benzoate in the usual dosage, intermittent intramuscular injections of red mercuric iodide and intravenous injections of compounds with their mercury in firm organic combination—salirgan, novasurol and mercurosol. These give very high temporary levels for excretion of mercury but they sink to insignificant ones within a few hours. All methods of treatment that secure a daily urinary excretion of from 0.8 to

1 mg of mercury at the end of the fourth week are effectively antisiphilitic and may cause stomatitis. The ordinary and the massive inunctions, the daily oral administration of 0.2 Gm of mercury with chalk, the daily intramuscular injection of mercuric sodium bromide and the weekly intramuscular injection of mercuric oil come within this group. With the last preparation there is the constant danger of cumulative intermittent absorption and intoxication. The oral administration of yellow mercurous iodide and mercuric sodium bromide, 0.5 Gm daily, and some of the methods of injection raise the level for the fourth week to 2 or 4.5 mg of mercury daily. These higher levels probably act more rapidly against syphilis, but they are also more likely to produce severe stomatitis, which limits their continuance and reduces their efficiency. Considerable quantities of mercury are retained in the tissues indefinitely even with the intravenous injections of diffusible organic compounds (from 31 to 77 per cent). These retentions are especially high with the colloidal solutions (from 96 to 99 per cent). Since the antisiphilitic action ceases promptly with the excretion, this retained mercury is therapeutically useless. It is undesirable since it may be harmful to the tissues.

Archives of Neurology and Psychiatry, Chicago

34:1242 (July) 1935

- Cutaneous Innervation. Experimental Study. L. H. Lanier, H. M. Carney and W. D. Wilson. Nashville, Tenn—p. 1.
- Cerebral Birth Conditions with Especial Reference to Myelogeny. C. A. Patten and R. A. Matthews. Philadelphia—p. 61.
- *Cervicodorsal Sympathectomy in Multiple Sclerosis. Its Rationale and Report of Eight Cases. F. S. Wetherell, Syracuse, N. Y.—p. 99.
- Effect of Intracranial Tumors on Sella Turcica. Analysis of Four Hundred and Forty Six Cases of Verified Intracranial Tumor. K. Kornblum and L. H. Osmond. Philadelphia—p. 111.
- Relation of Hypothalamico-Hypophyseal System to Diabetes Insipidus. C. Fisher, W. R. Ingram and S. W. Ranson. Chicago—p. 124.
- Extensive Calcification in the Brain. Case. J. Kasanin and R. P. Crank with technical assistance of Dorothy E. Noble and Annette C. Rivard. Howard, R. I.—p. 164.
- Claude Bernard 1813-1878. J. N. Petersen and J. Sanclier. Montreal—p. 179.

Cervicodorsal Sympathectomy in Multiple Sclerosis.—Wetherell resorted to cervicodorsal sympathectomy as a measure of relief in eight cases of multiple sclerosis. The operation consists of removing the inferior cervical and the first thoracic ganglion by the posterior approach. The transverse process of the first thoracic vertebra and about 1 inch of the first rib are removed. The ganglions are picked up and the cords above and below are sectioned as are all the rami, and the structures thus sectioned are removed. With the exception of the first case, bilateral sympathectomy was done in one stage. General anesthesia with nitrous oxide and ether was used. All patients had little postoperative discomfort and stood the procedure exceptionally well. An attempt is made to rationalize the procedure on a basis of betterment of cerebral circulation which may relieve irritation and allow a more normal blood supply and more normal conduction of nerve impulses.

Canadian Public Health Journal, Toronto

26:261-314 (June) 1935

- Progress and Trends in Public Health in North America. H. S. Cumming. Washington, D. C.—p. 261.
- Tuberculin, Johnin and Mallein Derived from Nonprotein Mediums. E. A. Watson. Hull, Que.—p. 268.
- The Problem of Fish as Food. A. G. Huntsman. Toronto—p. 275.
- Epidermophytosis. W. J. McCormick. Toronto—p. 281.

Colorado Medicine, Denver

32:513-592 (July) 1935

- Roentgenologic Studies of Stomach with Especial Reference to Rugae. J. S. Boualog. Denver—p. 524.
- Present Status of X-Ray Interpretation of Pulmonary Tuberculosis in Children. K. D. A. Allen. Denver—p. 530.
- *Simple Conception of Dementia Praecox. C. S. Bluemel. Denver—p. 540.

Dementia Praecox.—Bluemel states that it is not inconceivable that emotional stress may produce a toxic state which in the case of a biologically deficient organism leads to degeneration of the brain cortex. Following such a line of reasoning one would implicate the endocrines as a source of

intermediate disturbance. One would suspect the gonads for the reason that the psychosis commonly occurs in the reproductive period of life. The end result of dementia praecox can be identified as organic change in the brain cells. It is probable that damage to the brain cells, and especially the dendrites, accounts for the associational defect that characterizes the fully developed psychosis. Presumably there occurs a sort of physiologic short circuiting, which breaks the former associational pathways. It is logical to suppose that cellular dysfunction accounts also for the so-called somatic hallucinations. The toxic theory of dementia praecox explains not only the degeneration of the brain cells in the later stages of the disease but also the phenomenon of recovery without defect during the early stages of the psychosis. Apparently the toxic condition may abate in any stage of the disease. The resultant damage is proportionate to the duration and violence of the destructive process. With early arrest of dementia praecox there is absence of sequels, and the patient seems to have suffered nothing more critical than a transient toxic confusional psychosis. With delayed arrest there are inevitable sequels.

Journal of Clinical Investigation, New York

141: 373-504 (July) 1935

- Pneumonia Due to Pneumococcus Type XIV (Cooper) and Its Treatment with Specific Antiserum J G M Bullowa New York—p 373
- Minute Volume Output and Work of Heart in Hypothyroidism M D Altschule and Marie C Volk Boston—p 385
- Immunity in Diabetes II Relative Importance of Nutritional State and Blood Sugar Level in Influencing Development of Agglutinin After Typhoid Vaccine R Richardson Philadelphia—p 389
- Excretion of Inulin Xylose and Urea by Normal and Phlorhizinized Man J A Shannon and H W Smith New York—p 393
- Renal Excretion of Creatinine in Man J A Shannon New York—p 403
- Electrolyte Balance in Acute Gout J H Talbott B M Jacobson and S A Oberg Boston—p 411
- * Study of Leukocytosis Produced in Man by Artificial Fever P Cohen and S L Warren Rochester N Y—p 423
- Urticarial Response to Light and Its Photophysiology H F Blum H Allington and R West Berkeley Calif—p 435
- Effect of Renal Denervation on Patients Suffering from Nephritis I H Page and G J Heuer New York—p 443
- Behavior of Haemophilus Influenzae in Certain Diseases of Children R W Huntington Jr New Haven Conn—p 459
- Experimental Carditis Changes in Myocardium and Pericardium of Rabbits Sensitized to Streptococci B M Baker Caroline Bedell Thomas and R M Penick Jr Baltimore—p 465
- Rate of Absorption of Iodide and Glycine from Gastrointestinal Tract in Normal Persons and in Disease Conditions C W Heath and H W Fullerton Boston—p 475
- The Heart in Thyroid Disease I Effect of Thyroidectomy on Orthodipgram A Margolies E. Rose and F C Wood Philadelphia—p 483
- Id II Effect of Thyroidectomy on Electrocardiogram E Rose, F C Wood and A Margolies Philadelphia—p 497

Leukocytosis Produced by Artificial Fever—To determine the changes occurring in the number of blood cells during artificial fever treatments, in which the patients' temperature was elevated and maintained at a constant level for a definite period by radiant energy, Cohen and Warren observed ten patients during a total of eleven treatments. There were seven treatments for gonococcal infection, one patient in this group was suffering also from latent syphilis and chronic infectious arthritis. The diagnoses in the remaining four cases were syphilis of the central nervous system, chronic infectious arthritis, brain tumor and carcinomatosis. All observations of temperature during treatment were made by means of a resistance thermometer placed in the rectum of the patient. In practically every case the red blood cell count, hemoglobin, white blood cell count and differential count, including the Schilling hemogram made from coverslip blood smears stained with Wright's stain were determined before treatment and every hour starting when the temperature had reached the desired height and was being maintained at a constant level. These determinations were continued for several hours after the termination of the fever. The blood studies were then followed at intervals until the patient was discharged from the hospital. The counts were made from blood taken from the ear. A leukocytosis was found in every case. The maximal change and the onset, duration and extent of this change, in relation to the period of fever varied from patient to patient.

A relative and absolute increase of polymorphonuclear leukocytes was observed during or immediately following the febrile period. There was a substantial relative and absolute increase in immature polymorphonuclear leukocytes in six of the eleven cases. There was a relative and absolute decrease in lymphocytes in all cases. There was a slight rise in the red blood cell count and hemoglobin during or immediately following the period of fever. Immature red blood cells were found in a single case, which also exhibited the greatest increase (20 per cent) in hemoglobin during a fever of 41.6 C. (106.9 F) for twenty-one hours. These observations suggest a mobilization into the circulation of available and nearly mature cells of the myeloid and erythrocytic series as a result of the fever, while the cells of the lymphoid series decrease during this period.

Journal of Lab and Clinical Medicine, St. Louis

20 895-1000 (June) 1935

- Observations on Autonomic Control of Cardiac Vasculature. Attempted Vagus and Sympathetic Overaction on Cats Heart. H F Robertson and A J Derbyshire Boston—p 895
- * Value of Takata and Ara Reaction as Diagnostic and Prognostic Aid in Cirrhosis of Liver A B Ragins Chicago—p 902
- Artificial Pneumothorax in Treatment of Lobar Pneumonia. Review of Forty Pneumothorax Treated Patients and One Hundred Patients Treated by Other Methods A Behrend Philadelphia V L Tuck, Sherman Texas and W E Robertson Philadelphia—p 914
- Phosphorus Metabolism V Relation Between Urinary Phosphate and Blood Phospholipids During Absorption of Fats G E Youngburg Buffalo—p 920
- * Complement Fixation Reactions in Carcinoma H W Lundy St. Louis—p 923
- Serum Calcium in Arthritis E F Hartung and C H Greene, New York—p 929
- * Occlusion of Portal Vein. Experimental Study with Its Clinical Application F F Boyce R Lampert and Elizabeth M McPetridge New Orleans—p 935
- Influence of Diet on Toxicity of Ethylhydrocupreine Hydrochloride Preliminary Report A J Nedzel Chicago—p 944
- Fat Embolism Control Study of Blood Serum and Urine. F J Jurka and C S Seudert Chicago—p 945
- Local Adrenalin Effect After Sympathectomy I Peripheral Vessels Preliminary Report. A M Wright, J H Mulholland K. Leora McCloskey and F W Co-Tui New York—p 947
- Tungical Power of Phenol Derivatives II Strength in Presence of Proteins G J Woodward L B Kingery and R J Williams, Portland Ore—p 950
- Preservation of Blood Films T K Rathmell and H W Jones, Philadelphia—p 954
- Use of Razor Blades for Tissue Sectioning I A Nelson Tulsa Okla—p 956
- Technique for Bile Fistula in Rat and Demonstration of Indispensability of Bile L Sawyer and S Lepkovsky Berkeley Calif—p 958
- Use of Proteins for Embedding Small Tissues for Sectioning by Freezing Method I A Nelson Tulsa Okla—p 964
- Suspension Damped for Low Frequency Vibrations J P Baumberger and Stephanie Sigurdson Stanford University Calif—p 968
- New Rat Feeding Device J P Baumberger and S Allen Stanford University Calif—p 970
- Method for Determination of Creatine in Urine. W D Langley M M Rosenbaum and M G Rosenbaum Buffalo—p 972
- Altering the Vm Scheffel Colorimeter for General Use J A Schindler Monroe Wis—p 975
- Method of Sputum Digestion Preliminary to Culture for Tubercle Bacilli. W L McNamara and E F Ducey West Los Angeles Calif—p 976
- Mass Culture Apparatus for Securing Bacterial Cells for Analysis. R A Greene, Tucson Ariz—p 977
- Vaseline Dispenser for Hanging Drop Preparations R. A. Greene Tucson Ariz—p 978
- Special Camera for Routine Photomicrography J A Reyniers, Notre Dame, Ind—p 979
- Electrodialysis Apparatus for Use with Alternating Current E. J Czarnetzky San Francisco—p 981
- Determination of Urea in Blood by Folin Distillation Method. Note Margaret A. Adams Boston—p 983

Value of Takata and Ara Reaction in Cirrhosis of Liver—Ragins employed the Takata-Ara reaction in 276 patients, using the Jezler modification. The clinical diagnosis was used as a basis for classification of the diseases and when ever possible, was substantiated by postmortem examination or surgical biopsy. The cases were classified into fourteen main groups, with cirrhosis of the liver heading the list. That the test is of value in cases of decompensated liver conditions due to cirrhosis is without doubt. For latent liver damage the test is not entirely reliable. The Takata-Ara reaction is positive in 98 per cent of the cases of cirrhosis of the liver. The sim

phlicity with which the test is carried out warrants its use in hospital and office practice as both a diagnostic and prognostic aid in cases of cirrhosis of the liver. Liver impairment occurs in hyperthyroidism, as shown by the Takata-Ara reaction.

Complement Fixation Reactions in Carcinoma—By fractionating according to Lehmann-Facijs the alcoholic extract of cancer tissue, Lundy obtained positive complement fixation reactions in 70 per cent of fifty-one cases of carcinoma examined. Of twenty-eight carcinoma serums tested with the ethylene chloride antigen, 100 per cent were positive. With the cholesterolized phosphatid fraction of the alcoholic extract, all but two of 107 four-plus syphilitic serums reacted positively. With the ethylene chloride fraction of twenty-seven four-plus syphilitic serums tested, eleven were negative. Of ninety-two normal serums one gave positive reactions with the phosphatid fraction, while out of eleven such serums four were positive with the ethylene chloride fraction. The antigen concerned in fixation with cancer serums is not destroyed by heating it to 125 C. but is destroyed by certain alkaline reagents. The cancer antigen apparently is different from the syphilitic antigen, and it appears probable that these two antigens may be separated.

Occlusion of Portal Vein—Boyce and his collaborators present experiments proving that 1. Complete occlusion of the portal vein in one stage, as well as successive occlusion of both branches, is incompatible with life. 2. Occlusion of the main portal trunk in several stages is a feasible procedure if not more than two thirds of the vein is occluded at any one time. Experimental proof is advanced to disprove the theory that the loss of blood into the gastro-intestinal tract is the only cause or the chief cause of death in portal occlusion. The theory is advanced that death in portal occlusion is due (1) to an abrupt and immediate fall in blood pressure, brought about by a neurogenic factor with resulting reflex inhibition, as in primary shock, plus the abrupt diversion of a large amount of blood from the circulation with a resulting decrease in blood volume, and (2) to the maintenance of the blood pressure at this critical level, as the result of a continued gradual withdrawal of blood from the circulation, with a continued gradual decrease in blood volume as the diverted blood is collected in an area from which it cannot escape plus the stagnation of this blood in the gastro-intestinal tract, which has all the effect of primary hemorrhage. Occlusion of the portal vein for pylophlebitis of appendical origin is discussed in its clinical aspects, and it is concluded that the operation although theoretically sound and technically possible, actually has a limited field and always is attended with grave risks.

Journal of Urology, Baltimore

34 192 (July) 1935

*Hyperparathyroidism and Renal Disease. Note as to Formation of Calcium Casts in This Disease. F. Albright and Esther Bloomberg. Boston—p. 1.

Treatment of Bladder Tumors with McCarthy Resectoscope. T. E. Gibson. San Francisco—p. 8.

Bladder Dysfunction in Cases of Brain Tumor. Cystometric Study. J. W. Watts and C. A. W. Uhle. Philadelphia—p. 10.

Preliminary Shrinkage of Prostate in Transurethral Resection Together with Histologic Study of Action of Coagulating and Cutting Currents. C. K. Smith and A. L. Stockwell. Kansas City, Mo.—p. 31.

Spontaneous Rupture of Epididymitis and Two Unusual Accidents of Testicle. Report of Cases. E. S. Pomeroy. Salt Lake City—p. 43.

Abscess of Testicle. W. Rosenberg. Cleveland—p. 44.

*Gonadotropic Hormone in Urine of Men with Tumor of Testis. F. Hinman and T. O. Powell. San Francisco—p. 55.

Prognosis and Treatment of Tumors of Testis. F. Hinman. San Francisco—p. 72.

Myxosarcoma of Spermatic Cord. A. N. Collins and G. L. Berdez. Duluth, Minn.—p. 85.

Hyperparathyroidism and Renal Disease—Albright and Bloomberg state that hyperparathyroidism is such a frequent cause of renal stone formation that its presence must be ruled in or out in every case of this disease. They studied a series of twenty-three proved cases of hyperparathyroidism. Of these fifteen patients had renal calculi and three others renal lesions due to calcium deposits in the intrarenal urinary passageways. Eleven patients were suspected of having the disease only because of the renal calculi and had no bone disease. Only

five patients had bone disease without renal disease. A frequent finding in hyperparathyroidism is the presence of many finely granular casts in the urinary sediment. The granules have been shown to contain calcium, probably calcium phosphate. The casts can be made to change into hyaline casts, as the urine is made more acid by administering ammonium chloride by mouth. Their continuous presence in large numbers is an indication that intrarenal damage is in progress. The factors governing the formation of these casts, which in a way are microscopic calculi in the renal tubules, are probably the same that govern stone formation in hyperparathyroidism. These factors are the concentrations in the urine of calcium, of phosphate and of hydrogen ions. Stone formation in hyperparathyroidism belongs to that etiologic group in which the presupposing abnormal factor is an excess of crystalloids in the urine.

Gonadotropic Hormone in Urine with Tumor of Testis—Hinman and Powell state that the pituitary gland, pregnancy and embryonal tumors are known causes of the appearance in the urine of gonad-stimulating hormones. The stimulation of the growth of gonads and genitals of infantile animals varies with the origin of the hormone producing it, the amount present in the urine and the animal used for the injections. The authors make a qualitative test for as low as 250 units in infantile mice and rats first on fresh unaltered morning urine. If positive, a quantitative test may be made. The microscopic ripening of the graafian follicles is more easily read in mice than in rats. The gross enlargement of the uterine horns is more definite and diagnostic in mice than in rats. At the age of twenty or twenty-one days the ovary of the rat may show open follicles normally. The hydrocele fluid with tumor of the testis may contain more of the hormone than the patient's urine. The majority of tumors of the testis are embryonal. The urine of patients having embryonal tumors contains a substance that produces gross enlargement of the uterine horns or microscopic ripening of ovarian follicles (reaction I of Zondek) when injected into infantile female mice and rats. The presence of such a gonadotropic hormone in the urine of a patient with a tumor of the testis is evidence of testicular malignancy and its absence is evidence against malignancy. The effect of irradiation on the amount of hormone in the urine, as determined by quantitative methods before and after irradiation, gives a good indication of roentgen sensitivity and may be used as a therapeutic test in conjunction with the clinical effect on metastases, when present. The therapeutic test of irradiation must be interpreted in conjunction with the histologic structure of the tumor, the clinical absence of metastases or the character of metastases when present and the physical condition of the patient. The hormone test permits a more accurate prognosis and a better control of therapy than has been possible heretofore.

Michigan State M. Society Journal, Grand Rapids

34 347-416 (June) 1935

Low Calory Ketogenic Diet for Treatment of Chronic Urinary Tract Infections. R. M. Nesbit, C. H. McDonnell and Genevieve C. Rourke. Ann Arbor—p. 347.

*Diabetes Insipidus After Epidemic Encephalitis. L. E. Himler, Ann Arbor—p. 350.

Major and Minor Medical Morals. L. F. Barker. Baltimore—p. 352.

Aneurysm of Splenic Artery with Fatal Hemorrhage. G. L. LeFevre and E. M. Pettis. Muskegon—p. 358.

Physicians as Dramatists. G. S. Bates, Detroit—p. 362.

The Rhinologic Management of Allergic Individual. J. E. Croushore and S. J. Levin, Detroit—p. 369.

The Periodic Health Survey in Women. E. S. Hoffman, Detroit—p. 374.

Ectopic Pregnancies. Review of Two Hundred and Eighteen Cases. D. M. Davidow, Detroit—p. 376.

Hyperparathyroidism. Blood Phosphorus and Calcium Changes. Report of Three Cases. I. I. Bittker, Detroit—p. 381.

Some Interesting and Unusual Lesions of Oral Mucous Membrane. A. R. Woodburne, Grand Rapids—p. 384.

Sickle Cell Anemia. Etiology. Report of Case. H. A. Robinson, Detroit—p. 388.

Diabetes Insipidus After Epidemic Encephalitis—Himler discusses a case in which almost all the symptoms of the so-called neuropituitary syndrome were present: polydipsia, polyuria, obesity, elevated blood pressure, tendency to somnolence, headaches and mild emotional and psychic disturbances. The febrile illness which preceded the onset of the polydipsia

in infancy was undoubtedly an attack of epidemic encephalitis. The subsequent development of parkinsonism and oculogyric crises fourteen years later leaves little doubt that epidemic (lethargic) encephalitis was the sequel. Because of the close proximity of the globus pallidus and substantia nigra to the hypothalamus, it can be readily understood how an inflammatory process in the basal ganglions may by slight extension medially involve the region in which the diencephalic thirst center is located. Various types of medication were tried in an attempt to reduce both the parkinsonian tremor and the excessive desire for fluids. The usual drugs for parkinsonism failed to have an appreciable effect on the intake and output. Solution of pituitary intramuscularly four times a day, and pitressin nasal spray every six hours, were definitely the two most valuable agents in reducing the polydipsia and polyuria. When the intake was kept between 6,000 and 8,000 cc. daily, the patient also felt generally more comfortable. The possibility of a psychogenic element was excluded by substituting sterile hypodermics at the time solution of pituitary was being given, and there was a prompt rise of the intake to the original level within a day. The persistence of symptoms in the patient for nineteen years would indicate that they are in all probability permanent. In this respect the diabetes insipidus bears the same general prognosis as other sequels of epidemic encephalitis. In view of the organic nature of the underlying cause, it is doubtful whether any therapy for the abnormal thirst sensation can be more satisfactory than that for the parkinsonism. What beneficial effect is obtained seems to be due to intermediation of the pituitary. The exact physiologic relationship between the hypophysis and the hypothalamus, and the manner in which it is influenced by the administration of posterior lobe extracts, has not as yet been determined.

Military Surgeon, Washington, D C

77:156 (July) 1935

- Promotion and Experience J C Pryor—p 1
- Economic Phases of Tropical Medicine with Especial Reference to Malaria Control R C Connor—p 4
- Food Fads and Folly F J Vokonn—p 19
- Gunshot Wounds Which Caused Deaths of Three of Our Presidents J W Davis—p 23
- Advantages of Active Duty Training with Regular Army Units for Medical Reserve Officers D P Penhallow—p 29
- Quinine and Malaria in the Army Ninety Years Ago G F Lull—p 34

New England Journal of Medicine, Boston

212:1197-1242 (June 27) 1935

- Management of Bright's Disease and Hypertension J P O'Hare Boston—p 1197
- Paradenolymphitis L. A. Giffin West Hartford Conn.—p 1209
- *Treatment of Acne Vulgaris with Pregnancy Urine Extract Preliminary Report. C H Lawrence and J Feigenbaum Boston.—p 1213
- Bromide Intoxication T S Claiborne Boston—p 1214
- Optic Disk as Aid to Diagnosis in Central Nerve Lesions G G Marshall Rutland Vt.—p 1220

Treatment of Acne Vulgaris with Pregnancy Urine Extract.—Lawrence and Feigenbaum treated fifteen patients presenting acne vulgaris with an initial dose of 1 cc of anterior pituitary-like principle (100 rat units) to determine the individual reaction to the extract. The dose was then increased to 2 cc. three times weekly. In only one patient was there enough reaction to make it inadvisable to give the larger dose. The treatment was interrupted three or four days before each menstrual period and resumed from two to four days after menstruation ceased. In no case was there any demonstrable effect on normal menstruation. In patients who had acne and menorrhagia or metrorrhagia, the improvement in the acne paralleled the return of menstruation to normal. This association of effects suggests that, in these patients, the acne and the menstrual disturbance were due to an identical hormone imbalance. Of the authors' patients eight have been cured while four are greatly improved and two show slight improvement. No definite conclusions can be drawn from so small a series of observations but these observations and the natural history of acne suggest that its cause lies in an endocrine imbalance coincident with adolescence consisting possibly in a quantitative or qualitative abnormality of the newly activated gonadal hormones.

Puerto Rico J Pub Health & Trop Med., San Juan

10 417-548 (June) 1935

- Modern Measures in Mass Control of Tuberculosis E R. Long Philadelphia—p 417
- Tuberculosis Surveys in Puerto Rico I Study of a Coast and a Mountain Municipality J Rodriguez Pastor P Morales Otero and G C Payne San Juan—p 451
- Id II Study of Two Urban Communities Preliminary Report. J Rodriguez Pastor P Morales Otero G C Payne, R Ramirez Santos and E Silva San Juan—p 514
- Id III Survey of Slums in San Juan J Arruza, G C Payne and J Rodriguez Pastor San Juan—p 533
- *Chromoblastomycosis Preliminary Report on New Clinical Type of Disease Caused by Hormodendrum Compactum Nov Sp A L. Carrión San Juan—p 543

Chromoblastomycosis.—Carrión reports a case of chromoblastomycosis in which the infection started more than twenty years ago on the left wrist. The disease has followed a slow and chronic course, gradually but steadily spreading, until now it covers most of the hand, forearm and elbow. It does not show either the nodules or the large, prominent, vegetative tumors usually present in this mycosis, and the lesions are more patchy, psoriasiform, less infiltrated and, in places, more or less papillomatous. The invasion of new regions seems to have taken place chiefly by peripheral extension of old foci. The occurrence of extensive zones of scarred skin indicates that healing has eventually taken place in the older portions of the pathologic areas. The histopathologic changes are indistinguishable from those observed in other cases of chromoblastomycosis. The fungus isolated from the lesions is a hormodendrum, which resembles in some respects Hormodendrum pedrosoi but which shows a considerable number of clean-cut differences clearly separating it from that species. Cultures on Sabouraud's medium are characteristic. The rate of growth is much slower, the gross morphology is markedly different and the consistency is much more brittle than in Hormodendrum pedrosoi. Microscopically the thallus as a whole is darker and the hyphae are coarser and more tortuous. The spore heads are more compact, owing to the sphericity of the conidia, the relatively large diameter of the cross septums which separate them and the frequency with which a spore gives rise to two or more secondary conidia. Finally, the size, shape and mode of articulation of the individual spores are entirely different from Hormodendrum pedrosoi. Because of the compact arrangement of the spores the name Hormodendrum compactum is proposed to designate this species.

Radiology, Syracuse, N Y

24 651-780 (June) 1935

- Rhizomonmelorheostosis B P Widmann and W R Stecher Philadelphia—p 651
- Some Phases of Roentgenologic Diagnosis of Gastric Cancer B R. Kirklin Rochester Minn—p 672
- Debt of Surgery to Roentgenology D C Balfour Rochester Minn.—p 684
- *Inflammation of Descending Portion of Duodenum Preliminary Report. M L Sussman New York—p 691
- Treatment of Epithelioma Involving Cartilage Using 220 Kilovolt Peak and Heavy Filtration E A Merritt and R R Rathbone, Washington D C—p 701
- Osteogenic Sarcoma Roentgenologic Characteristics R. T. Wilson Temple Texas—p 708
- Bone Lesions in Children J I Mitchell Memphis Tenn—p 715
- Osteogenic Sarcoma Its Pathologic Characteristics C. Phillips, Temple, Texas—p 728
- *Modification of Radiation Treatment of Carcinoma of Stomach I I Kaplan New York—p 735
- Preliminary or Preoperative and Preradium Irradiation in Management of Malignant Diseases J T Stevens New York and Montclair N J—p 739
- *Simplified Method of Bronchography J Forester and L. Leroux, Paris France—p 743

Inflammation of Descending Portion of the Duodenum.—Sussman states that duodenal inflammatory lesions occur distal to the duodenal bulb and particularly in the portion between the knee and the papilla major. He studied eight cases in which the diagnosis of inflammatory lesion of the descending portion of the duodenum was made roentgenologically. Operations were performed in two, but the information obtained was not satisfactory and the conclusions arrived at must be evaluated accordingly. The cases could be grouped roentgenologically as stenosis and irritability of the descending portion alone, stenosis with the demonstration of an ulcer crater within the

stenotic lesion, stenotic lesion in association with ulcer of the duodenal bulb, and stenotic lesion in association with gastric ulcer. Noteworthy features were relatively slight to marked narrowing of the lumen of the duodenum between the upper knee and the papilla major, marked irritability, irregularity in outline or unusual smoothness, and a marked disturbance in the longitudinal mucosal folds so that they either disappeared or were irregular in their distribution as demonstrated by compression technic. In some cases an ulcer crater was seen. There was no organic obstruction. There may be an associated peptic ulcer. The clinical symptoms of peptic ulcer are obtained but are exaggerated, often there is stress on nocturnal pain, nausea and vomiting in attacks and poor response to a Sippy regimen. Hyperacidity is a fairly prominent feature. An appeal for careful study of the descending portion of the duodenum is made, particularly in routine cases to determine the normal, and in cases in which there is a suggestive history of ulcer and a lesion is not demonstrated in the stomach or duodenal bulb. The diagnosis of inflammatory disease of the descending portion of the duodenum rather than essential peri-duodenitis appears to be the more satisfactory in these cases.

Modification of Radiation Treatment of Carcinoma of Stomach—Kaplan used the following technic in three patients who had carcinoma of the stomach. It consists in a preliminary gastro-enterostomy, followed by the delivery of the stomach into the abdominal wound, localization of the lesion and implantation of suitably prepared, filtered radon seeds. The number of seeds and the strength of the radon in each varies with the extent of the lesion. From twenty to forty gold seeds were used, containing approximately 1 millicurie of radon in each seed. The seeds were implanted in the part of the stomach wall involved by the tumor and were placed in parallel lines up to, but not puncturing through, the mucosa of the stomach. Seeds were also placed in all palpable accessible lymph nodes in the vicinity of the stomach. The gold filtration of 0.3 mm absorbs approximately 95 per cent of the beta rays thereby to a large extent avoiding localized necrosis. Following the radon implantation, the abdominal wound is closed. The next day the patient may be put on a nourishing soft diet and in a short time allowed up and about. A few days following the healing of the abdominal wound, high voltage x-rays are directed to the stomach lesion, anteriorly and posteriorly through the abdominal wall. In this way additional radiation over a more extensive area is delivered to the tumor and surrounding tissues. In carcinoma of the stomach the pylorus is the most frequent site of the lesion. Of the three cases presented, two were pyloric tumors and the third involved nearly the entire stomach, presenting the so called leather bottle type. The result was good in two cases and bad in the third. The two patients were alive and comfortable, one after five months and one after two years. The third patient, with the leather bottle type stomach, died two months after treatment, having been bedridden continuously following treatment.

Simplified Method of Bronchography—Forestier and Leroux describe a modification of the method proposed by Hicquet and Hennebert, which consists in injecting the oil into the bronchial tree with a soft rubber catheter introduced into the nostril and farther down into the pharynx, larynx, and trachea. The authors found that the same route could be followed without the use of any catheter, the oil, and, previously to it, the anesthetic, being injected directly into one nostril with an ordinary glass syringe exclusive of any tip or catheter of any sort. The method is based on the following principles. When the tongue is pulled out of the mouth and grasped firmly the epiglottis is raised with the whole larynx, the upper orifice of the esophagus is closed and the patient is unable to swallow. If any fluid comes into the pharynx in this position, the only way open below is the glottis. The local anesthesia of the pharynx, larynx and trachea is made with exactly the same technic as the injection of iodized oil itself. The anesthetic solution is poured into the nostril and slides down to the glottis and later into the trachea, following exactly the same path which the oil will follow when bronchography is performed. No laryngeal mirror, swab or spray is necessary, and the technic may be performed by any qualified physician. The local anesthesia brought about by the

cocaine solution on the nasal and pharyngeal mucous membranes probably helps to stop the cough reflex arising in the laryngeal vestibule. Once the anesthesia of the larynx has been obtained, the tracheal bifurcation is anesthetized by injecting some more anesthetic into the bronchial tubes. The results of the method have been most satisfactory. Only one person out of several hundred is able to swallow the oil while the tongue is pulled out firmly. This procedure causes the patient as little discomfort as possible. Fluoroscopy can be performed while the injection of iodized oil is made. In the event of failure the use of a catheter passed through the nose may lead to success in a limited number of cases. In hospital work from four to five patients may easily be examined almost at the same time, the anesthesia being begun for each of them one minute after the other, and the whole set of cases can be examined within less than half an hour. The authors found the method without danger. A limited number of patients have experienced some dyspnea during the time of the injection. A subcutaneous injection of camphor oil with ether can control this symptom very easily. In case of active sinus or nasal infection the pernasal route should be avoided.

Southern Medical Journal, Birmingham, Ala

28:583-678 (July) 1935

- Report on Application of Smith-Petersen Nail in Fresh Fractures of Femoral Neck by Adaption of Simplified Technic W B Carrell Dallas Texas.—p 583
- True Prostatic Calculi H W McKay and G A Hawes Charlotte, N C.—p 588
- Adenofibroma (Fibro-Adenoma) Malignant of Breast. M D Lindsay and H C Schmeisser Memphis Tenn.—p 594
- Variations in Origin and Course in Hepatic Artery Importance from Surgical Point of View E Z Browne New Orleans.—p 599
- *Neuropathology of Pellagra in Its Relation to Cutaneous and Other Manifestations Preliminary Report. B R Tucker Richmond Va.—p 603
- Hereditary Ectodermal Dysplasia of Anhidrotic Type Report of Two Cases E G Schwarz Fort Worth, Texas.—p 606
- Sea Sponge Dressing to Promote Healing and Arm Function Following Radical Breast Amputation M J Rumold and T G Orr Kansas City Kan.—p 609
- Ringworm of the Scalp Treatment of Microsporon Infections with Specific Culture Filtrate. L M Smith El Paso Texas.—p 610
- Cancer of Face and Oral Cavity Surgery versus Radiation A O Singleton Galveston Texas.—p 615
- Röntgen Therapy in Mammary Cancer R G Giles Temple Texas.—p 620
- Management of Atrophic Arthritis W P Holbrook and D F Hill Tucson Ariz.—p 625
- Influence of Early Therapy on Incubation Period of Syphilis T B Hall Kansas City Mo.—p 631
- Dengue Fever Report of One Hundred Cases Studied at Jackson Memorial Hospital During the Miami Epidemic 1934 J M McClamroch and J R Vallotton Miami Fla.—p 635
- Rational Treatment of Nasal Diseases. D Roy Atlanta Ga.—p 638
- Trachoma Infection and Treatment. M M Cullom Nashville Tenn.—p 642
- Incomplete Abortion and Miscarriage Analysis of Five Hundred and Twenty One Cases T M Boulware Birmingham Ala.—p 645
- Hernia in Railroad Employees C C Green Houston Texas.—p 649
- Mechanisms of Corpus Striatum and Cerebellum in Muscular Action Mechanism of Voluntary Muscular Action J Greenwood, Houston Texas.—p 653
- *Newer Aspects of So-Called Plomaine Poisoning J L Goforth Dallas Texas.—p 659
- Allergic Dermatitis C M Stroud St Louis.—p 665
- Some Important Factors in Prevention of Tuberculosis S E Thompson, Kerrville Texas.—p 669

Neuropathology of Pellagra—Tucker attempts to correlate the alimentary and cutaneous lesions with the pathologic lesions found in the nervous system, discusses the latter and suggests a virus invasion as the possible etiologic factor in pellagra. The sequence of the symptoms of pellagra was first those of the alimentary canal, then of the cutaneous surfaces, nervous and mental manifestations usually coming later. In the alimentary canal the parts chiefly affected by pellagra are the mouth and the colon. The cutaneous lesions are bilateral and symmetrical and occur chiefly on the dorsum of the hands and the extensor surface of the arms, on the outer surface of the elbows, on the dorsum of the feet and the front of the knees, on the forehead ala nasae, cheeks and chin and less frequently on the front and back of the neck and on the labia or scrotum. Hence these lesions occur on either exposed or unexposed surfaces. Among the organic neurologic symptoms are tremors, muscular cramps, transient contraction of the limbs, mumbling speech, diminished hearing, diminished smell and diminished

taste, and the Romberg sign may be present. The most constant finding in six spinal cords and in two sympathetic spinal ganglions was gliosis. In the cords the posterior columns were especially involved. Other changes in both cords and ganglions were scattered chromatolysis, shrinkage of nerve cells, pigmentation, neurophagia and lysis or fragmentation of Nissl granules. Allowing for possible postmortem changes, it would seem that these alterations occur more markedly in pellagra than in most other diseases, although they cannot be considered specific for pellagra. All forms of degeneration were possibly more marked in the cervical and lumbar regions of the cords. The degenerations of the spinal sympathetic ganglions were extensive. The disease in its wide epidemiology, in its place occurrence, in its trophic lesions corresponding to root endings in its cord and spinal sympathetic ganglionic invasion in its apparent attenuation and in its recurrence reminds one of such filtrable virus diseases as influenza, encephalitis and infantile paralysis. The author believes that, if many more sections of the cord from the upper cervical region to the conus, of the sympathetic ganglions and of both motor and sensory peripheral nerves and sympathetic nerves are studied, pellagra will eventually be classified as a neurologic rather than a general medical disease and that it will be found that the distribution of the cutaneous and alimentary symptoms will be in relation to the lesions of the nervous system.

So-Called Ptomaine Poisoning—Goforth says there is no justification for the continued use of the expression ptomaine poisoning. Food infection, the invasion and growth in the body of pathogenic micro organisms capable of producing toxins, and food intoxication, a poisoning produced by toxins formed by bacteria in food before ingestion, constitute the largest and most important varieties of acute food poisoning. The organisms of the *Salmonella* group, particularly *Bacillus aertrycke* enteritidis and *supestifer*, are responsible for the majority of outbreaks of acute food poisoning. These organisms are capable of forming a heat-resistant irritant which can produce acute gastro-enteritis. The sources from which the organisms causing bacterial food poisoning are derived are not completely known. Protein foodstuffs particularly meat and milk products, are the vehicles of infection in the majority of instances. Laboratory methods are necessary in proving the diagnosis and etiologic factors of food poisoning. They should be more frequently employed when the physician makes his initial detailed study of the case. Accurate conclusions presuppose the support of pertinent clinical data. The increasing number of medicolegal cases of food poisoning emphasizes the necessity for the early, complete and accurate collection of data and materials for examination in each case by all associated with the case. The prevention of bacterial food poisoning depends to a large extent on the coordinated activities of the laboratory workers, the public health officer, the veterinarian, the nurse and the general practitioner. Rigid standards of sanitation regarding the preparation, preservation, handling and exposure of foodstuffs should be maintained. Extended research is needed to bridge the gaps in our knowledge of bacterial food poisoning.

Southwestern Medicine, Phoenix, Ariz

19:183 222 (June) 1935

- *Bronchomoniliasis Preliminary Report J W Flinn R S Flinn and Z M Flinn Prescott Ariz—p 183
- Physiologic Approach to Treatment of Heart Failure F A Willius Rochester Minn—p 188
- Polycystic Kidney Report of Five Cases J W Pennington and D M Davis Phoenix Ariz—p 194
- *Presacral Ganglionectomy for Dysmenorrhea A K Duncan Douglas Ariz—p 198
- Prehistoric Syphilitic Lesions Example from North America H S Denninger Glendale Ariz—p 202
- Calcium in Therapeutics E C Houle Nogales Ariz—p 204
- Artificial Pneumothorax in Treatment of Pneumonia J C Riggins Tucson Ariz—p 207

Bronchomoniliasis—In two cases of nontuberculous disease of the lungs the Flinns isolated bronchomoniliasis and proved its pathogenicity by injection into the lungs of laboratory animals. In one case the diagnosis was confirmed by therapeutic test in the other the diagnosis was proved by postmortem study and recovery of the organism from necropsy specimens. Morphologically the infecting organism was a yeast-

like fungus belonging to the family Oosporaceae Saccardo. Biochemical studies enabled them to classify it definitely in the genus *Monilia* (or more accurately *Monilia Persoon*) and the species *Monilia Pinoyi*.

Presacral Ganglionectomy for Dysmenorrhea.—Duncan states that surgery of the pelvic sympathetic nerves for intractable dysmenorrhea has proved to be a safe and satisfactory method for the immediate and lasting relief of this periodically disabling condition. The operation can be performed by any competent abdominal surgeon and obviates the unsatisfactory temporizing methods of treatment in intractable dysmenorrhea or unnecessary hysterectomy or the use of radium or x rays, which are distinctly contraindicated in the young as a cure for this condition. The resection of the superior hypogastric plexus is safe and is not followed by any serious complications, and it in no way interferes with conception, gestation or delivery. The procedure is indicated in severe disabling pain at the menstrual period, which has existed over a period of time often associated with pain of a neuralgic type in the pelvis and back between periods. If no adequate explanation for this pain can be found on physical examination, and it has resisted all the usual methods of treatment, a good indication for a sympathetic resection exists if one wishes to give permanent relief. It is not indicated when at exploration, definite pathologic conditions are encountered that adequately account for the pain. Careful examination will show a high proportion of these cases showing a sclerotic change in the ovaries and these ovaries should not be removed as their function seems to become more normal after the sympathetic resection and anatomic improvement may also take place. Cysts of the ovaries should be resected the ovarian structure being disturbed as little as possible.

Texas State Journal of Medicine, Fort Worth

31:67 184 (June) 1935

- Memorial Address C A Gray Bonham—p 73
- Can Our Present System of Medicine Survive S E Thompson, Knoxville—p 74
- Relation of Auxiliary to the Medical Profession Mrs S D Whitely, Greenville—p 78

United States Naval Med. Bulletin, Washington, D C

33:313 420 (July) 1935

- Ameliasis and Its Surgical Complications J J A McMullin—p 313
- Ameliasis H M Weber—p 324
- Suggested Change in Calculating Decompression Tables for Diving J A Hawkins C W Shilling and R A Hansen—p 327
- Promotion and Experience J C Pryor—p 338
- Treatment of Vesical and Vascular Conditions by Operations on Sympathetic Nervous System W M Craig—p 341
- Tumors and Associated Problems F K Soukup—p 348
- Chorio Epithelioma Should Serum from Female in Puerperium and Pregnancy Be Given Therapeutic Trial? J G Dickson—p 358
- Double Oral Administration of Dye for Cholecystography I W Jacobs—p 362
- Methylene Blue and Other Agents as Antidotes in Hydrocyanic Acid and Carbon Monoxide Poisoning G F Cooper—p 364
- Oral Prophylaxis E B Howell—p 370
- Psychology of the Sick B W Hogan—p 373
- Surgical Treatment of Retinal Detachment G C Wilson—p 379
- Prophylactic Use of Arsenicals in Syphilis J W Kimbrough—p 386
- Arteriovenous Aneurysm of Internal Carotid Artery and Cavernous Sinus Report of Case J F Riordan and O R Veas—p 388
- Instance of Circulatory Collapse Attributed to Diminution of R J Leutscher—p 394

Virginia Medical Monthly, Richmond

62:185 242 (July) 1935

- Urinary Obstructions in Children L Davis Roanoke—p 186
- Urethral Obstructions in Children W W S Butler Jr Roanoke—p 188
- Some Extra Uterine Complications of Pregnancy H H Ware Jr Richmond—p 190
- Community and Medical Economics R W Garnett Danville—p 196
- Medicolegal Aspects of Apoplexy J M Hutcheson Richmond—p 198
- Administration and Misadministration of Digitalis W P Adams Norfolk—p 202
- Splicing Cast to Correct Angulation and Lengthen Leg M A Johnson Jr Roanoke—p 207
- Myocardiosis Problem of Preventive Medicine L S Liggan Irvington—p 208
- Effect of Salyrgan (Mersalyl) on Electrocardiogram N Bloom and Grace Cashon Richmond—p 216
- Preventive Pediatrics W F Burdick Washington D C—p 218
- End Results of Dental Focal Infection from Medical Point of View W H Higgins Richmond—p 220

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

72: 83-162 (April-June) 1935

- Neurologic Complications of Varicella. Clinical and Epidemiologic Study. E. A. Underwood—p. 83
Analysis of Over Four Thousand Cases of Educational Deafness Studied During Past Twenty Five Years. M. Yearsley—p. 107
Cancerum Oris in Ancient Rome. W. J. Rutherford—p. 129

British Journal of Experimental Pathology, London

16: 201-348 (June) 1935

- Spectroscopic Investigation of Bacterial Toxins. Absorption Spectrums of Products of *Corynebacterium Diphtheriae*. A. Wadsworth, M. O. Crowe and L. A. Smith—p. 201
Experiments on Serologic Reactions of Potato Virus X. E. T. C. Spooner and F. C. Bawden—p. 218
Hemolysis from Strain of Animal Streptococci. H. Loewenthal and M. G. Pradhan—p. 230
Bacillus Resembling *Erysipelothrix Murisepctica* Isolated from Necrotic Lesions in Livers of Mice. S. E. B. Balfour Jones—p. 236
Studies in Mouse Leukemia. Preleukemic Changes in Lymphoid Metabolism. J. Victor and J. S. Potter—p. 243
Id. Metabolic Observations in Spontaneous Lymphatic Leukemia. J. Victor and J. S. Potter—p. 253
Hypertension Associated with Experimental Oxalate Nephritis. W. M. Arnott and R. J. Kellar—p. 265
Propagation of Strain of Rabbit Fibroma Virus in Tissue Culture. G. H. Faulkner and C. H. Andrews—p. 271
Influenza. Preparation of Immune Serums in Horses. P. P. Laidlaw, W. Smith, C. H. Andrews and G. W. Dunkin—p. 275
Id. Experiments on Immunization of Ferrets and Mice. W. Smith, C. H. Andrews and P. P. Laidlaw—p. 291
Relation of Bile to Absorption of Vitamin D. N. B. Taylor, C. B. Weld and J. F. Sykes—p. 302
Tryptophan and Sporogenes. Vitamin Requirements of *Bacillus Botulinus*. P. Fildes—p. 309
Essential Growth Factor for *Staphylococcus Aureus*. B. C. J. G. Knight—p. 315
Amino Acids Necessary for Growth of *Clostridium Sporogenes*. P. Fildes and G. M. Richardson—p. 326
Carbon Dioxide as an Essential Factor in Growth of Bacteria. G. P. Gladstone, P. Fildes and G. M. Richardson—p. 335

Hypertension Associated with Experimental Oxalate Nephritis—In their search for a nephrotoxic substance that might produce hypertension Arnott and Kellar used sodium oxalate. Fourteen chinchilla rabbits were used throughout the course of the experiments. Eight of these were placed on a relatively dry diet of oats and bran with an occasional cabbage leaf and no water. The other six received a cabbage diet with water as desired. One animal in each group served as a control. After a prolonged period of control lasting several weeks, the animals were given a course of sodium oxalate intravenously, the injection being repeated every second day. The initial dose was from 50 to 60 mg of sodium oxalate, which was raised after two injections to from 80 to 100 mg depending on the weight of the animal. The control animals received equivalent volumes of physiologic solution of sodium chloride intravenously, to eliminate the possibility that the mere bulk of fluid had any effect on the blood pressure. Blood urea nitrogen readings were made on all animals during the control period and on the animals that survived a period of three weeks of the oxalate injections. The average normal systolic pressure in the fourteen rabbits was 96 mm of mercury. It was found that repeated injection of sodium oxalate into rabbits results in a definite hypertension with a duration of approximately twelve days. Thereafter the pressure shows a pronounced instability although it never reaches such a height as during the initial period of hypertension. This hypertension appears sooner and is more pronounced in the case of animals fed on a dry diet. It is hardly surprising that there is to be found a difference in the reaction of animals on such diets as the conditions of renal function are so widely dissimilar. Those on a dry diet produce scanty concentrated urine rarely in excess of 50 cc daily, with occasional periods of anuria as long as thirty-six hours whereas those on the wet diet pass as much as 500 cc. of urine and rarely less than 150 cc. Whether or not this hypertension is of renal origin, the albuminuria, the nitrogen retention and the histologic picture indicate that at least it is associated with renal damage. The authors are unable at present to advance any evidence as to the mechanism by which the pressure is elevated although

they might suggest that it is in some way associated with glomerular ischemia resulting from the pressure exerted by the swollen tubular epithelium. The one common factor that is shared by most varieties of human renal disease associated with hypertension is some interference with glomerular circulation. It has to be realized, however, that, owing to the widely dissimilar etiology and histology, experimental oxalate nephritis sheds little light on human glomerular nephritis. They hope that this experimental production of hypertension may provide a basis for the investigation of the as yet unsolved relationship between renal damage and hypertension.

Influenza and the Preparation of Immune Serums in Horses—Laidlaw and his associates found that antinfluenza serum of significant potency can be made by hyperimmunizing horses with virus emulsions from ferrets suffering from acute attacks caused by human or porcine strains of influenza virus. Such hyperimmune serum will neutralize influenza virus in mixtures even after considerable dilution. This serum confers some degree of passive immunity to mice on injection. It has a beneficial action on mice already infected with the virus. Horse hyperimmune serum can be fractionated and concentrated. The greater part of the activity is found in the pseudoglobulin fraction of the serum and is precipitated in the fraction salted out between 12 and 16 per cent of sodium sulphate. The resolution of influenzal pneumonia in mice is a slow process and presents some peculiar features.

Influenza and Experiments on Immunization of Ferrets and Mice—Smith and his co-workers observed that ferrets after recovery from infection with influenza virus are completely resistant to reinfection for at least three months, thereafter the immunity slowly wanes. Ferrets with waning immunity still have significant amounts of virus-neutralizing antibodies, but in spite of the presence of these the nasal mucosa is susceptible to attack by virus. The waning immunity can be reinforced by subcutaneous inoculations of living virus so that once more the ferret becomes completely resistant. Subcutaneous inoculations of living or formolized virus produce in ferrets a partial immunity, characterized by the development of virus-neutralizing antibodies in the circulation and by an increased resistance of the lungs against virus attack. Similar immunization of mice with living virus has also a beneficial effect on the extent and course of the disease. The swine strain of virus (Shope, 1931) is immunologically related to but not identical with the two human strains studied.

British Journal of Physical Medicine, London

10: 23-40 (June) 1935

- Physical Medicine and Flying. T. S. Rippon—p. 25
Place of Sun Bathing, Sea Bathing and Open Air Exercise in Growth and Development. K. R. C. Hallows—p. 27
Function of Pigment in Skin. R. Aitken—p. 30
Feeding in Adolescence. Mary E. Ormsby—p. 32
Treatment of Certain Diseases by Chromotherapy. N. Scott—p. 34

British Medical Journal, London

1: 1251-1302 (June 22) 1935

- *Treatment of Obstetric Disproportion. R. C. Brown—p. 1251
Survey of Physical Condition of Children Between Ages of Three and Five Years in Cardiff and Rhondda Schools with Especial Reference to Factor of Malnutrition. A. G. Watkins—p. 1256
Recent Advances in Trachoma. F. H. Stewart—p. 1261
Five Hundred Foreign Bodies in Stomach. R. S. Kennedy—p. 1262
Pneumococcosis in South Wales Colliery Surface Workers. A. Harper—p. 1264
Thyrotoxic Heart Disease. G. Bourne—p. 1277

Treatment of Obstetric Disproportion—Brown states that the recognition of gross disproportion can be made on the findings of gross contraction of the pelvis alone. It is therefore essential that every patient be subjected to a vaginal examination and that the diagonal conjugate be measured. The outcome of labor in cases in which minor disproportion is thought to be present is uncertain. A decision can be made only after labor is in progress. Pelvic measurements are not unimportant but must be considered in conjunction with all other factors before prognosis can be made. A vaginal examination should be made in every case during pregnancy. Induction of premature labor for disproportion has no place in the delivery of a primipara. Induction of premature labor is a useful method in the delivery of a multipara when a record of the history

of former labor has been carefully kept and can be used as a guide to the capacity of the patient to deliver herself. A trial of labor will estimate the patient's capacity for delivery, and no amount of skill can enable an observer to decide on this capacity during pregnancy. When induction of premature labor is practiced in the case of the primipara it may be done unnecessarily, and there is little to prevent the obstetrician from repeating this error in the treatment of future pregnancies.

East African Medical Journal, Nairobi

12 67 98 (June) 1935

- Review of Incidence of Amebiasis in Zomba with Especial Reference to European Cases T A Austin and L C Mayne—p 68
Bradycardia in a Muganda Case R Y Stones—p 89

Journal of Physiology, London

84: 223 366 (June 18) 1935

- Method of Directly Recording Changes in Caliber of Bronchi M P Ellis and A E Livingston—p 223
Part Played by Splanchnic Innervation in Emptying Time of Stomach S Cerqua—p 232
Slow Impulses from Cutaneous Nerves of Frog B M Hogg—p 250
Acetylcholine Equivalent of Nervous Tissues G S Barsaoum—p 259
Course of Cardiac Nerve Fibers in Pulmonary Plexuses D T Barry—p 263
Effect of Vitamin D on Calcium Content of Dentine E W Fish—p 272
*Some Immediate Physiologic Effects of Reduced Cooling Powers on Human Subjects D H K Lee and A G Mulder—p 279
Response of Uterus of Hypophysectomized Rabbits to Extracts of Corpus Luteum J M Robson—p 296
Relation of Spleen to Formation of Glycogen in Liver Note on Rate of Absorption of Glucose and Lactic Acid Margaret Kerly and C Reid—p 302
Intravenous Injection of Oxygen with Animal Under Ordinary and Increased Atmospheric Pressure I Singh—p 315
Afferent Fibers from Abdomen in Splanchnic Nerves W A Bain J T Irving and B A McSwiney—p 323
Studies in Exophthalmos Effect of Certain Sympathomimetic Substances on Eye of Cat and Dog C E Brunton—p 334
Undulatory Changes of Uterine Origin in Arterial Blood Pressure K J Franklin—p 342
Adrenalin Vasodilatation in Voluntary Muscle G A Clark—p 344
Oxytocic Properties of Blood Extracts and Their Physiologic Significance G H Bell and J M Robson—p 351
Hypoglycemic Action of Insulin Phosphotungstate and Phosphotungstic Acid Administered by Mouth H N Mukherjee—p 362

Physiologic Effects of Reduced Cooling Powers—Lee and Mulder describe experiments in which human subjects in the postabsorptive state were kept at rest for six and one-half hours in hot rooms of two different humidities but of the fairly comparable "effective temperatures" of from 92 to 95 F. A standard meal and a standard amount of water were taken at stated times, and observations were made on pulse rate, body temperature, respiratory changes, urinary acid excretion, certain acid-base items in the cutaneous vein blood and symptoms. In subjects exposed to high temperatures, dry or humid the pulse rate and body temperature behave in a closely similar fashion. In the postabsorptive state they respond in equivalent fashion in environments of equivalent "effective temperatures," whether dry or humid, the taking of food, however, causes a greater reaction in the dry atmosphere. The value of Q_{10} for pulse rate in these experiments shows that the increase in rate is the result of complex factors. Respiratory changes are slight in the first three hours of the exposure they may become more marked subsequently. These changes are of the nature of increased depth rather than rate of respiration. Alveolar carbon dioxide tension does not fall until the respiratory volume has been markedly increased. Urinary acid excretion is lowered as compared with the normal room during the third to the sixth hour of the experiment. There is a definite fall in the carbon dioxide of cutaneous vein blood from the forearm. This appears before any fall in alveolar carbon dioxide tension. It is suggested that the causation is increased excretion of carbon dioxide through the skin, supplemented in some cases by an increased rate of cutaneous blood flow. Falling alveolar carbon dioxide tension may later cause a further lowering. The evidence for the existence of a true alkalemia of arterial blood, apart from overventilation, is inconclusive. There is no increased blood lactate content under these conditions. In the consideration of acid-base changes there is an urgent need for the reduction or so far as that is not possible, for the simultaneous study of variables simultaneous measurement of numerous items and rigid standardization of conditions.

Lancet, London

1: 1427 1482 (June 22) 1935

- Undulant Fever in Scotland C P Beattie J Smith and W J Tulloch—p 1427
Hemoglobin Level Among London Mothers of Hospital Class and Its Probable Bearing on Susceptibility to Infection Helen M M Mackay—p 1431
*Influence of Large Doses of Potassium Chloride on Myasthenia Gravis L P E Laurent and W W Walther—p 1434
Cleft Palate W E M Wardill—p 1435
Use of Purified Casein in Salt Free Diets E M Widdowson and R A McCance—p 1437
Value of the Drinker Respirator in Diphtheria Empyema and Pulmonary Collapse Note M Mitman and N D Begg—p 1438
Adolescent Coxa Vara V H Ellis—p 1440

Large Doses of Potassium Chloride in Myasthenia Gravis—Laurent and Walther determined the level of potassium in the blood plasma of ten normal subjects and of six patients presenting myasthenia. They used the following method of potassium estimation. Clear, nonhemolized serum or plasma is deprived of protein by means of tungstic acid and the clear supernatant fluid is treated with nearly saturated sodium cobaltic nitrite solution to precipitate the potassium as potassium sodium cobaltic nitrite. The precipitate is washed with distilled water and a solution of metaphenylenediamine hydrochloride is added and the precipitate allowed to dissolve in this acid solution in the boiling water bath. A yellow color is produced, varying in intensity with the concentration of nitrite. This color is compared with the color produced by a standard potassium solution similarly treated in a colorimeter. The advantages of the method are speed, simplicity and sensitivity. An adequate color is produced by quantities as low as 0.2 cc. of plasma, provided a microcolorimeter is used. The ten normal subjects had respectively 21.4, 17.5, 22.5, 15.2, 15.9, 15.8, 15.8, 17.0 and 18.0 expressed in milligrams per hundred cubic centimeters, while the six myasthenic patients had 15.7, 16.4 later 13.8, 15.2 later 15.8, 14.2, 15.8 and 15.2. Three patients with myasthenia were given 2 Gm of potassium chloride orally five times a day, each dose being dissolved in half a glass of water. They all reported some subjective improvement, starting half an hour after each dose and passing off in the course of the next hour. The authors observed slight diminution in ptosis, slight improvement in the range of ocular movement and increases of from 3 to 5 pounds in the power of the grasp. Large single doses were administered to five patients in the hope of obtaining a more clear cut improvement. Ptosis, external ocular movements and facial appearance were improved to a greater extent than the limbs, although the recording dynamometer showed constant increase in the power of the grasp of from 3 to 15 pounds according to the case. In two cases the plasma potassium was determined before and an hour after the ingestion of 12 Gm of potassium chloride. A considerable rise took place in each case. The preliminary figures were 14.7 and 15.2 mg per hundred cubic centimeters, and they increased to 22.6 and 27.4 respectively. Six patients with myasthenia took from 4 to 6 Gm of the salt six times daily. This treatment was a valuable adjunct to prostigmine (a derivative of physostigmine). Several of the patients found that a dose of potassium chloride taken before the action of prostigmine has ended relieves the feeling of exhaustion and to some extent prolongs the improvement brought about by this drug. The results obtained with the largest doses of potassium chloride tolerated by the patients are still somewhat short of the effect of 0.5 mg of prostigmine given by injection. The authors conclude that potassium chloride, when administered orally in doses of from 10 to 12 Gm., gives a demonstrable improvement in myasthenia and that in small repeated doses it is a useful adjuvant to prostigmine.

Japanese Journal of Gastroenterology, Kyoto

6: 61 112 (Dec) 1934

- Study of Relations Existing Between Liver Function and Metabolism of Fructose Reports I to VI Y Iida—p 61
Experimental Study on Influence of Diet on Formation of Hepatic and Renal Calculi Report IV Effect of Diet Deficient in Fat Soluble Vitamins IV Anatomic and Histologic Study of Liver Gallbladder and Kidneys. Appendix Bacteriologic and Microscopic Investigation of Bile and Urine K. Usuki—p 94
Id Report V Feeding on Diet Deficient in Fat Soluble Vitamin V Changes of Hydrogen Ion Concentration and Buffer Action of Bile K Usuki—p 105

Presse Médicale, Paris

43 977 1000 (June 19) 1935

- Parathyroidectomy and Chronic Rheumatism L. Bérard H. Thiers and M. Henry —p. 977
Serious Hemorrhages from Solitary Rupture of Hymen A. Binet and M. Tieger —p. 980
Vulnerable Regions of Small Intestines in Closed Traumatism of Abdomen C. Vergoz Homar and Ricard —p. 981
Facial Spasms of Dental Origin Y. Bercher B. Pommé and J. Dugué —p. 982
Acute Puerperal Psychotic Encephalitis L. Marchand A. Courtois and P. Sivodon —p. 984
Gastro-Esophageal Sensation of Burning M. Gaston Durand —p. 987
Importance of Mucin in Equilibrium of Gastric Acidity—R. H. Vonceaux —p. 988

Parathyroidectomy and Chronic Rheumatism—Berard and his co-workers discuss the question of parathyroidectomy for chronic rheumatism. The clinical indications are uncertain, and failures occur apparently regardless of the type of the rheumatism. They believe that parathyroid extract produces in certain cases modifications of the oscillometric curve. This action of the extract verifies the reality of the close relation between the parathyroid and vegetative systems. The suddenness of the improvement in certain cases and the rapidity of relapses confirms the impression of nervous action. The most effective operation is the ablation of a portion of the parathyroid system, even though this is not the cause of the pathologic syndrome. It is a symptomatologic treatment acting through the intermediary of the vegetative system. The obscure point is the nature of this connection. The simplest hypothesis is that parathyroid extract regulates the relation between sodium \times potassium and calcium \times magnesium. If this is verified, the improvement of a chronic rheumatism would be the conclusion of a series of phenomena which, starting with a disturbance of ionic equilibrium of the blood by the parathyroid, ends in a modification of vegetative excitability.

Gastro-Esophageal Sensation of Burning—The group of patients treated by Gaston-Durand comprised those having gastroduodenal burning sensations with migraine, with urticaria with a combination of the two, and with migraine and angioneurotic edema. Twenty-one patients (fifteen women and six men) were observed. A first series of daily subcutaneous injections of parathyroid extract was given. Five units was employed on the first day to test the susceptibility of the patient and 10 units on the succeeding days. From 15 to 20 units was given in some cases of severe disorder. Twelve injections were given in the series. In the three or four following weeks, bismuth subnitrate, kaolin, magnesium or acacia was administered orally a half hour before meals. A month after the first parathyroid series, a second series is given with subsequent alternation of these procedures. In one case there was complete failure (after two series), in four there was partial failure, in four there was marked improvement and in twelve there was such a notable improvement that the patients could be considered cured. The author states that this method of treatment cannot be applied to all cases and is not infallible but offers more hope in selected cases than any other method that he has tried.

Revue Française de Pédiatrie, Paris

11: 265-408 (No. 3) 1935

- Studies on Infantile Acrodynia Annual and Seasonal Frequency E. Leenhardt and J. Boucomont —p. 265
Id. Capillaroscopic Investigations J. Boucomont and R. Lafon —p. 272
Investigations on Origin of Allergy of Nursling P. Woringer —p. 283
Prophylaxis and Treatment of Severe Familial Icterus of the New Born M. Pehu A. Brochier and P. Wang —p. 304
Sugar of Blood and Cerebrospinal Fluid A. V. Tcherkassov and E. E. Jolkver —p. 350
Anemia of Mother and Child S. Van Creveld and N. I. Heybroek —p. 365

Origin of Infantile Allergy—Woringer studied sixty-six allergic infants from the standpoint of allergic family history and particularly of other cases of allergy in the direct ancestors. For twenty-two (33½ per cent) the inquiry was negative. Forty-four infants had one or more cases of early eczema among their direct ancestors or in the preceding collateral generations. Twenty-three times (35 per cent) the family of the mother was affected seventeen times (26 per cent) that

of the father and four times both sides. The allergies of the same family were always identical from an etiologic standpoint. The children of the same parents were affected with allergic disorders in a variable proportion, but usually the unaffected members predominated. The author believes that these facts cannot be explained either on the hypothesis of a postnatal sensitization or by an intra-uterine sensitization. They favor the hereditary origin of infantile allergy. This type appears as a character transmitted by gametes according to mendelian laws and seems to be recessive.

Blood and Cerebrospinal Fluid Sugar—Tcherkassov and Jolkver studied seventy-four patients with different forms of meningitis. They made 149 parallel determinations of the blood sugar and of the cerebrospinal sugar in these patients. They conclude that the quantity of fasting blood sugar in mild cerebrospinal meningitis does not show any pronounced deviations from normal. In the severe forms an increase paralleling the severity of the process is present. In tuberculous meningitis it is more often above normal. The quantity of sugar in the cerebrospinal fluid during meningitis varies according to the etiology. In tuberculous meningitis it is markedly diminished and falls progressively with the development of the disease. In cerebrospinal meningitis it varies with the course of the disease. At the beginning it is always below normal and later the quantity increases as the process improves, in serous meningitis the quantity of the spinal fluid sugar diminishes a little at the onset, but less pronouncedly than in cerebrospinal or tuberculous processes. The proportion of blood sugar and cerebrospinal sugar in the course of tuberculous and cerebrospinal meningitis shows a higher value than normal, owing to the diminution of sugar in the fluid. In serous meningitis the proportion is reversed, owing to the increase of sugar in the cerebrospinal fluid. The glycemic curve in the toxic forms of cerebrospinal meningitis and in advanced cases of tuberculous meningitis does not return to the initial level even after two hours and sometimes does not reach its maximum until this period. The attempt to push sugar on the patients with meningitis aims at the definition of the functional state of the blood brain barrier but is in no way preferable to other methods employed for this object.

Policlínico, Rome

42: 389-448 (July 1) 1935 Medical Section

- Extrapyramidal Nervous Syndrome of Malarial Origin Case V. Chini —p. 389
*Spontaneous and Provoked Ketonemia as Functional Test of Liver P. Zorzoli —p. 405
*Resistance of Leukocytes in Acute Diseases of Respiratory Tract of Children. V. Serra and S. Colbi —p. 425
Creautemia in Muscular Hypertonia of Extrapyramidal and Pyramidal Origin G. Cardinale and G. Arnone —p. 441

Ketonemia as Functional Test of Liver—Zorzoli studied the behavior of ketonemia after the intramuscular injection of epinephrine alone and in combination with sodium butyrate by the oral route in normal persons and in three groups of patients suffering from liver diseases, diabetes and hyperthyroidism, respectively. For the estimation of the results of the tests the patients suffering from liver diseases are placed in two groups according to the value of spontaneous ketonemia during fasting, which is higher than normal in those having the febrile and acute type of the disease and jaundice, and lower than normal in those suffering from the chronic type especially in patients who are in the advanced stages of atrophic cirrhosis. As a result of the tests, ketonemia increases both in normal persons and in patients of the first group having liver diseases, but the increase of ketonemia in the latter is higher than that in the former. The curves of ketonemia in patients of this group are similar to those given after the same tests by patients suffering from either diabetes or hyperthyroidism. Ketonemia in patients of the second group fails to react to the tests or reacts poorly. The more advanced the disease is in this group, especially in those suffering from atrophic cirrhosis, the greater the insufficiency of the liver and the more marked the lack of response of ketonemia to the tests.

Resistance of Leukocytes in Respiratory Diseases in Children—Serra and Colbi state that the fragility of the leukocytes increases during the evolution of acute diseases of the respiratory tract of children. The intensity of the fragility

does not have any relation to the age of the patient or to the duration of the disease. The leukocytes start regaining their resistance one or two days after the febrile crisis if there are no recurrences or complications. While the fragility of the leukocytes has no prognostic value, its persistence after the crisis has. A decreased resistance of the leukocytes in one case represents a defensive reaction of the organism against the infection similar to the appearance of fever and leukocytosis in some infections, while in another it indicates the presence of new pathologic foci or the development of some other infectious disease as a complication and coexists with the persistence or reappearance of fever. The fragility of the leukocytes appears to be the result of an injurious action of the bacteria and their toxins, both directly on the leukocytes in the blood and indirectly by a pathologic stimulation of the bone marrow. The predominance of lymphocytes over leukocytes during the reversion of the leukocytic formula that follows the febrile crisis is probably the factor by which the resistance of the leukocytes increases after the crisis.

Semana Medica, Buenos Aires

42: 1841-1912 (June 27) 1935 Partial Index

- Pulsating Exophthalmos Case A. F. Saralegui—p. 1841
Erythema Nodosum in Children J. C. Navarro and R. R. Sundblad—p. 1847
Salmonella Infection in Man E. Savino—p. 1860
Fibromas of Abdominal Wall Cases C. A. Brea—p. 1866
Subcutaneous Rupture of Achilles Tendon Case E. F. Malbec and B. S. Aguilo—p. 1869
*Speed of Sedimentation of Erythrocytes in Pick's Disease H. Basabe—p. 1890

Sedimentation Rate in Pick's Disease—Basabe states that retarded sedimentation speed of the erythrocytes in patients with the clinical picture of Pick's (Friedel) disease is of value in the diagnosis. The fact that the velocity is increased in tuberculosis and in rheumatism indicates that the etiology of Pick's disease is neither tuberculous nor rheumatic. The abdominal symptoms in patients suffering from Pick's disease, especially the obstinately recurring ascites, mask the clinical picture and suggest a mistaken diagnosis of tuberculous peritonitis. The systematic performance of the Rivalta reaction of the ascitic fluid for determination of its nature, either exudative or transudative, as well as of the other laboratory tests commonly used for detection of tubercle bacilli, is advisable in all cases of tuberculous peritonitis for the differential diagnosis between this condition and Pick's disease. In the latter the retarded sedimentation speed coincides with negative results of the Rivalta reaction and of the other tests for tubercle bacilli and with a lesion of the pericardium, detectable in careful examination of the heart. On the other hand, acceleration of the sedimentation of the erythrocytes and positive results of the Rivalta reaction or of the other reactions for tubercle bacilli in a diagnosis of Pick's disease indicate that the diagnosis should be verified. A case of Pick's disease is reported.

Archiv für Gynäkologie, Berlin

159: 313-428 (June 14) 1935 Partial Index

- *Enlargement of Pelvis by Means of Hormones in Animal Experiments S. Tapfer and L. Haslhofer—p. 313
*Significance of Determination of Urinary Pigments for Obstetrics and Gynecology E. W. Winter—p. 332
Changes in Mucous Membrane of Uterine Cervix During Pregnancy Delivery and Puerperium E. Petrova and A. Berkowskaja—p. 339
Epinephrine and Sugar Contents of Fetal Blood O. Macchiarulo—p. 349
*Pathogenesis of Galactorrhea and Remarks on Hormone Processes in Physiologic Lactation E. J. Krans—p. 380
Diabetes Insipidus and Pregnancy H. Dietel—p. 404

Enlargement of Pelvis by Means of Hormones—Tapfer and Haslhofer call attention to the fact that a considerable expansion of the pubic symphysis and of the sacro-iliac joints takes place during pregnancy and delivery. They review the literature on the causes of this pelvic enlargement, citing animal experiments carried out by several investigators. They show that nearly all workers agree that the pelvic enlargement in pregnant guinea pigs is due to the action of certain hormones. However, there is no agreement as to what hormone produces this pelvic enlargement, whether the estrogenic or the corpus luteum hormone, and to determine this the authors made experi-

ments on guinea-pigs. They used the serum of pregnant rabbits to obtain enlargement of the pelvis without artificial hormone and organ preparations. It was found that this serum produces in nonpregnant guinea-pigs an expansion of the pubic symphysis like that taking place during pregnancy and was the more effective for enlargement of the pelvis, the closer the pregnancy was to its termination. The authors demonstrate that the behavior of the pubic symphysis of guinea pigs toward the serum of pregnant rabbits indicates clearly that the enlargement of the symphysis and the action of the corpus luteum do not run parallel. Experiments on castrated animals indicated that the estrogenic hormone is the active substance in the pregnancy serum. Subsequently the author tested also artificial hormone preparations and found that estrogenic substance alone is capable of producing an enlargement of the pubic symphysis. Microscopic studies disclosed that the expansion of the pubic symphysis produced artificially by estrogenic substance is identical with that of pregnancy.

Determination of Urinary Pigments—In colorimetric studies on specimens of the urine of 465 women from gynecologic and obstetric departments Winter employed absolute colorimetry by means of gray solution and spectral filters. He reviews observations made by others by means of the step photometer. The elimination of urinary pigment has been known to be increased following irradiations with roentgen or radium rays. This increase has been ascribed to an impairment of the liver or to a greater decomposition of erythrocytes, the latter possibility being considered most likely. Another investigator detected increased pigment content of the urine during pregnancy and ascribed it to a greater blood exchange during pregnancy. The author observed that in some cases of carcinoma, nephropathy and eclampsia the color values were on the upper limits of normality or slightly above these limits. He never observed great deviations from the normal and consequently does not draw conclusions regarding the function or abnormal function of an organ (perhaps the liver) or of a system, such as the erythropoietic or the reticulo-endothelial system. The colorimetric studies on the urine are of theoretical interest and doubtless are an aid to further research but have as yet no practical clinical value for the gynecologist.

Pathogenesis of Galactorrhea—Kraus says that the majority of cases of galactorrhea occur in women (rarely in men) with disturbances in the hypophyseodiencephalic system, particularly in patients with acromegaly. He describes two cases of galactorrhea in nulliparas in whom there existed a partial hyperpituitarism caused by hyperplasia of the anterior lobe of the hypophysis with an increase in the eosinophil cells and with proliferation of hypertrophic main cells, some of them resembling pregnancy cells. The ovaries showed signs of degeneration. The author sees the cause of the galactorrhea in these hypophyseal and ovarian changes. The fact that the continued stimulus of suckling is capable of producing lactation even in virgin animals and that lactation may develop during false pregnancy indicates that the secretory organs particularly the hypophysis are stimulated by way of nervous channels. Under pathologic conditions lactation may develop under the influence of a partial, lactogenic hyperpituitarism in which deficient or abolished gonadal function is a contributing factor.

Deutsche medizinische Wochenschrift, Leipzig

61: 1065-1104 (July 5) 1935 Partial Index

- *Clinical Aspects and Therapy of Severe Dysentery During Childhood A. Loeschke—p. 1065
Roentgenologic Demonstration of Cranial Foramen Ovale and Its Significance for Treatment of Trigeminal Neuralgia F. F. Hartel—p. 1069
*Further Studies on Formerly Unknown Decomposition Product of Blood Pigment (Pentdyopent) in Urine F. Wimplinger—p. 1072

Dysentery During Childhood—Loeschke shows that in severe toxic dysentery two conditions predominate, the loss of water and of body fluids and the flooding of the organism with toxins. He says that although the efficacy of therapeutic serum is doubtful, it should be injected. If considerable dehydration has taken place or if it threatens and with it the danger of secondary intoxication, infusion should be resorted to, preferably in the form of the continuous drip. If the toxic symp-

toms persist for longer periods, the transfusion of small quantities of blood (from 100 to 200 cc) is advisable. If there are signs of increasing cerebral edema, concentrated dextrose solutions should be tried intravenously.

The Pentdyopent Test—Wimplinger calls attention to a decomposition product of the blood pigment recently discovered by Bingold and called pentdyopent, a name that designates the spectroscopic localization of the substance. In the Schunim-Loewe grating spectroscope it is indicated by a sharply defined line that has its maximum at 525 (pentdyopent) micromicrons. The substance is free from iron and protein and readily soluble in water. In alkaline solution (in case of the addition of potassium hydroxide or ammonia and of reduction with the aid of sodium thiosulphate) the substance has a pleasing red color. Spectroscopic analysis is possible only following these preparatory measures, for the nonreduced substance in the nonalkaline reaction does not permit this. If present in the urine, the substance is readily detectable. To 10 cc of urine, approximately 2 cc of solution of potassium hydroxide is added and the mixture is boiled. Following filtration, this urine is reduced by means of small quantities of sodium thiosulphate and is boiled again. Spectroscopic examination discloses at about 535 micromicrons a sharply defined line, which has its maximum at 525 micromicrons. Urobilinogen and urobilin can likewise be detected in the spectroscope. The author searched for pentdyopent in 1200 specimens of urine. He found that it is always detectable when conditions exist that cause the elimination of bile pigments. The first group of specimens in which pentdyopent was found came from patients with icterus. In certain infectious diseases such as pneumonia, Weil's disease, typhoid and various types of sepsis, pentdyopent was present, as was the case also in a number of cardiac disturbances in which conditions of stasis existed. Pentdyopent was found in cases of hepatic disturbances, but not to the extent to which it had been expected. It had been assumed that in certain diseases of the blood particularly pernicious anemia, pentdyopent would appear in the urine in large quantities, but this was not the case in fact, the substance was entirely absent. The same applies also to cases of lymphogranulomatosis and leukemia. Uncomplicated renal diseases and acute and chronic gastro intestinal disturbances gave negative results. The author points out that numerous tests on the blood serum of patients who eliminated large quantities of pentdyopent in the urine were nearly all negative. Bingold himself has found traces of the substance in the erythrocytes and has demonstrated by test tube experiments on hemoglobin that the substance is actually a derivative of the blood pigment. The pentdyopent test has diagnostic significance, the negative outcome even more than the positive one. For instance, if the question arises as to whether a hepatic disorder is present or another organ is involved, the absence of pentdyopent from the urine permits the exclusion of a hepatic disorder.

Deutsche Zeitschrift für Chirurgie, Berlin

245 173 260 (June 28) 1935

- *Significance of Presacral Intervertebral Disk for Spondylolisthesis H Meyer Burgdorff and H Sandmann—p 173
- Localization of Surgical Disturbance in Central Nervous System by Means of Chronaxia I Nagai—p 184
- Influence of Circulatory Disturbances on Electrical Behavior of Skin G Witte—p 193
- Results of Treatment of So-Called Congenital Dislocation of Hip Joint. Gangele and L Kienle—p 214
- Surgical Treatment of Nonspecific Lesions in Knee Joint W Hetzar—p 231
- Clinical Aspects and Pathology of Cerebral Tumors T Recke—p 245
- Significance of Number of Cells in Inoculation of Adenocarcinoma of Mouse G Witte—p 251

Spondylolisthesis—Meyer-Burgdorff and Sandmann in discussing the pathogenesis of spondylolisthesis point out that as yet there is no definite proof of the congenital nature of the disorder. They show that, whereas some investigators stress the importance of 'congenital spondylolysis' that is the cleft in the lateral portion of the vertebral arch others, particularly Blume, stress the destruction of the intervertebral disk between the fifth lumbar and the first sacral vertebra as the most important factor. The authors criticize the specimen on which Blume made his studies and on the basis of which he stressed the degeneration of the intervertebral disk as the

important factor in the development of spondylolisthesis. They show that in this specimen there existed severe malformations in the form of a congenital kyphosis with misplacement of the bones, fusions, arch defects and so on. They maintain that Blume's specimen does not represent a spondylolisthetic disorder. They state that the question investigated by Blume, whether the primary cause of the slipping is to be found in the intervertebral disk, has been the subject of their investigations for two years. On the basis of clinical and roentgenologic observations and of animal experiments they conclude that a degeneration of the presacral intervertebral disk occurs quite frequently in older persons without subsequent slipping, but that lateral vertebral clefts develop with the same frequency without the least indication of a degeneration of the intervertebral disk. The authors tested the resistance of the presacral intervertebral disk on dogs. Among nine dogs there was one in which "sliding" of the lumbar vertebra on the sacrum could be produced after seven months of observation. By taking out lateral and posterior portions of the arch, it was possible to make the intervertebral disk between the last lumbar and the first sacral vertebra yield and produce a slipping of the vertebrae. The result of this experiment largely resembles spondylolisthesis in human subjects. The authors conclude from this that the degeneration of the intervertebral disk cannot be the cause of spondylolisthesis but that the presence of a lateral cleft in the arch, that is, spondylolysis, is the cause. However, they were not able to prove the congenital nature of spondylolysis.

Localization of Surgical Disturbances in Central Nervous System—Nagai reports that, in thirty patients with spinal disorders and signs of pressure myelitis, he was able to determine by means of chronaxia measurements changes caused by the disease focus. In all the patients he observed in the region corresponding to the focus either a prolongation or a shortening of the chronaxia. He generally observed a shortening in the new cases and a prolongation in the old cases. The chronaxia likewise disclosed fluctuations in the muscles belonging to the segments below the segment involved by the focus, but they were of a milder degree than the ones in the region of the focus. The author concluded that the change in the chronaxia in the region corresponding to the focus is helpful in localizing the focus. He made use of the chronaxia test also in twenty cerebral processes. He points out that the motor centers are localized chiefly in the gyrus centralis anterior. He thinks that a change in any of the centers would be followed by a change in the chronaxia of the subordinated nerves and muscles. He actually found considerable conformity between the results of the chronaxia tests and observations during the surgical intervention. He reaches the conclusion that the chronaxia test is superior to the formerly employed physical methods, because it avoids unpleasant after-effects and is simpler.

Klinische Wochenschrift, Berlin

14 945 984 (July 6) 1935 Partial Index

- Mechanism of Tuberculosis Immunity H Selter and P Weiland—p 948
- *Cushing's Basophil Adenoma of Hypophysis (with Functional Tests) K H Hildebrand—p 951
- *Pectins as Substances Accelerating Blood Coagulation O Riesser—p 958
- *New Method of Rapid Histologic Diagnosis in Its Significance for Surgery of Brain M de Croux—p 961
- Temperature Regulation H H Meyer—p 962
- Group Formation of Diphtheria Bacilli J Hammerschmidt—p 964

Cushing's Syndrome—Hildebrand points out that Cushing has separated from the group of so-called polyglandular disturbances a definite syndrome and has shown that a basophil adenoma of the hypophysis is the cause of this condition. While acromegaly is the result of a hyperfunctioning of the eosinophil cells this new syndrome is the result of a hyperfunctioning of the basophil epithelia. Pituitary basophilism has been described by others under such terms as multiglandular disease, osteoporotic obesity, hypophyseal plethora and diabetes of bearded women. Because it cannot be decided as yet to what extent other glands are involved in addition to the hypophysis the author thinks that each new case of Cushing's syndrome should

be carefully studied. He gives the history of a man, aged 53, who had an abnormal carbohydrate metabolism with signs of insular diabetes, an obesity that was localized on the head, neck and trunk and in which there was a tendency to hypercholesteremia, no demonstrable disturbance in the protein metabolism, a severe decalcification of the bones with hyperphosphatemia, slight hypercalcemia, negative calcium balance and a slightly positive phosphorus balance, follicle maturation principle in the urine, but no gonadotropic principle in the cerebrospinal fluid, reduced basal metabolic rate with unusually strong specific dynamic action, intact renal function, and increase in the systolic and diastolic blood pressures but no increase in the quantity of blood. On some portions of the patient's body the skin was extremely thin, so that the subpapillary venous plexus was quite noticeable, and to this was ascribed the sensitivity for mechanical injuries. There was sexual dystrophy. The patient's previous history disclosed a temporary polyuria and polydipsia. The author thinks that these symptoms make the existence of a basophil adenoma highly probable.

Pectins Accelerate Blood Coagulation—Favorable clinical reports on the hemostyptic action of pectin induced Riesser to investigate the action of pectin on the coagulation of blood. He experimented on rabbits, using a sterile, isotonic apple pectin. The preparation was administered to the animals intramuscularly, orally or intravenously. All these methods of application resulted in a considerable acceleration of the coagulation time, occasionally reaching such a degree that it was impossible to get noncoagulated blood into the tube. The animals showed no other manifestations. In discussing the mode of action of pectin, the author points out that in vitro pectin has a tendency to retard rather than promote coagulation. From this he concludes that the action of pectin is an indirect one and that the active substance is formed as the pectin comes into contact with the endothelium of the vessels.

Rapid Histologic Diagnosis in Surgery of Brain—To find a rapid method for histologic examination, de Crinis used a micropolychromatic device that permits the optic coloration of microscopic objects. The micropolychromatic instrument is a shutter mechanism attached to the illuminating apparatus of the microscope and permits the simultaneous use of the light and dark fields with and without optic coloration. The author describes its structure showing that it is a dioptric dark field condenser. The examination of the tissue is done in the following manner. A quantity of the tissue or the punctate equal to half the size of a pinhead is put on a slide and prepared by means of teasing needles in physiologic solution of sodium chloride or a 1 or 2 per cent bichromate solution. A cover glass is pressed over it and it is examined under the microscope with the polychromatic attachment. It is unnecessary to prepare a completely teased specimen, because the diagnosis is easier if cells can be observed both inside and outside the tissues. Not all color combinations are of equal value for the examination. He found the contrast violet and green most suitable, the first for the colored dark-field illumination and the second for the background. He shows that the method is suitable also for the demonstration of cells in the cerebrospinal fluid. He concludes that the histologic examination of the tissues with the aid of the micropolychromatic device, because of its simplicity and rapidity, is a valuable aid in cerebral surgery.

Medizinische Klinik, Berlin

31 869 900 (July 5) 1935 Partial Index

- Pathophysiology of Concussion of Brain A. Kral—p 876
 *Spontaneous Thrombosis of Inferior Hemorrhoidal Plexus K. Blood.—p 880
 Severe Anemia Induced by Self Injury G. Parper—p 883
 Physical Diagnosis of Lungs F. Besdzick—p 884

Thrombosis of Inferior Hemorrhoidal Plexus—Blond states that thrombosis in the region of the inferior hemorrhoidal plexus is the most frequent spontaneous thrombosis in the human organism. These nodules are extremely painful. If they are incised within the first eight days after their development, a dark red discharge can be pressed out. If more than eight days has elapsed, the nodule can be excised only by removing the venous wall. Not until the proctoscope with the lateral

window was available could these cases be subjected to an exact examination. The author injects an anesthetic under the nodule, opens it by means of a puncture incision and evacuates the thrombus by means of lateral pressure. The subsequent proctoscopy, which is usually painless, reveals varices in the region of the superior hemorrhoidal plexus which should be obliterated at once. Their obliteration, however, differs from that of varices of the lower extremities. He makes submucous injections without aiming at or achieving thrombosis. In answer to the question why spontaneous thromboses develop in this region, he points out that this is the "divide" between the portal system and the vena cava and that the reflux of portal blood into the vena cava is one of the chief factors in spontaneous thrombosis. Since the presence of varices within the rectum is a grave danger during pelvic operation, he advises that every surgical intervention within the pelvis be preceded by an examination of the extremities and by proctoscopy to determine the condition of the rectal veins. Varicose conditions in these regions signify danger of embolism and should be properly treated first.

Münchener medizinische Wochenschrift, Munich

82: 1063 1102 (July 5) 1935 Partial Index

- Modern Antipyresis E. Grafe—p 1063
 Myotonia, Myotonic Dystrophy and Pupillotomy W. Kyrieles.—p 1067
 *Abdominal Myalgia and Its Relations to Internal Organs. F. Klingler—p 1069
 Abdominal Injury Caused by Bullet Complicated by Meckel's Diverticulum P. Straler—p 1071
 Therapeutic Use of Yeast (Vitamin B) Manifestations of Vitamin B Deficiency F. Widenbauer—p 1071
 *Noteworthy Source of Error in Staining for Demonstration of Schüffner's Stippling Giemsa—p 1075

Abdominal Myalgia—According to Klingler, abdominal myalgia is a form of muscular rheumatism. It is comparatively rare but of great differential diagnostic significance. The author observed cases of abdominal myalgia erroneously diagnosed as colitis, enteritis, colic, gastralgia, gastric ulcer, renal, ureteral or biliary calculi, cardiospasm, angina pectoris and so on. He reports several cases. Myalgia may resemble neuralgia, but careful observation will reveal its myalgic character, for the pain follows the muscle and not the nerve. If the myalgia is localized in the lower part of the abdomen, intestinal colics and dejection are the predominating symptoms, but, if the upper part of the abdomen is involved, vomiting and cardiospasm are often observed. Pectoral myalgia is accompanied by cardiac symptoms. To counteract the disorders, it is necessary to treat the primary myalgia. The author did this successfully by the application of heat and massage and by the injection of a 10 per cent solution of dextrose.

Source of Error in Staining for Schüffner's Stippling—Giemsa points out that, if slides of blood from tertian malaria are stained with Romanowsky's method, the erythrocytes that have been attacked by the parasites show a peculiar red stippling which increases with the age of the plasmodia and to which Schüffner, their discoverer, ascribed great diagnostic value in the recognition of this type of malaria. Romanowsky's method was not quite perfect until it had been recognized that the staining of these granules was possible only when the stain had a weakly alkaline reaction. Giemsa had obtained perfect results for years, but suddenly he noticed failures. Since the same kind of dye was being used, the cause could not lie in the dye solution. He soon discovered the cause in the fixing agent for, whereas formerly he had always used the purest methyl alcohol, he had been using a cheaper, somewhat less pure, type of alcohol when the mistakes were first noticed. Comparative tests with the two types of methyl alcohol soon disclosed that the degree of purity of the methyl alcohol is of great importance for the demonstration of Schüffner's stippling. What types or impurities caused the mistakes could not be determined as yet. The author recommends the use of buffered water. He dilutes his stain solution with a buffer solution with a pH of 7.2. He states that other types of granules, such as the Ziemann stippling in quartan malaria and Maurer's spots in tropical malaria, as a rule become visible only in case of a slightly higher pH (7.5). Whether impure methyl alcohol impairs the staining of these types of granules also, the author had no opportunity to observe.

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CLINICAL INVESTIGATION PHYSICIAN AND PATIENT

THE NINTH ALPHA OMEGA ALPHA
ANNUAL LECTURE

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BOSTON

I plan to consider only certain aspects of clinical investigation especially referable to the physician and patient—thoughts about which have been fermenting in my mind for several years—rather than to present an exposition on all phases of the subject.

The medical student is trained by university education to use his own mind and to do his own thinking. Moreover, so long as he is active in medicine he must continue his education and constantly sharpen his powers of observation and judgment. At the bedside this attitude is essential. Doctors deal with human problems. To solve human problems, an active creative imagination and scientific curiosity are necessary tools. Such qualities are needed by the physician not because every doctor is expected to conduct investigations leading to new knowledge but rather because every patient who consults a doctor presents a problem for investigation before the best advice can be offered. Thus basically each practitioner of medicine is a clinical investigator, though research is not the *sine qua non* in making a clinician. The physician becomes inefficient and nonprogressive unless he is inspired by imagination and the curiosity to learn. It is important, therefore, that he should appreciate the spirit and understand the principles of research, and also develop an investigative habit of mind. These attributes must be applied at the bedside in the elucidation of the phenomena of disease. There is another goal that must be kept in mind. Since medicine deals so essentially in human problems, the physician must constantly strive to broaden his outlook on life, and he may do this by cultivating interests that may appear extracurricular to the practice of medicine.

WHERE UNDERTAKEN

Clinical investigation may be pursued in institutions designed only for that purpose or in any hospital. It may also be undertaken in offices for private practice. The establishment of laboratories and opportunities for clinical investigation in large hospitals where the study of patients under controlled conditions can be undertaken seems especially wise. On the one hand it surrounds the investigators with a wealth of clinical

material for study which offers opportunity for the origination of ideas and, on the other hand, it plays an important role in maintaining the hospital as a modern institution and permits patients to receive the very best treatment. There is nowhere that a patient stands so good a chance of being benefited as in a clinic where his disease is arousing scientific curiosity. The large general hospital that does not deliberately, wholeheartedly and intensively further the development of research or keep up with progress soon becomes one that goes backward.

To many persons the word laboratory implies a place where test tubes and complicated apparatus are employed to satisfy intellectual curiosity. The clinical investigative laboratory is not of that order, for wards with patients are the salient feature. The sick individual is the center of the picture. It is from the patients' problems that clinical investigations originate and these are not confined within the walls of a building. Indeed, clinical investigation goes far beyond the hospital grounds or doctor's office, because solutions to a given problem may be found at a distance, for example, in the social or economic aspects of the country, the community or the home. Although technical apparatus may be required for the proper care of the patient and for intelligent observation to promote the welfare of mankind, it is the least significant feature of clinical investigation. The most valued and most impressive possession of a clinical investigative unit, besides the sick people, is the accumulated records containing consecutive data often largely obtained by simple procedures and frequently entirely by the use of the intellect. One of the important methods of science is to create detailed trustworthy records of natural phenomena. It is from such information that concepts regarding the nature, treatment and prevention of disease are formulated and lead to the establishment of useful new knowledge. The foundation of such work lies in the quality of the minds of the staff and the freedom and tranquillity permitted for the use of their abilities. Free choice of problems and free choice to follow leads disclosed must be the privilege of the investigator.

THE MAN

The term clinical investigator is usually thought of as being applied to a man who devotes a considerable amount of time to the study of clinical problems in organized clinical laboratories. A man may devote his life to problems pertaining to the clinic but essentially never observe a patient. Such an individual, invaluable to the progress of medicine, may work, for example, in a laboratory of experimental medicine or in a chemical or physiologic laboratory, but for purposes of discussion here I do not refer to such an individual as a clinical investigator.

The William W. Root Lecture of Alpha Omega Alpha Honor Medical Society read at the annual meeting in Atlantic City, N. J., June 13, 1935. From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital and the Department of Medicine, Harvard Medical School.

A trained clinical investigator may mean a different type of individual to different people. Broadly speaking, it seems to me that there are two types of clinical investigators and that the distinction between them has not been well understood. The first is the experienced clinician who seeks tools through which to solve problems that originate in his mind at the bedside, for example, the man who observes in several patients an abnormal color of the skin and decides that, as an aid to determine its cause, chemical procedures must be utilized. The second also may have clinical training, but he is the trained technician who takes his tools to the bedside to apply them to problems he may be interested in, for example, a man trained in chemistry who seeks a patient that he believes will elucidate the mechanism of pigment formation. The former is more truly the clinical investigator, and it is by the intellectual rather than by the technical method that he approaches his problems. In any event the investigator must fertilize his plots with carefully tested mixtures of thought and knowledge gleaned from experience, books and journals, suggestions from colleagues and eternal painstaking study. He should have as his ideal the ambition to be the best possible man in his chosen field and among other qualifications, he must be industrious, alert, and able to progress by use of constructive imagination.

Both types of clinical investigator have their place in the development of useful knowledge and can profitably be found in the same hospital unit. However, if aggregations of individuals chosen only because they are acquainted with special techniques form the personnel of a clinical investigative unit, the practical needs of clinical medicine are apt to be forgotten. Likewise, the type of man more interested, for example, in chemistry than in the patient will not be as valuable to the hospital's total interests, including the patients and students therein, as the type of man who is chosen because of his clinical ability, scientific curiosity and an aptitude to formulate clinical problems and to foresee a way to solve them.

There is a strange fascination about research, which in the past quarter century has tended to make it a fashionable undertaking for the young physician. Remember, however, that a doctor should choose the field that will bring him happiness and should never pursue a career in the spirit of "it's the thing they all do." Much time has been wasted by men attempting things for which they have neither qualification nor training. Practitioners have suffered by believing they were research workers and good investigators have been lost to the world by their trying to become general practitioners. A man with an active medical practice, however, can contribute importantly to medicine although often lack of time and the character of his interests prevents or interrupts investigative studies. It is, indeed, the practitioner with limited practice—hospital or otherwise—who often becomes the most successful trained clinical investigator. The problem lies in the man himself rather than in his precise occupation, he needs to have a desire for adventure, a collecting or acquisitive spirit and a craving to learn about the unknown. He who undertakes clinical investigation, however, must learn to recognize clinical facts and never jeopardize the patients' health. He must establish a detailed diagnosis as rapidly as possible and not let science encourage him to waste time over unessential details but proceed to action for every aspect of the patient and his case. Training in investigative

ways most assuredly leads to better clinical work although some men who have spent much time in research laboratories or wards become poor practitioners. This is not the fault of the laboratory but the fault of the man himself. He must see to it that he receives proper training as a clinician.

Besides what is gained by investigative work itself, this type of work has a large educational value. Throughout life the physician must keep abreast of the times, and he should be surrounded by associates from whom he can constantly imbibe knowledge. An understanding of the principles of investigative work can lead him to judge critically, to appreciate the nature and significance of proper controls and to distinguish the chaff from the wheat of medical papers. Every physician must be trained to look at problems from numerous angles and be unwilling to confine himself to standardized procedures, no matter how successful they may be in contemporary industrial life. Mass production cannot be used in medical service. As each bit of information is added to the sum of human knowledge it is evident that it is the little things that count that give all the fertility and character, all the hope and happiness, to human affairs.

THE STUDIES

Clinical investigation takes a variety of forms, and much work properly belonging under that title would not be called research in the strictest sense of that term. The aim should be, however, to undertake fundamental problems and to appreciate that progress in the clinic may owe its origin to the fields of pure science. Sir Thomas Lewis has written on the scope and methods of clinical science and considers that work in this field consists of studying diseases as diseases or as some manifestation of disease that several diseases have in common. Therapeutics is essentially an experimental science and will always have experimentation on man for its chief basis. It is linked with pharmacology, and a clinical investigator may find that he is, at least for his own purposes, the best pharmacologist. Many clinical investigative studies are of a simple routine collective nature such as the analysis of clinical data, the evaluation of new procedures or the correlation of clinical and chemical or pathologic studies. A complete study of a case and the literature concerning it, with some special observations followed by a carefully written report as Herrick has said, will do much to clarify the doctor's own knowledge and may help clarify knowledge for some one else. Such work sharpens powers of observation and tends to prevent conclusions based on mere impressions and leads to obtaining facts. Descriptions of heretofore unrecognized conditions often depend on the good fortune of observing several cases and not on planned investigation. Collecting proper information over long periods of time so as to formulate knowledge of prognosis, which in many chronic conditions is imperfect, represents a simple type of investigation. There is need for more accurate work of this sort to formulate rules to forecast the patient's future. The question of the origin or cause of disease is of unusual importance to the clinical investigator and may require intricate and complicated studies. A catalogue of the varieties of studies which the clinical investigator may pursue will be long and of little value. It is more significant to realize that important original contributions are made which require only simple technical and clinical wisdom. To be sure, complicated apparatus and specialized knowledge may be needed to solve

problems arising at the bedside, but it seems that frequently the clinical investigator advances knowledge by discovery of the new with simple technic

Often the clinical investigator can study his problem by methods at his command, but he may find it necessary to seek out a particular technic or assistance from a wide variety of such divergent sources as botanic and sociological ones. The university investigators are apt to ask for advice from within one or another department of their own or other universities. There are, however, other sorts of institutions, such as industrial plants, where investigators seek, and more and more often will seek, advice and make progress by cooperation. The aim in these different sorts of laboratories is basically the same, namely, to search for truth regarding the laws of nature.

The present century has seen far-reaching organization and endowment of medical research, including units for the care of the patient, clinical investigation and teaching, which has influenced clinical medicine in important ways. Partly as a result of these developments, team work is much more general and prolific where before isolated efforts were the rule. This scheme of events has made it possible to undertake clinical investigation on a broader scale and to attack problems that formerly were impossible for one man to undertake alone. Artificial barriers between different fields of knowledge have handicapped science and art. This inherited tradition is fortunately being broken down, and one of the ways that should lead to the great advances of the future is the cooperative investigation of physicians, scientists and all types of scholars trained in different ways and in different sorts of institutions. For example, important knowledge has been obtained by the joint studies of engineers and physicians concerning the prevention of disease and for enhancing contentment in industry, and by chemist and clinician in the therapy of disease. Such cooperation when spontaneous is fruitful but when compelled may be sterile.

There are types of clinical investigation that demand organized study by institutions so that data can become available over many years and generations before final analysis is made, for example, creative work to determine the exact qualitative and quantitative influence of dietary factors alone or in combination with one another under varying climatic environment on the influence of thought and social life. The history of the people of this world could perhaps be written in terms of diet, as Zinsner has done in terms of epidemics. Initiative, progress, success and the happiness of a people tend to go hand in hand with an abundance of food and a good diet.

THE INVESTIGATION OF SOCIOLOGICAL CONDITIONS

The physician must have a deep interest in human beings, an interest in their economic and social structure as well as in their physical and psychic state. The clinical investigator is apt to be successful somewhat in proportion to his appreciation of the sick man as an individual. A considerable fraction of the successful care and treatment of patients, and undoubtedly the prevention of much illness, is to be identified with the proper consideration of the social, economic, psychological and allied factors. More attention by clinicians to the investigation of problems concerning such matters would be of great value, work requiring investigators trained in various fields pertaining to the medical, social and mental aspects of human beings. The diagnosis of

the person is too often neglected when diagnosis of the case is made in detail. Careful study and formulation and extension of knowledge concerning the medico-social aspects of cases is what is needed rather than leaving these matters to haphazard abilities or to individual interests. The field is a difficult one for reliable scientific study because it involves all the complications of human life. The science dealing with the relation between human behavior and health is in its infancy, and the progressive physician should attempt to advance medical knowledge in that direction as much as he has advanced that concerning organic disease within the past quarter century.

The medicosocial aspects of cases or the social component of medicine concern various fields of knowledge. Physicians for generations have been aware that the daily problems of life affect the health and happiness of individuals and have written on such topics. Even so they have not perhaps investigated these problems as often as have social case workers, psychologists, industrial experts, political scientists and clergymen. Although each has a contribution to make, the physician should do more, he, especially, is in a position to comprehend all aspects of an individual. He daily makes contacts with human beings whom the social environment has affected adversely, and to aid them he must know how readjustment can be made. Tact and personality play an important role, but an acquaintance with the stream of world thought and the actions of human beings are valuable when treating patients intensively and completely. The physician must understand what Smollett, in *Humphry Clinker*, first described well—indeed, it had scarcely been attempted before, namely, the different effects which the same scenes, persons and transactions have on different tempers. He must be a student of men and never forget the uniqueness of each human being if he is to be intelligent in the care of the sick. The many important matters that affect the checkered lot of mankind are not to be obtained in books only, but in the study of mankind. It is in the study of the fields of social science that the hope lies of making life better and happier, and the physician should do his share by increasing his investigative activities in this direction.

The late John Candler Cobb has defined social science as "the analysis and study of human relations and the forces that affect the development of civilization." Scientific methods applied with skill, concentration and proper facilities must be employed. The absence at present of definite "yard sticks" to measure factors to be studied is a handicap, but all sciences started with deductive reasoning from observation and developed first along the lines of qualitative methods and have gradually worked toward quantitative methods with the resultant tendency toward exactness. Psychology is essential to social science, for sociological and economic problems cannot be solved without psychologic data. Psychologists often give opinions, but quantitatively stated data are what is needed. The scientific method of approach to the problems of social science and the development of quantitative data will do much toward solving many difficulties with which the world finds itself at the present time and which, in turn, affect not only the doctor but the patient whom he must help.

Today the doctor may become a statesman in a wide field of activity and have great influential power. By and large he has been slow in studying the medico-social aspects of cases and applying such knowledge

skilfully, and now he finds that he should become acquainted with a variety of problems arising in social science. Medical economic problems of various sorts such as that creature "State Medicine," not yet satisfactorily defined or analyzed, and health insurance, as well as the relation of medicine and the doctor to modern sociological trends are matters requiring better knowledge, more thought and less passionate discussions. Perhaps a type of trained clinical investigator working at such problems from the physician's point of view will aid to bring divergent opinions into line by means of scientific methods with quantitative data.

Man in all his manifold relations will remain the center of thought and action for the physician, no matter whether he is or is not a clinical investigator.

A PHASE OF LIFE, EXEMPLIFIED BY BOOKS AND NATURAL HISTORY

In my introductory remarks I mentioned that it was an asset to the physician to broaden his outlook on life. I now plan to comment on a phase of life of value for anybody in spite of the fact that this may seem irrelevant. There are a myriad of ways by which the physician, whether a clinical investigator or not may broaden his mental horizon by activities outside the sphere of modern medicine. Specialization has been carried so far that it has caused a perverted view of life in some minds. A doctor should try to lead a complete life and not confine his thoughts to narrow fields. Indeed, it is often from other fields of knowledge than medicine that useful information is obtained to aid patients and to investigate their problems. The mind cannot always be consciously directed to definite ends. The ability to relax the tension of work is as important as the power of concentration, for the two processes combine in doing progressive work. Relaxation, when the mind follows its own bent, may be a significant period in life. Hobbies of various kinds, I believe, have their value to aid relaxation. They also may train the powers of observation. The collecting habit is common among medical men and they carry that spirit into their professional work.

Miscellaneous information acquired casually may not be of practical value, but it can serve for enrichment of thought. In these modern days of hurry there is a tendency to forget to reserve time for thought and relaxation. It seems to me that it is advantageous to see to it that there is time for what may be called informative extracurricular purposes throughout life. This time may not be measured in terms of accomplishment and certainly not in dollars, but it can be evaluated by some measure that is applicable to making life fuller and richer. As William Lyon Phelps has said, "the happiest person is the person who thinks the most interesting thoughts." Examples from every field and type of knowledge and experience could be cited showing that interests external to pure modern medicine can be of value to the physician. I will not only illustrate by remarks on books and natural history but also present a few thoughts on these subjects, because physicians often take a deep interest in such matters.

Books aid one to deal with the world of men. One may read for information, for refreshment or for enrichment by browsing at will. Literature and essays are a storehouse of the richest human interest. There is varied enjoyment and never-failing instruction regarding man. The works of Dickens and Stevenson and such essays as those of Montaigne, Sir John Lubbock and Hamilton Wright Mabie certainly help in the

understanding of patients. To read John Locke's essay "Some Thoughts Concerning Education" and come across the paragraphs concerning constipation, or "costiveness" as he calls it, allows one to wonder why the excellent rules regarding the treatment and prevention of this condition, which he so well set forth in the seventeenth century, are not practiced more often. If one then reads "A Dialogue between a Bilious Patient and a Physician," written by James Henry in 1838, one wishes one could persuade all human beings to grasp and follow the salient facts described in these books. Well known books must form the background of one's reading, but how fascinating it is to "discover" books off the "beaten path" that are appealing. Consider the anonymous "Essay on Laughter wherein are Displayed its Natural and Moral Causes with the Arts of Exciting it," published in London (translated from the French) in 1769, or consider the book by the apothecary Richard Browne, which appeared in 1729, entitled "A Mechanical Essay on the Effects of Singing, Music and Dancing on Human Bodies." The influence of these pleasures on health, folly and, as the authors remark, on "the cure of diseases," would be worthy perhaps of more modern scientific investigation than they have received. The essays on "The Art of Living Long," first published in Padua in 1558 and written by the Venetian Luigi Cornaro, who died in 1566 in his 103d year indicate, as Benjamin Franklin wrote, "against diseases known the strongest fence is the defensive virtue abstinence." The basic thoughts expressed by Cornaro regarding diet might have stimulated certain investigative studies by scientific methods long before they were undertaken, and even in recent years thoughts about these essays have suggested problems for clinical study.

Biography and history, including that concerning medicine, serve for orientation and perspective and is stimulating along many lines. There is always something corresponding in our own lives to be found in history. Whether one reads about the life of Syllius of Leyden (1614-1672) and learns how he first introduced bedside teaching, or about the life of a statesman or any other human being, one will become a better student of man from the experience.

Reading the works of past masters of medicine increases respect for accomplishments made without the aid of modern equipment or knowledge, and from them much useful information may be learned. Records made long ago may suggest investigations appropriate for today. It is remarkable how frequently one can find fragmentary and sometimes fairly complete information that has not been expanded or adequately utilized for generations. For example, Cartier's description of the cure of scurvy in the sixteenth century, Robert Boyle's comments on specific medicines in the seventeenth century, the experiences with cod liver oil and John Huxham's observations pertaining to blood clot retraction in the late eighteenth century, and the early references to the influence of diet on anemia. The history of the development of medical thought and of scientific discoveries can teach something about methods of thought and deduction and serve for the proper orientation of modern problems. To read about the keen observations leading to the early descriptions of disease excites admiration and can be a factor in arousing one to develop the use of one's own eyes. Books of many varieties on natural history can also help train one to observe, but one must learn to observe by studying nature, not only books.

The power to see straight is a rare gift. To see no more and no less than is actually before one, to see with one's reason as well as with one's perceptions—that is to be an observer and to read the book of nature aright. Many people may walk through fields and woods and see nothing, others may see every conceivable activity of plants, insects and birds. The physician who enjoys natural history will find that, like books, it broadens his horizon and permits interpretation into his professional career. Observe an azalea bush, which normally thrives in acid soil develop chlorosis, a condition leading to pale leaves and attributable to certain elements not being absorbed by the roots. Watching the "anemia" disappear on rendering the soil more acid, so the proper elements can be absorbed by the plant, can lead to observations concerning the effect of the hydrogen ion concentration of the intestinal contents on iron absorption in patients with anemia. Of course all biologic knowledge becomes of value to mankind and the clinical investigator can frequently be assisted by the biologist, but the pleasure and ideas he may receive by being fond of all that nature creates has its independent advantages.

To know the butterflies, their habits and instincts can give one enjoyment. The dietary habits of caterpillars and the influence of climatic factors on the development of butterflies can carry suggestions regarding the optimal mixtures of food for man. Some caterpillars are polyphagous and others will starve to death if they are not supplied with just what they want, which not infrequently is a single species or genus of plant. The size of a butterfly may vary with but slight changes in climate. For example, the brown-yellow-silver spotted butterflies of the genus *Argynnis* are prone to be smaller on the islands a few miles off the coast of Maine than on the neighboring mainland and thus cannot be attributed to want of food. As pointed out by Samuel H. Scudder nearly fifty years ago, the butterflies of America often have more broods in a year than the butterflies of Europe. The reverse is never true. There are very few butterflies common to the two continents. The painted lady (*Vanessa cardui*) butterfly is an example with two broods, and I believe occasionally three broods in America, but with never more than one brood in Europe. The comparison of the annual histories of similar European and American butterflies furnishes an instance of that intensity which characterizes all life in America. In Europe there is a tendency to proceed with less haste, in America we bend with nervous energy to our work and play. This aspect of our lives was correlated years ago with climatic differences, and in recent times studies by several men have shown how the more rapid and wider barometric oscillations in America can be correlated with certain features of the make-up of Americans.

Watching the changing distribution of insects locally or nationally permits one to reflect on similar phenomena referable to human disease. A most striking change in the distribution of two butterflies of this continent has taken place in the last seventy-five years. In 1860 the now common white cabbage butterfly, *Pieris rapae* was introduced from Europe. By 1871 it appeared all over New England and further introductions were made in various parts of this country. Now this insect is found in every part of North America and usually in great profusion. This imported butterfly has affected a native species, *Pieris oleracea*, which it

resembles, so that whereas it used to be very common in New England it is now exceedingly rare and found only in a few local mountainous regions.

CONCLUSION

In presenting some aspects of clinical investigation I have rambled from university education far afield across the domains of the clinician, the psychiatrist, the economist and other specialists to the world of insects. Even so I have not described a precise procedure for the training of a clinical investigator, because such a man cannot be made by any rule of thumb. The best sort of properly trained clinical investigator must be an able clinician, one with wide interests who understands human beings and can act wisely for all the multiple aspects of a given individual. He also must have an ardent desire to seek for knowledge by scientific methods and wish to carry the torch forward so that the next investigator will find it nearer the ultimate goal.

EXPLOSIVE GASES FORMED DURING ELECTROTRANSURETHRAL RESECTIONS

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Among the accidents that have been reported incident to the use of high frequency currents in transurethral prostatic resections are ruptures of the bladder attributable to explosions within the organ.¹ Doubtless similar explosions resulting only in damage to the bladder mucosa are not uncommon.²

The present investigation was undertaken with a view to determining whether the evolution of an explosive gas usually accompanies the use of high frequency currents in such resections and, if so, at what rate the gas is evolved, its composition, and how the danger of explosion may be minimized.

In experiments on a series of twelve dogs there was produced in every instance a gaseous mixture which, in the absence of oxygen from external sources, was not explosive but became highly explosive on the addition of the proper proportion of oxygen or air. When such mixtures were exposed directly to the arc from the resection apparatus they invariably exploded inside the bladder as well as in glass tubes constructed for the purpose. The violence of the explosion was sufficient to give a loud report when it took place in the exposed bladder, but in the healthy bladders of the dogs used no ruptures were produced. In one instance, 2 cc. of the gas mixed with air exploded in a pyrex tube inverted over water with such force that the tube was dislodged from the buret clamp in which it was held and shattered against the ceiling of the laboratory.

The idea that the gas might be produced by electrolysis at once presented itself, but when the rate at which it was evolved was measured it became evident that even were we dealing with a direct current, electrolysis would have been much slower with the amperage used. Under favorable conditions approximately

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¹ Kretschmer H. L. Intravesical Explosions as a Complication of Transurethral Electrosurgery. Report of Two Cases. J. A. M. A. 103: 1144 (Oct. 13) 1934.

² Cassuto A. J. urol. 22: 263 (Oct.) 1926.

1 cc of gas per second was obtained with a current not exceeding 500 milliamperes (By favorable conditions is meant that there is a considerable arcing.) Either cutting or coagulating current may be used effectively.

Since it appeared that the gases were derived from thermal decomposition of the tissues, the experiments were repeated on a smaller series of dogs, an ordinary heat cautery at high temperature being used for the resections. By this method a gaseous mixture with the same explosive properties was obtained. Quantitative differences in the composition of the mixture may be explained by differences in temperature produced by the use of the two types of instruments.

EXPERIMENT

The bladder in old male dogs under morphine and amylal anesthesia was exposed through a suprapubic incision. The cautery was introduced into the urethra through an incision in the perineum. A series of cuts was made into the prostate and the gas that passed into the bladder was drawn off from time to time by means of a needle thrust through the wall of the organ or by means of a cannula fastened in the dome of the bladder. In bladders that offered much resistance to distention the latter arrangement proved more satisfactory, as less gas was lost by escaping through the urethra.

Range of Percentage Values of Various Gases

Name of Gas	When Using High Frequency Current		When Using Heat Cautery	
	Low	High	Low	High
Carbon dioxide	62	14.9	12.8	14.2
Oxygen	2.0	5.1	0.2	1.6
Acetylene	1.0	2.2	2.1	2.6
Ethylene	Trace	1.0	2.4	12.8
Carbon monoxide	9.4	27.0	23.1	31.4
Hydrogen	37.6	53.9	29.0	43.5
Residual inert gas	12.3	17.3	14.2	17.7

The gas thus collected was analyzed for carbon dioxide, oxygen, acetylene, ethylene, higher sulphuric acid-soluble hydrocarbons, carbon monoxide and hydrogen in the order named. The absorbents used for the various gases were for carbon dioxide, a 33 per cent solution of potassium hydroxide, for oxygen, a solution obtained by mixing one volume of a 22 per cent solution of pyrogallol with five volumes of 60 per cent potassium hydroxide, for acetylene, a 20 per cent solution of mercuric cyanide in 2 normal sodium hydroxide, for ethylene, a solution made by dissolving 20 Gm of mercuric nitrate in 100 cc of 2 normal nitric acid and saturating this solution with sodium nitrate, for higher unsaturated hydrocarbons concentrated sulphuric acid, for carbon monoxide a solution prepared by the addition of one volume of ammonium hydroxide solution (specific gravity 0.91) to three volumes of a saturated solution of cuprous chloride in 25 per cent ammonium chloride.³ Hydrogen was determined by the use of a colloidal palladium solution stabilized with acacia and containing a small amount of sodium picrate.⁴

All of these gases, with the exception of the higher sulphuric acid-soluble hydrocarbons, were found to be present in varying proportions. In addition there remained a considerable amount of inert gas, presumably nitrogen, and a little more than a trace of some

gas or gases that yielded carbon dioxide on burning. The burning was accomplished by mixing the gas remaining after the analysis with some hydrogen and an excess of oxygen and then exploding the mixture.

The accompanying table shows the highest and lowest percentage values obtained from the analysis of various samples of gas from different dogs.

COMMENT

The unexpected presence of oxygen in the mixture containing such readily oxidizable gases as carbon monoxide, hydrogen and acetylene is understandable when it is recalled that the composition of the tissue being decomposed varies continuously during the cauterization. During the stages when an excess of oxygen is evolved the oxidizable gases are in all probability burned to carbon dioxide, which is always present in considerable amount. As the gases are formed they pass to the dome of the bladder and are thus removed from the field of action, so that combustible gases evolved during other stages of the decomposition become mixed with the oxygen after having passed from the vicinity of the cautery. This does not necessarily mean that the gas evolved during the early stages of the resection differs in any regular way in composition from that evolved in the final stages, since the cautery may be brought into contact with some fresh tissue as well as partly decomposed tissue up to the time the resection is completed. It is also possible that in some instances the oxygen is in part of atmospheric origin, since it is difficult to be absolutely certain of complete exclusion of air. However, the higher ratio of oxygen to inert gas present in some of the gaseous mixtures indicates that the oxygen is evolved by the action of the cautery on the tissues.

The surprisingly rapid rate at which highly inflammable gases may be evolved in the use of high frequency currents for transurethral resections emphasizes the necessity of caution to prevent the occurrence of serious accidents. Since a small volume of gas mixed with air is sufficient to produce an explosion of great violence, a mere washing out after each series of cuts cannot be considered an adequate safeguard unless the entrance of air is rigidly prevented. In cases of dilated or atonic bladders or when a diverticulum is present, accumulated gases may not be removed even by careful washing. The diverse character of the gases in the mixture precludes the possibility of their removal by an absorbent. If a large amount of air or gas collects in the bladder, as shown by a large bubble, this should be aspirated by inserting a ureteral catheter into the bubble before further cutting or coagulation is done. When the patient is placed in the Trendelenburg position the bubble is brought closer to the area to be coagulated and the danger of explosion is increased, as explosion does not occur unless the arc comes in direct contact with the gas.

SUMMARY

A mixture of inflammable gases is produced when high frequency currents are used for transurethral resections.

Similar gaseous mixtures have been obtained by the use of the heat cautery.

The gases are produced by the thermal decomposition of the tissues.

The composition of the gaseous mixture has been determined, and it has been shown that oxygen from external sources is necessary to render the gas explosive.

³ Treadwell F. P. and Hall W. T. *Analytical Chemistry* ed. 7 New York, John Wiley & Sons Inc. 2: 643 653 656 676 and 698 1930

⁴ Paal and Hartmann. *Ber. d. deutsch. chem. Gesellsch.* 43 243 1910 Rideal. *J. Am. Chem. Soc.* 42 749 1920

ABDOMINAL PAIN AS A SYMPTOM
OF DISEASE OF THE BRAINI S WECHSLER, MD
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Abdominal pain is not generally associated with disease of the brain, when gastric distress does occur in tumors or other cerebral conditions it is either ignored or casually explained on the basis of the associated nausea and vomiting. Occasionally, if the pain is sufficiently severe, gastro-intestinal or gallbladder disease is thought of, as is also the possibility that the cerebral condition is secondary or metastatic in nature. The very rare occurrence of abdominal pain as a symptom of tumors of the fourth ventricle is not generally referred to (Ernest Sachs some time ago reported one case) or regarded as clinically important, and when fleeting thought is given to the fact the opinion ventured is that it may have something to do with the vagus. Many years ago I saw a boy (case 1) with a frontal epidural abscess who presented a clinical picture of acute appendicitis. He was operated on, a normal appendix was removed, and fortunately he recovered when the abscess was evacuated by the brain surgeon. Several years later I saw a girl, aged 16 years, with an intrapontile tumor that extended to the midbrain and possibly involved the hypothalamic region, who complained of abdominal pain. The first symptom was urinary retention requiring catheterization, but she also had definite abdominal pain not associated with distention of the bladder. About the same time a young man with hemangioblastoma of the cerebellum came under my observation. The clinical history, which extended over a period of years, was punctuated by recurrent attacks of abdominal pain. Because of negative results of the general medical examination the patient's complaints were looked on as psychoneurotic. He subsequently died of the cerebellar tumor, which had invaded the fourth ventricle.

These three cases led to the question whether disease of the brain may not in some way affect the visceral efferent pathways anywhere from the cortex through the hypothalamus to the vagus region in such a way as to manifest itself on occasion in the form of abdominal pain. What is known as abdominal migraine, a rather ill defined clinical syndrome, also came to mind, and the question arose as to the possible correlation of the abdominal symptoms with what is regarded as a cerebral condition. The occurrence of abdominal pain either as an epileptic aura or following a convulsive attack or as the equivalent of a convulsion presented itself for consideration. So did the rare occurrence of morbid hunger in brain tumors. Still another question was raised by the occasional presence of abdominal pain, definitely not on the basis of radicular involvement, in both acute and chronic encephalitis. The fact demonstrated by Cushing that solution of pituitary injected into the ventricles gives rise to gastric hypermotility, pylorospasm and reverse peristalsis lent further plausibility to the assumption that abdominal pain may be a symptom of disease of the brain. The occurrence of peptic ulcer in cortical lesions, a fact that has received considerable attention in recent years though known practically since the days of Rokitsansky, naturally also served as both question and answer to the problem of abdominal pain in disease of the brain, despite the fact that what is here considered is merely pain and not a

pathologic condition of the gastro-intestinal tract. Finally arose the question whether the abdominal pain that the "neurotic" often complains of, or the intestinal peristalsis that manifests itself in diarrhea and the reverse peristalsis that expresses itself in vomiting, or the inhibition of gastric and intestinal peristalsis, are not in effect the result of disturbed cerebral physiology rather than what is with ill concealed contempt designated as "bellyaching."

All these facts, to be discussed presently at greater length, which are further supported by the experimental production of intussusception after ablation of the premotor cortex, justify the assertion that abdominal pain, without demonstrable intra-abdominal pathologic changes, may be regarded as a symptom of disease of the brain. That it is not rare can be inferred from the fact that in a comparatively short time I have been able to gather sixteen cases. Indeed, special attention revealed a number within a very few months. However, whether or not the symptom is common or rare is not nearly so important as that it occurs and that it is generally overlooked or wrongly interpreted. In any case it demands explanation. The following cases, given here in the briefest outline, illustrate the occurrence of the symptoms.

REPORT OF CASES

CASE 1—A boy, aged 10 years, seen by me in consultation two weeks after an operation for "acute appendicitis," had had a moderate degree of fever for several days, complained of severe frontal headache vomited, and was going from drowsiness into stupor. Two weeks before the boy began to complain of abdominal pain. He vomited a few times, not after meals, and had fever. The blood showed leukocytosis. Based on these observations, despite the absence of abdominal rigidity, the surgeon made the diagnosis of appendicitis operated on the boy, and found a normal appendix. The patient made an uneventful operative recovery, but after ten days he began to have headache, to vomit once more and to go into stupor. When seen by me he had beginning papilledema and marked tenderness to percussion over the frontal bone and the deep reflexes were bilaterally hyperactive. The presence of a comparatively recent scar on the forehead elicited the information that while playing the boy had fallen on his face a few weeks earlier and cut his forehead but he had concealed the fact from his parents until he came home in the evening. Apparently he suffered few after-effects the headaches fever, abdominal pain, vomiting and leukocytosis not appearing until two weeks later. A roentgenogram of the skull showed a fissure fracture of the frontal bone. Trephine exploration led to the evacuation of a frontal epidural abscess and to recovery. The abscess was fairly large and had compressed the frontal poles.

CASE 2—L. Y., a woman, aged 20, was admitted to the Montefiore Hospital because of abdominal cramps and generalized convulsions. The former, mainly localized in the epigastrium and right upper and lower quadrants had lasted fairly continuously for three years. After repeated examinations at another hospital, it was decided that she had "chronic appendicitis and hysteria," and she was treated without relief. The convulsions appeared six months before admission to the hospital and gradually increased in frequency until they occurred several times a day. They were characterized by sucking movements of the lips, tonic spasms of the right upper extremity and groping of the hand, and were followed by a period of disorientation. She vomited frequently. She had old-standing bilateral choked disk with secondary optic atrophy, which had progressed to complete blindness. She died four days after admission to the hospital. At necropsy a large infiltrating hemorrhagic tumor of the right temporal lobe and hippocampus, invading the putamen and globus pallidus, was found.

CASE 3—C. I., a man, aged 36, had had generalized convulsions for ten years, apparently controlled by medication. Ten days before admission to the Montefiore Hospital he began to vomit and to complain of epigastric pain. He gradually

became stuporous and died. The neurologic examination gave few and inconclusive results. The fundi were normal. The laboratory data, except for an increase of lymphocytes (20 on the first and 10 on the second tap) in the spinal fluid, were negative. The temperature rose to 103 F. The patient died, and at necropsy an oligodendroglioma was found infiltrating the right frontal lobe up to the parietal.

CASE 4—M. D., a man aged 56, admitted to the Montefiore Hospital in 1933 had had seizures, headaches and impairment of vision for a year and a half and for the last six months pains in the right side of the abdomen at times accompanied by vomiting. He became impotent and lost sexual desire five years before admission to the hospital. The petit mal attacks consisted of perception of bad odors, pallor, and momentary loss of consciousness. Examination showed scanty facial, axillary and bodily hair of female distribution, bilateral optic atrophy, constricted visual fields, a basal metabolic rate of minus 17, marked destruction of the sella turcica, negative serologic changes and a negative gastro intestinal series of films. The diagnosis of pituitary tumor was made, operation was advised but refused, and the patient was discharged.

CASE 5—L. I., a man aged 21 seen at the Jewish Hospital Brooklyn in May 1933 following right frontal sinusitis had a right frontal epidural abscess, which was evacuated and followed by recovery. In November 1933 he was readmitted in coma and a right frontal lobe abscess was evacuated. After five weeks he was discharged, only to be again admitted in February 1934. This time a right temporal lobe abscess was evacuated. He remained in the hospital till May at which time he was discharged fully recovered. In addition to headaches, convulsions and focal signs he suffered throughout his stay in the hospital from attacks of right sided abdominal pain, accompanied by nausea and hiccups. Abdominal examination did not account for the pain. As his cerebral condition cleared up the abdominal pains subsided.

CASE 6—A. G., a youth aged 15, was admitted to the Jewish Hospital, April 27, 1934 because of headache, vomiting and convulsions. He had fallen and struck his head March 11 but was not unconscious. April 6 he began to have generalized convulsions. From April 13 to April 27 he suffered generalized abdominal pains. Examination showed bilateral papilledema and left homonymous hemianopia. Evacuation of a right temporal lobe abscess resulted in complete recovery.

CASE 7—A. A., a woman aged 41 complained of headaches and pains in the back of the eyes for ten weeks and pains in the left lower quadrant, worse at night, for six weeks. Except for bilateral choked disk with retinal hemorrhages, she showed no neurologic signs. A ventriculogram revealed a dilated ventricular system, including the fourth, namely, marked internal hydrocephalus. Suboccipital exploration failed to show a tumor. The patient was discharged unimproved and entered another hospital, where another operation was performed and the diagnosis of arachnitis blocking the ventricular foramina was made.

CASE 8—H., a woman, aged 46, admitted to the Neurological Institute, complained of stomach trouble with cramps and vomiting, occipital headache, unsteadiness, and disturbance of vision. The history was that she had been suffering occipital headaches for fourteen years. At the same time she had blurring of vision and unsteadiness in walking. During this period she had attacks of cramping pains in the abdomen which increased in severity for four or five days and decreased for a few days, only to recur again and again. The attacks were accompanied by nausea and vomiting. The presence among other conditions of left homonymous hemianopia pointed to a right-sided lesion, and at operation a meningioma overlying the right occipital lobe was removed.

CASE 9—W. K., a male, admitted to the Neurological Institute, Oct. 1, 1934, because of pain in the eyes and the stomach of about one month's duration awoke one night with severe pain in both eyes and very severe abdominal cramps unaccompanied by nausea or vomiting. The pains lasted about one hour and recurred every night. Abdominal examination was negative. The neurologic changes consisted of left-sided pyramidal tract signs and blurring of the margins of the disks.

Roentgenograms of the skull showed a calcified mass in the inferior portion of the right occipital lobe with characteristic parallel, convoluted arrangements seen in venous angioma of the brain. The patient was not operated on and was discharged ten days after admission.

CASE 10—J. H., a man, aged 36 admitted to the Neurological Institute in June 1934, complained of headache, difficulty in walking, spots before the eyes, and abdominal pains and vomiting. He had been operated on in August 1925 and again in January 1928 for a left cerebellar cyst. For five months before the last admission he had been suffering from severe pains in the abdomen and vomiting. Roentgen examination showed no evidence of pathologic changes either in the stomach or in the intestine. Neurologic examination confirmed the recurrence of the tumor in the left lobe of the cerebellum.

CASE 11—G. T., a girl, aged 19 years was admitted to the Neurological Institute with a two-year history of frontal headache, vomiting, somnolence and impairment of vision. For one year she had had occasional attacks of abdominal pain. Reduction of visual acuity, bilateral optic atrophy, temporal hemianopia in one eye and roentgen evidence pointed to a buccal neural pouch tumor. She was operated on and a cyst in the suspected region was found and drained. During her stay in the hospital both before and after the operation the patient had on three or four separate occasions severe lancinating abdominal pains with tenderness. At one time the diagnosis of appendicitis was made. Examination failed to reveal pathologic changes of the abdomen.

CASE 12—C. O., a girl, aged 16 years admitted to the Neurological Institute complained of headache, drowsiness, vomiting, abdominal pain and weakness of the left side of the body for the past month. Examination showed left hemiparesis, papilledema with retinal hemorrhages and roentgen evidence of increased intracranial pressure. At operation an infiltrating tumor beginning in the right frontal lobe and extending backward to the parietotemporal was found. Pathologically it proved to be a medulloblastoma. The abdominal pains that persisted after operation consisted of sharp cramps in the right lower and upper quadrants. The pains had no relation to meals.

CASE 13—R. W., a woman aged 40 admitted to the institute complained of vomiting, headache, unsteadiness, and awkwardness of the right arm. For several months she also had abdominal colic. Examination showed cerebellar ataxia, nystagmus and bilateral choked disk. A ventriculogram pointed to a tumor of the posterior fossa. At operation a right cerebellar tumor, later reported as an "unclassified glioma," was removed. The abdominal pains, which persisted after the operation consisted of gnawing in the right upper and lower quadrants and of colic-like spasms, which kept recurring. There were no associated gastro-intestinal symptoms. Careful examination ruled out suspected gallbladder disease and other abdominal conditions.

CASE 14—F. F., a woman, aged 48, on admission to the institute complained chiefly of frontal headache, vomiting, dizziness and mental confusion of three months' duration. For two years she had had recurrent abdominal pain. Examination showed bilateral papilledema, left lower facial weakness and increased deep reflexes on the left side. A roentgenogram of the skull showed a right frontal, parasagittal tumor. At operation an infiltrating tumor, later proved to be an astrocytoma, was found in the frontal lobe posteriorly and parasagittally. The abdominal pains both before and after the operation which had no relation to meals consisted of cramps near the umbilicus. Because she had been jaundiced sometime before the operation, roentgen and other examinations were made and no gallbladder disease was found. Further examination at the hospital failed to reveal the cause of the abdominal pains.

COMMENT

In trying to explain the occurrence of abdominal pain on the basis of brain lesions, one is confronted with the difficulty that little is as yet known of the anatomy and physiology of the visceral efferent or autonomic pathways of the brain. Nor is it possible on the basis of pathologic lesions alone to localize this symptom anatomically or to correlate a particular region with the

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production or mediation of the pain. While six of the cases herein recorded (and if the tumor in the region of the pituitary, which impinged on the frontal lobes, included there were seven) involved the frontal lobes, two each were in the temporal and occipital lobes and three were cerebellar or in the posterior fossa. Experimental evidence points more or less to the premotor area, but there is much to be said for an interbrain or hypothalamic localization, and arguments could be adduced in favor of the vagus region.

Although I am not here concerned with the question of neurogenic erosions² or the production of gastric and duodenal ulcers³ and perforations by cerebral lesions, their occurrence bears on the problem of abdominal pain. Cushing⁴ correlated the occurrence of peptic ulcer with lesions of the interbrain region, and his experimental demonstration that gastric hypermotility, pylorospasm and reverse peristalsis can be induced by the intraventricular injection of solution of pituitary lends plausibility to such a view. It is noteworthy, however, that, if one excludes the two cases of inahugnant hypertension, which do not help in the localization, six of his remaining nine cases were cerebellar or posterior fossa tumors, one was parietal only one was in the third ventricle, and the other was an olfactory groove meningioma. If, therefore, localization should be attempted on the basis of his cases, one might be compelled to look in the vagus region. None the less there is a great deal to be said for the hypothalamus⁵ and its numerous visceral autonomic structures. It may be, of course that lesions in all three regions are capable of producing abdominal pain and that a discharge may be set up in the autonomic portion of the cerebral cortex, wherever that may be, or the hypothalamic or vagus region. Most of the evidence so far adduced points, however, to the cortex.

As far back as 1876 Bochefontaine⁶ showed that stimulation of the sigmoid gyrus in the dog resulted in peristaltic contraction of the pylorus and sometimes inhibited rhythmic contractions of the stomach. Other experimenters showed that cortical stimulation may either set up or inhibit peristalsis and concluded that the cortex actually has an inhibiting influence. This was deduced from the fact that stimulation of the vagus does not induce peristalsis if the cortical connections are intact but does if the cortex is ablated or if sections are made at various levels above the vagus. The occasional occurrence of diarrhea in the case of removal of cortical inhibition. But the more recent work of Watts⁷ and of Watts and Fulton⁸ is not only highly interesting but probably points to the explanation of abdominal pain in brain lesions. They reported the spontaneous occurrence of intussusception in monkeys after ablation of the cortex and showed that stimulation of the premotor cortex induced peristalsis and in two cases intussusception, that occasionally stimulation of the frontal and postcentral convolutions

induced peristalsis, and that sectioning of the vagi prevented the occurrence of intussusception and induced only slight peristalsis. They concluded that the cerebral cortex contains autonomic representation, both inhibitory and excitatory. They stated that the probable pathways are from the cortex to the hypothalamus, the red nucleus, the substantia nigra and the vagus. That the pathway is by way of the vagus was inferred from failure of cortical stimulation to induce peristalsis if the vagi are cut. That the hypothalamic region is another center was deduced from failure to cause peristalsis on stimulation of the lateral margins of the infundibulum if dial or barbiturates were given, these drugs being presumed to affect the hypothalamic nuclei.

That pain can occur as an epileptic aura, as an equivalent of a convulsion or as a postconvulsive phenomenon is a well known clinical fact. Penfield and Gage⁹ have shown that stimulation of the cortical area 7a caused pain in the right lower quadrant of the abdomen and elicited an epileptic attack. They concluded, as did Watts and Fulton in the case of monkeys, that there is in man sensory autonomic representation for the gastro-intestinal tract in the cerebral cortex. Watts and Frazier¹⁰ also state that a neurogenic discharge may manifest itself through abnormally vigorous movements of the gastro-intestinal musculature and that the discharge comes from the autonomic portion of the cerebral cortex, although they cannot say just what part of the cortex it is. In any case, cortical autonomic epilepsy expresses itself in nausea, vomiting and gastric distress. Fulton suggests that morbid hunger may be due to excessive motility of the stomach. Spiller¹¹ once reported the occurrence of morbid hunger in a patient with gloma of the pons and again (quoted by Watts) in the case of a large meningioma of the frontal lobe.

Migraine expressing itself in recurrent crises of abdominal pain, though neither common nor well defined, may possibly be the expression of fleeting cerebral pathologic changes. This view is fortified by the opinion commonly held that some cases of migraine are due to anaphylaxis and by the fact that the brain can react focally to sensitization. I have seen such cases and so have other observers. Cassirer¹² mentioned edema, and E. Flatau described abdominal pains, hyperperistalsis and diarrhea in migraine. Oppenheim¹³ cited cases of paroxysmal abdominal pain in children with migraine as equivalents lasting several hours and cited Moebius, who spoke of gastrocnysis, namely, paroxysmal hypersecretion of hydrochloric acid as a form of migraine. The view that abdominal pain may be an expression of paroxysmal headache due to local pathologic changes of the brain does not conflict with the opposite view that the pathologic changes of the brain or hepatic disturbances may be the result of gastric While encephalitis, because of its dissemination, cannot be lightly invoked as a basis for cerebral localization, it is a brain disease, and, if abdominal pain can be shown to occur as one of its manifestations, the inference is justified that the pain is cerebral in origin. I am not unmindful of the fact that radicular pains in the

² Masten Mabel G. and Bantz R. C. Neurogenic Erosions and Perforations of the Stomach and Esophagus in Cerebral Lesions. Arch. Int. Med. 54: 916 (Dec.) 1934.
³ Grant F. C. Brain Lesions and Duodenal Ulcers. Ann. Surg. 101: 156 (Jan.) 1935.
⁴ Cushing Harvey. Pituitary Body, Hypothalamus and Pansym. Pathetic Nervous System. Springfield Ill. Charles C. Thomas, 1932.
⁵ Watts J. W. and Fulton J. F. The Effect of Lesions of the Hypothalamus upon the Gastro-Intestinal Tract and Heart in Monkeys. Ann. Surg. 101: 363 (Jan.) 1935.
⁶ Bochefontaine cited by Watts.
⁷ Watts J. W. The Influence of the Cerebral Cortex on Gastro-Intestinal Movements. J. A. M. A. 104: 355-357 (Feb. 2) 1935.
⁸ Watts J. W. and Fulton, J. F. Intussusception. The Relation of the Cerebral Cortex to Intestinal Motility in Monkeys. New England J. Med. 210: 833-825 (April 26) 1934.
⁹ Penfield Wilder and Gage, Lyle. Cerebral Localization of Epileptic Manifestations. Arch. Neurol. & Psychiat. 30: 709 (Oct.) 1933.
¹⁰ Watts J. W. and Frazier C. H. Cortical Autonomic Epilepsy. J. Nerv. & Ment. Dis. 81: 168-176 (Feb.) 1935.
¹¹ Spiller W. G. Brain Tumor. J. A. M. A. 53: 2078 (Dec. 18) 1909.
¹² Cassirer R. Handbuch der Neurologie. Berlin Julius Springer 1909.
¹³ Oppenheim II. Lehrbuch der Nervenkrankheiten. Berlin S. Karger 1923 p. 1865.

lower thoracic region can, as in tabes for instance, simulate abdominal syndromes, but in the main I believe that the glib ascription of abdominal pain to root involvement is not justified. The observation may be true, perhaps, in the myeloradicular types of encephalitis but does not hold for those cases in which the infection is more or less limited to the brain, midbrain and brain stem. Certainly no definite radicular distribution has been demonstrated in those cases. But, what is more important, I have seen instances of abdominal pain in encephalitis when there was no suspicion whatever of radiculitis and can cite at least two cases of dystonia, definitely on the basis of encephalitis, which were characterized by constant and severe abdominal pains that hardly yielded even to morphine, and by intractable vomiting that was the expression of reverse peristalsis. That dystonia, too, has an underlying disseminated pathologic condition not lending itself to special correlation of structure with function does not invalidate the conclusions that the abdominal pain is in fact the result of disease of the brain. In any case both acute and chronic encephalitis affect those regions, namely, the cortex, interbrain and bulb (vagus), which may possibly have to do with the production of abdominal pain, even though the virus has a predilection for the hypothalamic and midbrain regions. The inference is also justified that cardiospasm and esophagospasm may be due to hypothalamic involvement, it is known to occur in impairment of function of the vagus.

While hysterical or so-called psychogenic abdominal pains are generally vague and diffuse, they are not infrequently severe and localized sufficiently to simulate abdominal syndromes of one kind or another. It is not at all either a novel or an uncommon experience to come across hysterical patients who have been operated on one or more times for nonexistent gastric ulcers, gall-bladder disease, appendicitis and the like. The common explanation that hysterical pains are psychogenic in nature and the psychoanalytic one that they are conversion symptoms though to a large extent true and psychologically satisfactory, ultimately beg the whole question. To say that the hysterical pains are of no significance is obviously untrue and to dismiss the patient with the statement that he is "bellyaching" is bad diagnosis and worse practice. The fact is that the patient does have a belly ache and it is just as real to him or to her as if it were caused by renal or gall-bladder colic, for instance. It may well be that actual disturbance of cerebral functioning, secondary to psychic emotional stimuli, is the underlying factor in the production of abdominal pains. In this sense psychogenesis merges into physiogenesis or neurogenesis. That sudden fright, for instance, can induce intestinal peristalsis and lead to diarrhea or contraction of the stomach wall and precipitate vomiting is a well known clinical fact. It may be debatable whether one is dealing here with cortical stimulation or inhibition, but it is hardly to be doubted that one is dealing with a cerebral process probably involving in the circuit the cortex, the hypothalamus and the vagus. Since it has been shown that abdominal pain can and does occur on stimulation or irritation or pathologic involvement of the cortex and possibly of other regions, it is quite probable that the hysterical abdominal pain is the expression of a psychophysiogenic process and that the hysterical patient suffers neurogenic cerebral pain. In any case cerebral vomiting and pain, and this may be equally true in cases in which there are demonstrable pathologic changes, are not altogether unrelated.

CONCLUSIONS

From what has been said so far, it may be set down as a clinical fact that abdominal pain occasionally occurs in disease of the brain and that it may be regarded as one of its manifestations. The probability is that it occurs more frequently than appears from casual observation and that special attention will bring to light a greater number of cases, particularly in tumors and other expanding lesions of the brain. It has been shown that it can occur in the convulsive state, in migraine, in encephalitis, in hysteria, and under experimental conditions. The present paper deals with expanding lesions, which are of such great importance to the neurologist and neurosurgeon. Most of the evidence presented points to the cortex and possibly to the frontal, more particularly the premotor, area as the source of neurogenic abdominal pains and indicates that the cortex contains visceral autonomic representation. But there is also evidence to show that the hypothalamus and possibly the vagus region may be responsible for the abdominal pains, and that if the cortex is the source of the pain it is mediated by way of the lower levels or centers. The symptom, therefore, cannot be said to have localizing value, though it may point to the frontal part of the brain. Both the observation and the proffered explanation may have clinical significance alike for the neurologist and for the internist and abdominal surgeon.

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SYSTEMIC THRUSH IN CHILDHOOD

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Since the days of Virchow a group of diseases which primarily affect the skin and its appendages have been designated as mycoses. The etiologic factor in these disorders seems to be plant agencies, particularly fungi.

Thrush is one of these diseases and plays a principal role in the mycotic disorders of childhood. It differs from other fungoid infections in that, in addition to the skin the mucous membrane and some of the internal organs may be affected.

Contrary to general opinion, thrush is not caused by only one species of fungus, the so-called thrush fungus or *Oidium albicans* (Robin). According to Castellani¹ it may be caused by a number of different fungi, some of which are botanically far apart from one another, belonging to separate species, genera and families. The fungi belong to the large group of thallophytes, plant organisms that are without chlorophyll, that do not assimilate carbon dioxide and that are dependent on a saprophytic or parasitic existence.

There are three different groups of the mycoid fungi, molds, yeast forms or sporothrix, and dermatophytes. It is under the last named group that thrush as commonly seen in infants and children is classified.

Two principal types of thrush can be distinguished clinically: the white or gray-white type that is extremely common and the yellow or yellow-brownish type of rarer occurrence.

The dermatophytes are distinctly dermatophilic and have a predilection for the carotene-containing epi-

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¹ Castellani, Aldo. *J. Trop. Med.* 23: 17 (Jan. 15) 1920. *Fungi and Fungous Diseases Arch. Dermat. & Syph.* 17: 61 (Jan.) 1914 (Feb.) 354 (March) 1928.

dermal layers and the hair and nails. The dermatophytes require very little nitrogen and make little demand on their environment for subsistence.

The capacity of most dermatophytes to exist or live is exceptionally good. They are very resistant to physical conditions, such as heat, cold, dryness and many chemical substances. An explanation of this resistance is probably found in the thickened membrane which supports the spore forms.

Dermatophytes require but little oxygen and many forms are anaerobic. They have an excellent buffer action, which gives them the capacity of retaining a favorable reaction for a long time and of counteracting unfavorable ones rapidly. They tend to form alkali and have a marked tendency to cause fermentation.

Lipoids permit the fungi to enter into a slight lipid coating of the skin. Trypsin-like ferments aid in the solution of the surrounding skin, and the resulting products of alkaline breakdown cause the moderate inflammation which is characteristic of these lesions.

The affected skin manifests certain defense reactions, one of them being a progressive keratinization and lamellation, particularly of the horny layers of skin, such as the nails and nail beds.

Thrush belongs to a group of mycoses which not only affect the skin but may also affect the mucous membranes and the internal organs and in rare cases cause general sepsis.

The most common form of thrush occurs in the mouth of young infants, particularly if they are poorly nourished. Ordinarily the disorder is due to a mold and readily yields to simple forms of treatment. It can, however, occasionally show formidable symptoms and present a clinical picture of an infection which for tenacity and baffling resistance to all forms of therapy hardly has an equal. If a chronic form of general sepsis develops, it almost uniformly leads to a fatal termination.

Beginning with lesions about the mouth there are extensive angina, involvement of the entire gastro-intestinal tract and lesions about the anus and, in the female, about the genital region. Often there is more or less involvement of the lungs. Of the abdominal organs the kidneys and liver are chiefly invaded.

Exceedingly chronic lesions develop on the skin involving particularly the extremities and the nails and nail beds and appearing in fairly large, isolated patches on the trunk.

The lesions are rather dry with considerable tendency to scaling and crusting. There is little itching except when interdigital spaces are invaded. At no time is there a severe inflammatory reaction and even when there is evidence of extensive sepsis, the disorder may be afebrile unless acute pulmonary inflammation is a complication.

In practically all the lesions, massive formation of mycelia and spores can be demonstrated. Small vesicles are often found in the desquamating portions of the lesions. The organisms are grown easily, especially on solid mediums.

Thrush is not contagious and arises only when conditions favorable to its development are present.

Czerny² expressed the view that fungi are present in the mouth of every infant with thrush. Epstein³ found that thrush is not found in the infant's mouth until the fifth day and is rarely found after the second year.

Thrush is not confined to young infants, as it may occur at all ages. It is not known why the organism can remain latent and harmless and then suddenly become pathogenic.

In latent thrush not only the mouth but the entire digestive tract may be involved. The organisms are apparently not destroyed by intestinal secretions. In all cases of thrush the infection probably originates in the mouth.

Thrush generally remains a localized superficial disease and seldom becomes an infection of the blood stream, but it may involve the skin and internal organs extensively and present all the manifestations of general sepsis.

Moro⁴ expressed the belief that sepsis due to thrush is more common than is generally believed. Generalized cutaneous manifestations of thrush in infants were first reported by Beck⁵ and by Ibrahim⁶. Since then occasional additional cases have been reported in the pediatric and dermatologic literature.

Still more rare are the generalized septic forms, which generally end fatally. Heubner⁷ reported such a case in 1903 in a girl, aged 16 months. The entire visible mucous membrane of the mouth, throat and pharynx was covered with a yellowish, dry exudate which resembled a diphtheritic membrane but proved to be thrush. Fatal termination of the case was preceded by dyspnea and severe symptoms of sepsis. Extensive pulmonary and renal involvement was found at autopsy. Typical organisms were recovered from all the lesions.

A similar case in an infant of 6 months was reported by Schamberg⁸. In addition to the oral lesions, there were extensive cutaneous lesions and death occurred soon.

A case of thrush in an infant 5 months of age showing polyarthritis and extensive gastro-intestinal involvement was mentioned by Goldring⁹. This patient recovered. A twin sister also had generalized thrush but no symptoms referable to the joints.

Christison¹⁰ reported the condition in an older child. The first symptoms appeared when the child was 2 years old and the entire duration of the disease was three years. Extensive cutaneous lesions developed, especially about the face, scalp and nails and finally there was massive pulmonary involvement. Extreme weakness and emaciation preceded the fatal termination.

During twenty-five years of pediatric practice I have seen five patients with generalized systemic thrush, all showing very unusual symptoms. Four of these cases are reported here, the fifth case was the one reported by Dr Christison. The patient had been under my care for about one year.

REPORT OF CASES

CASE 1.—B. G., a girl, aged 4 months, I saw first in October 1913. The complaint was excessive drooling, eruptions about the mouth, vulva and rectum and white patches in the mouth. She had been in fairly good health up to the age of 5 months. She had been breast fed for one month and then artificially fed with mixtures of dilute cow's milk. The gain in weight had been good until the third month. After that there were gastro-intestinal disturbances, persistent loss in weight and gen-

⁴ Moro E. in von Pfäundler Meinhard and Schlossmann Arthur Handbuch der Kinderheilkunde ed. 2 Leipzig F. C. W. Vogel 1910 p. 19.

⁵ Beck Dermat. Studien 20:494 1910. Dermat. Wchnschr. 60:301 1915.

⁶ Ibrahim J. Arch. f. Kinderh. 53:91 1911.

⁷ Heubner O. Deutsche med. Wchnschr. 29:581 1903.

⁸ Schamberg J. F. Arch. Pediat. 32:617 1915.

⁹ Goldring Morris Thrush Complicated by Acute Polyarthritis in an Infant, J. A. M. A. 76:724 (March 12) 1921.

¹⁰ Christison J. T. Fatal Case of Thrush Involving the Skin, Lungs and Nails. Am. J. Dis. Child. 26:250 (Sept.) 1923.

² Czerny Adalbert and Keller A. Des Kindes Ernährung Ernährungsstörungen und Ernährungstherapie Leipzig Franz Deuticke 1901 1912 1922.

³ Epstein B. Jahrb. f. Kinderh. 104:129 (Feb.) 1924.

eral decline. The drooling and eruptions had been present for about two weeks before I saw the infant.

Eruptions resembling impetiginous lesions were present in the angles of the mouth and on the right cheek. Lesions similar to those seen about the mouth were found adjacent to the rectum and a few on the labia majora.

A moderate degree of diarrhea was present. The temperature was not elevated. There was paronychia of the thumb and middle finger of the right hand. The mucous membranes of the lips, the entire buccal surfaces and the anterior portion of the tongue were covered with yellowish white membranous patches. There was no fetor. The membranes could not be detached and there were no bleeding surfaces. Diphtheria was thought of but both smear and culture proved to be negative. Scrapings of the membrane showed numerous mycelia and spores of *Oidium albicans*. Scrapings from all the superficial cutaneous lesions, including the paronychia, showed the same organism and established the diagnosis.

Within a few days the entire mouth and throat, including the tonsils and hard and soft palate, were covered with a thick, furry, whitish membrane. There was excessive drooling and considerable difficulty in breathing.

Food was persistently refused and a moderate diarrhea with mucous stools continued. Simultaneously with the onset of fever, pneumonic inflammation developed in both lungs, presumably due to extension of the thrush. The infant succumbed three weeks after the onset of the illness and the first evidences of the infection. Autopsy was not permitted.

No form of treatment either local or systemic inhibited or influenced in the least degree the progressive development of the disease.

CASES 2 (M S) and 3 (S S).—The next two cases involved two sisters, M S, aged 4 years and 9 months, and S S, aged 6 years. These children were admitted to the University Hospital in July 1924 with identical complaints of generalized alopecia, generalized impetigo and malnutrition.

The father was a tanner but had never had any cutaneous disease. Two brothers, one aged 13 years, the other 3 years, have been well and free from the disorder exhibited by the sisters.

Both girls were born at full term, had normal weight, were breast fed for a year and developed normally in every respect until they were a year old. Both had pertussis during the first year and the older child had a mild attack of varicella during the fourth year of life.

In the older child, cutaneous lesions appeared when she was 3 months old, first in the form of a nail-sized crust over the occiput. Similar crusts developed on both cheeks. These were diagnosed as eczema and cleared up under treatment. A few weeks later similar lesions appeared about the corners of the mouth.

The lesions had a red slightly inflammatory base, covered with dry scaly crusts. The removal of these left a raw red, slightly weeping area over which the dry, scaly crusts rapidly reformed. Lesions have persisted about the mouth and its immediate neighborhood up to the present time.

When she was 18 months old, the finger-nails of both hands became involved the infection clearing up at times with loss of the nails and then reappearing. After the second year, lesions similar to those on the face spread over the dorsal surfaces of both feet, the heels and the surfaces of both elbows and knees. There were practically no lesions on the trunk and the vulva and rectum were free.

When the child was 3 years old an attending physician diagnosed the condition as tinea. Under treatment all the lesions cleared up except those about the mouth, only to reappear again in three months over all the previously affected body surfaces.

Subsequently a diagnosis of impetigo was made, but no form of treatment seemed to influence or relieve the disorder.

The cutaneous condition continued practically unchanged from the time of its initial appearance to the time of admission to the hospital, a period of nearly six years. During that entire period there was very little gastro-intestinal disturbance and the child was relatively free from respiratory disease.

Two striking features developed during the course of the disease. There was marked retardation of the child's growth, especially in height, leading to definite dwarfing but without

any impairment of the intellect, and complete alopecia, which first developed when she was 4 years old. Up to the time of admission, the hairs of the scalp, eyebrows and lashes had shed and reappeared four successive times, but there had been no regrowth of hair for over a year and there was every indication that the baldness was permanent.

The history of the younger child previous to admission was similar to that of the older sister. Cutaneous eruptions about the mouth, eyes and ears and on the feet, legs and elbows, over the sacrum and on the nails of both hands and feet have existed for a period of three and one-half years. There has been considerable itching of the eruptions about the mouth and eyes. Troublesome anorexia has existed for nearly three years and she has shown marked undernutrition for about one year. As in the older child, there has been considerable dwarfing.

The eruption first began when the child was a year old and dry, itching, scaly eruptions on a reddish base developed about the corners of the mouth and eyes. The diagnosis, treatment and course of the lesions and their character and general distribution were almost identical with those of the older sister. The hair did not begin to fall out until a year previous to admission and grew out once or twice, but there had also been complete and apparently permanent baldness with loss of eye brows and lashes for four months preceding her entrance to the hospital.

At the time of admission the striking feature in both cases was the marked dwarfing. They had the stature and appearance of infants of 8 months and a year, respectively, but the intellect and mental development as evidenced by their speech and actions were those of children 4 and 6 years old. The complete baldness and loss of all hair about the eyes, the marked pallor and transparency of the skin, and the marked state of undernutrition and tissue atony also were striking features. They were able to sit up but had not walked for many months.

Considerable tendency to looseness of the bowels has existed during the past year. Infections of the upper respiratory tract have been infrequent. The mouth, nose, throat and lungs of both children were free from any evidence of infection at the time of admission.

Examination of the blood showed a slight secondary anemia in both cases and a normal differential white cell count. The urine was normal and renal function in both seemed to be entirely normal. The Wassermann and Pirquet tuberculin tests were negative. There were no abnormal neurologic signs to explain the marked trophic disturbances.

Both children were unusually alert, above the average in intelligence for their age, exceedingly active except for their inability to walk and amusing on account of their ceaseless intelligent chatter.

The skin over the entire body was moist, exceedingly delicate and transparent.

In the older child the characteristic cutaneous lesions were observed on the scalp, on the lobes of both ears about the inner canthus of both eyes, on the lower part of the nose and at the corners of the mouth. There were no lesions on the trunk. Well circumscribed, red papular scaly lesions covered the region of both olecranon and the dorsal surfaces of both hands involving all the finger-nails in the form of a paronychia. Similar lesions were distributed about the knees and the dorsal surfaces of the feet, involving all the toe nails.

The lesions in the younger child had a somewhat similar distribution about the face, especially the mouth, eyes and ears, and the extremities except that the finger nails and toe nails were not so extensively involved. The younger child had lesions about the rectum and over the sacrum. She had much more looseness of stool than the older child. Organisms were recovered from all the cutaneous lesions in both cases, were demonstrable in stool cultures and were readily grown from blood cultures.

Both patients were extremely resistant to treatment, which consisted of local applications to the cutaneous lesions, the use of ultraviolet radiation, neoarsphenamine, vaccine prepared from the cultures, occasional blood transfusions and dietary management. Dilute solutions of copper sulphate seemed to be most effective for the cutaneous lesions but nothing really produced any lasting improvement. The physical state of both children progressively declined. They were taken from the hospital

after a stay of four months, entirely unimproved, and died a few months later from marasmus and terminal pulmonary infection.

CASE 4 (C B)—A girl, aged 8 years, reared on a farm in North Dakota, was brought to the University Hospital in November 1928 with the complaint of chronic eruption of the skin. The lesions first appeared when she was 10 months old about the corners of the mouth and the nose, extending later to the extremities. They were pustular and showed a tendency to dry scaling and thick crusting. They periodically healed only to reappear again in aggravated form. The condition had continued all through the child's life since infancy.

A complete loss of hair of the scalp, eyebrows and eyelashes had occurred four different times since the beginning of the eruption and seemed to coincide with the height of the eruption and its reappearance with subsidence and partial healing of the lesions.

Looseness of the bowels and chronic bronchitis were a continually recurring complaint.

There was no history of tuberculosis or other chronic disease or cutaneous disorder in the family. One brother was living and well.

Birth was normal. The child was breast fed for one year and gained well up to the time the eruption appeared. After that she was continually underweight although the increase in height has been adequate. Anorexia had been a persistent complaint.

At admission the child presented a thin, pale appearance. The stature was adequate for a child of 8 years. Slowness of speech and listlessness were marked but the mental faculties seemed unimpaired. There were numerous bald patches on the scalp and the remaining hairs were short, thin and very dry. The eyebrows and eyelashes were intact. The teeth showed a great deal of decay but the mouth and throat showed no signs of disease.

Except for the marked malnutrition, apparent anemia and cutaneous lesions, the physical examination was normal. The blood picture was that of a mild secondary anemia. The tuberculin and Wassermann tests were negative.

The cutaneous lesions consisted of dry, scaly, papulopustular patches, tending to fairly thick crusting with a red slightly indurated and inflammatory base. These lesions were located about the lips and the corners of the mouth and on all the extremities. The dorsal surfaces of both hands and feet, all the nails of both hands and several toe-nails on both feet were extensively involved. Large, apparently coal-scoring lesions were present on both forearms about the knees and on the lower part of the legs but the trunk, genitalia and rectum showed no involvement.

Scrapings from all the cutaneous lesions and cultures from the throat and the stool showed the organism of thrush—*Oidium albicans*—present in massive growth. The organism was not found in expectorated material and in blood culture.

The characteristic resistance of this disorder to all forms of treatment when it extensively involves the organism and becomes a systemic infection was exhibited in this case also.

Of the local medications, silver nitrate and dilute solutions of copper sulphate seemed to be the most effective. Improvement was noted also after ultraviolet irradiation coupled with dietetic and hygienic management. Arsenicals, iodides, and vaccine prepared from culture material seemed to be entirely without effect.

The characteristic remissions and exacerbations continued to occur in spite of any form of treatment. The child was discharged practically unimproved after a stay of over four months in the hospital.

Nothing was heard from the patient until a recent inquiry for her was made. Her mother wrote as follows:

Her sores bothered her constantly the winter she came back from the hospital in Minneapolis, but toward spring she started to improve. That summer (1929) she felt fairly well and her skin was clear most of the time. In the late fall and early winter of the same year the sores broke out again and she missed three months of school.

Since then her condition has not been bad, she has attended school quite regularly up till this last winter when she became worse. In addition to the old trouble she contracted measles

and that certainly set her back. She lost all her hair and the eruptions, especially around her ankles, have been worse than ever—pus and blood trickle out continually. Sometimes the sores itch so that she cannot sleep at night, and lately her eyes have been so sore. These last days she has felt somewhat better. She has grown considerably since you saw her, and whenever the sores heal up, she runs around and plays and is about as spry as any youngster."

The interesting feature of the cases reported consists in the extraordinary symptoms presented. The dwarfing effect of the disease presented in two of the cases and the generalized alopecia noted in three of them have to my knowledge not been reported in the literature. The fairly rapid form of sepsis observed in the case of the infant also seems to be exceedingly rare.

All four of the cases illustrate the formidable nature of this disorder when it becomes a generalized infection, and the remarkable ineffectiveness of any form of treatment.

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ABSTRACT OF DISCUSSION

DR. ISAAC A. AET, Chicago. Thrush infection is common in the new-born period; it is rare in older children and certainly uncommon in adults. It is assumed that thrush infection does not occur in the mouth cavity unless there has been some injury to the oral mucous membrane or the resistance of the infant has been lowered by nutritional disturbances. Professor Czerny said that in his experience thrush infection did not occur in a normal infant. I recall, however, periods in the nursery for the new-born when thrush infection occurred among the babies probably as the result of some temporary failure in the aseptic technic. There is no doubt that the fungous infection may spread to the pharynx and may descend through the larynx into the bronchial tubes or through the esophagus into the stomach and intestine. It has also been recorded that these thrush organisms may gain access to the blood stream, but again it must be assumed that in such cases the patient's resistance is low or that he is in a cachectic state. It seems to me that there is no reason why a generalized thrush infection should not occur. Thrush in older infants and children is most often associated with diarrheal diseases, perhaps the part played by a systemic thrush infection in the severity of the illness has been generally overlooked and the cause of the severe symptoms and the death has been assigned to alimentary infections.

DR. FREDERICK W. SCHLUTZ, Chicago. It is true that thrush infection is exceedingly common in the infants who are not doing well but this type of picture as represented by the four cases just reported is, I believe, exceedingly rare. It seems that this ordinarily fairly harmless agent can, under the right sort of conditions, produce pathologic conditions which so seriously affect the child in a trophic way that it eventually dies. I think the baldness in three of these cases (in two of them it showed permanently and will doubtless become so in the third) is unique. The fact that the last child has been more or less under treatment for a period of something like seven or eight years indicates the peculiar trophic systemic effect this disease can have. Any treatment tried so far has been ineffective. I should like to try some of the dyes by the intravenous route and possibly roentgen therapy. At the time these cases were under my care, treatment along these lines was not quite as advanced as it is at present. I have, of course, no assurance that such treatment would be effectual. It seems that in the end all these patients finally succumb to the disorder. I think it is probably true that the condition is apt to be overlooked in children and especially in older children. One expects to see thrush in the infant not doing well. It may involve the entire gastro-intestinal tract and the internal organs and in that way contribute to the fatal termination of the case. The picture itself is rare and I have not been able to find a reference in the literature to the peculiar effects the disease may produce, such as complete dwarfing and complete and permanent loss of all hairs of the scalp and face.

ACACIA IN THE TREATMENT
OF NEPHROSIS

MARK W DICK, MD

EDNA WARWEG, MA

AND

MARIE ANDERSCH, PHD

IOWA CITY

The use of acacia intravenously in the treatment of edema due to nephrosis has been advocated¹. The rationale of this treatment is based on the fact that acacia is an inert colloid which, when introduced into the blood stream, will raise the osmotic pressure of the blood above the levels at which edema occurs. The theory is logical, but our experiences with its use have been disappointing.

Acacia in amounts approximating 1 Gm per kilogram of ideal body weight has been given intravenously to four children with nephrosis in order to combat edema. The first administration of acacia was markedly effective, but not only were succeeding injections progressively less effective in reducing edema but other unfavorable symptoms developed. In each child the liver became markedly enlarged and tender, and simultaneously with a period of acacia treatment the serum protein, particularly the albumin fraction, dropped to dangerously low limits, remaining very low as long as the use of acacia was continued, and increasing very slowly after the use of acacia was stopped. The individual reports follow.

REPORT OF CASES

CASE 1—J A J, a girl, aged 3 years, was brought to the hospital Aug 30, 1932 because of swelling of the ankles, hands and feet, and sore throat. The patient had been well until five weeks previously. At the beginning of her illness she had a series of "boils" in the left axilla, which were opened and drained, during which time she contracted a "cold" and several times complained of a sore throat. Swelling of the face, feet and ankles soon became noticeable and was associated with scanty urine. The temperature was only slightly elevated.

When first examined at the hospital she had slight generalized edema, pallor of the skin, subacutely inflamed tonsils and pharynx, and a blood pressure of 105 systolic 70 diastolic. The urine contained rather large quantities of albumin, numerous casts and white blood cells but no red blood cells. The hemoglobin was 80 per cent, red blood cells 5,400,000, white blood cells 11,200, with a normal differential count. The blood Wassermann reaction was negative. The serum protein was 3.5 per cent, nonprotein nitrogen 34.6 mg per hundred cubic centimeters, and the cholesterol 296 mg per hundred cubic centimeters. The throat was treated conservatively. A high protein diet was given. After a few days in the hospital the edema rapidly increased.

Thyroid was administered with indifferent results. Acacia was given at irregular intervals intravenously as indicated in chart 1, approximately 1 Gm being used per kilogram of body weight. Ampules of 30 per cent acacia and 4.5 per cent sodium chloride were used, diluted with equal volumes of distilled water. Some reduction in edema was noted after acacia therapy, with symptomatic improvement. The patient left the hospital for a period of three weeks returning with marked generalized edema, fever and an infection of the upper respiratory tract. The urine still contained large amounts of albumin and numerous casts, but no blood. The total serum protein was 3.1 per cent, with the albumin fraction 1.1 per cent and the globulin 2.0 per cent. Acacia, salyrgan and ammonium chloride were given, in an effort to combat the increasing edema.

In spite of generous dosages of acacia the edema was always present, varying from day to day. The infection of the upper respiratory tract progressed to bilateral otitis media, the edema subsequently increased rapidly, and December 24 the patient died. A total of 285 Gm of acacia was given intravenously. Necropsy was not permitted. Chart 1 shows the total protein values of the blood together with the amounts of acacia and the times it was given during the course of the disease.

CASE 2—D J, a girl, aged 2 years, was brought to the hospital, Sept 8, 1934, because of swelling of the face, abdomen, arms and legs. Three days previously, swelling of the eyelids had been noticed.

Examination showed marked generalized edema, slight injection of the tonsils and pharynx, and mild paranasal sinusitis. The urine contained rather large quantities of albumin and many casts, but no blood. The hemoglobin was 70 per cent, red blood cells 4,800,000, white blood cells 15,000, with a normal differential count. The blood Wassermann reaction was negative. The serum protein was 3.96 per cent, with the albumin fraction 1.19 per cent and globulin 2.77 per cent. The nonprotein nitrogen was 28.6 mg per hundred cubic centimeters and the cholesterol 667 mg.

A high protein diet was given and the infection of the upper respiratory tract was treated conservatively. Acacia was given intravenously in dosages of 1 Gm per kilogram of theoretical body weight at irregular intervals, as shown in chart 1, ampules of 30 per cent acacia and 4.5 per cent sodium chloride diluted with equal volumes of distilled water being used. Marked reduction in edema was noted. During acacia therapy the serum total protein fell rapidly from 4 per cent to 1.9 per cent.

The liver became enlarged four finger-breadths below the costal margin and was very tender. Several transfusions were given to combat an increasing anemia. On October 11 there was a sudden increase in edema with hydrothorax, death came quickly and without fever as a result of embarrassment of respiration. The patient received a total of 129 Gm of acacia intravenously.

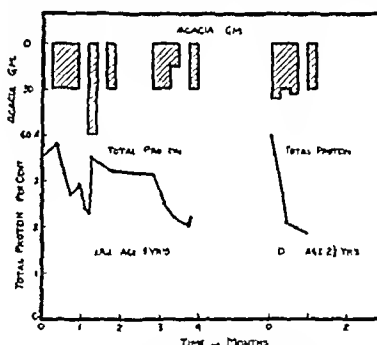


Chart 1—Amounts of acacia given intravenously to patients J A J and D J and the serum proteins.

At necropsy there was generalized edema of all the subcutaneous and internal connective tissues with ascites and bilateral hydrothorax. The liver was enlarged to twice its normal size and was grossly yellow.

Microscopic examination showed the increased size to be due to an engorgement of the liver cells with vacuoles thought to contain acacia. The kidneys were large, swollen and pale yellow. The essential lesion proved to be a deposition of fat in the convoluted tubules, there being very little evidence of glomerular damage. However a few crescents were seen as well as a small amount of blood within the tubules. The lungs were boggy and heavy and showed congestion and edema. There was marked enlargement of the mesenteric lymph nodes, and the malpighian corpuscles of the spleen were very prominent. There was microscopic evidence of acacia in the liver, spleen, kidneys, lungs, lymph nodes and bone marrow. Analysis of the liver and transudate fluids showed the presence of acacia in appreciable amounts. The acacia values were determined by hydrolysis of protein-free filtrates and the determination of the resulting pentose.² The heart blood plasma contained 21 per cent acacia, the pericardial fluid 0.6 per cent, the peritoneal fluid 11 per cent, the bile 2 per cent. Analysis of the liver showed 39 per cent acacia.

CASE 3—D S, a boy, aged 6 years, came under observation June 11 1932, because of swelling of the entire body. The

From the Department of Pediatrics and Medicine, State University of Iowa.
1. Hartmann, A. F., Senn, M. J., E. Nelson, Martha V. and Perley, Anne M. The Use of Acacia in the Treatment of Edema. *J. A. M. A.* 100: 251 (Jan 28) 1933.

2. (a) Andersch, Marie and Gibson, R. B. *J. Pharmacol. & Exper. Therap.* 52: 390 (Dec.) 1934. (b) Youngburg, G. E. *J. Biol. Chem.* 73: 599 (June) 1927.

onset occurred four months previously with influenza and an infection of the upper respiratory tract. Edema appeared in the face and ankles two weeks later, rapidly spreading to the remainder of the body and becoming progressively worse.

Examination showed generalized edema subacute faucial and pharyngeal tonsillitis, mild sinusitis and pallor. The blood pressure was 96 systolic 60 diastolic. The urine showed a rather large quantity of albumin and casts, but no blood. The hemoglobin was 70 per cent, red blood cells 2,450,000 white blood cells 6,150 with a normal differential count. The blood

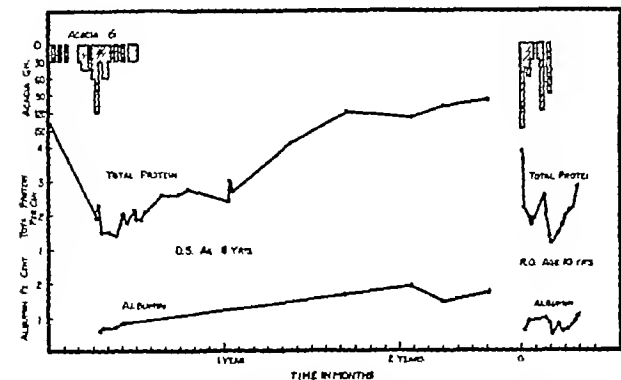


Chart 2—Amounts of acacia given intravenously to patients D S and R O together with total serum protein and serum albumin

Wassermann reaction was negative. The serum protein was 47 per cent. The nonprotein nitrogen was 53 mg per hundred cubic centimeters and the cholesterol 320 mg.

A high protein diet was prescribed. The infection of the upper respiratory tract was treated conservatively. Blood transfusions were given frequently. Edema increased and acacia was given intravenously, approximately 1 Gm per kilogram of body weight in concentrations varying from 6 per cent to 15 per cent. Ampules of 30 per cent acacia with 45 per cent sodium chloride diluted with distilled water were used. The edema varied at first decreasing after acacia but later very little effect was noted after repeated generous dosages of acacia. Thyroid and salyrgan had little effect. During a period of six months of acacia therapy the liver enlarged almost to the umbilicus and was very tender. Also during this period of acacia administration the serum protein fell to 15 per cent. Because of the enlarged liver acacia therapy was discontinued after a total of 705 Gm had been given intravenously. With repeated blood transfusions and treatment of the infection of the upper respiratory tract gradual improvement was noted.

Dec 12 1934, two and a half years later the patient was edema free and had no symptoms. The liver was still enlarged three fingerbreadths below the costal margin. The serum protein was 534 per cent but the albumin fraction was only 175 per cent and the globulin 358 per cent. The urine still contained a trace of albumin but no casts or red blood cells. The values for the serum proteins together with the amounts and time of acacia therapy are shown in chart 2.

CASE 4—R O a boy aged 10 years was brought to the hospital Aug 30 1934 because of swelling of the entire body, decreased urine output weakness and difficult breathing. The onset had occurred seven weeks previously with puffiness of the eyelids which was followed by gradually increasing generalized edema. Albumin had been found in the urine three weeks before he came to the hospital.

Examination showed generalized edema with marked ascites, pale skin, chronic faucial and pharyngeal tonsillitis and chronic paranasal sinusitis. The blood pressure was 115 systolic 65 diastolic. The urine showed a large amount of albumin and occasional casts but no blood. The hemoglobin was 80 per cent, red blood cells 3,980,000 white blood cells 7,500, with a normal differential count. The blood Wassermann reaction was negative. The blood analysis showed a serum protein of 385 per cent, a nonprotein nitrogen of 357 mg per hundred cubic centimeters, and a cholesterol of 728 mg.

A high protein diet was prescribed. The infection of the upper respiratory tract was treated conservatively. Acacia was

given intravenously in dosages of approximately 1 Gm per kilogram of ideal body weight. Ampules of 30 per cent acacia with 45 per cent sodium chloride were used, diluted with an equal volume of distilled water. Reduction in edema was at first noted with acacia therapy. However with repeated dosages the effect became less until little reduction in edema was observed. Thyroid and ammonium chloride were given in generous dosages without noticeable results. Repeated transfusions were found necessary to combat an increasing anemia.

During acacia administration the serum proteins fell to a low level of 1.68 per cent, rising to 2.56 per cent after acacia was temporarily discontinued and falling again to 1.12 per cent during a second course of acacia administration, as shown in chart 2. At this time the patient's liver enlarged to three fingerbreadths below the costal margin and became very tender. Marked ascites made breathing difficult, and abdominal paracentesis was necessary on several occasions. The first abdominal paracentesis was made twenty-four hours after the giving of 30 Gm of acacia intravenously. The ascitic fluid contained 0.3 per cent acacia and the blood plasma 21 per cent.

Acacia administration was discontinued after a total of 492 Gm had been given and a subsequent rise in serum proteins was noted with a value of 3.27 per cent December 17. The urine had continuously contained from 2 to 9 Gm of albumin per liter by the Esbach method. Chart 2 shows the values for the serum proteins together with the amounts of acacia and the time it was given.

The patient is symptomatically improving with conservative treatment of the infection of the upper respiratory tract, high protein diet, blood transfusions and occasional abdominal paracentesis. The liver remains enlarged but slightly less so than during administration of acacia.

Deposition of acacia in organs of experimental animals, especially in the liver with resulting hepatic damage, has been reported^{2a}. Thus, together with its presence in edema fluid is sufficient to give rise to hesitation as to its continued use. Acacia fixed in tissue and having found its way to deposits of edema fluid is definitely defeating the purpose for which it was given. The decrease in serum protein, however, was the most alarming feature. If this was a result of the administration of acacia, the lowering of osmotic

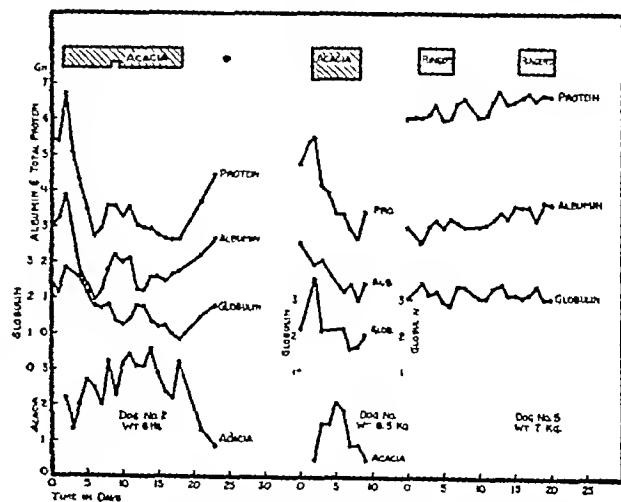


Chart 3—Amounts of acacia given intravenously to dogs 1, 2 and 5 together with total serum protein, serum albumin and serum globulin

pressure, caused by the loss of serum protein, more than nullified the effect of the acacia. It was not wholly clear, however, whether the decrease in serum protein observed in these children was caused by, or merely accompanied, the administration of acacia. To aid in answering this question four normal dogs were given acacia intravenously in dosages of 1 Gm per kilogram

of body weight, and a control dog was given Ringer's solution intravenously in corresponding volumes. Daily serum protein partition, blood acacia, hemoglobin and cell volume determinations were made. The serum protein determinations were made by the micro-Kjeldahl method.³ The acacia values were determined by hydrolysis of protein-free filtrates and the determination of the resulting pentose,² hemoglobin was determined by the method of Newcomer, and cell volume values were obtained with a Van Allen hematocrit. The data obtained are shown in charts 3 and 4.

EXPERIMENTS ON DOGS

Dog 1 was given acacia daily, 1 Gm per kilogram of body weight for seven days. The blood acacia reached a maximum on the fourth day and thereafter decreased rapidly, notwithstanding continued administration. The serum proteins, however, continued to decrease, the albumin fraction showing a continuous lowering, the globulin fraction being more variable but showing some decrease. The lowest total protein value was reached on the ninth day, a decrease of 52 per cent, the blood acacia at this time being very little higher than the value observed after one day's administration. The day after the

third day of administration, and acacia disappeared from the blood rapidly during the recovery period. The serum albumin decreased from 31 per cent to 168 per cent with three days of acacia administration, then rose again to 27 per cent even though acacia was being given daily. The recovery of the albumin level was slow, the value reaching approximately its initial level on the fifteenth day. The serum globulin fell more slowly at first, then more rapidly as the albumin values tended to become constant. The rise during recovery was also more rapid. With the second acacia period both albumin and globulin decreased rapidly and steadily, the globulin decreasing to 104 per cent in five days, the albumin to 195 per cent. A total protein decrease of 47 per cent was noted.

Dog 4 was allowed a smaller rest period between the two acacia periods. The blood acacia values in this dog were not high, but acacia remained in the blood at a more constant level after administration was discontinued. The highest acacia values were observed at the end of the second period of administration. In dog 4, practically the entire decrease of serum protein during the first period of acacia administration was due to decrease in albumin. During the five-day recovery period the albumin tended to rise, but the globulin fraction fluctuated irregularly. During the second five-day acacia period the albumin remained at 2 per cent, the globulin remained constant at 21 per cent for three days and then dropped rapidly to 1 per cent. Thus the fall of serum protein during the second acacia period was due almost entirely to decrease of globulin. There was a decrease of total protein of 52 per cent. When acacia administration was discontinued, both fractions of serum protein increased slowly.

COMMENT

It will be observed that the level of acacia in the blood of the four dogs varied considerably, even though all the dogs received 1 Gm of acacia per kilogram of body weight daily for at least five days. Likewise, the apparent period of recovery varied, being least in dog 4 during the five-day interim between periods and most rapid, probably, in dog 3, whose total protein reached its original value on the fifth day, although the albumin did not reach its original value until the tenth day.

All dogs, including the control dog, showed a fairly uniform fall in hemoglobin and cell volume while receiving intravenous fluid and having blood samples drawn (about 6 or 7 cc of whole blood daily). The fact that the hemoglobin and cell volume of the dog receiving Ringer's solution fell proportionately to those receiving acacia would discredit a dilution phenomenon due to acacia. The decrease in protein cannot be ascribed to added fluid due to acacia, for the sharpest drop often occurred before the acacia level had reached its maximum. In dog 1 the level of blood acacia actually fell from 21 per cent to 0.9 per cent in four days, while acacia was being given daily, the lowest serum protein value for this period occurring when the serum acacia was lowest. In dog 2 serum albumin decreased to 2.9 per cent while the acacia increased to 27 per cent, but a further increase of acacia to 3.6 per cent was accompanied by an increase in the serum albumin level. The total protein of dog 4 fell from 6.15 per cent to 3.02 per cent in fourteen days, while the level of serum acacia remained approximately constant, varying only between the levels of 1.2 per cent and 2 per cent. There would seem to be no accurate correlation between the fall in serum protein and the rise in serum acacia. All the dogs showed a distinct tendency to maintain the serum albumin level at or above 2 per cent. A decrease below this level was invariably followed by a rise, even though, as in dog 2, the increase could not be maintained. This is quite different from the serum albumin of the four nephrotic

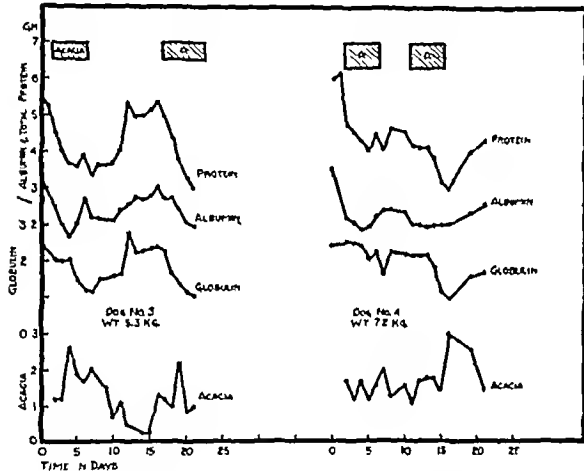


Chart 4—Amounts of acacia given intravenously to dogs 3 and 4 together with total serum protein, serum albumin and serum globulin.

administration of acacia was stopped both fractions of the serum protein showed a definite increase. Unfortunately this dog disappeared, and the blood could not be studied during the remainder of the recovery period.

Dog 2 was given acacia daily for seventeen days. The amount of acacia in the blood stream was higher after one administration than the highest value observed in dog 1. The blood acacia value fluctuated more or less but reached a maximum of 3.6 per cent on the fourteenth day of administration. After this, the acacia level fell for three days, rising again to 3.2 per cent on the last day of administration. With this dog the decrease in serum albumin was prompt and marked. The serum globulin decreased more slowly and reached its minimum later. After the albumin level had fallen to 0.95 per cent, a transient rise occurred, which was maintained for several days. During the remainder of the acacia period the albumin values tended to fluctuate between 1.0 and 1.6 per cent. The globulin values showed some fluctuation but seemed to be still decreasing at the time acacia was discontinued. A maximum decrease in total protein of 61 per cent was noted. During the recovery period both the albumin and the globulin fractions increased steadily but were not yet normal when the experiment was discontinued.

Dogs 3 and 4 were given acacia for periods of five days then a rest period, followed by a second period of acacia administration. Dog 3 showed a maximum blood acacia value on the

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THE ALLERGIC THEORY OF SO-CALLED THYMIC DEATH

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children, which decreased to values below 1 per cent. None of the dogs exhibited an albuminuria, whereas all the children were losing albumin steadily through excretion in the urine. The protein of the control dog rose slowly during the experiment, probably because of the high protein diet the dogs were fed. When the osmotic pressures of the lost serum protein and of serum acacia were calculated, it was noted that the values were not equal. In dog 1 there was a drop of 284 per cent of total protein in six days, which by Govaert's formula should exert an osmotic pressure of 10.95 cm of water. During the same period the serum acacia rose only 0.4 per cent, which according to Dodds and Haines⁴ should exert an osmotic pressure of only 0.8 cm of water. The fall in serum protein does not appear to be due to an effort on the part of the body to preserve a constant serum osmotic pressure by lowering serum proteins by an amount sufficient to offset an equivalent osmotic pressure due to acacia. It would seem that serum acacia does not merely displace serum protein.

SUMMARY

The use of acacia intravenously to combat the edema of nephrosis was found to have only a transient or slight effect on the edema. Continued use of acacia led to a marked lowering of the serum protein and to the development of an enlarged tender liver. When the acacia therapy was discontinued serum protein tended to remain low, the liver slowly resumed its normal size. In two patients acacia was found in deposits of edema fluid, and in one of these coming to necropsy, appreciable amounts of acacia were found by chemical analysis in the liver, with evidence by microscopic examination of deposits in the bone marrow, lymph nodes, lungs, kidneys, spleen and liver. In dogs the administration of acacia intravenously in dosages equivalent to those used in patients with nephrosis produced a marked lowering of the total serum protein affecting both the albumin and globulin fractions. This reduction in protein did not appear to be a simple dilution effect. The exact mechanism of protein reduction remains unknown. However, the degree of reduction of serum protein was not related to the amount of acacia in the blood stream. The level of serum acacia varied markedly even with daily injections and could not be constantly maintained. When the daily administration of acacia was discontinued, the serum protein values of the dogs returned to normal much more rapidly than was observed with the nephrotic children.

The use of acacia intravenously in patients with nephrosis was not found of value and was associated with undesirable results.

In the lymphoid structures in cases of so-called thymic death Symmers¹ described areas which he held to be indicative of anaphylactic changes. Hammar² suggested repeatedly a state of unusual sensitivity as an underlying factor in so-called thymic death. Yet the anaphylactic conception of "thymic death" has not gained adherents very rapidly. Thus, I believe, is due to three facts. 1. Until recently, anaphylactic shock has been held to be a phenomenon occurring only in animals—not in man. 2. It was not believed to be produced by ways other than injection. 3. It was thought to be always associated with antigens of protein nature and even mechanical stimuli were involved in the production of thymic death seemed to weigh heavily against this theory.

Yet there are various observations that suggest an association of the thymic death problem with allergy. For many years past the medical literature has linked with the so-called thymic diathesis features that are now considered allergic, such as the tendency to nasal and bronchial catarrhs, to enlarged tonsils, adenoids and other lymphoid structures, to eczema, and to eosinophilia. Of particular significance in this respect is frequently a familial tendency to "thymic death," as attested by reports in the literature.³ In children with a roentgenologically enlarged thymus true allergic manifestations often develop in later life.⁴ In allergic families I have observed on several occasions sudden death which presented the clinical and pathologic characteristics of so-called thymic death. In recent autopsies on asthmatic patients, descriptions of enlargement of the thymus and other lymphoid tissue and a decrease of medullary substance of the adrenals have played an increasing role.⁵ The same has been noted in cases of sudden death due to an overdose of serum and pollen.⁶

HUMAN ALLERGIC SHOCK

Since there has been very little known concerning human allergic shock, it is necessary to present a few observations concerning this phenomenon. In men, allergic shock can probably best be studied in work with pollen extracts, for one is here dealing, as a rule, with a known degree of sensitivity, with a known antigen, namely, the pollen, and with a known dose. It was determined that the production of allergic shock depends primarily on three factors: first, on the degree

⁴ Dodds E C and Haines R T M. *Biochem J* 28 499 1934

Potential Capability of the Brain—The most wonderful feature of the human brain is its extraordinary potential capability. An obvious instance is seen in the spread of education of the reading and writing mechanism and the classes and the masses and varying degrees among both the acquisition of knowledge and to its application to the arts and the crafts. The important, and also individually varying factor is the grade of mind or general intelligence which may vary from that of the imbecile or general defective up to that of the genius and whose psychomotor possibilities, according to its grade, are limited solely by opportunity and environment.—Bolton J S. *The Evolution of Mind*, *Lancet* 1 728 (March 30) 1935.

Read before the Section on Pediatrics at the Eighty Sixth Annual Session of the American Medical Association Atlantic City N J June 13 1935

¹ Symmers J A. *The Thymus in Men* *Am J M Sc* 156: 40 (July) 1918

² Hammar Zisch. *f mikr anat. Forsch* 1926 suppl vol 6

³ I have the records of four such families

⁴ Waldbott G L and Anthony G E. *The Normal Organ abnormalen Korpervorgängen* *ibid* 1929 suppl vol 16

⁵ MacDonald I G. *The Local and Constitutional Pathology of Bronchial Asthma* *Ann Int Med* 6: 253 (Aug) 1932

⁶ Waldbott G L. (a) *Systemic Reactions from Pollen Injections* *J A M A* 96: 1848 (May 30) 1931 (b) *The Prevention of Anaphylactic Shock with a Study of Nine Fatal Cases* *ibid* 98 446 (Feb 6) 1932

⁷ The differentiation between anaphylactic and allergic shock, if justified at all is of little importance to the clinician and is therefore not applied in this paper (Waldbott G L. *The Types of Human Hypersensitiveness* *J A M A* 102 1631 [May 12] 1934)

of individual sensitivity—whether inherited, as for instance in cases of atopic asthma, or acquired, as in individuals who are sensitized by previous injections of horse serum, second, on the size of the overdose of the injected antigenic substance, third, on the rapidity of its absorption. As to the latter point, it was found that in sudden deaths following the administration of serum the accidental injection into a vein was responsible in the majority of cases^{8b}.

The manifestations of allergic shock are subject to great variations. There is usually a predominance of respiratory and dermal symptoms. These are due either to true allergic edema of the urticarial type or to edematous hemorrhagic lesions, which are followed by necrosis. As Kline and Young⁹ pointed out, the latter type of lesion may be considered as evidence of local anaphylaxis (Arthus phenomenon) and is apt to arise in



Shock due to contact of the lip with a minute particle of egg. Epinephrine effected prompt relief. (Courtesy of W. W. Duke, Kansas City, Mo.)

any part of the body. Outside of dermal edema and respiratory symptoms, these pathologic changes give rise to such additional manifestations as convulsions, hematuria and severe gastro-intestinal pains. It has been stated by Roth and Szauder⁹ that the organs first reached by the antigen are those which are principally involved. Hence pulmonary and hepatic symptoms are more frequent, since the antigen is largely absorbed through the venous circulation and the first capillary systems that it reaches are those of the lungs and liver. If a previous allergic or nonallergic focus such as eczema, a tooth abscess or a sinus infection has been present, symptoms attributable to a flare up of this focus may arise¹⁰. The mode of introduction of the antigen into the body may also alter the symptomatology of shock. If it is given as an intravenous injection, collapse and death may occur so rapidly that no symptoms referable to a single organ can be noticed¹¹. Two features are usually not sufficiently stressed, namely, that nonprotein substances may produce the same symptom complex as pollen or serum and that shock can be produced by ways other than injection. The latter fact is best illustrated by the accompanying illustration, which I owe to the courtesy of Dr. W. W. Duke of Kansas City, Mo. This presents a case of shock brought on by dermal absorption through contact of an (excoriated?) area of the lip with an exceedingly small amount of egg. In this case it was particularly noteworthy that an area of local edema was present at the site of contact (the raw area on the lip) similar to a local wheal that follows an injection of pollen and serum.

I have recently collected¹² records of thirty cases of allergic shock in which absorption of the antigen took place by routes other than injection. The following modes of absorption were held responsible in thirteen cases, ingestion of food, in five the taking of drugs by mouth, in five, inhalation, in two, contact of the antigen with the skin, in three, cold and in two heat. Among the foods, egg was the most common source, among the drugs, acetylsalicylic acid.

OBSERVATIONS IN "THYMIC DEATH"

With these facts in mind, I reviewed a series of 104 autopsies from various hospitals in which the diagnosis of thymic death had been made¹³. Sixty of these cases were excluded because there were sufficient other indications to account for death. The remaining thirty-four were divided into three groups: those in which no cause whatever for death could be determined, those in which minor, usually nonfatal, conditions were coincident with death, and those in which the so-called thymic syndrome had developed, i. e., stridor, dyspnea and shock, followed by bronchopneumonia. In all these cases there were uniform changes in the lungs, namely, edematous hemorrhagic areas into the alveoli. According to the advancement of these lesions a more or less severe degree of necrosis was present. Traumatic emphysema alternating with atelectasis was noted, and occasionally eosinophil cells were present. In some cases there was what seemed to be a secondary enlargement of the right heart. In some, hypoplasia of the adrenals, particularly of the medullary portion, was noted.

INTERPRETATION

In interpreting these changes it seemed at first that I was dealing with an urticaria-like allergic phenomenon. However, the relative absence of eosinophils and the more or less marked degree of necrosis present was not compatible with this explanation. From true bronchial asthma, on the other hand, these lesions are so strikingly different that they do not admit a comparison. In reviewing the available literature on the pathology of anaphylactic shock in man, edematous lesions associated with necrotic areas in the lungs as well as in other tissues, particularly in the liver, are described as the most characteristic changes. This is particularly emphasized in the thorough description by Dean¹⁴ of

8 Kline, B. S. and Young, A. M. Nonallergic and Allergic Inflammation. *J. Allergy* 6: 247 (March) 1935.
9 Roth, J. and Szauder, B. Experimentelle Beiträge zur Frage der Organanaphylaxie. *Klin. Wochenschr.* 11: 456-459 (March 12) 1932.
10 Waldbott, G. L. Allergic Shock from Substances Other Than Pollen and Serum. *Ann. Int. Med.* 7: 1308 (April) 1934.

11 Waldbott, G. L. and Ascher, M. S. The Role of Accidental Puncture of Veins in the Production of Allergic Shock to be published.
12 I am indebted to members of the Society for the Study of Allergy for the records of these cases.
13 Waldbott, G. L. So-Called Thymic Death. VI. The Pathologic Process in Thirty Four Cases. *Am. J. Dis. Child.* 47: 41-60 (Jan) 1934.
14 Dean, H. R. The Histology of a Case of Anaphylactic Shock. *Brit. J. Path. & Bact.* 23: 305 (May) 1921.

a case of death following the administration of tetanus antitoxin. These lesions correspond accurately with those in the present series.

If these data are interpreted as indicative of anaphylactic shock, the question arises whether or not enlargement of the thymus gland could be considered an allergic phenomenon. Such an assumption would not be in accordance with clinical observation, for routine x-ray films of patients with hay fever and asthma do not manifest an enlarged thymus gland. Skin testing on children with roentgen evidence of an enlarged thymus does not, as a rule, reveal positive reactions at the time when clinical evidence of an enlarged thymus gland is present. Yet, in later years, as Anthony and I¹⁵ pointed out, true allergic symptoms do develop in these patients with positive skin reactions in an unusually large percentage of cases. This therefore suggests the possibility that enlargement of the thymus gland may constitute a preallergic phenomenon.

In order to shed further light on this problem I attempted to study the pathologic changes of asthma in its earliest development. I obtained autopsies on two infants in which true allergic asthma had been present for as short a time as three weeks and six weeks respectively.¹⁵ Again, in these cases a striking resemblance to the changes of "thymic death" as well as of anaphylactic shock was found at autopsy. There are considerably less emphysema, little evidence of bronchospasm and a lesser degree of secretion of the mucous glands in early infantile asthma than in cases of long standing. This might be accounted for by the fact that the organism has not yet had sufficient time to develop such anatomic changes as a compensatory thickening of bronchial musculature, enlargement of mucous glands, eosinophilia and leukocytosis, in other words, lesions which in all probability represent evidence of an adjustment of the body to the functional disturbance present. On the other hand edematous areas of the alveoli, necrosis and lymphocytic infiltration quite similar to what is found in acute anaphylactic lungs¹⁴ are decidedly more predominant features. It then appears likely that "thymic death" represents a preallergic phenomenon that is probably identical with anaphylactic shock. During this preallergic state the system does not appear to be endowed with a sufficient defensive mechanism against the invading antigen. When this antigen is ingested, inhaled, injected, absorbed through the skin or possibly formed in the system as the result of mechanical or thermic stimuli the patient succumbs suddenly instead of developing an asthmatic attack.

As an illustration of this theory I will give a brief report of the following instance, which I had occasion to observe.

F. M., a girl, aged 2 years with a strong family history of allergy, developed typical stridor, dyspnea, cyanosis and shock followed by a low grade bronchopneumonia at the height of the ragweed season in 1933. Although the skin reactions for ragweed were negative, an attempt to desensitize the patient for ragweed during the following winter was made. This had to be abandoned because attacks similar to the first one followed each injection of the extract. At the beginning of the 1934 ragweed season a nasal catarrh developed progressing rapidly to extreme shock and the child died within two days. At autopsy the thymus weighed 35 Gm.¹⁶ and the lungs showed edematous hemorrhagic lesions associated with beginning bronchopneumonia.

TREATMENT

With the present state of knowledge it is of course impossible to outline definitely measures of prevention and treatment. There is no remedy known at present that will counteract anaphylactic shock once it has developed.¹⁷ It is true that urticarial lesions can be controlled by epinephrine. However, the aforementioned irreversible lesions, particularly the necrotic changes, have been but little influenced by this medicament in my experience. Concerning the administration of intravenous dextrose to counteract the edema, no definite data are at hand.

Of greater value may be the specific treatment, namely, the administration of extremely small doses of the sensitizing antigen in a manner similar to that in which allergic conditions are controlled at the height of their development. But this is possible only if one is familiar with the causative antigen and if death does not occur too rapidly. In most of the cases that I reviewed, death occurred instantly, in others, during the ensuing bronchopneumonia. Here such therapy may be in place, and it is perhaps the only specific treatment.

More valuable perhaps than treatment itself are measures of prevention. If one entertains seriously the allergic conception of thymic death, any child born to allergic parents could well be considered a potential candidate for it. This condition may or may not develop during its early childhood just as urticaria or hay fever may occur at any time of his life. All such measures as are proposed for prevention of asthmatic attacks should be considered. It is well to guard these children against exposure to weeds, flowers, face powder, sudden chilling, overheating, or the ingestion of foods or drugs to which they may be sensitive. Whether or not systematic skin testing will be successful in the recognition of the sensitizing agents is questionable. It seems that in this state skin sensitizing antibodies are not yet as prevalent as in cases presenting existing allergic manifestations. One may recall that, in some of the severe cases of fatal shock following injections of horse serum which I reviewed, previous skin tests were negative.

That a period of from two to three weeks between a previous absorption of an antigen and a subsequent one is instrumental in the production of shock in man as well as in animals has been brought out elsewhere.¹⁸ This should be borne in mind in connection with the ingestion of drugs, with previous anesthesia and with such foods that are not eaten frequently, or with inhalation of air-borne substances. Concerning hypodermic medication, an attempt should be made by history and by clinical observation to determine a possible sensitization to the material to be injected. Particular attention should be directed toward the prevention of accidental intravenous injections.

Roentgen treatment of the enlarged thymus did not prevent death in several instances.¹⁵ Many, however, believe that several small exposures of the thymus to x-rays produce a great deal of symptomatic relief, an effect which is comparable with that of small doses of x-rays over other lymphoid tissues, such as the spleen and the hilus glands in bronchial asthma.

SUMMARY

The evidence presented here suggests that the condition termed "thymic death" is a preallergic phenomenon similar to or identical with anaphylactic shock. This may be brought on by ingestion, inhalation, injection,

¹⁵ Waldbott G. L. The Pathologic Changes in Asthmatic Infants. *Am. J. Dis. Child.* 49: 1531 (June) 1935.

¹⁶ Repeated roentgen examinations failed to reveal evidence of thymic enlargement.

¹⁷ Hill, Justina H. and Martin Lay. A Review of Experimental Studies of Nonspecific Inhibition of Anaphylactic Shock. *Medicine* 11: 141-234 (May) 1932.

tion or absorption through the skin of antigens to which unusual sensitivity exists. In addition, sensitization to cold and heat, mechanical stimuli and infection should be considered as exciting agents

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ABSTRACT OF DISCUSSION

DR B S KLINE, Cleveland While I subscribe to the belief that thymic death may be an allergic or para-allergic reaction, the observations in thirty-eight cases in which status lymphaticus was the principal or accessory cause of death at Mount Sinai Hospital in Cleveland in the past twelve years support the view of Symmers, presented in 1918, that the most impressive lesion in these cases is the degeneration and necrosis in the germ centers of lymph follicles throughout the body, particularly in the intestine, in the lymph nodes and in the spleen. While there are frequently primary changes in the heart, arteries, adrenals and thymus, and also secondary changes in the heart or in the vascular system and in the pulmonary system, these are not as impressive as the striking changes in the lymphoid tissues. I would class these pulmonary changes, the hemorrhages, edema and round cell infiltration (not eosinophilic as in ordinary clinical allergies) as secondary manifestations. Incidentally, there were patients particularly those dying soon after the onset of symptoms, who showed negligible pulmonary changes. Concerning the nature of the degeneration and necrosis in the lymphoid tissues, it reminds one of specific parenchymatous changes observed in several types of injury: arsenic and mercury poisoning, hormones in excess, and changes in the liver in eclampsia and in the pancreas in diabetes mellitus. The lesion is unassociated with vascular changes of inflammation. It also reminds one of changes in rheumatic endocarditis for instance, when there is no appreciable round cell infiltration but specific degeneration and necrosis of the endocardial cells. There are many views on thymic death and as many on the significance of status lymphaticus. I would say, having observed death in cases of slight burn or slight gastro-intestinal upset or slight operation done skilfully, that there does seem to be an underlying status lymphaticus that contributes to the death of the individual. The body in a case of thymic death has its lymphoid tissues damaged in one or more ways, possibly releasing some antigenic substance and following a subsequent release of the same or similar material or other material, changes occur that lead to secondary vascular and pulmonary changes and finally to death.

DR A GRAEME MITCHELL Cincinnati It seems to me that Dr Waldbott has argued intelligently for the fact that a certain number of cases of so called thymic death may be due to anaphylactic shock. I myself would prefer to accept this as quite possible but I do feel that the question is not settled. There are still a certain number of cases of so called thymic death in which obvious causes cannot be found but which may be linked up to some other type of disturbance of the thymus or lymphatic system. Dr Waldbott's discussion at least presents the idea that anaphylaxis must be carefully excluded as the cause of death in so-called thymic cases.

DR GEORGE L WALDBOTT Detroit Dr Kline suggested that the pulmonary changes may not be the cause of death in these cases. It is true that edema and necrosis may also be present in other organs. The following reasons however suggest that the pulmonary lesions are directly responsible for death. There are no changes as constant as those in the lungs, they are sufficiently extensive to interfere with respiration and death is usually of the asphyxiative type. There is a question as Dr Mitchell states whether or not allergy in the strict sense of the term is always responsible for the lesions in the lungs. In cases of toxemia of pregnancy, mercuric chloride poisoning and acute infections, Moon has described similar edematous and necrotic areas in the lungs which he explained on the basis of shock from liberation of histamine-like substances. This is also the explanation of many investigators of the origin of the allergic wheal. Between this type of shock and true allergic shock there may be a relationship similar to that which exists between the histamine wheal and the true allergic wheal.

A GRADED COURSE IN MEDICINE AS PART OF THE DENTAL CURRICULUM

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To any one engaged in the practice of internal medicine or of dentistry today, it soon becomes apparent that in spite of the steady progress of both these professions there still remain uncultivated large areas in their mutual fields of clinical interest. This concept has been fully accepted for several years by leaders in medical and dental education in this and other countries. At the University of Pennsylvania the idea of incorporating into the dental curriculum a course in internal medicine was conceived by Dr Alfred Stengel, professor of medicine and vice president in charge of medical affairs of the university, and Dr Charles R. Turner, professor of prosthetic dentistry and dean of the school of dentistry. Such a teaching liaison has now been in operation for two years. It is our purpose in this communication to indicate to those engaged in medical and dental education the scope of these courses, the objectives that have been kept in mind, and the apparent results that have been obtained to date.

Our courses have been designed specifically to establish in the mind of the future practitioner of dentistry the idea that he should know at least the working vocabulary of the science and practice of internal medicine. Our aim is to transmit to the student of dentistry the idea of viewing a sick human being as much as possible after the manner of a competent internist. To date this has been our sole goal and therefore we have not attempted to teach methods of physical and laboratory examination as they are taught to students of medicine. In other words we have endeavored to illustrate the benefits that may follow the closer cooperation of the professions of dentistry and medicine.

The courses that we have conducted to achieve this goal are constituted as follows. Throughout the entire second year of the dental course there is given weekly one lecture that aims to introduce to the student the major concepts in the internal medicine of today. Through careful selection of subjects it has been possible to cover, during this year, a considerable amount of subject matter. During the year an idea of the progress of the course in the student's mind is gained by written quizzes in addition to the written examinations at the end of the first and second semesters.

Throughout the third year of the dental course, biweekly clinics are given. In these during the course of the year the attempt is made to amplify the accumulation of the basic facts of internal medicine begun in the second year. More important than this, however, is the attempt that is made to illustrate, as completely as possible to the student, the general clinical characteristics of the most frequently encountered medical disorders. We have attempted to cover as wide a field of internal medicine as seemed reasonable, aiming constantly to stimulate the imagination and curiosity of the student into those channels that may indicate to him respects in which such information may be of

From the School of Medicine and the School of Dentistry University of Pennsylvania

value in his practice of dentistry. In this course a written examination is given at the end of the first and second semesters.

Throughout the fourth year, groups of students, averaging about eight, meet in the presence of a member of the dental and of the medical faculties to discuss, at close hand, patients selected to illustrate the importance of correlating as fully as possible the best that these two professions have to offer. These classes meet once weekly and are arranged so that each student has eight such meetings during the year. These clinical conference groups are quite informal and are designed to promote pertinent discussion between the students and the teaching staff. At the end of the senior year a comprehensive oral examination in medicine is held.

Concerning the demonstrable results of these courses, it is obviously too early to speak. One result that does seem to be apparent is that the members of the dental and medical faculties of this university have come to cooperate more closely in their interchange of ideas in both clinical and investigative work. It is our belief that, if it has not succeeded in doing so already, this cooperative enterprise will show its fruits in the work of the graduates of the School of Dentistry. At the present time the subject matter presented in these courses, with the addition of data relating to internal medicine that may be of use to students and practitioners of dentistry, is being assembled in book form.

Clinical Notes, Suggestions and New Instruments

DESTRUCTION OF EPIPHYSES BY FREEZING

RUTH BLOUNT BENNETT M.D. AND W. P. BLOUNT M.D. MILWAUKEE

Disturbances of epiphyseal growth have been much studied from the clinical and experimental points of view in the past decade. Numerous proved and theoretical causes for osteochondrosis have been recorded. A careful search of the literature discloses only one case of stunted growth of the fingers as a result of freezing, however. Another instance (fig 1) is reported here.



Fig. 1—Appearance of hands in December 1932 showing the shortness of the digits and the fusiform swelling of the proximal interphalangeal joints of digits two, three and four.

A white girl, aged 8 years, seen in July 1932, complained of swelling of the proximal interphalangeal joints of the second, third and fourth fingers of the left hand. The patient had frozen all the fingers of the left hand, with the exception of the thumb, in December 1931 with subsequent loss of the fingernails. There was no disability until the swelling appeared in June 1932.

From the Milwaukee Children's Hospital

The developmental history was otherwise normal. With the exception of chickenpox in 1929 and scarlet fever in May 1932, the past medical history was negative. The Mantoux, Wassermann and microprecipitation (Kline modification) tests were negative.

When first seen there was swelling of the proximal interphalangeal joints of digits two, three and four, crepitation, and



Fig. 2—Roentgen appearance of both hands in December 1932 showing generalized atrophy on the left, the complete destruction of the epiphyses of distal phalanges two, three, four and five, and middle phalanges two, three and four.

some limitation of motion. The third and fourth digits were crooked with the apex of the angle medially and at the proximal interphalangeal joint.

The fingers were splinted temporarily, and the patient was seen for follow up in October and December 1932 and December 1934. Very little change occurred in the clinical appearance except for the greater variation in length. On the left, the corresponding fingers were shorter by the following amounts: index finger, 1 cm; middle finger, 1.3 cm; fourth finger, 1 cm; and fifth finger, 0.5 cm. There was slight habitual flexion deformity of the distal phalanges of the middle three digits.

Roentgen studies (fig 2) were taken of both hands in the postero-anterior direction. On the right the epiphyses are normal in distribution, regular in outline, and still open. On the left there is slight generalized bony atrophy. The epiphyses of the first digit, the other four metacarpals and the proximal phalanges are otherwise normal in appearance. The epiphysis at the proximal end of the fifth middle phalanx is also normal. Those of the distal phalanges of the second, third, fourth and fifth digits as well as the middle phalanges of the second, third and fourth digits are entirely absent. The metaphyses at these points are markedly irregular in contour and appear moth-eaten. The same irregular appearance is evident on the contiguous surfaces of the neighboring phalanges where there is no epiphysis. The proximal interphalangeal joints of the third and fourth digits are angulated with the apex laterally.

COMMENT

Osteochondrosis of the phalangeal epiphyses has been well known since 1909 when Thiemann¹ reported a case of multiple involvement of the fingers. Following his lead, eight men published reports of similar cases. Most of these reports are in roentgenologic journals and have not attracted the attention of the profession at large. In 1933 Ryffel² summarized the literature and added three cases from one family. The changes of Thiemann's disease are almost entirely limited to the proximal end of the middle phalanges. The cause is as obscure as that of the osteochondroses elsewhere.

In 1930 Löhner³ published the report of a case almost exactly similar to the one here reported, even to the onset six months

¹ Thiemann H. Juvenile Epiphysenstörungen. Fortschr. a. d. Geb. der Röntgenstrahlen 14:179, 1909.

² Ryffel H. Zur Thiemannschen Epiphysenerkrankung. Röntgenpraxis 5:423 (June) 1933.

³ Löhner W. Die Verschiedenheit der Auswirkung gleichartiger bekannter Schaden auf den Knochen jugendlicher und Erwachsener gezeigt an Epiphysenstörungen nach Erfrierung und bei Hamophilen Zen-trabl. f. Chir. 57:898 (April 12) 1930.

after freezing, the loss of finger-nails, and the involvement of the joints. He compared the roentgenograms to those taken of fingers following Volkmann's ischemia.

We also were interested in observing the similarity of this condition to epiphyseal destruction by freezing. A severe ischemia following supracondylar fracture resulted in an x-ray appearance almost the same as in this case except for the soft tissue contracture. The effect of prolonged ischemia, whether due to stopping of circulation by freezing or to mechanical obstruction, appears to be much the same as far as destruction of epiphyses is concerned.

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COLD URTICARIA FOLLOWING MEASLES IN THREE SISTERS

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In the investigations of cutaneous reactions and of peripheral vascular phenomena the wheal has been a subject of much interest. Its appearance under various influences has confused the investigators in their effort to fix a single ultimate substance or cause as the direct etiologic factor. Interest in urticaria due to cold has been fostered in part by its apparent pathogenic difference from those urticarial states which result from internal factors, allergic influences, histamine injections, burns and the like.

During recent years many cases of urticaria due to cold have been reported, especially in the German and Viennese clinics but the literature fails to reveal one instance of the occurrence of this condition following measles. Del Vivo¹ has reported a case in a woman aged 24, in which it appeared and persisted following scarlatina at the age of 16.

Its simultaneous occurrence in more than one member of a family must be extremely rare, since only one such instance could be found: cases in two children reported by Jadassohn and Schaaf.² Therefore we are reporting the following cases, which we have observed.

In June 1934 three sisters aged 8, 11 and 13 years, had measles. The course of the disease was typical rather mild and uneventful, and no medicine was administered. None of the children had ever received serum injections. Immediately following recovery, it was noticed that all three girls would develop hives in areas of the skin exposed to cold, as for example, following contact with a cold milk bottle. On one occasion the youngest child presented marked urticaria of the entire buttocks after accidentally sitting in a bucket of cold water. This phenomenon persisted throughout the summer and fall of 1934 and was brought to our attention by the mother who is a graduate nurse and a good observer.

When the sisters were examined by us in November and December 1934, the condition was still present but appeared to be subsiding. Cubes of ice were placed on the backs of the hands. After two and one-half minutes the areas thus exposed became red, and after five minutes of contact small wheals appeared which faded after five minutes. There was no dermographism. The oral mucosa was not and had not been affected by cold. The condition was the same in all three girls.

Physical examination revealed no other abnormality in these children. Laboratory data also were uninformative excepting eosinophilia (7, 10 and 13 per cent) in each case. The presence of eosinophilia must be considered as a quite usual accompaniment to the urticarial state. (Stool examinations failed to reveal evidence of any parasitic infestation.)

The fact that three sisters should begin to evince this abnormal skin reaction simultaneously and apparently as a result of their having passed through an attack of measles opens a field of speculation. However it seems most probable that the so-called H substance was elaborated or freed in greater amounts in the skin sensitized by the roseolar disorder.

The familial distribution of allergic tendencies requires no emphasis. The chief interest in these cases lies in the develop-

ment of an identical (allergic?) manifestation in all three simultaneously and probably as a result of the same factor.

Since we made these observations the urticarial tendency has continued to subside, and now (June 7, 1935) it has disappeared entirely.

Special Articles

THE USES AND ABUSES OF MODERN GLAND PRODUCTS IN GYNECOLOGIC DISORDERS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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If this paper dealt with gynecologic endocrinology instead of gynecologic organotherapy, it would be difficult to crowd within its restricted limits a recital of the brilliant accomplishments in that field, constituting as they do one of the most outstanding recent chapters in physiology. It is not so difficult to find space for the accomplishments in the field of organotherapy. This may seem strange, for it might be expected that from the great mass of new knowledge concerning reproductive physiology there should be a rich yield of facts translatable into therapeutic practice.

The best way to teach organotherapy is to teach endocrinology. Without some knowledge of the latter, it is utterly impossible for the physician to employ hormone products intelligently, with such knowledge he can at least know whether a given plan of endocrine treatment is rational and sound or whether it is palpably irrational and quite sure to be ineffective. This is not to say that treatment which seems quite rational is sure to be effective for this unfortunately is not true. It does mean, however, that certain methods of treatment can be carried out with no loss of dignity or self respect, while others will at once be rejected as obviously unsound.

The most effective method for correcting the evils and abuses of gynecologic organotherapy is to teach the members of our profession at least the elements of reproductive physiology. Feeling as I do about this, I am frank to say that I would much rather discuss reproductive endocrinology than gynecologic organotherapy, the subject that has been assigned to me. For a fuller discussion I may refer to several previous publications.¹

Thus far the chief contributions to therapy made by recent scientific investigations in this field have been of negative rather than of positive value. They have shown the incorrectness and often the absurdity of many of the older methods of gland treatment and the worthlessness of many of the preparations formerly so widely employed for this purpose. This, after all, has been no mean contribution.

If one looks back detachedly over the poorly marked road that has been traveled, it now seems clear that ovarian therapy got off to a bad start. It was "dat ole

Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1935.

¹ Novak, Emil. Some Newer Aspects of Reproductive Physiology. *Am. J. Obst. & Gynec.* to be published. *Endocrine Mechanisms in Functional Gynecological Disorders*. *Surg. Gynec. & Obst.* 60:330 (Feb.) 1935. *Gynecological Aspects of Endocrinology*, *Brit. M. J.* 2:553 (Sept. 23) 1933.

¹ del Vivo, G. Contributo allo studio dell'orticaria da freddo. *Dermosifilografia* 2:387 (Aug.) 1927.
² Jadassohn, Werner and Schaaf, Fritz. Kalteurtikaria bei zwei Geschwestern. *Dermat. Wechnschr.* 86:565 (April 28) 1928.

dehbit" analogy which was responsible for the first efforts at ovarian therapy in the old Landau clinic in Berlin in 1894. Some years previously Murray and others had demonstrated the brilliant results of thyroid feeding in cases of thyroid hypofunction. Why, then, should not ovarian feeding give equally good results in the treatment of conditions of ovarian underfunction? This was the first false step, and it is appalling to think how many billions of ovarian tablets had to be ingested before the profession was convinced of the inefficacy of the method. As a matter of fact this grandiose therapeutic experiment would still be in progress had it not been for the cruel disillusionment emanating from the laboratories. That there is still a vogue for this form of treatment is an excellent illustration of the painful slowness with which new knowledge permeates professional practice.

With the discovery of the functional importance of the corpus luteum by Fraenkel in 1903, the new fad of corpus luteum therapy had to run its course as inevitably as a case of measles, side by side with the practice of giving ovarian tablets or capsules or, later, ovarian residue in one form or another. All these substances were rather costly to the patient, and the national cost of such medication would total a figure that would not be unimposing even in this day of stratospheric finance.

All this, of course, is "old stuff", but it is the stuff that forms the background of gynecologic organotherapy as we know it now, and it can no more be disregarded in an analysis of the latter than can tradition, folk lore or superstition in the development of our national mind. While the cold truth is that all these older preparations for oral administration are entirely or almost entirely inert, the person who believes they are no longer used, or that there are no longer doctors with pencils which reflexly write for ovarian tablets at the mere mention of any functional menstrual disorder, would believe that there are no longer people who carry horse-chestnuts in their pockets to ward off rheumatism.

An entirely new trend was given to ovarian therapy with the discovery of the follicle hormone, for here, for the first time, we were dealing with a purified principle of undoubted potency even in the cold glare of the laboratory. It is no wonder that the clinician, so completely lacking any satisfactory treatment in the very large class of functional gynecologic disorders, at once sat up and took notice, for here there seemed something tangible and intelligent to work with. There thus began another phase of ovarian organotherapy dealing with hormones rather than with gland preparations, but equally disappointing, and for reasons that could have been foretold at the time and were foretold by those who were at all familiar with the physiology of menstruation and with the differences which it exhibits from the estrous cycle in the lower animals.

To produce estrus in the lower animals, only one ovarian hormone that of the follicle is necessary, so that the administration of the latter in proper dosage may be expected to produce the phenomenon even in the castrated animal as it does. But to produce menstruation in the human female two ovarian hormones are necessary, that of the follicle and that of the corpus luteum, and they must be properly balanced in a quantitative way and must operate in a certain sequence. Furthermore they must be given in huge dosage, if they are to bring about in the uterus an actual simula-

tion of menstrual changes. This has been shown by experiments on castrated women, the adequate dosage being apparently from 200,000 to 300,000 mouse units of estrin and 60 rabbit units of progesterin. Parenthetically, it may be added that eighty human corpora lutea would be required to yield one rabbit unit of progesterin, for here, as with many other endocrine glands, there is a vast difference between storage and production capacities. Any one interested in arithmetic and knowing something of the present-day market value of these preparations can readily figure out that the reproduction of a single menstruation by this treatment would cost several hundred dollars.

Another woful shortcoming of ovarian therapy in cases of ovarian deficiency is the fact that it is purely substitutional and that it does not in any way start up the ovarian menstrual machinery. This is in keeping with the well known endocrinologic law that no ductless gland is stimulated by its own secretion. Moreover, the evidence indicates that excessive or prolonged estrin therapy actually inhibits the activity of the anterior hypophysis, on which depends the efficiency of the pelvic menstrual mechanism.

Still another factor, as I shall later reemphasize, is that estrin treatment in itself has no more stimulating effect on ovulation than it does on menstruation, so that its use in most cases of the sterility so often associated with amenorrhea is irrational and unsuccessful.

Finally, in the treatment of gynecologic disorders of various sorts with estrin, one must contend with the possible factor of antihormone production, which may perhaps explain the apparent refractoriness of the organism to long continued endocrine therapy. This bedeviling concept, recently suggested by Collip and his associates, is still too new and unconfirmed to justify its discussion except as a possibility to be contended with, as if there were not already enough such difficulties to plague the endocrinologist. One may be permitted a sigh of relief that recent investigations appear to indicate the incorrectness of the antihormone concept as applied to theelin.

In view of the dominance of the anterior hypophyseal lobe over gonadal function, is there any way in which a lazy or totally inactive pituitary may be restored to normal activity? If there were, the problem, at least so far as ovarian hypofunctional conditions are concerned, would be much simplified. In spite of the assurance with which primary ovarian deficiency is spoken of, it is probable that in the majority of such cases the ovary would be capable of responding to the pituitary stimulus if the latter were forthcoming. But there is no known way of stimulating anterior lobe activity except the rather empirical and uncertain method of irradiation. No one knows just how the latter acts or on what elements it produces its chief effect, so that its employment in functional disease can only be compared to the employment of the "alteratives" so popular with the saddle-bag practitioner of a former day.

For substitutional purposes pituitary substances are often employed by mouth, without benefit, according to the best available evidence, unless huge doses are employed, and even then there is considerable reason to doubt their efficacy. The anterior pituitary-like substances now so popular because of their undoubted gonadotropic effects in animals have been without noteworthy effect as substitutes for the deficient anterior pituitary hormones, as might perhaps be expected, since

they are now believed by most investigators to be chiefly of chorionic rather than of pituitary origin

These, then, together with thyroid extract, are practically all there is to work with in efforts at gynecologic organotherapy. Some of the commercial forms of these substances I have enumerated in a recent paper, so that I shall in this paper talk in the general terms of physiologic principles rather than the commercial preparations that actually or purportedly represent these principles. Since the writing of the paper referred to, there have been a few additions to the armamentarium of ovarian therapy. The chief changes in this field are (1) at least some reduction in price, (2) a growing tendency to adopt the international unit of dosage for estrin in place of the rat unit, which had been almost universally employed in this country, (3) the production of more potent estrin preparations, (4) the availability of commercial preparations of progesterin, and (5) an effort to prepare the anterior pituitary sex principles from the gland itself instead of utilizing the anterior pituitary-like principles found in the urine of pregnant women. While reports of the use of these newer preparations are beginning to appear in the literature, these have so far been too meager to justify any conclusions as to whether they will bring about any improvement in results. For reasons that I have discussed, no matter how much the ovarian hormone preparations are improved they would still fill only a limited need in most of the indications for which they have been recommended.

Since this review is to be an evaluation of the rationale or lack of rationale of present-day glandular therapy for gynecologic disorders, the most logical plan would seem to be to set forth my comments under the heads of the various conditions for which organotherapy has been recommended.

AMENORRHEA

As I have had occasion, in a recent paper in *THE JOURNAL*,² to discuss at length the use of estrogenic substances in the treatment of amenorrhea, only a brief epitome need here be included. Organotherapy is useful in the definitely hypothyroid cases but of little value in other types, and the latter make up by far the largest group. The old-fashioned tablets, capsules or powders of ovarian substance, ovarian residue and corpus luteum substance are practically inert, so that there is no excuse for their use at present. Estrogenic preparations, such as the commercial theelin or anniotin, have little value for reasons that I have already enumerated. If they are used for this indication, and there are probably few gynecologists who do not at times feel driven to this by the lack of any treatment more logical or more successful, they should be employed in very large doses if the patient can afford this. If economy makes necessary the usual small doses, there is little reason to expect good results, so that the treatment is to be looked on as little more than a placebo to the patient and a mental sop to the physician.

To be as nearly rational as possible under present conditions, the administration of estrogenic substances in amenorrhea should be immediately followed, with some overlapping, by the hypodermic administration of preparations of the gonadotropic substance from the urine of pregnancy, such as antuitrin-S or follutein, or one may try one of the progesterin preparations, which are beginning to appear. The most that can be hoped

for even then is a single menstrual period, so that the treatment would have to be repeated for each menstrual period, a plan that is obviously not practical and of which the patient will soon tire. She will usually then pass on to some other physician, who with incipient enthusiasm will tackle the problem along similar or even more ineffective lines. Every now and then she may have a period of bleeding, perhaps spontaneously or perhaps as a result of treatment, her physician at that time being made to glow with a pride and enthusiasm which commonly fades when the amenorrhea again recurs. The perseverance of many patients is amazing, their peregrinations being checked only after many years of disappointment, or by advancing years, or until they are fortunate enough to fall into the hands of a physician who will take the trouble to explain to them that amenorrhea in itself is harmless and that, unless the factor of the frequently associated sterility is the all important one, as it unfortunately often is, there is not much to be hoped for from ovarian organotherapy in its present state. My own policy in such cases is to emphasize to the patient that such problems are being intensively studied throughout the world and that it is quite possible that these studies may before long yield some more effective organotherapy than is now available.

DYSMENORRHEA

It is very probable, though not clearly established, that in some cases of primary dysmenorrhea the endocrinopathic factor is the important one. There are many physicians even now who treat such cases, and indeed any functional gynecologic disorder, with the older forms of desiccated ovarian or corpus luteum substances given orally. For this there is not the slightest excuse to be made. There are others who use the estrogenic substances, usually just because they are the up-to-date forms of giving the ovarian principles and not because any one has any idea as to how they can do good in dysmenorrhea. The preponderance of what little evidence there is on the subject would indicate that they might do harm, for most investigators believe that estrin increases and progesterin decreases uterine contractility. On this basis there seems to be some reason to employ progesterin or the pregnancy urine preparations as a part of the treatment of primary dysmenorrhea. Far more important in the present state of organotherapy is an effort to correct the constitutional, environmental or psychogenic factors that are so often concerned in the causation of dysmenorrhea.

FUNCTIONAL UTERINE BLEEDING

For functional uterine bleeding, organotherapy appears to have established itself as of some value, although our imperfect knowledge concerning endocrine mechanisms entails a certain degree of empiricism in such treatment. Furthermore, the results are far from uniformly good. The largest group of functional cases are those characterized by a failure of ovulation, with abnormal persistence of estrin activity and with absence of the corpus luteum and its characteristic hormone, progesterin. This syndrome occurs most frequently in women approaching the menopausal epoch but is encountered at any age during reproductive life and is frequent in girls during the pubertal and adolescent years. The endometrium in such patients shows a greater or less degree of proliferative but always non-secretory change and in the typical case presents the characteristic Swiss cheese gland pattern of hyperplasia.

² Novak, Emil. The Therapeutic Use of Estrogenic Substances. J. A. M. A. 104: 1815 (May 18) 1935.

Mild cases of this disorder are frequent, and often the endocrine balance is spontaneously readjusted without treatment of any kind. When the bleeding is severe, organotherapy is indicated, and in very young individuals, in whom there is no reason to fear cancer, this need not be preceded by diagnostic curettage, though pelvic examination, either vaginal or rectal, is always wise. The most frequently helpful treatment is with one of the anterior pituitary-like preparations made from the urine of pregnant women, the two chief commercial forms being antuitrin-S (Parke, Davis & Co.) and follutein (E. R. Squibb & Sons). These were originally suggested because of their luteinizing effects on the ovaries of laboratory animals, in the hope that they might have a similar effect on the human ovary, which might thus be stimulated to supply the progesterin deficiency. Progesterin itself would be more rational and probably more effective if an unquestionably active preparation were available for clinical use. Although it is now known that these anterior pituitary-like substances do not in the human being bring about luteinization, the fact remains that in many cases they are useful in checking or controlling bleeding. Just how this occurs is not known though it is probably dependent on some interaction between the ovarian and pituitary secretions. There seems to be no doubt that the underlying disturbance in such cases involves the anterior hypophyseal lobe, so important as the regulator of ovarian function.

When the pregnancy urine hormones are used in the treatment of functional hemorrhage it seems best to withhold them until the onset of a bleeding phase, for often the bleeding is periodic. From 100 to 200 units may then be given intramuscularly each day, for from one or two to five or six days, depending on the severity of the bleeding and the effect of the treatment. If bleeding is of the prolonged metrorrhagic type, treatment should be commenced at once. When those preparations alone are ineffective, the simultaneous daily injection of the ordinary posterior lobe extracts, in doses of from 0.5 to 1 cc., will sometimes enhance their value.

In women near middle life, and especially when the bleeding has been prolonged and free, curettage is advisable, because it usually checks the bleeding at least temporarily, and because it eliminates more serious intra-uterine lesions, such as cancer. When bleeding recurs after curettage, it may be treated organotherapeutically, according to the foregoing plan, but, if the woman is approaching the menopausal age, the sensible plan is to abolish the menstrual function by means of x-rays or radium. The latter should not be employed in young women except as a last resort, and then only by those sufficiently expert to regulate the dosage in such a way as to minimize the risks of permanent abolition of the reproductive and menstrual functions.

In some cases of functional bleeding, especially when there is definite evidence of hypothyroidism, thyroid extract is indicated, and it may be of value in the relief of the bleeding though such cases have not been numerous in my experience. Many other forms of organotherapy have been suggested, such as the use of estrin, parathyroid extract, insulin or mammary extracts but neither the rationale nor the results of such plans have commended them for general usage. The plan that I have suggested leaves much to be desired, and its general results are not at all consistent, but it has been detailed because the available evidence warrants the statement that it gives better results than any other

plan of organotherapy. There is little question that it will sooner or later be superseded by some more effective plan, perhaps by the substitutional use of progesterin, especially since there now seems to be a real hope for the synthetic preparation of the latter.

VASOMOTOR MENOPAUSAL SYMPTOMS

Although various explanations have been suggested for the mechanism of the curious vasomotor flushes, sweats and heat flushes that characterize the menopause, nothing of a definite nature is known. There is, however, little doubt that the immediate factor is the withdrawal of ovarian function, and considerable evidence to indicate that the most important factor is the cessation or marked diminution of estrin production. I need mention only the following observations in support of this view. 1. These vasomotor phenomena are usually mild or absent altogether in that phase of the menopause during which estrin is present in excessive amount, especially when this excess is expressed in the form of functional uterine bleeding. They are more apt to be troublesome in the stage of estrin deficiency, which, according to Zondek, follows that of excess. 2. In a number of cases of granulosa-cell carcinoma in women many years after a normal menopause, which had been accompanied by characteristic vasomotor symptoms, a second menopause, with again characteristic symptoms, has been observed. These tumors characteristically produce only estrogenic substance.

It is scarcely necessary to add that cessation or marked diminution of ovarian function is accompanied by striking changes in the anterior lobe, changes which, especially in the surgical menopause, are quite similar to the well known castration hypertrophy of the anterior lobe so well established by laboratory experiments. It seems quite possible that these pituitary changes, with some unknown repercussion through the cerebral and sympathetic centers, are responsible for the vasomotor phenomena, though one can only speculate as to the pathways and mechanism that are involved. But the fact remains that the estrin deficiency, especially if sharp or sudden, is the conspicuous hormone phenomenon associated with such symptoms. Hence the administration of this hormone in an effort to ease the patient over the transition phase seems logical when symptoms are sufficiently severe.

There is no phase of woman's life concerning which the public cherishes so many incorrect ideas as it does concerning the change of life. Hence the apprehensiveness with which many women approach this epoch. A physician can render his women patients a great service by explaining the normality of this phase, stressing the fact that in most cases no medication of any kind is necessary, because of the absence or mildness of the symptoms. Much can also be accomplished by insistence on the avoidance, so far as possible, of stress, worry and anxiety as well as the importance of maintaining physical health on as high a level as possible by such measures as rest and recreation. Simple nerve sedatives, such as the bromides, are often valuable adjuvants and may be all that is required in the way of medicine. In spite of all this, a minority of women are made very miserable for many months, and even a number of years because of the severity of the vasomotor symptoms. What can be done for these? If there is anything more nearly rational or more effective than estrin therapy now available for this indication, I do not know of it. With full regard for the necessity of eliminating the subjective factor in the

evaluation of results, and with full knowledge of the lack of brilliance in these results, my experience has been that many patients can be very materially helped by this plan of treatment, combined with the general measures already mentioned.

The admittedly poor results of ovarian therapy in general, and its lack of rationale in so many of the indications for which it has been employed, are no doubt responsible for the completely nihilistic attitude expressed by some writers, concerning even the few indications in which the hormone does not seem illogical or wholly ineffective. Without the slightest feeling of cocksureness on the subject, I for one expect to employ hormone therapy as a part of the management of some menopausal cases until a more effective or more rational method becomes available. I have an idea that most of the scoffers will do the same.

There would seem to be no excuse for the oral administration of the older forms of desiccated preparations of whole ovary, corpus luteum, or ovarian residue when commercial preparations of the hormone, with demonstrated laboratory potency, are now available. This hormone can be given either hypodermically or orally, the effective dose by the latter route being about five times that required by the hypodermic method. The available preparations, the doses and the general plan of treatment suitable for menopausal cases have been fully discussed in a recent paper, so that they need not be detailed again here.

STERILITY

While our knowledge of endocrine factors in sterility is very meager, there is no doubt that they play an important part in many cases of this frequently distressing female ailment. It seems hardly necessary to say that such an etiology should never be assumed until a thorough study of the male and female partners has eliminated all the other more common possible causes of the condition. If hypothyroidism is demonstrated in either partner, appropriate thyroid therapy is clearly indicated and pregnancy not infrequently follows. Even if the basal metabolism rate is normal there is no objection to small doses of thyroid, and even here good results are at times observed. When, as is so often the case the sterility is associated with an endocrinopathic amenorrhea of what might be called the cerebrohypophyseogonadal variety, the treatment is that of the latter, and the results are equally poor. In this group thyroid therapy is likewise commonly employed. It is probably of more frequent value than the administration of the ovarian or gonadotropic preparations so widely used.

Two other endocrine aspects of sterility may at least be mentioned. One is the possible absence of ovulation even though menstruation is essentially normal in rhythm and amount, and even more if it is somewhat irregular and free. That in some of these cases the sterility is due simply to the fact that no eggs are being given off by the ovaries no longer permits of doubt, as I have discussed in a recent article. But we do not as yet know what the actual cause of ovulation is. For that matter, it seems likely that it is neither the follicle-ripening gonadotropic hormone (prolan A), as some suggest nor the luteinizing hormone (prolan B), as others believe, but that it is dependent on some delicate quantitative balance between these two substances. Hence the present difficulty of correcting this anovulatory mechanism, and the fact that one must for the

present resort to such experimental therapeutic measures as the administration of the prolan-containing preparations at or near the usual time of ovulation.

Finally, even if the egg is given off, there is no certainty that it is fertilizable. The doctrine of "defective germ plasma" seems to have gained the acceptance of the most conservative embryologists. If the inferiority of the egg is not quite so pronounced, it may, so to speak, take the sperm charge, but "idiopathic" abortion or miscarriage takes place at one stage or another of pregnancy. If the germ plasma is still less inferior in quality the pregnancy may go to term, with stillbirth or death shortly after birth, while in the ideal cell union the germinal momentum is sufficiently strong to carry the gestation product through the usual human span. Needless to say the quality of the male germ is just as important as that of the female. The fertilized egg is the resultant of the fertilization capacities of both male and female partners, and in either one of these sterility may be only relative instead of absolute. From a practical standpoint, the only suggestion that can be made when such a factor as defective ova is suspected is to endeavor to improve the constitutional and endocrine status of the couple in every way possible. As regards the constitutional element, this often means the correction of such factors as diet, psychic conditions and overwork.

GONORRHEAL VULVOVAGINITIS OF CHILDREN

The treatment of the troublesome and frequent gonorrheal vulvovaginitis of children has long been a *bête noire* to gynecologists, so that there has been considerable interest in the suggestion of Lewis that estrogenic therapy might, through its biologic effect on the vaginal mucosa of the child's vagina, be of therapeutic value in this form of vulvovaginitis. Suffice it here to say as I have done more in detail elsewhere, that the treatment seems rational and that, in the light of such reports as have been made available, it merits continued usage, at least until its efficacy can be more satisfactorily proved or disproved. As the method is now being tried out fairly extensively, it should not be long before more definite conclusions than are as yet available can be arrived at. Studies now being made in the outpatient clinic at the Johns Hopkins Clinic by TeLinde and Brawner indicate not only the usual effectiveness of the treatment but that the most effective way to administer the hormone is by the vaginal route, through the use of vaginal cones containing the active principle.

OTHER INDICATIONS

There are a number of other indications for which organotherapy has been suggested and employed, but these need not be discussed here, because of the indefiniteness of the indications and the poorness of the results. Moreover, this poorly defined group has been briefly discussed in my previous paper. In this I also described the employment of the anterior pituitary-like hormones of pregnancy urine in the treatment of undescended testis. In this condition, in which surgical treatment is not always as successful as might be wished, the reported results justify the statement that operation should not be resorted to without first trying the organotherapeutic plan.

SUMMARY AND COMMENT

Sifting out the worthwhile evidence available on the general subject therefore, it may be concluded that organotherapy is apparently of value in the treatment

of functional bleeding and of the menopausal symptoms. Ovarian therapy seems worthless in the treatment of amenorrhea, though thyroid treatment is of value in an indeterminate though apparently not large proportion of cases. In dysmenorrhea the use of the anterior pituitary-like pregnancy hormones is helpful in some cases, though the correction of constitutional, psychic and environmental factors should never be overlooked and is far more frequently important for successful results. The use of organ extracts, especially thyroid, is fully justified in cases of sterility, but only after thorough consideration and, if possible, elimination of other etiologic factors. The available evidence indicates the value of organotherapy in cases of gonorrheal vulvovaginitis in children, and for the nongynecologic indication of undescended testes.

All in all, therefore, no great hardship would be worked on the female sex if ovarian organotherapy were suddenly blotted out. Indeed, this might not be undesirable if the new therapy that would be sure to arise could be built up on the substantial basis of what has actually been established in recent years concerning reproductive physiology, and what is reasonably sure to be learned in the years just ahead of us. Such a dream of starting all over again is just as utopian in this as in other fields of therapy, for always the harassed physician is faced with the necessity of doing the best he can under existing conditions when, as is so commonly the case, a scientifically ideal plan is not possible. But no physician can treat endocrine disorders intelligently unless he knows something of endocrine functions and interrelationships. The subject is admittedly vast, confusing and rapidly changing. There is thus a temptation for the busy doctor to dismiss the whole thing as a hopeless muddle and to depend on the literature of manufacturing houses for quick and often superficial information on the subject. And yet it is easy, without great effort, for every physician to familiarize himself with the essential elements of the subject through the numerous summarizing reviews that have appeared, none being better than the series of articles on "Glandular Physiology and Therapy" which have just been published in *THE JOURNAL*. In this field almost more than any other those qualified to do so can render a genuine service by summarizing, clarifying and appraising the subject for the benefit of those who through lack of time or opportunity, cannot otherwise keep in touch with the rapid developments in this field.

26 East Preston Street

Sir Patrick Manson's Diary—Manson commenced his Diary in June 1877 and continued to make entries therein with commendable regularity for another twenty years. The Diary is a plain ledger bound in buckram, and appears to have been acquired by Manson on his advent to Amoy for on the outer cover can still be deciphered Imperial Maritime Customs Amoy. The book measures 13 by 8 inches and contains 612 closely written pages. In these pages there are gathered together scattered observations on the main subjects for which Manson's name became world famous. It was apparently his habit to record his observations and experiments daily in an orderly fashion and to keep transcripts of all the letters he wrote to correspondents such as Timothy Lewis Spencer Cobbold, Leuckart Lister and the *Lancet*. Inserted too between these pages are numerous original drawings. The Diary is therefore replete with scientific historic and human associations. Naturally the main interest radiates round his first love—filariasis—Manson Bahr Philip. A Commentary on the Diary Kept by Patrick Manson in China and Now Conserved at Manson House, Tr Roy Soc Trop Med & Hyg 29 79 (June) 1935.

GLANDULAR PHYSIOLOGY AND THERAPY

COMMERCIAL GLANDULAR PRODUCTS

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CHICAGO

NOTE—This article concludes a series of thirty-two articles on glandular physiology and therapy by various authors, published under the auspices of the Council on Pharmacy and Chemistry. The series of articles will be published in book form.—Ed

Perhaps no group of pharmaceutical preparations in recent years has been the subject of such extravagant claims as that comprising allegedly active materials derived from various glands, nonglandular organs and body fluids. Hardly a tissue or fluid of the body has escaped desiccation or extraction, substances so obtained are marketed in pills, tablets, capsules, vials and ampules for introduction into the body by every conceivable route. Only a small percentage of the many preparations are known to contain active material, and with the few exceptions (thyroid, liver, stomach, adrenal cortex, and some estrogenic principles) discussed later, the products administered *by mouth* have little effect even if they do contain some active principle or principles¹. The active substances are either destroyed by the digestive juices or if not broken down they may not be absorbed from the intestine. An excellent example is the one presented by Evans² who, with Long, administered fresh pituitary glands to rats as the sole source of food without the slightest detectable acceleration of growth, a much smaller amount of material properly extracted and administered parenterally is known greatly to enhance the rate of growth. Thus glandular therapy by the oral route is in general quite limited, even when effective it is usually wasteful, as much more material must be used owing to poor absorption. However, when dealing with relatively impure products that may have toxic effects on parenteral injection it may be preferable to administer the preparation orally, if feasible. An example of this is adrenal cortex extract³.

Purification, particularly important for preparations intended for parenteral use, involves many difficulties. Chemical treatment may result in degradation products, whether or not a principle obtained by extraction actually exists as such in the gland from which it is derived is often a matter for speculation. Only a few substances have so far been obtained in crystalline form, by far the great majority of the remaining products are more or less contaminated with other active or inactive substances. Effects ascribed to an alleged active principle may be caused by pharmacologically active contaminants. These contaminants may also be important from the standpoint of toxicology, a number

¹ The Council on Pharmacy and Chemistry has omitted from V N R all desiccated ovarian preparations at one time thought to be active by mouth (Desiccated Ovarian Preparations for Oral Administration Omitted from V N R Report of the Council on Pharmacy and Chemistry J A M A 94 1997 (June 21) 1930). With the exception of thyroid and some liver and stomach preparations no glandular product for oral use stands accepted by the Council.

² Evans H M. The Growth Hormone of the Anterior Pituitary J A M A 104 1232 (April 6) 1935.

³ (a) Rogoff J M and Stewart G N. Suprarenal Cortical Extracts in Suprarenal Cortical Insufficiency (Addison's Disease) J A M A 92 1569 (May 11) 1929. (b) Loeb R F. The Adrenal Cortex, *ibid* 104 2177 (June 15) 1935.

of untoward reactions from the administration of glandular products have been reported⁴

Assay involves still further difficulties. The majority of methods employed are biologic, the effect of a given preparation is determined on some physiologic function in a test animal. At best biologic assay entails very large errors, sometimes as much as 1,000 per cent.⁵ In addition, the effect produced in the test animal that serves as the measure of potency may not necessarily be the effect desired or the effect that occurs in the human being who is treated with the preparation in question. For instance, a comparison of two estrogenic substances by the Allen-Doisy vaginal cornification test has no necessary bearing on the relative effectiveness of the two preparations in relieving the symptoms of the menopause in a woman, or an effect occurring in a test animal, such as the rise in blood pressure following the administration of a posterior pituitary extract to an anesthetized dog or cat, may not occur at all in the normal human being.⁶ Species differences also play a large part in making more difficult the interpretation of assay data. This is particularly true with gonadotropic and estrogenic products. Recent studies have emphasized the great differences in the physiology of the reproductive tracts in various species of animals. The only animal available for experimentation having a menstrual cycle similar to that of the human being is the *Macacus monkey*. Yet this animal is not used for assay. Most, if not all, the products belonging to this class are assayed on mice, rats or rabbits. Thus, the stated activity of a great many glandular products may be considered as no more than rough approximations. In addition, questions of deterioration in the interim between assay and use and of differences in rates of absorption and excretion of the active principle or principles make endocrine therapy with commercial products even more uncertain. Even when active products are used, consideration of the possible production of antihormones, which have been discussed at length by several authors in this series,⁷ enjoins caution in glandular therapy. From the practical standpoint of clinical use, the important factor is that the phenomenon described by Collip and his co-workers actually does occur with certain glandular products. Questions of the nature and mechanism of production of antihormones are secondary, for the time being these need concern only the physiologists.

Much confusion arises from the present deplorable state of endocrinologic nomenclature, this is particularly true with respect to commercial products. As stated in a recent editorial in *THE JOURNAL*,⁸ "In addi-

tion to the many terms invented from time to time by research workers in many parts of the world, the situation has been made even more difficult by the tendency of each of a number of commercial firms to register its own trade mark for a product to which otherwise, in most cases, it has no proprietary claim. The language of medicine appears to have been more burdened than enriched by the new nomenclature." Not infrequently the physician is confronted with a series of products purporting to be similar but sold under widely different names, or with other products unquestionably different but marketed under similar names. Examples of the former are too numerous to require specific citation, as an instance of the latter, three preparations of Parke, Davis & Co. may be mentioned "antuitrin," apparently a "soup-like" extract of the anterior pituitary, "antuitrin-S," an extract of the urine of pregnant women containing the pituitary-like gonadotropic factor, and "antuitrin-G," an extract of the anterior pituitary said to contain the growth hormone. That these three preparations are sometimes confused one with another is not surprising. Another example is supplied by the Schering Corporation, which markets two different estrogenic preparations, "progynon" and "progynon-B."

With an understanding of the many serious difficulties involved in the use of commercial glandular products, detailed consideration may now be given to the products themselves. It is inevitable that many products marketed in various parts of the world will be omitted, it is practically impossible to consider in detail all the products on the market within a reasonable space. Many of the preparations are such as to require no serious consideration, they fall into various classes of useless pharmaceuticals the characteristics of which are evident. Among these are combinations of extracts or of desiccated material from two or more glands. With one or two exceptions (such as combinations of liver and stomach for the treatment of pernicious anemia) these appear at present to be irrational. The great majority of pluriglandular products on the market are simply unstandardized (from the standpoint of their content of active principles) empirical mixtures, many are intended for administration by mouth, by which route the alleged active principles would in most cases not be effective. In addition, mixtures that do contain active material, and are recommended for administration by a route by which they may be expected to be effective, will contain the active substances in approximately fixed (and after a little aging, in unknown) proportions. Also, the effects of chemical interaction of different principles in solution are practically unknown. It seems much more rational to employ two or more separate extracts (each standardized as to its content of active substance) if these should be indicated. It is sufficiently confusing at best that a considerable number of the available extracts of single glands contain more than one active principle to add to the relatively impure preparations now available the products of still other glands is to compound the confusion.

The fact that the description of a product does not appear in the following should not be construed as necessarily indicating that it is considered to be a useless preparation. Furthermore, the amount of space devoted to describing the various preparations may not

4 (a) Benham, H. W., Fisher, Mary, More, I. and Thungar, C. J. L., Three Cases of Addison's Disease Treated with an Extract of Suprarenal Cortex, *Lancet* 1, 125 (Jan. 16) 1932. (b) Rowntree, L. G. and Ball, R. G., Diseases of the Suprarenal Glands, *Endocrinology* 17: 263 (May-June) 1933. (c) Rogoff, J. M., The Adrenal Cortical Hormone. Experiments with a Commercial Adrenal Extract (Eschatin), *J. A. M. A.* 103: 1764 (Dec. 8) 1934. (d) Simon, F. A., Hypersensitivity to Pituitary Extract, *ibid.* 104: 996 (March 23) 1935. (e) Werner, A. A., Experiments to Produce Lactation in Castrate Women, *Endocrinology* 19: 144 (March-April) 1935. (f) West, Randolph, Anti-anemic Material of Liver and Stomach, *ibid.* 105: 432 (Aug.) 1935.

5 Estrogenic Substances, Theelin, Report of the Council on Pharmacy and Chemistry, *J. A. M. A.* 100: 1331 (April 29) 1933.

6 Geiling, E. M. K., The Posterior Hypophysis, *J. A. M. A.* 104: 738 (March 2) 1935.

7 Evans, H. M., Clinical Manifestations of Dysfunction of the Anterior Pituitary, *J. A. M. A.* 104: 464 (Feb. 9) 1935. Smith, P. E., General Physiology of the Anterior Hypophysis, *ibid.* 104: 548 (Feb. 16) 1935. Collip, J. B., Diabetogenic, Thyrotropic, Adrenotropic and Parathyrotropic Factors of the Pituitary, *ibid.* 104: 827 (March 9) 1935. Novak, Emil, The Therapeutic Use of Estrogenic Substances, *ibid.* 104: 1815 (May 18) 1935.

8 The Nomenclature of Glandular Products, editorial, *J. A. M. A.* 103: 1152 (Oct. 13) 1934.

be in proportion to their relative importance. A number of new and comparatively untried products are discussed at length, as descriptive information on them may not easily be available elsewhere. Well known substances described in the Pharmacopeia or in New and Nonofficial Remedies are mentioned briefly or not at all.

Emphasis will be confined chiefly to the more important products marketed in the United States. Only those designated with the suffix N N R are accepted by the Council on Pharmacy and Chemistry.

ANTERIOR PITUITARY

Pituitary preparations intended for oral use will not be discussed, as there is no satisfactory evidence that these are effective by mouth.

Growth Hormone—Commercial preparations containing the anterior pituitary growth hormone in solution, free from other active principles, are not yet available. In general this appears to be true of all the pituitary extracts, even the relatively pure products contain contaminating substances in greater or less amount. The physiologic action and the therapeutic indications and effects of preparations containing the growth hormone are considered in the papers by Evans² and by Novak³ in this series. The clinical use of these products is still in the experimental stage. Caution is therefore indicated.

The presence of active principles other than the growth-promoting factor must be kept in mind as untoward effects may occur owing to stimulation of the thyroid gonads¹⁰ or other organs. Three products claimed to contain the growth hormone are available on the American market.

Anterior Pituitary Extract Squibb E. R. Squibb & Sons. This is said to contain the growth-promoting factor and, in addition, the gonadotropic and thyrotropic principles of the hypophysis. It is assayed for its content of growth hormone only. Adult female rats weighing 250 ± 25 Gm are injected daily for ten successive days; one rat unit is the daily dose necessary to cause an increase in body weight of 10 per cent in an eleven day period. Anterior pituitary extract Squibb is marketed in 10 cc rubber-diaphragm-capped vials containing 10 rat units in each cubic centimeter. As the potency in terms of growth hormone appears to be approximately equal to that of antuitrin G, the same dosage statement would probably apply. The dosage recommended by the manufacturer is from 0.5 to 5 cc, intramuscularly three times a week.

Antuitrin G Parke Davis & Co. This preparation is stated to contain the growth hormone without significant amounts of the gonadotropic, thyrotropic or adrenotropic factors. It is doubtful whether antuitrin-G may for practical purposes be considered free of these factors; however, as no assay data are available as to the content of these principles, the product is assayed for its content of growth hormone by its effect on the growth of adult female rats from 6 to 7 months of age: one rat unit is the minimal daily amount which when injected intraperitoneally in two divided doses will cause an average daily increase of 1 per cent in body weight over a period of ten days. Antuitrin-G is marketed in 20 cc rubber-diaphragm capped vials each cubic centimeter containing 10 rat units. The optimum dosage is not definitely established; antuitrin-G has been administered preferably intramuscularly in doses varying from 1 to 3 cc, two or three times a week. The dosage recommended by the manufacturer is from 6 to 10 cc, per week in divided doses of 2 to 5 cc.

Phyone, Wilson Laboratories. Information is not available as to the method of preparation and standardization of this product, or as to the forms in which it is marketed.^{10a}

Gonadotropic Principles—These are of two types, known, for want of better terms, as follicle stimulating and luteinizing. Commercial preparations in general contain mixtures of the two (and probably greater or smaller amounts of other factors as well). As yet there are few controlled clinical studies with the gonadostimulating extracts of the pituitary itself, most of those so far reported have been made with extracts of pregnancy urine or placenta. The effects of the latter, as already pointed out in several articles of this series,¹¹ are not equivalent to those produced by products obtained from the pituitary. In view of studies indicating that a persistent refractory state¹² of the ovaries of experimental animals may be produced by pituitary extracts, the commercial preparations should be employed clinically only when their known physiologic effects are fully understood and then with caution. The indications, contraindications and dosage are at present poorly defined.

Preparations derived from pituitary tissue

Gynatrin G D Searle & Co. This is said to contain the two gonadotropic factors of the pituitary; the presence and amount of other factors are not stated. Gynatrin is said to be assayed and standardized as follows: A rat unit is defined as the smallest amount which when divided into six equal parts injected over a period of three days into immature female rats less than 30 days old and weighing from 35 to 40 Gm will by the fifth day produce follicular maturation and luteinization of the ovaries and a marked increase in the size of ovaries and uterus in at least 60 per cent of animals so treated. Gynatrin is marketed in 5 and 15 cc rubber-diaphragm-capped vials, each cubic centimeter containing 100 rat units. The dosage recommended by the manufacturer is from 0.1 to 2 cc, administered preferably intramuscularly. As already stated, the indications, contraindications and dosage of this preparation are not yet well defined.

Prephysin-Chappel Chappel Bros, Inc. This is said to contain the follicle stimulating principle of the pituitary gland, including small quantities of the luteinizing factor prepared by the method of Fevold and his collaborators as modified by Meyer and Fevold. The presence and amount of other factors are not stated. Prephysin is said to be standardized as follows: One rat unit is that amount which, divided into six equal parts and injected over a period of three days into immature female rats 22 days old produces an increase in the weight of the ovaries of from 50 to 100 per cent by the end of the fifth day. The product is marketed in 5 cc rubber-diaphragm capped vials each cubic centimeter containing 25 rat units. The dosage recommended by the manufacturer is from 0.5 to 1 cc. Caution is necessary with regard to overdosage.

A number of products purporting to contain the gonadotropic factors of the pituitary are made by European firms. The available descriptions of these products are meager and in some cases it is not clear whether a given preparation in question is derived from the pituitary, the placenta or the urine of pregnancy. Infor-

^{10a} According to Evans² phyone prepared by the method of Van Dyke and Wallen Lawrence is contaminated not only with much inert protein but also with recognizable amounts of gonadotropic and thyrotropic hormones and traces of the lactogenic substance. Available literature does not indicate to what extent this applies to the Wilson product.

¹¹ Evans² Smith P. E. The Hypophyseal Gonadotropic Hormones, *J. A. M. A.* 104: 353 (Feb. 16) 1935. Collip J. B. Interrelationship Among Urinary Pituitary and Placental Gonadotropic Factors *ibid.* p. 556.

¹² Hertz Roy and Hisaw F. I. Effects of Follicle Stimulating and Luteinizing Pituitary Extracts on the Ovaries of the Infantile and Juvenile Rabbit *Am. J. Physiol.* 108: 1 (April) 1934.

⁹ Novak Emil. Anterior Pituitary and Anterior Pituitary-like Substances. Therapeutic Applications. *J. A. M. A.* 104: 998 (March 23) 1915.

¹⁰ Evans² Novak³.

mation as to the methods of standardization is in practically all cases insufficient. Hence these will not be considered in detail.¹³

Commercial preparations containing the lactogenic,¹⁴ blood sugar-raising¹⁵ or other principles of the pituitary more or less free of contaminating factors are not yet available. Investigations have not yet reached the stage at which the administration of such products to patients would be warranted, even if they were available.

A number of firms market "soup-like" extracts of the anterior pituitary. An example of these is antuitrin (without the qualifying S or G), most firms do not employ trade names for these products. The number, nature and potency of the active principles (if any) in such preparations is in general not known. The available evidence indicates that these are usually not assayed but are adjusted to represent a certain weight of fresh or dried gland. Clinical use of products of this type rests on an empirical basis only, their employment should be deprecated.

ANTERIOR PITUITARY-LIKE PREPARATIONS

Extracts from the urine of pregnancy or placenta are available on the market under various names. The relation of such products to those derived from the pituitary itself has already been discussed in this series.

Antophysin, Winthrop Chemical Company. This preparation unfortunately is marketed in such a way as to create the impression that it is derived from the pituitary. However it is described in recent advertising circulars issued by the firm as "anterior pituitary-like gonadotropic hormone." It is therefore obvious that this product is obtained either from the urine of pregnancy, the placenta or both. The source, however, as well as the method of standardization is not stated. Antophysin is marketed in ampules containing a soluble powder, 100 or 500 rat units together with ampules of distilled water for dissolving the powder before injection. Intramuscular injection is employed. The product is also marketed in tablets for oral administration, but there is no satisfactory evidence that such tablets would be active by mouth in human beings.

Antuitrin-S Parke Davis & Co. This product is extracted from the urine of pregnancy. It is stated to be standardized as follows: One rat unit is the minimal amount which when divided into six doses injected subcutaneously over a period of three days, will produce corpora lutea in the ovaries of 26 day old rats by the end of ninety-six to 100 hours. Antuitrin-S is marketed in rubber-diaphragm-capped vials containing 10 cc., each cubic centimeter contains 100 rat units.

A P L, Ayerst McKenna and Harrison. This preparation contains gonadotropic substance derived from the placenta by the method of Collip. It is standardized as follows: One "biological day-unit" is the minimal amount which when administered subcutaneously daily for three days to immature rats (from 18 to 21 days old and weighing from 20 to 30 Gm) will produce a vaginal estrous reaction within 120 hours after the first injection in 50 per cent of the animals. A P L is marketed in 5 cc. rubber-diaphragm-capped vials, each cubic centimeter contains 100 "biological day-units."

13 Descriptions of these products given in Gehe's Codex for instance are not adequate to serve as a basis for the intelligent use of any of these products. If such preparations are employed, definite information should be obtained from the manufacturer in each case as to source, method of standardization and presence of active principles other than the one assayed for standardization. As the use of all these products is in an experimental stage it seems best to employ the products of firms in this country in order that information may more readily be obtained.

14 While E. R. Squibb & Sons announced some time ago that it would shortly market a lactogenic extract of the pituitary, no subsequent announcement appears to have been made by the firm. It appears from the recent report by Werner¹⁶ that the efforts of this firm to produce an active and relatively pure preparation of prolactin have not yet succeeded. Werner was unable to induce lactation in women with the Squibb extract; severe local and systemic reactions occurred.

15 Praephyson Promonta (Hamburg, Germany) has been claimed to contain the blood sugar raising principle of the anterior pituitary. However, if it does, other factors are unquestionably present as well.

Follutein, E. R. Squibb & Sons. Follutein contains the gonadotropic factor extracted from the urine of pregnancy. It is standardized as follows: One rat unit is the minimum amount which, given to immature rats 30 days old, in six injections on three consecutive days, produces mature follicles, hemorrhagic follicles and corpora lutea in the ovaries within 100 hours after the first injection. The product is marketed in a syringe containing 1 cc. of a glycerin solution (1,250 rat units), together with a rubber-diaphragm-capped vial containing 9 cc. of distilled water. Before use the contents of the syringe are injected into the vial, the mixture (which, according to the firm, should be kept refrigerated and used within three weeks) contains 125 rat units in each cubic centimeter.

POSTERIOR PITUITARY

The extract of the posterior lobe of the pituitary most commonly employed is that described in the U. S. Pharmacopeia. Hence this need not be discussed here. Some firms market extracts of twice the potency of the U. S. P. product, none of these more potent preparations stand accepted by the Council on Pharmacy and Chemistry for New and Nonofficial Remedies.¹⁶ There seems to be little excuse for marketing the more active extracts, as the preparations of U. S. P. potency are sufficiently effective and the former may be dangerous if employed inadvertently for obstetric use.

Two preparations described in New and Nonofficial Remedies may be mentioned briefly.

Pitocin, N. N. R., Parke, Davis & Co. An extract of the posterior lobe of the pituitary having an oxytocic effect (10 units in each cubic centimeter) equal to that of U. S. P. solution of pituitary, but less than 0.5 unit per cubic centimeter of pressor activity.

Pitressin, N. N. R., Parke Davis & Co. An extract of the posterior lobe of the pituitary containing the pressor and diuretic-antidiuretic principle or principles in the same concentration (10 units in each cubic centimeter) as that in U. S. P. solution of pituitary but with less than 0.5 unit per cubic centimeter of oxytocic activity.¹⁷

ESTROGENIC PREPARATIONS

Much confusion exists not only as to the nature, sources, potency and effects of the estrus-producing products but also as to their clinical indications. It should be emphasized that none of the known potent preparations are derived from ovary and that there is no satisfactory evidence to indicate that any of the preparations actually contain the ovarian follicular hormone or hormones. Consequently it is not warranted to speak of estrus-inducing principles obtained from the urine of pregnancy, placenta or amniotic fluid or by chemical alteration of any of these factors as "ovarian follicular hormone." Nor is the commonly used "(o)estrin" a satisfactory generic term for all these products. Estrin has been identified both with the specific crystalline compound known as theolol¹⁸ and with the chemical nucleus of compounds of this group, thus theelin is known as "ketohydroxyestrin" and theelol as "trihydroxyestrin." Estrin cannot be both the compound itself and the chemical nucleus of the substance, much as caffeine cannot be both xanthine

16 Report of the Council on Pharmacy and Chemistry (omission from N. N. R. of all posterior pituitary extracts differing from pharmacopeial potency) J. A. M. A. 93:524 (Aug. 17) 1929.

17 It will be noted that the strength of pitressin as described here is one-half that stated in N. N. R. 1935. The potency has recently been changed to make it accord with that of U. S. P. solution of pituitary with respect to the amount of pressor principle.

18 Dowsy, E. A. Chapter X (page 494) of Sex and Internal Secretions (Edgar Allen, editor) Baltimore: Williams & Wilkins Company, 1932.

and trimethylanthine. The chemical nomenclature proposed for the estrogenic and related substances by a British group of investigators¹⁹ has a number of features to commend it. None of the proposed chemical names, of course, are applicable to estrogenic principles the chemical nature of which is unknown. For the time being, therefore, it is best to refer to these simply as "estrogenic substances."

The question of the relative potency of the estrogenic products is in an unsatisfactory state, owing to inherent variability of test animals, to differences in

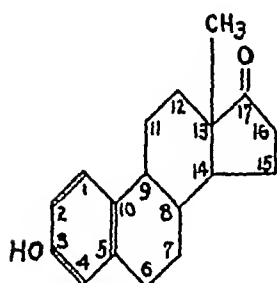


Fig 1—Theelin

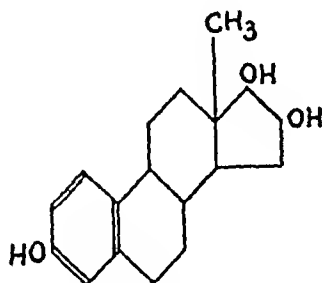


Fig 2—Theelol

species sensitivity, to lack of uniformity in technique of conducting the assays and to the use of three different units, mouse, rat and international unit. Fortunately the latter is superseding the two former, although confusion continues to exist because various manufacturers employ different ratios for the equivalence of rat, mouse and international units and because they do not state which animal is used for assay against the international standard²⁰. The international unit is defined by the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations²¹ as the estrus-producing activity contained in 0.1 microgram (one ten-millionth of a gram) of a standard preparation of theelin, this being approximately one-third the original rat unit of activity as defined by Allen and Doisy. A discussion of the various techniques of assay appears in the report of the Council on Pharmacy and Chemistry.⁵

The commercial products that represent crystalline material belong to three types, with proposed formulas (based on the formula for sterols suggested by Rosenheim and King) as follows:²²

(1) 3-hydroxy-17-keto-1,3,5-estratriene,¹⁰ ketohydroxyestrin, theelin, estrone, the compound used as the international standard (fig 1).

Examples: Theelin, Parke, Davis & Co. oestroform,²³ British Drug Houses, folliculin menformon,

Organon Laboratories (though apparently the latter product is not reduced to crystalline form during manufacture it is said to contain theelin as its active principle).

(2) 3, 16, 17-trihydroxy-1, 3, 5-estratriene,¹⁰ trihydroxyestrin, theelol, estriol (fig 2).

Example: Theelol, Parke, Davis & Co. Another product, emmenin, Ayerst, McKenna and Harrison, probably belongs in this group, while it is not reduced to a crystalline state during manufacture, it is said to represent a complex of theelol.²⁴

(3) The benzoate of 3, 17-dihydroxy-1, 3, 5-estratriene,¹⁰ the benzoate of estradiol (the hydroxyl group in the 3 position is replaced by benzoate forming 3-benzoate 17-hydroxy-1, 3, 5-estratriene^{24a}), hydroxyestrin benzoate (fig 3).

Examples: Progynon-B, Schering Corporation, dimenformon,²⁵ Organon Laboratories.

The three compounds differ considerably in a number of respects in their effects on test animals. To what extent these differences are reflected in the clinical use of these substances is unknown. It should be remembered that the commercial preparations are assayed according to the vaginal cornification test of Allen and Doisy in mice or rats. It does not follow that two preparations equally effective in producing vaginal cornification in animals will be equally effective in relieving some of the castration phenomena, for instance, in women, only in the treatment of gonorrheal vaginitis in children is cornification of the vaginal mucous membrane the desired clinical result.

Questions of the use of oily in preference to aqueous solutions, and of absorption, distribution and excretion of estrogenic principles are considered elsewhere²⁵ in this series and need not be discussed here.

Amniotin, E. R. Squibb & Sons. This is an estrogenic preparation originally derived from amniotic fluid, it is not reduced to the crystalline state during manufacture. More recently, according to the firm, the urine of pregnant mares has served as an added source of active material.

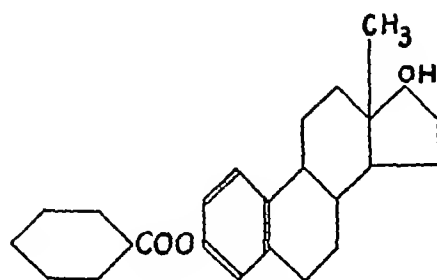


Fig 3—Progynon B

Dosage forms: Amniotin in Oil. Marketed in 1 cc glass ampules containing amniotin in corn oil in potencies of either 2,000 or 8,000 international units in each cubic centimeter, for intramuscular administration.

Amniotin Pessaries. These are vaginal suppositories containing amniotin in a glycerin and gelatin base to which is added 0.5 per cent of phenol as a preservative. Each suppository contains 2,000 international units. Fair absorption of the active

19 Adam N. K., Danielli J. F., Dodds E. C., Marrian G. F., Parkes A. S. and Rosenheim O. Nomenclature of the Oestrin Group. *Nature* 132: 205 (Aug. 5) 1933.

20 The ratios of international to rat unit employed by American firms are 1:3.33 (Parke Davis), 1:5 (Schering), 1:8 (Squibb). It is apparent that the rat units formerly employed by these firms were not equivalent. It is probable that the potencies as stated by the different firms in international units are more nearly comparable. However, E. Laqueur (Zur Eichung brunstgebender Stoffe. *Klin. Wchnschr.* 14: 739 [March 9] 1935) has pointed out that a comparison of two different estrogenic products on the basis of their claimed potency in international units is of little value unless the animal in which the comparison is made is stated. Rats for instance are much more sensitive to progynon B than to theelin (the international standard) while mice are equally sensitive to both. The comparative sensitiveness of the human being to the different products is unknown.

21 Conference on the Standardisation of Sex Hormones. London, July 30 and Aug. 1, 1932. League of Nations Quarterly Bulletin of the Health Organisation. Special Number on Biological Standardisation. January 1935.

22 The literature is reviewed by Sabotka Harry. *Chemistry of the Bile Acids and Related Substances*. Chem. Rev. 15: 311 (Dec.) 1934.

23 Oestroform and dimenformon apparently are not marketed in the United States.

24 Collip J. B., Browne J. S. L. and Thomson D. L. The Chemical Nature of Emmenin. *Endocrinology* 18: 71 (Jan. Feb.) 1934.

24a As the benzoate radical replaces one of the hydroxyl groups (which are directly involved in producing the estrogenic effect of this class of compounds) hydroxyestrin benzoate should not be considered simply a salt of the dihydroxy compound; it is a different estrogenic substance.

25 Allen Edgar. *The Physiology of Estrogenic Principles*. J. A. W. A. 104: 1498 (April 27) 1935. A more extensive discussion of these specific questions will be found in the Council report on Estrogenic Substances.

agent may apparently be obtained by the vaginal route, though this is of course less certain than by intramuscular administration

Amniotin Capsules Soluble gelatin capsules containing amniotin in corn oil, each capsule represents 1,000 international units, for oral administration

Emmenin, Ayerst, McKenna and Harrison This is an extract of placenta made by the method of Collip, apparently containing as its chief active principle a complex of theelin²⁴ not reduced to a crystalline state. Small quantities of other active substances such as theelin and theelol are probably also present. Emmenin is standardized as follows: One "day-oral unit" is the minimum amount administered daily in the drinking water which will produce a vaginal estrous reaction within 100 hours in 50 per cent of a group of rats from 18 to 21 days of age and weighing between 20 and 30 Gm. This preparation is marketed in the form of Emmenin Liquid for oral administration, each cubic centimeter containing 5 day-oral units (no data are available as to the relationship of this unit to the international unit). The recommended dosage varies from 4 to 30 cc per day. This product has been less extensively employed than some of the others.

Folliculin Menformon, Organon Laboratories, Amsterdam, Degewop, Berlin, H. H. Beisner, New York This product is said to contain theelin (estrone) as its active principle, though apparently it is not reduced to crystalline form during manufacture. The source is the urine of pregnancy. Dosage forms: Aqueous solution in 5 cc rubber-diaphragm-capped vials containing 1,000 international units in each cubic centimeter.

Oil solution (type of oil not specified) in 5 cc ampules containing 10,000, 50,000 or 100,000 international units in each cubic centimeter.

Tablets for oral administration containing 100 or 1,000 international units each.

Progynon²⁶ Schering Corporation This preparation is prepared from placenta and/or the urine of pregnancy. It is not purified in the process of manufacture, hence the exact nature of the active principle or principles is not known.

Dosage forms Ampules of 1 cc aqueous solution containing 125 international units.

Tablets containing either 225, 1,000 or 3,000 international units.

Progynon-B, Schering Corporation This is crystalline hydroxyestrin benzoate obtained by hydrogenation of theelin and subsequent conversion to the benzoate. The claim made by the Schering Corporation that progynon-B is the "real female sex hormone" is quite unfounded^{26a}. This claim is based on the recent report by MacCorquodale, Thayer and Doisy²⁷ of the isolation of a crystalline estrogenic compound from the liquor folliculi of hog ovaries. This compound was found to have a melting point within 1 degree C of and a biologic activity approximately equal to that of 3,17-dihydroxy 1, 3, 5 estratriene (not the benzoate). This does not constitute identification from the chemical standpoint, certainly there is no evidence that the compound obtained by MacCorquodale and his associates is the benzoate, nor is there evidence that the benzoate occurs naturally. In addition the newly isolated substance was obtained from hog ovaries, not only may there be other active substances in hog liquor folliculi but there is no available evidence whatever as to the nature of the estrogenic principle or principles in human ovaries. The claim of the Schering Corporation that progynon-B is "produced synthetically" may be misleading, the chemical processes whereby naturally occurring theelin is reduced and the benzoate formed

does not constitute "synthesis" as this term is commonly understood. The wording of the firm's recent advertising which implies that pyrogen-B is "six times as active" as the substance from which it is derived may also be misleading. While the claimed greater activity may be true under certain conditions with the dihydroxy form itself,²⁸ the benzoate (progynon-B) is said to be less active than the dihydroxy form.²⁹ Regardless of the relative potency in test animals, no information is available as to the comparative activity in human beings.²⁰

Progynon-B is marketed in ampules containing 1 cc. of a sesame oil solution of hydroxyestrin benzoate of either 2,500, 10,000 or 50,000 international units.

Theelin, Parke, Davis & Co. This is the crystalline keto-hydroxyestrin first isolated by Doisy and his associates. It is obtained from the urine of pregnancy. It is marketed in ampules containing 1 cc. of either the aqueous solution (167 international units) or the oily solution (type of oil not specified) (1,000 international units).

Theelol, Parke, Davis & Co. This is crystalline trihydroxyestrin, obtained from the urine of pregnancy. It is marketed in capsules for oral administration, each containing 50 Doisy rat units (according to the ratio employed by the firm, which is identical to that suggested by the Committee of the League of Nations, this would represent 167 international units).

A number of other preparations purporting to contain active estrogenic material are marketed in this country, however, insufficient information is available regarding these products to estimate their probable usefulness. Hence they will not be discussed here.³⁰ A large variety of estrogenic products are marketed in other countries.³¹ Commercial preparations made from the ovary³² generally contain little if any estrogenic material. Desiccated ovarian preparations were omitted from New and Nonofficial Remedies by the Council on Pharmacy and Chemistry in 1930.¹

CORPUS LUTEUM

The physiology of the corpus luteum has been discussed at length in the article in this series by Corner.³³ Since this article was written, the structure of the progestational hormone of the corpus luteum (designated "progestin" by Allen and Corner) has been elucidated.³⁴ The proposed formula, which illustrates the close relationship to the estrogenic compounds discussed in the previous section, is given in figure 4 (Allen, Butenandt, Corner and Slotta have adopted the name "progesterone" for the crystalline principle).

Comparatively little clinical application of active corpus luteum preparations has yet been made,³⁵ owing

²⁸ Reports in the literature with respect to the relative estrogenic activity of dihydroxyestrin (estradiol) and keto-hydroxyestrin (theelin estrone) vary within a wide range. Thus the dihydroxyl compound has been claimed to be from two to eight times as potent as theelin depending on the species of animal used and the method of assay. Laqueur²⁰ found that hydroxyestrin benzoate (progynon-B) was about five times as potent as theelin in rats but that the two compounds were about equally effective in mice.

²⁹ The benzoate, although it is less active, is employed because of its greater solubility.

³⁰ This group includes such products as estrogenic hormone (Reed and Carnrick), plestrin (Harrower), sistomensin (Ciba) and thelestrin (G. W. Carnrick).

³¹ Among European preparations said to contain estrogenic substance are dimenformon and folliculin menformon (both mentioned in the text), folipex (Sanabo-Chlnoin), fontanon feminin (Sachses Serum Werk), glandubolin (Richter), gynoestril (Laboratoire Française de Chimiotherapie), hormofollin (Labopharma), oestroform (mentioned in the text) and perlatan (Boehringer). This is not a complete list.

³² A number of these products are marketed with extravagant claims under fanciful names which serve in a measure to conceal their real identity.

³³ Corner, G. W. Corpus Luteum Therapy. J. A. M. A. 104: 1899 (May 25) 1935.

³⁴ Allen, W. M. The Isolation of Crystalline Progesterone. Science 83: 89 (Aug. 2) 1935. The references to the various publications may be found in Sabotka.²⁶

³⁵ Bishop, P. M. F. Cook, Frank and Hampson, A. C. Indications for the Clinical Use of Progesterone. Lancet 1: 139 (Jan. 19) 1935. Krohn, Leon, Falls, F. H. and Lackner, J. E. On the Use of the Lutein Hormone Progesterone in Threatened and Habitual Abortion. Am. J. Obst. & Gynec. 29: 198 (Feb.) 1935.

²⁶ Progynon should not be confused with progynon-B. It is unfortunate that in this case, as in others, firms do not follow the Council's rule which forbids the use of letters or numbers as an integral part of a name. The confusion entailed by the use of letters is well illustrated in this instance.

^{26a} Progynon-B and the Ovarian Follicular Hormone. Report of the Council on Pharmacy and Chemistry. J. A. M. A. this issue, p. 676.

²⁷ MacCorquodale, D. W., Thayer, S. A. and Doisy, E. A. The Ovarian Follicular Hormone. Proc. Soc. Biol. Chem. April 10-13 1935, p. 1viii. The Crystalline Ovarian Follicular Hormone, Proc. Soc. Exper. Biol. & Med. 32: 1182 (April) 1935.

no doubt to the fact that until very recently satisfactory commercial products were not available³⁶

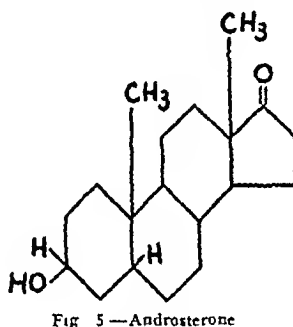
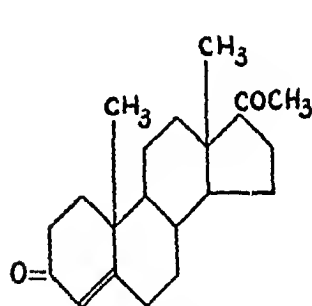
Proluton, Schering Corporation The method of preparation and assay of this product is not stated by the firm. The product is marketed in ampules (size unstated) containing $\frac{1}{2}$ or $\frac{1}{4}$ "European rabbit unit." This unit the firm claims to be "about 3 times stronger" than the American unit. If this unit represents the Claiberg unit, which seems probable, it appears according to Corner,³⁷ to be somewhat less than the rabbit unit as defined by Allen and Corner, and not three times greater as indicated by the firm.

Another preparation, **corlutin, Reed and Carnrick**, is said to be available but descriptive information on this product is lacking.

There is no evidence that any of the many products of corpus luteum intended for oral administration are of any therapeutic value. Solutions in ampules intended for parenteral injection, unless they are assayed for their content of progesterin, are probably equally valueless.

TESTIS HORMONE

No active preparation of the testis hormone or hormones appears to be available on the American market. Some products are manufactured by European firms, however, little adequate information is available as to



the activity of these products or as to their therapeutic applications. The formula of a compound isolated from urine by Butenandt and designated "androsterone," is given in figure 5³². Recent evidence indicates that this is not identical with the principle in extracts of the testis itself.

Among the European preparations purporting to contain testis hormone are **androl, Henning** (1 cc = 3 bird units), **androfort, Richter** (1 cc = 2 bird units), **hombreol, Organon Laboratories** (1 cc = 4 or 20 bird units)³⁷.

Preparations intended for oral administration as well as injectible solutions not assayed for their content of active principle are probably completely useless.

The theory proposed by McCullagh and his associates³⁸ that a principle exists in the testis (which they designate by the unfortunate term "inhibin") that may cause diminution in size of the hypertrophied prostate through depression of the pituitary is not based on adequate evidence. No adequately controlled studies appear to have been made on this hypothetical principle nor in fact has its existence been demonstrated.

36 Among European corpus luteum preparations said to contain progesterin are **glanducorpin (Richter)**, **luteogan (Henning)**, **luteolipex (Sanabo Chinoim)**, **lutex (Leo)**, **lutren (Bayer)**, **progesterin (British Drug Houses)**, **progesterin (Degewop)** and **progesterin (Organon Laboratories)**. This list is probably not complete.

37 Hombreol (and probably the others also) is made from urine and not from testicular tissue.

38 McCullagh, D. R. *Dual Endocrine Activity of Testes*. *Science* 76:19 (July 1) 1932. Lower, W. E., McCullagh, D. R. and Walsh, E. L. *Further Report on the Hormonic Control of Prostatic Function*. *Tr Am A Genito-Urin Surgeons* 27:15 1934.

THYROID

Thyroid requires little discussion here, as the most commonly used product, desiccated thyroid, is described in the U S Pharmacopeia. Deviations from pharmacopeial potency of some of the commercial products are discussed in the article by Means³⁹. Reference is made also to the comprehensive article by Thompson and his associates,⁴⁰ in which the comparative effects of thyroxine and related compounds are considered at length.

PARATHYROID

Three commercial preparations containing the active principle of the parathyroid glands^{40a} are available, made according to the method of Hanson (for methods of preparation and assay see *New and Nonofficial Remedies*, 1935) **Parathyroid Extract-Lilly, N N R**, **parathyroid Extract-Squibb, N N R**, and **Paroidin, N N R-Parke, Davis & Co**. All are marketed in 5 cc rubber-diaphragm-capped vials containing 100 units in each cubic centimeter.

ADRENAL

Adrenal Medulla—The active agent of the adrenal medulla, epinephrine, is included in the U S Pharmacopeia. Commercial preparations of this substance are so well known as to require no description here (see *New and Nonofficial Remedies*, 1935).

Adrenal Cortex—Much confusion exists in this field with regard to nomenclature, methods of preparation of active extracts, methods of assay, the number of active principles in the gland, the potency of commercial products and the therapeutic indications for these products.

One of the commonly used names for extracts of the adrenal cortex is "cortin", this is the term originally applied by Hartman⁴¹ to a product made by salt precipitation, preparations made by this method were later shown to be practically or entirely inactive.⁴² The name was subsequently applied by Hartman to a product made by a different method employing lipid solvents, this process was the subject of a patent ("Cortin and Method of Preparing Same")⁴³. Thus the term is employed to represent two different products, if "cortin" is employed at all it should be restricted to extracts made by these methods specifically. The name is objectionable, however from several standpoints. It is derived from "cortex" and hence may represent the cortex of any organ, such as kidney or cerebrum (thus applies to "eschatin" also, as this is derived from the Greek for cortex). "Adrenocortin" is a more satisfactory term, but this is already preempted by a commercial firm (Harrower). "Cortin" is also employed by a German (Degewop) and a Dutch firm (Organon Laboratories) for their commercial extracts of adrenal

39 Means, J. H. *Therapeutics of the Thyroid*. *J A M A* 105:24 (July 6) 1935.

40 Thompson, W. O., Thompson, Phebe K., Taylor, S. G., Nadler, S. B. and Dickie, Lois F. N. *The Pharmacology of the Thyroid*. In *Man*. *J A M A* 104:972 (March 23) 1935.

40a The physiologic and therapeutic effects of parathyroid are considered in two papers of this series. Hanson, A. M. *Physiology of the Parathyroid*. *J A M A* 106:113 (July 6) 1935. Aub, J. C. *Parathyroid Hormone Therapy*. *ibid* 105:197 (July 13) 1935.

41 Hartman, F. A., MacArthur, C. G. and Hartman, W. E. *A Substance Which Prolongs the Life of Adrenalectomized Animals*. *Proc Soc Exper Biol & Med* 25:69 (Oct.) 1927.

42 Stewart, G. N. and Rogoff, J. M. *Studies on Adrenal Insufficiency IX. The Influence of Extracts of Adrenal Cortex (Sheep and Cattle) on the Survival Period of Adrenalectomized Dogs and Cats*. *Am J Physiol* 91:254 (Dec.) 1929.

43 Hartman, F. A. *U S Patent 1914125* June 13 1933. Britton and Silvette (*Science* 73:322 [March 20] 1931) cast doubt also on the potency of extracts made by the lipid solvent method used by Hartman.

cortex. Thus the generic use of this term for any and all extracts of adrenal cortex leads to endless confusion, it should therefore be avoided.

Of the names employed to represent the life-sustaining principle of the adrenal cortex, the only one that is not objectionable from the standpoint of etymology is "interrenalin," proposed by Rogoff and Stewart,⁴⁴ who were the first to demonstrate the existence of this active principle in the gland.⁴⁵ Interrenalin is derived from "interrenal" gland, which is widely used among investigators as an inclusive designation for the gland represented in mammals by the adrenal cortex, in some species the interrenal gland forms an organ entirely separate from the chromaffin tissue (the adrenal medulla in mammals).

For the present, the Council on Pharmacy and Chemistry has adopted the generic term "adrenal cortex extract", however, no extract of this type stands accepted by the Council.

Practically all adrenal cortical extracts as now prepared contain toxic contaminants⁴⁶ (choline histamine, protein)^{46a} which have been reported to cause serious reactions both in man⁴⁶ and in animals⁴⁶ on parenteral injection. For this reason the extracts prepared by Rogoff and Stewart^{3a} were administered by mouth, by which route they were shown to be active (it is at present impossible to determine the relative activity by mouth and by parenteral injection in the human being). More recently Grollman and his collaborators⁴⁷ have proposed the oral use of adrenal cortical extracts. It appears, however, that none of the commercial preparations on the American market contain much, if any of the life-sustaining principle (the question as to whether more than one active principle exists is at present controversial, the evidence is conflicting and confusing). Only one satisfactory method of assay for the active principle exists, that is, the definite prolongation of life beyond the maximum survival time of untreated completely adrenalectomized animals. When subjected to this test, eschatin (Parke, Davis & Co.) made by the method of Swingle and Pfiffner, for instance, was found by Rogoff⁴⁶ to be not only not potent but toxic as well. The effects of extracts on blood urea, on the rate of production of muscular fatigue, or on the rate of growth of adrenalectomized animals (some of the methods employed at present) appear to be unsatisfactory as tests of potency. Consequently, the only reliable method for determining potency is largely qualitative and is difficult of standardization on a quantitative basis.

Further sources of error arise out of the use of commercial adrenal cortical extracts in patients errone-

ously diagnosed as having Addison's disease, most, if not all the so-called cures belong in this group. Still others occur through attributing improvement resulting from spontaneous remission in actual cases of Addison's disease as being due to the extract employed. Further discussion of this problem will be found in the paper in this series by Loeb.⁴⁸

One extract the potency of which appears to have been demonstrated indubitably both in adrenalectomized animals and in patients with Addison's disease is that of Rogoff.⁴⁸ This extract is not available commercially. Other potent extracts appear to have been prepared by investigators, but it seems that the difficulties of production on a commercial scale have not been surmounted.

PANCREAS

Insulin is discussed at length in two papers⁴⁹ of this series and need not be considered here. The products are described in New and Nonofficial Remedies. Pancreatin is considered in the article by Ivy,^{49a} this preparation is described in the U. S. Pharmacopeia. Other extracts of the pancreas will be discussed in a later section of this paper.

LIVER AND STOMACH PREPARATIONS

The actions and uses of liver and stomach preparations have been considered at length in the paper by West.⁴⁷ The following products (with two exceptions) stand accepted by the Council. (In view of the absence of satisfactory standards of antianemic potency for these products, no estimate of the relative potency will be made. It is expected that adequate standards will be established in the near future.)

Solutions for Oral Administration

Chappel Liver Extract (Oral), N. N. R., Chappel Bros., Inc.
Concentrated Liver Extract-Armour, N. N. R., Armour & Co.
Solution Liver Extract (Lederle) for Oral Use, N. N. R., Lederle Laboratories, Inc.
Solution Liver Extract, Valentine, The Valentine Company, Inc.

Powders for Oral Administration

Liver

Liver Extract-Fairchild, N. N. R., Fairchild Brothers & Foster
Liver Extract-Lederle, N. N. R., Lederle Laboratories, Inc.
Liver Extract-Illy, N. N. R., Elh Lilly & Co.
Liver Extract-Parke, Davis & Co., N. N. R.
Liver Meal, N. N. R., Livermeal Corporation

Stomach

Soluble Stomach Extract-Fairchild, N. N. R., Fairchild Brothers & Foster
Ventriculin, N. N. R., Parke, Davis & Co.

Stomach and Liver

Extralin, N. N. R., Elh Lilly & Co.

Solutions for Parenteral Administration

Chappel Liver Extract (Subcutaneous), N. N. R., Chappel Brothers, Inc.

44 Rogoff J. M. and Stewart G. N. Studies on Adrenal Insufficiency. V. The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Dogs. *Am. J. Physiol.* 84: 660 (April) 1928.

45 Rogoff J. M. The Adrenal Medulla. *J. A. M. A.* 104: 2088 (June 8) 1935. Loeb.⁴⁸

46 Cleghorn R. A. Observations on Extracts of Beef Adrenal and Elasmobranch Interrenal Body. *J. Physiol.* 75: 413 (Aug. 10) 1932.
Eagle E. Presence and Significance of Choline in Cortico-Adrenal Extract. *Proc. Soc. Exper. Biol. & Med.* 30: 1094 (May) 1933. Benham Fisher More and Thurgar.⁴

46a Epinephrine may also be present. This and possibly one or more of the other contaminants may explain the alleged action of commercial adrenal cortical extracts in glaucoma and progressive myopia (Josephson E. M. Adrenal Cortex Hormone in Intra Ocular Tension. *Eye, Ear, Nose & Throat Monthly* 13: 453 [Jan.] 1935. Effect of Cortin on Intra Ocular Tension in Glaucoma. *Science* 82: 62 [July 19] 1935).

47 Grollman Arthur Firor W. M. and Grollman Ellis. Studies on the Adrenal. VIII. A Simple Preparation of the Adrenal Cortical Hormone Suitable for Oral Administration. *J. Biol. Chem.* 109: 189 (April) 1935.

48 Rogoff J. M. and Stewart, G. N. The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Dogs. *Science* 60: 327 (Oct. 7) 1927. Rogoff J. M. Addison's Disease. Further Report on Treatment with Interrenalin (Adrenal Cortical Extract). *J. A. M. A.* 99: 1309 (Oct. 15) 1932.

49 Best C. H. The Internal Secretion of the Pancreas. *J. A. M. A.* 105: 270 (July 27) 1935. Joslin E. P., Root H. F., White Priscilla and Marble Alexander. Therapeutic Applications of Insulin. *J. A. M. A.* 105: 359 (Aug. 3) 1935.

49a Ivy A. C. Gastro-Intestinal Principles. *J. A. M. A.* 105: 506 (Aug. 17) 1935.

Lederle Solution Liver Extract Parenteral Refined and Concentrated, N N R, Lederle Laboratories, Inc (This firm also markets a preparation approximately three times as concentrated as the one in N N R)

Liver Extract (Intramuscular)-Parke, Davis & Co, N N R
Solution Liver Extract Concentrated-Lilly, N N R
Solution Liver Extract-Lilly, N N R, Eli Lilly & Co

Other firms market liver extracts which are presumably potent, however, the foregoing products are sufficiently numerous to provide a wide choice, as they have met the Council's requirements as to antianemic potency they are to be preferred

YELLOW BONE MARROW

Extracts of yellow bone marrow⁵⁰ have been proposed for use in the treatment of granulocytopenia. The number of cases in which they have been employed is too few to serve as a basis for evaluation of this remedy. Much more clinical investigation will be necessary.

Yellow Bone Marrow Concentrate, Armour & Co. This is a solution in oil (nature not stated) of an extract of yellow bone marrow from tibias and femurs of cattle obtained by alkaline hydrolysis and extraction with certain solvents (nature not stated). Each drop is said to represent 2 Gm of fresh marrow fat. The average dose recommended by the manufacturer is 5 drops three times a day. More or less may be required, the dosage has not been adequately worked out. Frequent blood counts should be made during treatment.

THYMUS

While the preparation of active extracts of thymus has been reported by investigators,⁵¹ no commercial preparations appear to be available in this country that contain the active principle or principles. There are as yet no clinical indications even for the active preparations.

Combinations of thymus with extracts of other organs such as posterior pituitary have no scientific basis.⁵²

PINEAL BODY

Recent work on the pineal body indicates that this organ may have an endocrine function. A variety of effects have been observed following the injection of pineal extracts or implantation of pineal tissue into test animals.⁵³ Antiestrogenic, estrogenic, antigonadotropic and growth inhibiting effects have been reported by various investigators. It is too early to speculate as to the significance of these results. Although Burger⁵⁴ has reported that he has used a pineal extract in the treatment of certain cases of menorrhagia with good results, no data are presented. Much more needs to be known about the physiologic effects of such extracts.

before they are used therapeutically. There appear to be no active extracts of the pineal body available commercially in this country.

DEPRESSOR PRINCIPLES

A number of preparations claimed to cause vasodilatation have been proposed for use in the treatment of hypertension, angina pectoris, intermittent claudication and the like. The nature of the active principles involved, the site of action and the degree of therapeutic benefit occurring clinically are all controversial at present. The literature has grown to such proportions since 1926, when Frey and Kraut⁵⁴ announced the extraction from urine of a depressor principle ("kallikrein"), that it cannot be reviewed here. The substance occurring in urine was thought to be identical with a principle obtained from pancreas⁵⁵ and designated by the same name.

Among the extracts employed are products made from urine,⁵⁶ pancreas,⁵⁵ liver,⁵⁷ striated muscle⁵⁸ and kidney.⁵⁹ Some of the preparations are available commercially for either oral or parenteral administration. Although promising results have been claimed with a few of them, much more experimental work is required before their true status may be evaluated. The pertinent literature is reviewed by Wolffe, Findlay and Dessen.⁶⁰ These investigators employed an insulin-free pancreatic extract in the treatment of angina pectoris, with partial or complete relief of pain in the majority of their twenty cases. This extract produced cardiac slowing and a fall in blood pressure in experimental animals, it antagonized the pressor effect of epinephrine. With regard to the clinical use of insulin-free pancreatic extracts and muscle extracts in intermittent claudication, reference is made to the recent article by Barker, Brown and Roth.⁶¹ The latter are of the opinion that the preparations employed by them produce their therapeutic effect in this condition primarily by supplying some agent which facilitates muscular contraction and not by causing vasodilatation.

The liver extract ("eutonon") proposed for use in the treatment of angina pectoris by Zuelzer,⁵⁷ has been found to contain tyramine and choline as its active principles.⁶²

Encouraging results with kidney extracts in the treatment of hypertension were recently reported by Jablons,⁵⁹ but confirmatory work has not yet appeared. No commercial preparation of Jablons' extract appears to be available.

54 Frey E K, and Kraut Heinrich. Ueber einen von der Niere ausgeschiedenen die Herztaetigkeit anregenden Stoff. *Ztschr f physiol Chem* 157 32 1926

55 A New Internal Secretion of the Pancreas. Berlin Letter J A M A 95 676 (Aug 30) 1930

56 Frey and Kraut. Bischoff F and Elliot A H. Purification of the Depressor Colloid of Urine (Kallikrein). *J Biol Chem* 109 419 (April) 1935

57 Zuelzer G. Zum gegenwaertigen Stand der Herzhoromonfrage. *Med Klin* 24 571 (April 13) 1928

58 Schwarzmann J S. Einige Gedanken ueber das Wesen und die Therapie der Angina Pectoris. *Ztschr f Kreislaufforsch* 20:515 (Sept 1) 1928. Ein neuer Weg in der Therapie der Angina Pectoris, *Muenchen med Wchnschr* 76:1329 (Aug 9) 1929

59 Jablons Benjamin. Isolation and Standardization of a Chlorokinetic Depressor Substance in Extracts of Mammalian Kidney. *Proc Am Physiol Soc* April 10 1935 p 70

60 Wolffe J B, Findlay Donald and Dessen Edward. Treatment of Angina Pectoris with a Tissue Vasodilator Extract—Preliminary Report. *Ann Int Med* 6 625 (Nov) 1931. See also Elliot A H and Nuzum F R. The Pharmacologic Properties of an Insulin Free Extract of Pancreas and the Circulatory Hormone of Frey. *J Pharmacol & Exper Ther* 43:463 (Nov) 1931

61 Barker N W, Brown G E and Roth G M. Effect of Tissue Extracts on Muscle Pains of Ischemic Origin (Intermittent Claudication). *Am J M Sc* 189 36 (Jan) 1935

62 Heinsen H A. Kreislaufwirksame Substanzen im Leberextrakt ("Eutonon"). *Klin Wchnschr* 13 1597 (Nov 10) 1934

50 Giffin H Z and Watkins C H. Treatment of Secondary Anemia. *J A M A* 95 587 (Aug 23) 1930

51 Rowntree L G. The Thymus Gland. *J A M A* 105 592 (Aug 24) 1935

52 Thymophysin Not Acceptable for N N R. Report of the Council on Pharmacy and Chemistry. *J A M A* 96 860 (March 14) 1931

53 Burger Karl. Ueber mit Zirbeldruesenextrakten ausgefuhrte experimentelle Untersuchungen und deren therapeutische Moeglichkeiten. *Zentralbl f Gynaek* 67 634 (March 18) 1933. Silberstein F and Engel P. Ueber das Vorkommen einer oestrogenen Substanz in der Epiphyse. *Klin Wchnschr* 12 908 (June 10) 1933. Engel Paul. Einfluss von Epiphysextrakten auf die Wirkung der Hypophysenvorderlappenhormon. *Klin Wchnschr* 13 266 (Feb 17) 1934. Saphir William. Concerning the Function of the Pineal Body. *Endocrinology* 18 625 (Sept Oct) 1934. The Pineal Body editorial. *J A M A* 103:1626 (Nov 24) 1934. Burger Karl. Pineal Gland correspondence and 104:417 (Feb 2) 1935. Hanson A M. Biological Effects of Active Thymus and Pineal Extracts. *Proc Staff Meet Mayo Clin* 10 113 (Feb 20) 1935. Engel Paul. Ueber die hormonalen Eigenschaften der Zirbeldruse. *Wien klin Wchnschr* 16 481 (April 19) 1935

Until more is known with regard to the nature and physiologic effects of the various commercial extracts,⁶³ they should be employed for experimental purposes only

COMMENT

It is apparent from the foregoing discussion that clinical applications of many of the newer commercial glandular products are on a very unsatisfactory basis. Physicians, particularly those who do not have facilities for controlled clinical observation, would do well to be guided by the judgment of the Council on Pharmacy and Chemistry in the use of these products. The advertising propaganda of pharmaceutical manufacturers cannot be depended on as a safe guide in this respect

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH, Secretary

PROGYNON-B AND THE OVARIAN FOLLICULAR HORMONE

Recently MacCorquodale, Thayer and Doisy¹ of St. Louis University reported the isolation in crystalline form of an estrogenic substance from the follicular fluid of hog ovaries. Estrogenic compounds previously isolated such as theelin and theelol, had been obtained from other sources, in particular the urine of pregnant women. A pure estrogenic preparation had not before been isolated from the ovary itself. Consequently, the actual constitution of the ovarian follicular hormone or hormones was not known.

MacCorquodale, Thayer and Doisy reported that the crystalline product obtained by them from follicular fluid had approximately the same estrogenic potency as dihydroxyestrin (theelin is keto-dihydroxyestrin and theelol is trihydroxyestrin), that is, from four to eight times the activity of theelin. These investigators said in their preliminary report^{1b}

Although we have not yet accumulated sufficient material for complete analysis our results indicate the identity of the hormone with dihydro-theelin [more accurately designated dihydroxyestrin]. The m-bromobenzoate of the hormone was prepared and after three crystallizations had a melting point of 154-155°. After four crystallizations the m-bromobenzoate prepared from a sample of pure dihydro-theelin melted at 155°-156° and the dihydro-theelin obtained from it by saponification with dilute alcoholic alkali melted at 171°-172° after one crystallization. By saponification of the m-bromobenzoate of the hormone in the same manner the crystalline hormone was recovered and found to melt at 170-171°.

It appears then that the only evidence at present available for considering the crystalline preparation from ovarian follicular fluid to be identical with dihydroxyestrin is the similarity of the estrogenic activity and of the melting points. This, of course, does not constitute proof from a chemical standpoint of the identity of the two preparations.

Despite the paucity of the evidence at present available, the Schering Corporation has made claims in its recent advertising literature that Progynon-B (said to be the benzoate of dihydroxyestrin, which the firm calls "benzoic acid ester of dihydro follicular hormone") is the 'true female sex hormone, as was definitely proved by Doisy.

In an advertisement in the June 1935 issue of the *American Journal of Obstetrics and Gynecology* appears the following

'SCHERING DIHYDRO
FOLLICULAR SUBSTANCE
Conceded to be Real Sex Hormone
PRODUCED SYNTHETICALLY

Six Times as Active as Commonly Known Follicular Substance

That the true female sex hormone is not the follicular sex hormone that has been marketed under various names, as has been generally supposed but that it is rather the dihydro form of this substance has now been definitely established as scientific fact.

This discovery comes as a result of the work of MacCorquodale, Thayer and Doisy of the St. Louis University School of Medicine and was announced at the meeting of the American Society of Biological Chemists in Detroit April 10-13.

Three years ago Schwenk and Hildebrandt prepared by reduction of the follicular sex hormone the aforementioned dihydro follicular substance proved to be six times as active. These workers then ventured the opinion that this compound would prove to be the actual sex hormone which circulates in the body. Consequently the keto form of follicular substance would only be found to be the excretion form of the hormone. Later Wintersteiner, Schwenk and Whitman found the dihydro material in natural substances.

PROGYNON-B The Real Female Sex Hormone.

The dihydro follicular hormone which is the true female sex hormone has been produced synthetically by the laboratories of Schering Corporation in Bloomfield N. J. for over a year under the name of Progynon-B.

Clinical use has shown that the results from the use of Progynon-B are far more satisfactory than can be secured with the ordinary so-called follicular hormones which are merely the excretion form of the true hormone. For amenorrhea, dysmenorrhea, menopausal disorders and other deficiencies of the female sex cycle.

Inquiry was made of Dr. Doisy as to the status of the preparations concerned. Dr. Doisy replied in part:

"In our latest paper presented before the American Society of Biological Chemists we gave data to substantiate our claim of the isolation of the crystalline hormone contained in the liquor folliculi from hog ovaries. Actually, our results do not exclude the possibility of the presence of other active estrogenic compounds in hog liquor folliculi.

Furthermore there is no definite evidence regarding the nature of the estrogenic substances of human ovaries. Reasoning by analogy is certainly fallacious as is evidenced by the nature of the estrogenic substances in human urine—theelin and theelol—in both the combined and free forms and in the urine of pregnant mares—theelin, dihydrotheelin (an isomer of the compound which we have obtained from hog liquor folliculi), equiline, equilenine and hippuline. We believe that the available evidence indicates that the active substance of hog liquor folliculi is present in an unconjugated form. So far as I know, there is no reason for believing that the conjugated form is the one secreted by the ovary. Furthermore, I know of no evidence that the conjugated forms appearing in the urine of pregnancy are benzoates.

'The Schering claim of greater activity seems to be sound but has little significance. However, I must point out that the estimate of greater activity is limited to the production of cornification in the vagina. We do not know that the dihydro compound produces a greater effect on the uterus or mammary glands of experimental animals and there is no information that the dihydro compound is more active in the treatment of the human.

"The claim of a synthetic compound is certainly not warranted, since the dihydro compound is prepared from the keto-dihydroxy compound by reduction of the carbonyl group. In other words the chemist starts with the conjugated ring structure containing all the substituents in the correct position. Such a reaction does not correspond to the usual conception of synthesis.

The advertising claims of the Schering Corporation for Progynon-B are therefore inaccurate and misleading.² The Council voted that this report be published to correct the erroneous impressions created by the reprehensible advertising policy of this firm.

63 Among the available commercial extracts are: 1. Insulin-free pancreatic extracts: angiochol (Laboratoire des Proxystases Paris), padutin (Bayer), pancreatic tissue extract number 568 (Sharp and Dohme). 2. Skeletal muscle extracts: myofort (Richter), myorgal (Winthrop) (known in Europe as lacarnol), myoston (Henning), MAP (Henning) (muscle adenosine phosphoric acid). 3. Liver extract: eutonon (Promonta).

1 (a) MacCorquodale, D. W., Thayer, S. A. and Doisy, E. A. The Ovarian Follicular Hormone. *Proc. Soc. Biol. Chem.* April 10, 1935, p. 1711. (b) The Crystalline Ovarian Follicular Hormone. *Proc. Soc. Exper. Biol. & Med.* 32: 1182 (April) 1935.

2 This report is not concerned with the overoptimistic claims as to the indications for and the therapeutic effectiveness of Progynon-B or other estrogenic preparations. In this respect the advertising claims of other firms for other estrogenic products are also open to severe censure. For a critical evaluation of the therapeutic usefulness of these preparations reference is made to the Council's report, *Estrogenic Substances: Theelin* (J. A. M. A. 100: 1331 [April 29] 1933) and to Dr. Novak's article in the *Series of Glandular Physiology and Therapy* (The Therapeutic Use of Estrogenic Substances) J. A. M. A. 104: 1815 [May 18] 1935.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR THE ACADEMIC YEAR
1934-1935 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

This report for the academic year 1934-1935 includes either statistical data or editorial comment regarding the medical schools approved¹ by the Council on Medical Education and Hospitals during this period. Also included are revised lists of hospitals approved for internships and residencies in specialties and the Essentials of an Acceptable School of Occupational Therapy.

Figures are presented covering seventy-seven medical schools in the United States and ten in Canada, 697 hospitals approved for internships and 392 hospitals offering approved residencies in specialties.

These data are based on official reports from the institutions listed. Acknowledgment is tendered the officers of these institutions for their ready cooperation in supplying the facts included in this presentation as well as for other material furnished throughout the year enabling the Council to maintain its medical student and hospital registers efficiently.

RESURVEY OF MEDICAL EDUCATION

Forty-five institutions in the eastern part of the United States have been inspected during the past year in connection with the resurvey of medical education. Although the study is, of course, incomplete, certain conditions needing improvement have already been clearly revealed.

During the last ten years the number of medical students has greatly increased (table 10). A number of factors may have contributed to this result. The great increase in college enrolments since the war doubtless has created a much larger body of students who aspire to a professional career. In law schools a corresponding increase in the number of students has also been observed. In recent years, financial stringency has caused some medical schools to rely more largely on the income from student fees, and larger numbers of students have been accepted for the sake of gaining additional revenue. Unfortunately, in most instances the teaching staff has not been correspondingly strengthened or the physical plant commensurately enlarged. In consequence it has been found that too often faculties are undermanned and laboratories overcrowded. A more serious feature of increasing enrolments is the failure to maintain high academic standards in the selection of students. Too many applicants with poor scholastic records have been accepted, with inevitable impairment of the efficiency of the school.

When the Council first graded medical schools, nearly thirty years ago, the curriculum was sharply divided into two preclinical and two clinical years. More recently a transformation has been taking place by which clinical subjects are being pushed back into the first two years. So it comes about that institutions which, lacking clinical facilities, were approved as "two year schools" have been unable to keep pace with this development. Some readjustment, therefore, of the status of these institutions seems to be inevitable.

There has been noted a very uneven development of clinical facilities. Some schools own and operate

their own hospitals and dispensaries. Some have affiliations whereby the university has the privilege of nominating or selecting the medical staff, while some other agency is responsible for the financial support of the hospital or dispensary. Others operate under less satisfactory arrangements, the school being obliged, in order to obtain any teaching privileges at all, to accept as members of its faculty men who owe their positions to other organizations with other aims, and who would not have been selected on the basis of training and experience for high positions of academic responsibility.

The lack of adequate clinical material is most strikingly evident in the field of obstetrics, and consequently failure to provide sufficient practical experience under competent supervision is one of the most serious defects thus far recorded.

PREMEDICAL EDUCATION

Since 1918 one of the essentials of an acceptable medical school has been a premedical requirement of two years of college work including courses in physics, chemistry and biology.

In June 1933 the following statement from the By-Laws² of the Association of American Medical Colleges was adopted by the Council as its premedical standard. In substance it does not differ from the two-year college prerequisite. No attempt is made to outline courses to be pursued in secondary schools.

SEC. 2—Requirements for Admission. Admission to medical schools and medical colleges in membership in the association may be by

(1) Satisfactory completion of a minimum of collegiate instruction, as provided below in subsection I, or by

(2) Examination, as provided in subsection II.

Subsection I. The minimum of collegiate credit required for entrance to medical schools and colleges in membership in the association shall be not less than two full academic years, which shall include English, theoretical and practical courses in physics and biology³ and in general and organic chemistry, completed in institutions approved by accrediting agencies acceptable to the executive council of the association.

Exception may be made under this section in that any member may admit applicants who have fulfilled the requirement in American and Canadian institutions not approved by such accrediting agencies, provided that all admissions so made be reported to the executive council and shall be published in the next annual report of the council.

All collegiate instruction given in satisfaction of this requirement must be based on the same entrance requirements and must be of the same quality and standard of instruction as that required for a baccalaureate degree in the institution in which the candidate received his preparation.

Subsection II. Admission to medical schools and medical colleges in the association may be by examination.

Examinations for the purpose of admission by this method shall be conducted by institutions acceptable to the executive council of the association, under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high

(Continued on page 682)

² Constitution and By-Laws of the Association of American Medical Colleges amended Oct. 30, 1934.

³ Exceptions may be made in these subject requirements only in unusual cases. Proposed exceptions shall be presented to and approved by the executive council.

¹ Including three schools whose approval has recently been withdrawn. See footnotes to table 1, page 679.

TABLE 1—Statistics of Approved Medical Schools in the United States and Canada

Marginal No	Name and Location of School	1935-1936 Prerequisite by Years	Length of Course in Years	Students by Classes Session 1934-1935						Graduates since July 1 1934	Session 1935-1936		Applications for Admission to the 1st Year will be re- ceived until	Executive Officer	Marginal No
				1st Year	2d Year	3d Year	4th Year	5th Year Or Intern	Totals		Begins 1935	Ends 1936			
1	ALABAMA University of Alabama School of Medicine University (Tusculocosa)	3	2	71	89	51	42	290	42	130	Sept 12	May 20	Stuart Graves M D Dean	1	
2	ARKANSAS University of Arkansas School of Medicine, Little Rock	2	4	85	62	51	42	290	42	130	Oct 2	June 8	Frank Vinsonbaker M D Dean	2	
3	CALIFORNIA University of California Medical School Berkeley San Francisco	3	5	64	62	58	44	531	51	230	Aug 20	May 22	Langley Porter M D Dean	3	
4	University of California Medical School Berkeley San Francisco	2	5	116	113	81	94	841	83	404	July 2	June 21	W E Macpherson M D Dean	4	
5	College of Medical Evangelists Loma Linda Los Angeles	3	2	54	48	44	30	341	176	35	Sept 23	June 6	Edward H Risley M D Dean	5	
6	University of Southern California School of Medicine Los Angeles	3	2	61	60	52	47	461	220	47	Sept 24	June 10	Paul S McKibben Ph D Dean	6	
7	STANDARD University of Standard School of Medicine San Francisco	3	4	53	62	52	48	263	47	263	Sept 30	June 15	Loren Rosecoe Chandler M D Dean	7	
8	COLORADO University of Colorado School of Medicine Denver	3	4	47	53	53	47	297	47	297	Sept 23	June 10	Manrice H Rees M D Dean	8	
9	CONNECTICUT Yale University School of Medicine New Haven	3	4	120	124	113	113	463	113	463	Sept 23	June 8	Stanhope Bayne-Jones M D Dean	9	
10	DISTRICT OF COLUMBIA Georgetown University School of Medicine Washington	3	4	71	69	71	71	284	71	284	Sept 23	June 6	David V McCauley S J Ph D Dean	10	
11	GEORGIA Howard University School of Medicine Washington	2	4	41	31	38	34	141	53	171	Sept 24	June 5	Earl B McKinley M D Dean	11	
12	ILLINOIS University of Illinois College of Medicine Chicago	2	4	101	125	120	104	450	54	222	Sept 24	June 5	Anna P G Adams M D Dean	12	
13	INDIANA Indiana University School of Medicine Bloomington Indianapolis	2	4	104	90	93	63	350	54	222	Sept 25	June 8	Russell H Oppenheimer M D Dean	13	
14	IOWA State University of Iowa College of Medicine Iowa City	2	4	77	76	70	70	293	34	141	Sept 25	June 8	G Lombard Kelly M D Dean	14	
15	KANSAS University of Kansas School of Medicine Lawrence Kansas City	2	4	90	75	89	80	340	34	141	Sept 25	June 8	Louis D Moorhead M D Dean	15	
16	KENTUCKY University of Louisville School of Medicine Louisville	2	4	116	74	54	61	201	145	101	Sept 25	June 13	Irving S Outter M D Dean	16	
17	LOUISIANA Louisiana State University Medical Center New Orleans	3	5	127	100	112	116	471	162	102	Sept 25	June 13	Ernest E Irons M D Dean	17	
18	LOUISIANA Tulane University School of Medicine New Orleans	2	4	104	90	93	63	350	34	141	Oct 2	June 17	B O H Harvey M D Dean of Med Students	18	
19	MARYLAND Johns Hopkins University School of Medicine Baltimore	2	4	104	90	93	63	350	145	101	Sept 30	June 5	David J Davis M D Dean	19	
20	MARYLAND University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore	2	4	104	90	93	63	350	53	448	Sept 17	June 15	Burton D Myers M D Dean	20	
21	MASSACHUSETTS Boston University School of Medicine Boston	2	4	104	90	93	63	350	62	354	Sept 23	June 1	Willis D Gatch M D Dean	21	
22	MASSACHUSETTS Harvard University Medical School Boston	2	4	104	90	93	63	350	62	354	Sept 23	June 1	Even Murchison MacEwen M D, Dean	22	
23	MASSACHUSETTS Tufts College Medical School Boston	2	4	104	90	93	63	350	67	297	Sept 16	June 8	H R Wahl M D Dean	23	
24	MICHIGAN University of Michigan Medical School, Ann Arbor	2	4	104	90	93	63	350	70	340	Sept 10	June 0	John Walker Moore M D Dean	24	
25	MINNESOTA Wayne University College of Medicine Detroit	2	4	104	90	93	63	350	10	201	Sept 10	June 1	Arthur Vidrine M D Dean	25	
26	MINNESOTA University of Minnesota Medical School Minneapolis	2	4	104	90	93	63	350	125	471	Sept 27	June 10	Charles O Bass M D Dean	26	
27	MISSISSIPPI University of Mississippi School of Medicine University	Degree	4	68	71	68	69	276	69	276	Oct 1	June 6	Alan M Chesney, M D Dean	27	
28	MISSISSIPPI University of Mississippi School of Medicine University	2	4	115	117	101	104	437	103	437	Sept 24	June 6	J M H Rowland M D Dean	28	
29	MISSOURI University of Missouri School of Medicine Columbia	3	4	60	63	64	67	253	63	253	Sept 26	June 15	Alexander S Begg M D Dean	29	
30	MISSOURI St. Louis University School of Medicine St. Louis	2	4	125	127	114	117	523	137	523	Sept 23	June 15	Charles Sidney Burwell M D Dean	30	
31	MISSOURI Washington University School of Medicine St. Louis	Degree	4	152	119	117	116	484	116	484	Sept 25	June 15	A Warren Stearns M D Dean	31	
32	NEBRASKA Creighton University School of Medicine Omaha	3	4	141	104	121	103	472	103	472	Sept 30	June 22	William J Stapleton, Jr M D Assistant Dean	32	
33	NEBRASKA University of Nebraska College of Medicine Omaha	3	5	76	75	84	72	301	74	310	Sept 20	June 15	Ellas P Lyon Ph D Dean	33	
34	NEW HAMPSHIRE Dartmouth Medical School Hanover	2	5	151	141	170	80	104	123	502	Sept 30	June 15	B S Guyton M D Acting Dean	34	
35	NEW HAMPSHIRE University of New Hampshire School of Medicine	3	2	22	30			52		52	Sept 18	June 1	Dudley S Conley M D Dean	35	
36	NEW HAMPSHIRE University of New Hampshire School of Medicine	3	2	46	36	121		82		82	Sept 6	June 3	Alphonse M Schmitt S J, Ph D Dean	36	
37	NEW HAMPSHIRE University of New Hampshire School of Medicine	2	4	146	127	121		351		351	Sept 10	June 1	W McKim Marriott M D Dean	37	
38	NEW HAMPSHIRE University of New Hampshire School of Medicine	4	4	84	77	68		283		283	Sept 20	June 9	Bryan M Riley M D Dean	38	
39	NEW HAMPSHIRE University of New Hampshire School of Medicine	2	4	82	63	78		203		203	Sept 10	June 4	C W M Poynter M D Dean	39	
40	NEW HAMPSHIRE University of New Hampshire School of Medicine	2	4	161	83	73		30		30	Sept 23	June 8	John P Bowler M D Dean	40	

TABLE 2—Birthplace

Marginal Number	Name of School	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Marginal Number
1	University of Alabama School of Medicine	48	1		7	1	2	2		4			2			2							1
2	University of Arkansas School of Medicine	1		120	1		1			1	2		8	6	1	2	2	3	1				2
3	University of California Medical School	1	2	2	118	4	1				1	2	0	3	2	2							3
4	College of Medical Evangelists		1	4	88	11	1		2	1	4	5	7	7	8	4	1						4
5	Univ of Southern California School of Medicine		2	1	57	0	2			1	2	0	3	3	5	0	1		2	11	5	20	4
6	Stanford University School of Medicine		5		158	1			1		1	1	1	1				1			5	5	5
7	University of Colorado School of Medicine				9	153						1	3	2					2			2	0
8	Yale University School of Medicine			1	1	1	42			2			8	1				1	0	3	24	1	7
9	Georgetown University School of Medicine	1		2	1		10	5	22		1	4			1	1		1	8	0	31	4	8
10	Georg Washington Univ School of Medicine		2	1	2	1	5		55		2	5		4	1	1		1	2	8	9	4	10
11	Howard University College of Medicine	3	1	2			1		10	3	7		2				3	2		8	3		11
12	Emory University School of Medicine	11		1			1			14	120				1	1	2	1					12
13	University of Georgia School of Medicine	1								120													13
14	Loyola University School of Medicine		1		0	2	3			1			311	10	2	1					2	20	14
15	Northwestern University Medical School		3		17	2	1	1				13	218	10	17	10				1		17	15
16	Rush Medical College	0			7	1	1			2	1	7	74	7	4		1				5	11	19
17	School of Med of the Div of the Biological Sc	2			0	1	2		2	3	7	1	10	13	8	1	1	2		1	2	19	17
18	University of Illinois College of Medicine				4	1	1					1	435	12	0	4	2			1	4	1	18
19	Indiana University School of Medicine	1			2	1							10	263	2	0			1		2	2	19
20	State University of Iowa College of Medicine									1				344			1						20
21	University of Kansas School of Medicine		1	2	1	5					1	8	1	4	170						1	1	21
22	University of Louisville School of Medicine	4			2		1			3	1	9	24	1	2	100					1	0	22
23	Louisiana State University Medical Center	10			2			1		4	5	1	1	2	1			207			1	1	23
24	Tulane University of Louisiana School of Med	49	3	24	2				1	35	7	4		1		7	110				2	24	24
25	Johns Hopkins University School of Medicine	4		4	0			3	1	0	5	6	8	5	2	1	4			1	52	8	25
26	U of Maryland Sch of Med and Coll of P & S	1						11	1	5	1		2	2	1		2		2	152	8		26
27	Boston University School of Medicine						10							1				13		154	2	27	27
28	Harvard University Medical School	8	2		11	5	0		1	1	3	1	17	7	0	4	6	1	13	3	127	13	28
29	Tufts College Medical School				1		49		1									23		326			29
30	University of Michigan Medical School				2		4		1	1	1		11	12	1	2	3		1	13	203	30	30
31	Wayne University College of Medicine	1	1		1	2						0	0	1	1	4		3		6	147	31	31
32	University of Minnesota Medical School				1	1						1		3	2						1		32
33	University of Mississippi School of Medicine	1		1																			33
34	University of Missouri School of Medicine				1	1							0			2						1	34
35	St. Louis University School of Medicine	2	4		23	4	7			1	1	2	40	12	4	12	0				3	7	35
36	Washington University School of Medicine	8	3	1	23	1				3	1	6	33	8	3	10	2				2		36
37	Creighton University School of Medicine		2	1	58	1	2		1			7	2	21	7							1	37
38	University of Nebraska College of Medicine			1	4	7					1	9		30	7	1					3	38	38
39	Dartmouth Medical School												1								7		39
40	Albany Medical College																				6		40
41	Long Island College of Medicine						10	1					1	1		1		1			3		41
42	University of Buffalo School of Medicine	1								1			2					1			2	1	42
43	Columbia University College of Phys and Surgs	2	1	1	5	1	21			1	1	1	1	2		1		1	4	2	14	1	43
44	Cornell University Medical College			2	2	0		1	1	5	1	1	1	2	2	2	1	1	1	11	2	44	44
45	N Y Homeopathic Med Coll and Flower Hosp				3		8		1	1	1		1						2	5	4		45
46	New York University College of Medicine	1		1	1	0		1	1			2	1				1	1			8		46
47	University of Rochester School of Medicine			4			3			1		4		2				1		11	2		47
48	Syracuse University College of Medicine											5						1		1	2		48
49	University of North Carolina School of Medicine	1		1	1		1	1	3	2	2	3	2	2	1	4	1			8	1	1	49
50	Duke University School of Medicine	1																					50
51	Wake Forest College School of Medicine	1								1	2												51
52	University of North Dakota School of Medicine													1							1		52
53	University of Cincinnati College of Medicine	1			1		2			1		1	14		1	25		1			2	2	53
54	Western Reserve University School of Medicine	1			1		2			1	2	9	9			1			1	1	8		54
55	Ohio State University College of Medicine	2			1		1					4	8	1	1	2				1		1	55
56	University of Oklahoma School of Medicine			10	4	2				1	1	3		1	8	8	1						56
57	University of Oregon Medical School				2							5											57
58	Hahnemann Med Coll and Hosp of Philadelphia				1		0	10	2	2	1	2	3		1	1	1	3		5	2	58	58
59	Jefferson Medical College of Philadelphia	1			5	1	0	10	1	1	1	1	3		3			5	0	6	3	59	59
60	Temple University School of Medicine				2		1					1			1				1		1		60
61	University of Pennsylvania School of Medicine	2	2		2		2	3		2	2	1		2	2	3	0	3	5	5	5	61	61
62	Woman's Medical College of Pennsylvania				4		2										1		1		9	2	62
63	University of Pittsburgh School of Medicine				1		1	1	1			1						1			1	1	63
64	Medical College of the State of South Carolina	1								1	2	3					1						64
65	University of South Dakota School of Medicine			1	3									7									65
66	University of Tennessee College of Medicine	17	12	1	1	1	1			1	4	5	13	0	2	1	23	1				1	66
67	Meharry Medical College	4		0	4			0	5	10		4			2			12		4		3	67
68	Vanderbilt University School of Medicine	19	1	1	2					1	9	1	5	2		30					4	7	68
69	Baylor University College of Medicine	3	1	3	3	3	1		1			2	11		3	4	8				1	4	69
70	University of Texas School of Medicine	1		7		2	1				1	1			1	3	4					1	70
71	University of Utah School of Medicine				2							0	1		1	2							71
72	University of Vermont College of Medicine				1		10	2										8			21		72
73	University of Virginia Department of Medicine				2	4		1	2	2							7		4		2		73
74	Medical College of Virginia	1			0		3		2	3							2		2		1		74
75	West Virginia University School of Medicine				1												1						75
76	University of Wisconsin Medical School				2						2	2	22	2	2	4		1					76
77	Marquette University School of Medicine			4	1	1						0	2	3									77
78	University of Alberta Faculty of Medicine														1								78
79	University of Manitoba Faculty of Medicine																						79
80	Dalhousie University Faculty of Medicine				1		1						1										80
81	Queen's University Faculty of Medicine				1		1																81
82	University of Western Ontario Medical School						2																82
83	University of Toronto Faculty of Medicine				7																		83
84	McGill University Faculty of Medicine	1		23			0				1	1	5	1	4			1	0	1	31	0	84
85	University of Montreal Faculty of Medicine																						85
86	Laval University Faculty of Medicine																						86
87	Univ of Saskatchewan School of Med Sciences																						87
Total		230	40	215	740	229	303	45	130	119	345	74	1549	559	529	300	341	375	115	336	927	97	

of Students

[illegible]

(Continued from page 677)

order but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credits in any or all of the required subjects, may be admitted on passing examinations in these subjects

Forty medical schools in the United States have adopted requirements in excess of this minimum, 1 e four require a degree, thirty-two require three years, one requires four years, and three admit students with three years of college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine. The medical schools of Canada vary with regard to the premedical requirement. One requires a degree, three have a two year requirement, one requires one year, one requires three years, and four schools have a six year medical course including premedical subjects

For the guidance of prospective medical students and admitting officers, the Council publishes annually a compilation of college of arts and sciences approved by the following agencies

Association of American Universities
Middle States Association of Colleges and Secondary Schools
New England Association of Colleges and Secondary Schools
North Central Association of Colleges and Secondary Schools
Northwest Association of Secondary and Higher Schools
Southern Association of Colleges and Secondary Schools

The Association of American Medical Colleges endorses the lists of evaluating agencies included in the Council's publication but in addition recognizes also the colleges approved by a state university

College grades serve as a basis for selection in almost all medical schools. Candidates with an average grade of C or lower are regarded as poor risks. The medical aptitude test conducted by the Association of American Medical Colleges is another useful criterion in the appraisal of applicants. Many schools also require a personal interview

The preliminary requirement of each school will be found in table 1. No attempt has been made to outline the admission requirements, since they vary considerably

The two year premedical requirement has been in effect since 1918—seventeen years. However, there are eight states which have not adopted this standard as a legal requirement for licensure. Six of these states will not admit to licensure other than graduates of recognized medical schools which enact this requisite. The statutes of these states should be amended to conform

LENGTH OF MEDICAL COURSE

The medical curriculum in the United States in general is taught in four years of thirty-two weeks each. The medical schools of the universities of Minnesota, Duke and Tennessee operate on the quarter plan, permitting the student by utilizing the summer months to complete the course in three calendar years. The two medical schools of the University of Chicago operate on the individualized plan of instruction whereby a student progresses as rapidly as his ability permits. Fourteen medical schools in the United States require a year of internship or research as a part of the medical course, thereby lengthening the course to five years

Duke University requires a two year internship. Ten schools offer only the work of the first two years

Five of the medical schools of Canada offer a five year course, four have a six year course including premedical subjects, and the University of Saskatchewan offers only the first two years of the medical course. These data are included in table 1. Three of the Canadian schools have an internship requirement

CURRICULUM

The Council recognizes as the standard curriculum that provided in the By-Laws² of the Association of American Medical Colleges, which is as follows

SEC. 3 Curriculum. The entire course of four years shall consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours per year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated

	Hours	Per Cent
1 Anatomy including embryology and histology	14	18.5
2 Physiology	4.5	6
3 Biochemistry	3.5	4.5
4 Pathology bacteriology and immunology	10	13
5 Pharmacology	4	5
6 Hygiene and sanitation	3	4
7 General medicine	20	26.5
Neurology and psychiatry		
Pediatrics		
Dermatology and syphilis		
8 General surgery	13	17.5
Orthopedic surgery		
Urology		
Ophthalmology		
Otolaryngology		
Röntgenology		
9 Obstetrics and gynecology	4	5
Total	76	100
Electives	24	0

When the teaching conditions demand it, a subject may be transferred from one division to another

STATISTICS OF MEDICAL SCHOOLS

Table 1, pages 678 and 679, lists the medical schools in the United States and Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association during 1934-1935 and contains figures regarding the premedical requirement by years for the session 1935-1936, length of the medical course by years, enrolment by classes for the session 1934-1935, including fifth year students intern-ing or engaged in research, number of graduates since July 1, 1934, dates of the beginning and ending of the forthcoming session, and the month until which applications for admission to the freshman class are received. Changes in the classifications that have taken place since the publication of the educational statistics in 1934⁴ can be noted in the footnotes at the bottom of the table and refer to those schools which are marked by asterisks preceding the name. Also contained in the footnotes are references to the fifth and sixth year enrolments and those schools which admit students at varying times during the year

The data presented in this table constitute the basis also for several of the subsequent tabulations. Beginning on page 692 are given historical information and essential facts concerning the schools arranged by states

Seventy-seven institutions in the United States and ten in Canada are listed. With the exception of three, all these schools at the present time enjoy full approval by the Council. In eighty-four schools there were 6,989 freshman students enrolled, 6,200 sophomores, 5,698 juniors, 5,438 seniors, 373 fifth year and 220 sixth year students, during the session just ended. The students enrolled in the two medical schools of the Uni-

versity of Chicago and Duke University are not classified by years. In these three schools there were 861 students enrolled, making a total of 25,779 in the eighty-seven schools listed. In the United States alone there were 6,356 freshmen, 5,624 sophomores, 5,142 juniors and 4,905 seniors and the 861 students mentioned above, a total of 22,888. The enrolment in Canada was as follows: first year, 633, second year,

with 1,231. From the twelve states that do not have medical schools there were enrolled as students the following

Arizona	40	New Jersey	860
Delaware	45	New Mexico	32
Florida	119	Rhode Island	146
Idaho	74	Washington	257
Maine	115	Wyoming	22
Montana	85		
Nevada	22		1 817

There were ninety-seven born in the United States possessions and 885 in foreign countries. In addition 2,400 Canadians were also studying medicine, the majority enrolled in the medical schools of Canada.

In table 3 the medical school enrolment is further classified by birthplace indicating that 14,842 are studying in the state of their birth and 10,937 elsewhere. This is particularly significant in Illinois, where, of the 2,309 students in five schools, 1,116 were born outside the state. It may be that many of these have become residents of the state.

More than 800 born in New York are studying elsewhere. Altogether, 42 per cent are studying in schools located in states other than their birth. Eliminating the 1,817 born in states having no medical school, there are still 9,120 of the 25,779 studying outside their birth state.

A perusal of the table will show many instances in this classification wherein the number studying elsewhere far exceeds the number attending school in the

TABLE 3—Students Classified by Birthplace

State	Number of Schools	Attending School in State of Birth	Birthplace Elsewhere
Alabama	1	48	82
Arkansas	1	126	104
California	4	441	608
Colorado	1	13	52
Connecticut	1	42	163
District of Columbia	3	90	538
Georgia	2	240	117
Illinois	6	1 103	1 116
Indiana	1	303	63
Iowa	1	344	10
Kansas	1	113	112
Kentucky	1	100	174
Louisiana	2	326	446
Maryland	2	244	469
Massachusetts	3	607	633
Michigan	2	340	432
Minnesota	1	437	63
Mississippi	1	47	6
Missouri	3	326	623
Nebraska	2	294	349
New Hampshire	1	7	32
New York	0	1 881	824
North Carolina	3	184	103
North Dakota	1	51	19
Ohio	3	644	294
Oklahoma	1	152	84
Oregon	1	104	0
Pennsylvania	6	1,540	684
South Carolina	1	131	31
South Dakota	1	20	24
Tennessee	3	280	533
Texas	2	620	209
Utah	1	42	18
Vermont	1	09	104
Virginia	2	327	231
West Virginia	1	94	47
Wisconsin	2	408	221
Canada	10	2,311	680
Totals	67	14 842	10,937

576, third year, 556, fourth year, 533, fifth year, 373, and sixth year, 220, a total of 2,891. The 25,779 students enrolled do not include 1,347 students intern-ing as a requirement for the degree. Since July 1, 1934, 5,101 received M.D. degrees from schools in the United States and 457 from Canadian institutions. In addition there were enrolled 133 part-time, 244 special and 718 graduate students. Nine schools had an enrolment of less than 100, fifteen less than 200, twenty-three less than 300, seventeen less than 400, thirteen less than 500, eight less than 600, and two schools had an enrolment of more than 600. The smallest enrolment was at Dartmouth Medical School (thirty-nine), which offers only a two year course, the highest enrolment was at the University of Toronto Faculty of Medicine (816) which has a six year course including premedical subjects. The lowest enrolment among four year colleges was 112 at Albany Medical College and the highest 614 at the University of Illinois College of Medicine. Louisiana State University Medical Center had the lowest number of graduates (nineteen) and Rush Medical College had the highest (152).

BIRTHPLACE OF STUDENTS

Table 2, pages 680 and 681 shows the birthplace of students in attendance at each medical school during the past session. The state furnishing the greatest number of students was New York, 3,478, followed by Pennsylvania with 2,207, Illinois with 1,549 and Ohio

TABLE 4—Schools, Students and Graduates by States

State	Schools	Students	Graduates
Alabama	1	130	
Arkansas	1	230	42
California	4	1 039	216
Colorado	1	203	47
Connecticut	1	207	47
District of Columbia	3	948	239
Georgia	2	366	88
Illinois	6	2,309	573
Indiana	1	448	93
Iowa	1	354	62
Kansas	1	287	67
Kentucky	1	340	79
Louisiana	2	772	144
Maryland	2	713	174
Massachusetts	3	1 290	311
Michigan	2	782	140
Minnesota	1	602	123
Mississippi	1	62	
Missouri	3	831	202
Nebraska	2	643	146
New Hampshire	1	50	
New York	0	2 705	633
North Carolina	3	947	47
North Dakota	1	70	
Ohio	3	958	227
Oklahoma	1	236	50
Oregon	1	274	
Pennsylvania	6	2 429	64
South Carolina	1	162	576
South Dakota	1	3	41
Tennessee	3	821	190
Texas	2	780	161
Utah	1	60	
Vermont	1	173	35
Virginia	2	678	130
West Virginia	1	141	
Wisconsin	2	629	121
Totals	77	22,888	5 101

state of birth. It also shows some states in which the contrary is the case, notably Indiana, Iowa and South Carolina.

SCHOOLS, STUDENTS AND GRADUATES BY STATES

The number of schools, students and graduates for each state are given in table 4. New York, with the largest number of schools, nine, naturally had the largest number of students and graduates, 2,705 and 633 respectively. Pennsylvania with six schools had 2,429 students and 575 graduates. Illinois was third

with five schools, 2,309 students and 573 graduates. In four schools in California there were 1,039 students enrolled and 216 graduates, while in three schools in Massachusetts there were 1,260 students and 311 graduates. In the seventy-seven schools in the United States, including those that offer only the preclinical courses, there were 22,888 students and 5,101 graduates. Canada, with ten schools, had 2,891 students and 457 graduates.

REQUIRED INTERNSHIPS

In tables 5 and 6 are listed the state licensing boards and medical schools now requiring internships for licensure and the M D degree respectively. Some of these schools will accept research or other clinical work in lieu of the internship. There is also included the effective date of the requirement. Seventeen states, the District of Columbia and Alaska and fifteen schools in the United

TABLE 5—*Internship Required by Medical Licensing Boards*

Alaska	1917	Pennsylvania	1914
Delaware	1924	Rhode Island	1917
District of Columbia	1930	South Dakota	1925
Illinois	1923	Utah	1926
Iowa	1924	Vermont	1934
Michigan	1922	Washington	1919
New Jersey	1916	West Virginia	1932
North Dakota	1918	Wisconsin	1927
Oklahoma	1933	Wyoming	1931
Oregon	1933		

TABLE 6—*Hospital Internship Required by Medical Schools*

United States	Effective Date
University of California Medical School	1919
College of Medical Evangelists	1927
University of Southern California School of Medicine	1933
Stanford University School of Medicine	1910
Loyola University School of Medicine	1922
Northwestern University Medical School	1920
University of Chicago Rush Medical College	1919
University of Chicago, The School of Medicine of the Division of the Biological Sciences	1930
University of Illinois College of Medicine	1922
Louisiana State University Medical Center	1934
Wayne University College of Medicine	1924
University of Minnesota Medical School	1910
Duke University School of Medicine*	1932
University of Cincinnati College of Medicine	1926
Marquette University School of Medicine	1920
Canada	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
University of Montreal Faculty of Medicine	

* Requires a two year internship

States and three in Canada are mentioned in these tables. During 1934-1935 there were 1,233 students of the United States and 114 in Canada reported as interns, a total of 1,347. Duke University School of Medicine grants the degree after the completion of the senior year, but all graduates are required to spend at least two years in hospital or laboratory work after graduation. While some of the licensing boards may have their own list of hospitals recommended for intern training, generally the Council's list of hospitals approved for internships is followed. A revised edition will be found beginning on page 699.

GRADUATES AND INTERNSHIPS

Table 7 contains figures regarding graduates from July 1, 1933, to July 1, 1934, who have served or are serving internships during the period July 1, 1934, to July 1, 1935. The figures for the graduates differs from that mentioned elsewhere in these statistics, since those who received M D degrees in 1934 on completion of

a required internship that was served during July 1, 1933, to July 1, 1934, are omitted and also a few others. The second column, however, includes those serving internships as a requirement for the degree to show

TABLE 7—*Graduates from July 1, 1933, to July 1, 1934, Who Have Obtained Internships During the Period July 1, 1934, to July 1, 1935*

School	Number of Graduates	Number Interning
University of Arkansas	50	47
University of California	*	53
College of Medical Evangelists	*	84
University of Southern California	*	30
Stanford University	*	40
University of Colorado	51	51
Yale University	40	40
Georgetown University	104	154
George Washington University	70	65
Howard University	47	47
Furness University	60	50
University of Georgia	39	38
Loyola University	*	100
Northwestern University	*	159
Rush Medical College	*	132
Division of the Biological Sciences	*	27
University of Illinois	*	140
Indiana University	114	108
State University of Iowa	72	71
University of Kansas	68	68
University of Louisville	94	85
Louisiana State University	*	20
Tulane University	122	122
Johns Hopkins University	73	68
University of Maryland	103	103
Boston University	53	52
Harvard University	132	131
Tufts College	101	97
University of Michigan	90	82
Wayne University	*	70
University of Minnesota	*	115
St. Louis University	103	108
Washington University	91	90
Cleveland University	66	63
University of Nebraska	85	73
Albany Medical College	20	20
Long Island College of Medicine	111	98
University of Buffalo	63	63
Columbia University	99	93
Cornell University	56	64
New York Homeopathic Medical College	72	67
New York University	100	100
University of Rochester	46	45
Syracuse University	52	52
Duke University	34†	34
University of Cincinnati	*	78
Western Reserve University	53	53
Ohio State University	85	85
University of Oklahoma	61	58
University of Oregon	56	56
Hahnemann Medical College	93	93
Jefferson Medical College	143	143
Temple University	118	118
University of Pennsylvania	130	132
Woman's Medical College	10	18
University of Pittsburgh	65	65
Medical College of South Carolina	31	30
University of Tennessee	80	75
Meharry Medical College	38	38
Vanderbilt University	50	49
Baylor University	64	60
University of Texas	70	69
University of Vermont	33	33
University of Virginia	52	48
Medical College of Virginia	93	88
University of Wisconsin	40	40
Marquette University	*	60
University of Alberta	24	24
University of Manitoba	*	53
Dalhousie University	*	15
Queen's University	44	39
University of Western Ontario	24	23
University of Toronto	106	99
McGill University	80	70
University of Montreal	*	37
Laval University	43	20
Totals	4,268	5,349

* An internship or other acceptable clinical work is a requirement for graduation

† Two year internship requirement after graduation

the total number of students interning. There were 1,347—1,233 U S students and 114 Canadian students—interning as a requirement for the degree, and 4,002 others. Altogether, 5,349 individuals have served or are serving internship during the period July 1, 1934, to July 1, 1935. With the exception of one in Canada, every school in the list has more than 90 per cent of its

graduates serving internships, and in twenty-one schools 100 per cent interned. Excluding those schools that require the internship for graduation, 94 per cent of

TABLE 8.—Distribution by Sex

	Students		Graduates	
	Men	Women	Men	Women
University of Alabama	128	2		
University of Arkansas	221	0	42	
University of California	200	39	44	7
College of Medical Evangelists	364	40	77	0
University of Southern California	107	9	34	1
Stanford University	209	11	42	0
University of Colorado	103	12	47	
Yale University	187	20	42	5
Georgetown University	403		113	
George Washington University	24	30	65	0
Howard University	164	7	53	2
More University	222		54	
University of Georgia	142	2	34	
Loyola University	406	21	81	5
Northwestern University	342	15	141	5
Rush Medical College	306	6	145	7
Division of the Biological Sciences	302	37	31	3
University of Illinois	192	22	142	3
Indiana University	435	13	59	4
Iowa State University	343	11	62	
University of Kansas	270	17	65	2
University of Louisville	330	4	78	1
Louisiana State University	258	11	18	1
Tulane University	462	9	124	1
Johns Hopkins University	248	23	61	5
University of Maryland	420	11	104	1
Boston University	230	23	31	4
Harvard University	523		157	
Yale College	449	25	114	5
University of Michigan	442	30	100	6
Wayne University	300	10	42	2
University of Minnesota	482	20	110	7
University of Mississippi	50	2		
University of Missouri	70	3		
St. Louis University	113		110	
Washington University	334	17	00	2
Creighton University	290	4	08	1
University of Nebraska	330	4	76	1
Dartmouth Medical School	39			
Albany Medical College	107	5	28	
Long Island College of Medicine	300	17	97	1
University of Buffalo	292	15	03	3
Columbia University	370	23	91	6
Cornell University	248	29	50	5
New York Homeopathic Medical College	311	17	63	
New York University	505	28	122	4
University of Rochester	159	8	43	3
Syracuse University	187	4	44	1
University of North Carolina	68	6		
Duke University	203	5	46	1
Wake Forest College	63			
University of North Dakota	70			
University of Cincinnati	277	11	69	4
Western Reserve University	260	11	68	3
Ohio State University	361	12	51	2
University of Oklahoma	222	14	51	4
University of Oregon	218	16	50	4
Hahnemann Medical College	498		102	
Jefferson Medical College	557		142	
Temple University	428	20	97	8
University of Pennsylvania	514	17	129	5
Woman's Medical College		192		72
University of Pittsburgh	243	10	63	2
Medical College of South Carolina	150	6	40	1
University of South Dakota	62	1		
University of Tennessee	415	14	96	3
Marshall Medical College	184	5	40	
Vanderbilt University	180	17	46	5
Baylor University	368	8	79	
University of Texas	339	20	79	3
University of Utah	67			
University of Vermont	107	3	34	1
University of Virginia	220	10	53	1
Medical College of Virginia	315	17	73	3
West Virginia University	190	5		
University of Wisconsin	294	23	50	5
Marquette University	306	6	04	2
University of Alberta	185	9	28	1
University of Manitoba	186	16	19	5
Dalhousie University	147	4	22	
Queen's University	310		48	
University of Western Ontario	215	14	32	2
University of Toronto	761	51	100	10
McGill University	404	10	102	1
University of Montreal	182	2	35	
Laval University	246		32	
University of Saskatchewan	48	4		
Totals	24,488	1,101	5,332	220

all graduates here listed have this added experience. It is a known fact that there is a scarcity of internships and it may be that of the 6 per cent who have not been reported as interning many have found it difficult to secure internships in approved hospitals.

DISTRIBUTION BY SEX

Students and graduates classified by sex are shown in table 8. There were seventy-five schools which had both men and women students in the United States and Canada, of which fifty-eight had women graduates. Altogether there were 24,588 men and 1,191 women students, and 5,332 men and 226 women graduates. There is one medical college for women, the Woman's Medical College of Pennsylvania, which had 132 students and thirty-two graduates, leaving 1,059 women students pursuing their medical education and 194 who completed the course in coeducational institutions.

During the past year there were 1,077 women studying medicine in the United States, fifty-seven more than last year. The percentage of women to all medical students this year is 4.7 as compared with 4.5 in 1933. There were 207 graduates, four fewer than last year. Of all the women matriculants, 132 students were in attendance at the one medical college for women, the Woman's Medical College of Pennsylvania, while 945 were matriculated in sixty-seven coeducational schools. From the Woman's Medical College, thirty-two were graduated, while 175 secured their degrees from coedu-

TABLE 9.—Women in Medicine in the United States

Year	Women students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1900	1,078	4.1	219	4.0
1910	1,071	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1930	930	5.0	212	5.4
1927	964	4.9	189	4.7
1928	970	4.5	207	4.9
1929	925	4.4	214	4.8
1930	935	4.4	204	4.5
1931	900	4.5	217	4.6
1932	935	4.3	208	4.2
1933	1,036	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1

cational institutions. As shown in table 9, the number of women students has been rather constant since 1920, although in 1935 there were more than in any other year.

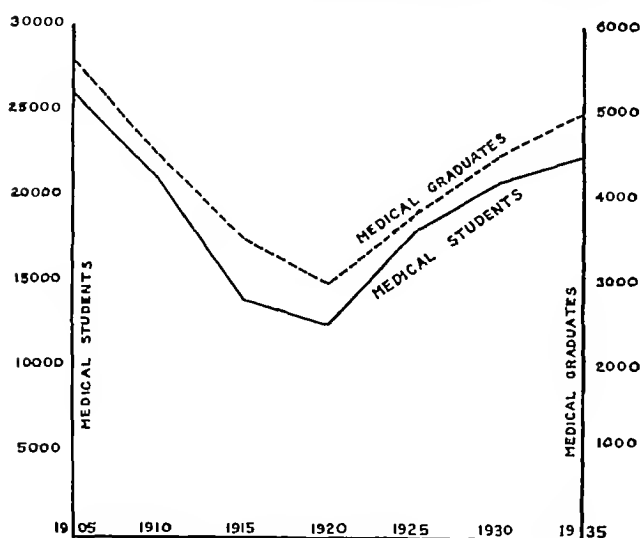
MEDICAL SCHOOLS STUDENTS AND GRADUATES IN THE UNITED STATES 1905-1935

The number of medical schools, students and graduates in the United States for each five year period from 1905 to 1920, and for each year since, is shown in table 10. The total number of undergraduate medical students for the college session 1934-1935 was 22,888, an increase of eighty-nine over the previous session. This is the largest number of students enrolled since 1905, when 26,147 were in attendance at the 160 medical schools then existing. Also included are figures covering the number of students enrolled in schools offering only the preclinical courses. Not included in the total number of students for 1935 are 133 part time, 244 special and 718 graduate students majoring in the medical school but not working for M.D. degrees.

Again referring to table 10, it will be noted that the total number of graduates was 5,101, an increase of sixty-six over the preceding session. With the exception of the slight decrease in the number of graduates in 1933 as compared with previous years there has been a steady increase since 1926. As will be noted, there were marked increases in 1923, 1924 and 1925. While

there was a decrease in the number of graduates in 1933, there was an increase in the number of students

The number of students and graduates for each five year period since 1905 is shown graphically. In 1905



Number of medical students over thirty year period

there were 26,147 students. The next fifteen years shows a decrease and since a noticeable increase. The Council has issued a general warning against the admission of larger classes than can properly be accommo-

TABLE 10—Schools, Students and Graduates in the United States

Year	No. Schools	Students*	Graduates
1905	160	20,147	5,606
1910	131	21,590	4,446
1915	90	14,891	3,566
1920	80	13,793	3,047
1921	83	14,400	3,186
1922	81	15,031	2,920
1923	80	16,060	3,120
1924	79	17,728	3,562
1925	79	18,900	3,914
1926	79	18,840	3,902
1927	80	19,002	4,031
1928	80	20,545	4,202
1929	78	20,878	4,440
1930	78	21,507	4,561
1931	76	21,982	4,731
1932	76	22,111	4,950
1933	77	22,466	4,891
1934	77	23,799	5,061
1935	77	22,880	5,101

* Includes figures for schools offering preclinical courses also

TABLE 11—Students in the United States Shown by Classes—1930-1935

	1st Year	2d Year	3d Year	4th Year	5th Year†	Total
1930-1931	6,456	5,533	5,080	4,908	1,021	23,007
1931-1932	6,260*	5,402*	4,932*	4,681	1,067	23,202
1932-1933	6,428*	5,479*	5,017*	4,948*	1,190	23,072
1933-1934	6,457†	5,571†	4,983†	4,977†	1,183	23,082
1934-1935	6,350†	5,624†	5,142†	4,901†	1,233	24,121

* Enrolment for the two medical schools of the University of Chicago not included

† Enrolment for the two medical schools of the University of Chicago and Duke University not included

‡ Intern year

dated or than can reasonably be expected to satisfy approved scholastic standards. Seven schools have definitely stated that their enrolment will be decreased and others have indicated adherence to the Council's principles.

In this connection it is interesting to note the number enrolled in the various classes in the United States for

each session from 1930-1931 to 1934-1935 inclusive, as shown in table 11. The total attendance for the first year for the session 1934-1935 was 6,356, or 101 fewer than the number enrolled for the session 1933-1934. The figure, however, is 100 more than were enrolled during 1930-1931. The total attendance for the remainder of the classes was, respectively, 5,624, 5,142, 4,905 and 1,233. The two medical schools of the University of Chicago are not operated under the promotion by class system but on an individual plan. It is not possible, therefore, to group them into the figures given.

TABLE 12—Negro Students and Graduates

Name of School	Enrolment by Classes During 1934-1935					Totals	Graduates
	1st Year	2d Year	3d Year	4th Year	5th Year		
College of Medical Frangellists	1	1	1	1	1	5	1
Howard University College of Medicine	38	33	33	53	162	319	53
Loyola University School of Medicine	1					1	
Rush Medical College	1					1	1
The School of Medicine of the Division of the Biological Sciences		1	2			3	
University of Illinois College of Medicine	1	1		1		3	2
Indiana University School of Medicine			2			2	
University of Kansas School of Medicine		1				1	
Boston University School of Medicine	1					1	
Tufts College Medical School		1		1		2	1
University of Michigan Medical School		1				1	
Wayne University College of Medicine	1					1	1
University of Minnesota Medical School		1				1	
Long Island College of Medicine				1		1	1
Columbia University Coll. of Phys. and Surg.			1			1	
New York Homeopathic Medical College and Flower Hospital		1	1	3	5	6	3
New York University College of Medicine	1			1		2	1
Syracuse University College of Medicine		1				1	
University of Cincinnati College of Medicine				1		1	
Western Reserve University School of Medicine				1		1	
Ohio State University College of Medicine	2	2	1			5	
Temple University School of Medicine		1				1	
University of Pennsylvania School of Medicine	1	2				3	
Woman's Medical College of Pennsylvania	1					1	
Meharry Medical College	75	40	33	41	189	478	40
University of Vermont College of Medicine	1					1	
McGill University Faculty of Medicine		1	2	2	5	10	
University of Montreal Faculty of Medicine		1				1	
Totals during 1933-1934	121	90	80	107	402	104	100
	111	105	108	100	424	100	

TABLE 13—Fees 1934-1935—United States and Canada*

	Schools
Under \$100	3
\$100 to \$200	11
200 to 400	25
300 to 400	10
400 to 500	21
500 or over	10
Total	87

* Based on fees charged resident students

This is likewise true of the enrolment at Duke University School of Medicine. They are, however, included in the totals. There were 210 students enrolled at Duke 339 at the School of Medicine of the Division of the Biological Sciences of the University of Chicago and 312 at Rush Medical College, a total of 861. There were 1,114 more students enrolled than in 1930-1931. Only one new medical school has opened since that session, namely, the Louisiana State University Medical Center, which had an enrolment of 301 for the session of 1934-1935. Excluding the students of this university, there were 813 more students enrolled during the past college session than in the seventy-six medical schools that existed in 1931.

The Association of American Medical Colleges⁶ reports that there were 32,321 applications for admission to the freshman class, representing 12,779 applicants, and of these 7,419 were accepted and 5,360 refused. However, as already indicated, only 6,356 actually enrolled for the freshman year, exclusive of the University of Chicago and Duke University enrol-

students and 104 graduates, a decrease of twenty-two students but an increase of four graduates over the figure for the previous year. Meharry Medical College was organized in 1876 as a medical college for Negro youth, and at Howard University College of Medicine, organized in 1869, they compose a majority of those in attendance. These two schools graduated

TABLE 14—Citizens of the United States Enrolled in Medical Faculties Abroad

	Totals		Students Academic Year 1934 1935			Totals		Students Academic Year 1934 1935	
			Enrolled	Completed Course				Enrolled	Completed Course
Austria	22	3	12	3	Philipp's Universität Marburg	3	0		
Karl Franzens Universität Graz			10	0	Ludwig-Maximilians-Universität München	22	2		
Leopold Franzens Universität Innsbruck					Westfälische Wilhelms-Universität Münster	3	0		
Belgium	19	3	11	1	Universität Rostock	4	2		
Université Libre de Bruxelles			1	1	Herhard Karls Universität Tübingen	4	0		
Université Gent			7	1	Julius-Maximilians-Universität Würzburg	7	0		
Université Catholique de Louvain					Hungary	20	0		
Brazil	1	0	1	0	Magyar Királyi Pazmány Petrus Tudományegyetem Budapest	10	0		
Faculdade de Medicina do Paraná Curitiba					Magyar Királyi Ferencz József Tudományegyetem Szeged	5	0		
China	18	1	3	0	Ireland	5	0		
Peking Union Medical College			15	1	Queen's University, Belfast	1	0		
Pennsylvania Medical School Shanghai					National University of Ireland	1	0		
Czechoslovakia	10	0	1	0	University College Cork	1	0		
Univerzita Komenského Bratislava			1	0	University College Dublin	1	0		
Masarykova Univerzita Brno			4	0	University of Dublin School of Physics	2	0		
Deutsche Universität Prag			4	0	Italy	198	28		
Univerzita Karlova Prague					Regia Università di Bari	8	0		
Dominican Republic	1	0	1	0	Regia Università di Cagliari	1	0		
Universidad de Santo Domingo					Regia Università di Firenze	3	0		
England	69	21	3	0	Regia Università di Modena	2	0		
University of Birmingham			6	1	Regia Università di Padova	10	4		
University of Bristol			9	0	Regia Università di Palermo	0	0		
University of Cambridge			7	0	Regia Università di Pavia	3	0		
University of Durham Newcastle upon Tyne			1	0	Regia Università di Pisa	3	0		
University of Liverpool			0	2	Regia Università di Roma	101	24		
University of London			2	2	Regia Università di Sassari	1	0		
Charling Cross Hospital Medical School			11	2	Lithuania	2	0		
Guy's Hospital Medical School			1	0	Vytauto Didžiojo Universiteto Kaunas	2	0		
King's College Hospital Medical School			1	0	Netherlands India	1	0		
London Hospital Medical College			1	0	Geneeskundige Hoogeschool Batavia	1	0		
London (Royal Free Hospital) School of Medicine for Women			1	0	Philippine Islands	7	0		
St Bartholomew's Hospital Medical College			15	4	Ateneo College of Medicine Manila	3	0		
St George's Hospital Medical School			4	0	University of the Philippines Manila	1	0		
St Mary's Hospital Medical School			0	4	University of Santo Tomas Manila	3	0		
Westminster Hospital Medical School			1	0	Poland	12	1		
University of Oxford			5	0	Uniwersytet Jagielloński Cracow	2	0		
University of Sheffield					Uniwersytet Jana Kazimierza Lwów	2	0		
France	69	3	1	0	Uniwersytet Warszawski	2	0		
Université de Caen			4	0	Uniwersytet Poznański	3	0		
Université de Lyon			1	0	Uniwersytet Stefana Batorego Wilno	3	1		
Université d'Als-Marselle			13	0	Portugal	1	0		
Université de Montpellier			1	0	Universidade do Porto	1	0		
Université de Nancy			63	2	Scotland	421	71		
Université de Paris			1	0	University of Aberdeen	10	8		
École de Médecine de Reims			3	1	School of Medicine of the Royal College Edinburgh	109	10		
Université de Strasbourg			1	0	University of Edinburgh	14	8		
Université de Toulouse			1	0	Anderson College of Medicine Glasgow	84	0		
Université de Poitiers-Tours			1	0	University of Glasgow	25	13		
Germany	248	25	62	13	University of St Andrews	69	32		
Friedrich-Wilhelms-Universität Berlin			39	2	Switzerland	309	41		
Rheinische Friedrich-Wilhelms-Universität Bonn			1	0	Universität Basel	83	0		
Medizinische Akademie Düsseldorf			3	0	Universität Bern	114	20		
Friedrich-Alexanders-Universität Erlangen			13	1	Université de Lausanne	40	13		
Albert-Ludwigs-Universität Freiburg			14	0	Universität Zürich	72	3		
Johann-Wolfgang-Goethe-Universität Frankfurt am Main			3	0	Syria	13	2		
Hessische Ludwigs-Universität Gießen			4	0	American University of Beirut	7	0		
Georg-August-Universität Göttingen			3	0	Yugoslavia				
Vereinigten-Friedrichs-Universität Halle-Wittenberg			18	3	Beogradskog Univerzitet	7	0		
Universität Heidelberg			6	1	Totals by countries	1 471*	199*		
Universität Köln			4	0					
Albertus-Universität Königsberg			33	1					
Universität Leipzig									

It is believed this figure should be larger inasmuch as the following schools previously reported large numbers of American students: Vienna, Austria; Bologna and Naples, Italy; St. Mungo's, Scotland; and Geneva, Switzerland.

ment. It may be noted that 700 students were accepted by medical schools who did not matriculate in a medical school in 1934-1935 principally because of multiple application.

NEGROES IN MEDICAL SCHOOLS

The Negro medical students for the session 1934-1935 are recorded by classes in table 12. The totals for 1933-1934 are shown for comparison. There were 402

the majority of the Negro students. All other schools enrolled less than seven.

TUITION FEES

In table 13, the eighty-seven medical colleges of the United States and Canada have been grouped according to the amount of fees charged. To arrive at the figures listed, an average was compiled of the fees for each school. Included in these fees are the various minor charges, such as for matriculation, breakage, diploma and graduation. Three colleges have fees of

less than \$100 a year. These were the Louisiana State University, North Dakota and Oklahoma. They, however, charge an additional fee of \$300, \$90 and \$200, respectively, for nonresidents. The ten colleges having fees over \$500 are Yale, Johns Hopkins, Columbia, Cornell, Long Island, New York Homeopathic, Syracuse, New York University, Buffalo and Pennsylvania. There were thirty-two universities which made an additional charge for nonresidents, ranging from \$50 by the Universities of Mississippi, Missouri, Cincinnati (nonresidents of Cincinnati), Tennessee and Virginia to \$300 exacted by the Universities of California and Louisiana State.

The lowest nonresident fee was charged by the University of Utah, \$35. No noticeable increase or decrease has been noted in the fees charged by medical schools. The fees are not listed in these statistics by

TABLE 15—*Citizens of the United States Reported Enrolled in Medical Faculties Abroad—1930-1935*

	Students 1930-1931		Students 1931-1932		Students 1932-1933		Students 1933-1934		Students 1934-1935	
	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course
Austria	114	3	175	6	271	3	272	4	22	3
Belgium	3	0	4	1	10	1	11	0	10	3
Brazil							2	1	1	0
China					12	0	16	0	13	1
Colombia							1	0		
Czechoslovakia	2	0	4	0	10	0	2	0	10	0
Dominican Republic									1	0
England	52	2	61	4	57	1	69	4	69	21
Finland	1	0								
France	25	2	62	0	78	5	60	2	59	3
Germany	72	1	189	5	439	42	331	8	240	25
Greece					4	1	0	0		
Hungary	0	1	15	2	13	1	25	1	20	0
Ireland	14	1	21	0	20	0	4	1	5	0
Italy	78	11	155	4	232	14	22	21	103	23
Japan			1	0						
Lithuania			4	0	4	0	2	0	2	0
Mexico	1	0	1	1						
Netherlands India					1	0	1	0	1	0
Netherlands							1	0		
Philippine Islands					2	0	2	0	7	0
Poland	2	0	3	0	0	0	14	4	12	1
Portugal							1	0	1	0
Scotland	256	10	286	25	410	0	474	48	421	71
South Africa Union of			1	0						
Switzerland	65	4	214	1	405	10	351	8	309	41
Syria	16	2	8	0	7	0	11	2	13	2
Yugoslavia			2	1	5	1	7	0	7	0
Totals	710	46	1,203	56	2,054	88	1,040	104	1,471	199

individual schools other than in the descriptions beginning on page 692. Provision is made also for scholarships and loan funds for deserving students.

CITIZENS OF THE UNITED STATES ENROLLED IN MEDICAL FACULTIES ABROAD

A study of the number of citizens of the United States enrolled in medical faculties abroad will be found in table 14. This tabulation covers the academic year 1934-1935. There were 1,471 students and 199 graduates or those who completed their medical training in the ninety-seven institutions reporting. This study has been carried on since 1931, when it became evident that great numbers of Americans were going to Europe to study. The files of the Association of American Medical Colleges shows that the application record of 502 students whose names were supplied this year indicates that 106 have made application to medical schools in the United States without success since 1931. There were as many as twenty-five rejections by medical

schools in individual cases, indicating their inability to obtain a medical education in this country. In view of the problem created by this migration, the Federation of State Medical Boards of the United States in February 1933 adopted a resolution to the effect that no student matriculating in a European medical school subsequent to the academic year of 1932-1933 will be admitted to any state medical licensing examination who does not present satisfactory evidence of premedical education equivalent to the requirements of the Association of American Medical Colleges and the Council on Medical Education and Hospitals, and graduation from a European medical school after four academic years of attendance, and further submits evidence of having satisfactorily passed the examination to obtain a license to practice medicine in the country in which the medical school from which he is graduated is located.

This policy of the federation has been made effective by individual action on the part of the state licensing bodies and the National Board of Medical Examiners and will have its desired effect in the future.

For the purpose of keeping closely in touch with developments in other countries, a joint committee was appointed representing the Council on Medical Education and Hospitals, the Federation of State Medical Boards of the United States, the New York Board of Regents, the National Board of Medical Examiners, and the Association of American Medical Colleges.

Further, in 1934 the Federation of State Medical Boards passed a resolution to the effect that the federation recommend to its constituent state boards and to the National Board of Medical Examiners that, until adequate information is available, these boards deny graduates of foreign medical schools admission to the various medical licensure examinations.

The governments of many European countries have already taken cognizance of the situation and sent representatives to this country to discuss appropriate measures for dealing with students from the United States. In some universities, entrance requirements have been raised, in some, student enrolment has been limited. In all cases, credentials will be carefully scrutinized.

The enrolment of these students in foreign faculties as reported to us for each session since 1930-1931 is shown in table 15. The largest numbers were enrolled in Austria, Germany, Italy, Scotland and Switzerland. Those enrolled in 1930-1931 (710), if still studying abroad, will probably finish their course during this year or next and it may be expected that most of them plan to return to the United States to practice.

GRADUATE MEDICAL EDUCATION

Table 16 contains information regarding opportunities for graduate medical education by universities in the United States and Canada elicited from an inquiry as to whether (1) definitely organized courses for graduates were being offered, (2) graduate training was being conducted in an informal way, i. e., by residencies, fellowships, etc., (3) students enrolled primarily in the graduate school are permitted to do part of their work under the direction of the medical faculty, and (4) the institution engages in extension teaching in the field of medicine. Twenty-nine schools report that they have organized courses and two universities have graduate schools of medicine. Fifty-three offer residencies or fellowships. Courses in the graduate school under the direction of the medical faculty are reported by

TABLE 16.—*Opportunities for Graduate Medical Education by Universities in the United States and Canada**

Medical Schools	Type of Instruction Offered			
	Organized Courses	Residences Fellowships, Etc	Graduate School Students Under Direction of Medical School Faculty	Extension Teaching
University of Alabama	Chemistry	Fellowship in basic sciences	+	0
University of Arkansas	0			0
University of California	0	+		0
College of Medical Evangelists	0	0		0
University of Southern California	+	+	+	+
Stanford University	0	+	+	+
University of Colorado	+	+	+	0
Yale University	+	+	+	
Georgetown University	0	Fellowships		
George Washington University	+	Fellowships	+	0
Howard University	0		+	0
Emory University	0			+
University of Georgia	+	+	+	+
Loyola University	+	Fellowships	+	0
Northwestern University	0	+	+	0
Rush Medical College	Otolaryngology, ophthalmology and radiology			0
Division of the Biological Sciences	0	+	+	0
University of Illinois	+	+	+	0
Indiana University				
State University of Iowa	+	+	+	+
University of Kansas	0	+	+	+
University of Louisville	0			0
Louisiana State University	0		+	+
Tulane University	+	+	+	0
Johns Hopkins University	0	+	+	0
University of Maryland	0	Fellowships	+	+
Boston University	0	+	+	0
Harvard Medical School	+	+	+	0
Tufts College	0	+	+	0
University of Michigan	+	+	+	0
Wayne University College of Medicine	+	0	+	0
University of Minnesota	Graduate school of medicine	+	+	0
University of Mississippi			+	0
University of Missouri	0		+	0
St. Louis University	+	+	+	0
Washington University	+	+	+	0
Cleveland University	0	0	+	0
University of Nebraska	+	+	+	0
Dartmouth Medical School	+	Fellowships	+	0
Albany Medical College	0	+		+
Long Island College of Medicine	+	+	+	0
University of Buffalo	0			
Columbia University	+	+	+	+
Cornell University	0	Residences	0	0
New York University	+	Partially	+	0
New York Homeopathic Medical College	+	0	+	0
University of Rochester	Ophthalmology	+	+	0
Syracuse University	0	+		+
University of North Carolina	+	0	+	0
Duke University	0	+	0	0
Wake Forest College	0			0
University of North Dakota	0	+	+	0
University of Cincinnati	0	+	+	0
Western Reserve University	0	+	+	0
Ohio State University	0	+	+	+
University of Oklahoma	0		+	0
University of Oregon	0	+	+	0
Hahnemann Medical College	0			0
Jefferson Medical College	0	+		0
Temple University	+	Residences	+	0
University of Pennsylvania	Graduate school of medicine	Dermatology and roentgenology Fellows registered in graduate school of medicine	Faculties interlocking to a certain extent	Graduate school of medicine
Woman's Medical College	0	+	+	0
University of Pittsburgh	0	0	0	0
Medical College of South Carolina	0	0	0	0
University of South Dakota				
University of Tennessee	0	+	+	0
Meharry Medical College	0			0
Vanderbilt University	+	+	+	0
Baylor University	0			0
University of Texas	+	Residences	+	0
University of Utah	0			0
University of Vermont	0			0
University of Virginia	0	+	+	0
Medical College of Virginia	0	Residences	0	+
West Virginia University				0
University of Wisconsin	0			0
Marquette University	0	+	+	+
University of Alberta	Basic medical sciences	0	+	0
University of Manitoba	0	0		0
Dalhousie University	0	0	0	0
Queen's University	0			0
University of Western Ontario	0	+	0	0
University of Toronto	+	+	+	+
McGill University	0	+	+	+
University of Montreal	0	+	+	+
Laval University	0			0
University of Saskatchewan	0			0
	+	0	+	+

* Institutions offering graduate medical courses other than universities are not included in this tabulation
+ yes no reply 0 no

fifty-six schools and extension training by nineteen. Nineteen schools do not offer graduate work.

This table does not include institutions offering graduate medical courses other than universities, such as the New York Polyclinic and the New York Eye and Ear Infirmary. It therefore does not give a complete picture but will give the reader a fairly good idea of graduate instruction in the United States. The Universities of Southern California, Georgia, Iowa, Columbia, Pennsylvania and Western Ontario offer all four types of education.

NECROPSIES IN HOSPITALS APPROVED FOR INTERNSHIPS

While the performance of necropsies in hospitals is only one of many important functions, it is nevertheless a valuable index to the scientific interests of the staff.

TABLE 17—Approved Internship Hospitals with Highest Necropsy Percentages 1934

	Control	Deaths	Necropsies	Necropsy Percentage
1 Research and Educational Hospital Chicago	State	217	107	90.8
2 St Joseph Hospital Kansas City Mo	Church	230	210	90.4
3 Chas T Miller Hospital St Paul Minn	NP Assn	50	48	85.7
4 St Luke's Hospital Kansas City Mo	Church	140	125	80.0
5 Mary Hitchcock Memorial Hospital Hanover N H	NP Assn	90	80	80.8
6 Colorado General Hospital Denver	State	204	162	79.4
7 Johns Hopkins Hospital Baltimore	NP Assn	577	457	79.2
8 University of Nebraska Hospital Omaha	State	178	108	78.3
9 Bell Memorial Hospital Kansas City Kan	State	249	193	77.5
10 University of California Hospital San Francisco	State	170	131	76.6
11 Peter Bent Brigham Hospital, Boston	NP Assn	204	220	74.8
12 University Hospitals Minneapolis	State	422	312	73.9
13 St Elizabeths Hospital Washington D C	Fed	260	200	72.1
14 Grasslands Hospital Valhalla N Y	County	43	327	72.2
15 Evanston Hospital Evanston Ill	NP Assn	107	77	72.0
16 St Margaret's Hospital Kansas City Kan	Church	24	182	71.7
17 Santa Fe Coast Lines Hospital Los Angeles	NP Assn	67	48	71.0
18 State of Wisconsin General Hospital Madison	State	357	254	71.1
19 University of Chicago Clinics Chicago	NP Assn	249	170	70.1
20 St Mary's Hospital Duluth Minn	Church	220	158	69.9

NP Assn nonprofit association Fed federal

and their efficiency in the training of interns. All of the 697 hospitals now approved for intern training met or exceeded the 15 per cent requirement. A few were removed during the year because of low necropsy rates and other deficiencies.

The names of twenty hospitals achieving the highest rate during the year 1934 are given in table 17. Of these, seven were operated by nonprofit associations, seven were state hospitals, four church hospitals, one federal and one county hospital. However, the total results were as follows:

1934 Necropsy Averages		
No of Hospitals	Control	Average Percentage
36 Federal and state		59.1
87 City and county		35.1
270 Church		27.9
273 Nonprofit associations		33.8
26 Profit associations		28.4
5 Fraternal individual industrial and partnership		29

The progress made between 1926 and 1934 is shown in the following figures:

Necropsy Rate		Number of Hospitals	
		1926	1934
15 per cent to 29 per cent		146	371
30 per cent to 49 per cent		68	239
50 per cent to 69 per cent		21	59
70 per cent and above		14	28

The rate of necropsy performance achieved by each of the 697 hospitals now approved for internship is given among other data in the revised list of approved hospitals beginning on page 699.

ESSENTIALS OF AN ACCEPTABLE SCHOOL OF OCCUPATIONAL THERAPY

I ORGANIZATION

1 A school of occupational therapy should be incorporated under the laws regulating associations which are operated not for profit. The control should be vested in a board of trustees rather than an individual. This board should be composed of public spirited men or women receiving no financial benefits from the operations of the schools. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, this fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2 Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

3 Schools of occupational therapy should not be operated by hospitals independently. It is understood, however, that hospitals are needed for practice training and especially for graduate training in the special branches of occupational therapy.

II FACULTY

1 The school should have a competent teaching staff graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. Nominations for faculty positions should be made in accordance with academic custom. The staff should include not less than one regular salaried instructor and one registered occupational therapist. The question of full time and part time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained and well qualified in the lines they are teaching.

III PLANT

1 The school should own or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class laboratories and administration offices. Equipment should be adequate for teaching and training. Anatomic charts, manikins and dummies should also be provided. There should be a library receiving regularly all the leading periodicals pertaining to occupational therapy, current numbers of which should be easily accessible to the students.

IV ADMINISTRATION

1 *Supervision*—There should be careful and intelligent supervision of the entire school by the dean, director or other executive officer, who, by training and experience, is fitted to interpret the prevailing standards and who is clothed with sufficient authority to carry them into effect.

2 *Records*—There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students by means of which an exact knowledge can be obtained regarding each student's work. Schools should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, no credit should be given for any course when attendance has been less than 80 per cent.

3 *Credentials*—The admission of students to the occupational therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the occupational therapy school is an integral part of the university, this work usually devolves on the examiner or registrar.

4 *Advanced Standing*—At the discretion of the administration, advanced standing may be granted for work required in the occupational therapy curriculum which has been done in other accredited institutions. Official verification of previous work should be obtained by direct correspondence. Preliminary qualifications should also be verified and recorded.

5 *Number of Students*—The number of students admitted to the training course should not be excessive. In practical work of a laboratory nature the number of students that can be adequately supervised by a single instructor is in general experience, about fifteen, in lectures the number may be much larger. A close personal contact between students and members of the teaching staff is essential.

6 *Discipline*—All training schools reserve the right to drop a student at any time for any cause which the school authorities deem sufficient

7 *Publications*—The school should issue, at least biennially, a bulletin setting forth the character of the work which it offers. Such an announcement should contain a list of the members of the faculty with their respective qualifications

V PREREQUISITES FOR ADMISSION

Requirements for admission shall be

1 *Age*—The admission of candidates should be governed by the fact that it is required that each student be not less than 21 years old at graduation

2 *Education*—All candidates must furnish proof of having completed a high school education or its equivalent. In addition, it is desirable that all candidates, except those for the degree course, shall have had at least one year and preferably two years, of further education or successful experience in college art school, social service, nurse's training or the commercial field

Candidates for admission to a training course in a college or university which is combined with work leading to a bachelor's degree should be required to comply with the regular entrance requirements of the institution concerned.

3 *Character*—All candidates should be required to present evidence of good character and general fitness, the evidence of which should be investigated and duly weighed by the school concerned

4 *Health*—All students should be given a physical examination under the supervision of the school as soon as practicable after admission, and this examination should be repeated annually. The first examination at least, should include a roentgen examination of the chest

VI CURRICULUM

1 *Length of Course*—The minimum length of the course should be twenty-five calendar months (100 weeks) of full time training. The course should include not less than sixteen months (sixty-four weeks) of theoretical and technical work and not less than nine months (thirty-six weeks) hospital practice-training under competent supervision, all as set forth in detail in succeeding sections

2 *Distribution of Time*—The two years devoted to theoretical training should include not less than sixty semester hours, of which not less than thirty semester hours should consist of systematic instruction and not less than twenty-five hours of laboratory procedures. In special cases a variation of 10 per cent is permissible

3 The hours devoted to theoretical training should be still further subdivided as follows

	Semester Hours
(a) Biologic Sciences include	
Anatomy	15
Physiology	
Neurology	
Kinesiology	
Psychology	
Psychiatry	
(b) Social Sciences	4
(c) Theory of Occupational Therapy	4
(d) Clinical Subjects include	
Orthopedics	4
Tuberculosis	
Cardiac Diseases	
Blindness and Deafness	
Contagious Diseases (including Bacteriology if this subject is not given elsewhere)	
General Medical and Surgical Conditions	
(e) Electives	3
Total	30

4 Practical work in the various occupations should be allotted not less than twenty-five semester hours. The following subjects should be covered

Design	Leather
Textiles	Plastic Arts
Wood	Recreation
Metal	Miscellaneous

5 The curriculum outlined above should be in effect not later than Jan 1, 1939

ESSENTIALS FOR THE LISTING OF PHYSICIANS SPECIALIZING IN PATHOLOGY AND CLINICAL PATHOLOGY

Admission to the list is open to all physician-pathologists engaged in pathologic work in accordance with the "Essentials," whether connected with a hospital or not. The work of compiling a list of qualified pathologists according to these "Essentials" is done by the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago

Definition—A physician holding himself out as a specialist in pathology may be defined as follows: One who is a graduate in medicine having had satisfactory training and experience in pathology, chemistry, bacteriology, or other allied subjects for at least three years subsequent to graduation who is in good standing and has been duly licensed to practice medicine.

Qualifications—(a) The pathologist shall be on a full or part time basis with a laboratory for the practical application of one or more of the fundamental sciences by the use of specialized apparatus, equipment and methods, for the purpose of ascertaining the presence, nature, source and progress of disease in the human body. He should devote the major part of his time to work in this field. (b) Pathology should be practiced on the same scientific and ethical basis, whether in the hospital or in a detached laboratory. The work represents the practice of medicine as in other specialties. The pathologist may make diagnoses only when he is a licensed graduate of medicine, has had satisfactory training and experience in pathology for at least three years subsequent to graduation from a medical college, is reasonably familiar with the manifestations of disease and is competent to make reliable reports.

(c) *Assistants*—The pathologist may have a corps of qualified assistants and technicians, responsible to him, and for whom he is responsible to carry out promptly, intelligently and accurately the several kinds of service the laboratory offers. All their reports, not only of tissues but also of all bacteriologic, hematologic, biochemical, serologic and pathologic data, should be made to the pathologist.

Scope—Pathologic service may consist of

- (a) Hematologic—Blood counts, blood groupings and coagulation tests and tests for blood parasites in general
- (b) Biochemical—Qualitative and quantitative analyses of urine, blood, gastric contents, body fluids, feces, intestinal contents and cerebrospinal fluids; renal and hepatic function tests and basal metabolism
- (c) Bacteriologic—Bacteriologic diagnoses, preparation of vaccines and blood and body fluid cultures
- (d) Serologic—Serologic diagnoses, agglutination, complement fixation or precipitin and lysis tests
- (e) Pathologic—Preparation of paraffin, celloidin or frozen sections, microscopic and gross pathologic specimens and necropsies
- (f) Parasitologic—Protozoal and zoological diagnoses
- (g) Metabolic—Disorders of metabolism
- (h) Cardiologic—Disorders of the heart

It is of course not required that the candidate shall be prepared to render all the services mentioned, since the work must necessarily be diversified in larger laboratories and in smaller laboratories it is not always practical to have equipment and setups that would be used only occasionally. Since many pathologists limit their work to one branch of the specialty, referring certain items far more efficiently is to be expected.

Reports—Reports should be made solely to the physician in charge of the patient and should be signed by the pathologist. All blanks and reports should have the name of the director printed on them and, if of a diagnostic or prognostic character, the name of the staff physician also.

Records—Full records of all examinations made by the pathologist, suitably indexed and filed, are essential. Every specimen analyzed in the laboratory should be given a serial number, which should follow that specimen in the records and reports. When the laboratory report concerns a hospital patient, an exact transcript of the laboratory record should be appended to the hospital case record. Each specimen submitted to the laboratory should be accompanied by pertinent clinical data.

Advertising matter should be directed only to physicians either through bulletins or through recognized technical journals and never to the nonprofessional public, as, for example, by announcements in popular journals and periodicals, circulars, pamphlets, telephone lists or other means.

DESCRIPTION OF MEDICAL COLLEGES

ALABAMA

University

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868 inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907 when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are ninety semester hours of collegiate work. The course of study covers two years of thirty six weeks each. The faculty includes 13 professors and 10 instructors assistants etc a total of 23. The tuition fees are \$271 each year. Total registration for 1934-1935 was 130. The next session begins Sept 12 1935 and ends May 26 1936. The Dean is Stuart Graves M.D.

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE 300 West Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 34 professors and 65 lecturers and assistants total 99. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$200 nonresidents are charged \$150 additional each year. The total registration for 1934-1935 was 230 graduates 42. The next session begins Oct. 2 1935 and ends June 8 1936. The Dean is Frank Vinsonhaler M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL University Campus Berkeley Medical Center San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 by legislative enactment the College of Medicine of the University of Southern California at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work is required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 138 professors and 243 associates and assistants a total of 381. The course covers four years of eight months each and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years respectively for residents of California are \$277 \$240 \$235 and \$235 nonresidents are charged \$300 additional each year. Total registration for 1934-1935 was 239 graduates 51. The next session begins Aug 26 1935 and ends May 22 1936. The Dean is Langley Porter M.D. San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 59 professors and 237 associates assistants and instructors a total of 296. The course covers a period of five years including one year of internship. During the first and second years the students are in school twelve months each year. This is accomplished by means of the cooperative plan the student spending alternate months in an approved hospital in practical lines of medical training. Sixty four semester hours of collegiate work are required for admission. The total fees for the four years respectively are \$385 \$375 \$480 and \$440. The total registration for 1934-1935 was 404 graduates 83. The next session begins July 2 1935 and ends June 21 1936. The Dean of the Los Angeles Division is E. H. Risley M.D. and the Dean of the Loma Linda Division is W. E. Macpherson M.D.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Medical Department of the University of California in Los Angeles. In 1909 the College of Physicians and Surgeons established in 1904 became the Medical Department of the University of Southern California. Its activities were suspended in 1920 reorganized in May 1928 under present title. The faculty consists of 132 professors and 126 instructors assistants and others a total of 258. An internship is required for graduation. Three years of collegiate work is required for admission. Coeducational since organization. Annual fees amount to \$450. The total registration for 1934-1935 was 176 graduates 35. The next session begins Sept 23 1935 and ends June 6 1936. The Dean is Paul S. McKibben Ph.D.

San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE 2398 Sacramento Street San Francisco.—Organized in 1908 when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 109 professors and 156 lecturers assistants and others a total of 265. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each plus a fifth year of intern work. The fees for the four years, respectively are \$470 \$446 \$364 and \$364. The total registration for 1934-1935 was 220 graduates 47. The next session begins Sept 24 1935 and ends June 10 1936. The Dean is Loren Roscoe Chandler M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan 1 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers instructors and assistants a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado for each of the four years are respectively, \$211 \$231 \$181 and \$191. Nonresidents are charged \$132 additional each year. The total registration for 1934-1935 was 205 graduates, 47. The next session begins Sept 30, 1935 and ends June 15 1936. The Dean is Maurice H. Rees M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812 instruction began in 1813 first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887 Yale College became Yale University. Coeducational since 1916. The faculty consists of 127 professors and 180 lecturers and assistants a total of 307. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees for the four years respectively are \$500 \$500 \$500 and \$520. The total registration for 1934-1935 was 207 graduates 47. The next session begins Sept. 23 1935 and ends June 10 1936. The Dean is Stanhope Bayne-Jones, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE 3900 Reservoir Road N.W.—Organized 1851. First class graduated in 1852. The faculty is composed of 55 professors 36 associate professors 3 assistant professors and 139 instructors total 233. Three years of collegiate work is required for entrance. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions respectively are \$465 \$460 \$410 and \$450. The total registration for 1934-1935 was 493 graduates 113. The next session begins Sept 23 1935 and ends June 8 1936. The Dean is David V. McCauley S.J. Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE 1335 H Street N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838 and 1861 to 1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 54 professors and 110 instructors demonstrators and assistants a total of 164. Two years of collegiate work is required for admission. The course covers four years of thirty two weeks each. The fees for the four years respectively are \$500 each year. The total registration for 1934-1935 was 284 graduates 71. The next session begins Sept 25 1935 and ends June 6 1936. The Dean is Earl B. McKinley M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE Fifth and W Streets N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 30 professors and 79 lecturers and assistants 109 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty three weeks each. The fees for each of the four sessions, respectively are \$269 \$269 \$269 and \$276. Registration for 1934-1935 was 171 graduates 55. The next session begins Sept 24 1935 and ends June 5 1936. The Dean is Numa P. G. Adams M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854 as the Atlanta School of Medicine. Classes graduated 1855 to 1861 when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874.

In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905) reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915 assumed present title in 1917. Two years of collegiate work is required for admission. The faculty consists of 19 professors and 168 associates and assistants, a total of 187. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$300. Total registration for 1934-1935 was 222 graduates 54. The next session begins Sept 30 1935 and ends June 8 1936. The Dean is Russell H. Oppenheimer M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia the name being changed July 1 1933 to University of Georgia School of Medicine. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducational since 1920. The faculty includes 47 professors and 32 assistants 79 in all. Two years of collegiate work is required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$185 for residents of Georgia and \$365 each year for nonresidents. The total registration for 1934-1935 was 144 graduates 34. The next session begins Sept 23 1935, and ends June 8 1936. The Dean is G. Lombard Kelly M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE 706 South Lincoln Street.—Incorporated in 1915 as the Bennett Medical College and operated as an organic part of Loyola University by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Two years of collegiate work is required for admission. The course of study is five years including an internship. The B.S. degree in medicine is conferred at the end of the third year. The faculty is composed of 55 professors and 238 assistants, lecturers, instructors and others a total of 293. The fees for each year are \$371 \$407 \$336 and \$298 respectively. The total enrollment for 1934-1935 was 487 graduates 96. The next session begins Sept 25 1935 and ends June 13 1936. The Dean is Louis D. Moorhead M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 116 professors 288 associates and instructors, a total of 404. The requirement for admission is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the third year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are \$361 each year. The total registration for 1934-1935 was 557 graduates 146. The next session begins Oct 1 1935, and ends June 13 1936. The Dean is Irving S. Cutter, M.D.

UNIVERSITY OF CHICAGO RUSH MEDICAL COLLEGE 1758 West Harrison Street.—Chartered in 1837 held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University retaining however its self-government. This relation was dissolved in April 1898 and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. Since that time the work of the first two years has been given on the University Quadrangles. In May 1924 by a new contract the University of Chicago took over the work of Rush Medical College as a department of the university. Thereafter only clinical work has been offered by Rush Medical College. Since 1914 the course has included a fifth year consisting of a hospital internship or of a fellowship in one of the departments. Three years of collegiate work is required for admission. The year is divided into four quarters of twelve weeks each the completion of the work of three of these quarters gives credit for a college year. The faculty is composed of 136 professors 147 associates instructors and others a total of 283. The fee for the third year is \$391 and for the fourth \$411. Total registration for 1934-1935 was 312 graduates 152. The next session begins Sept 30 1935 and ends June 16 1936. The school is in session all year except the month of September. The Dean is Ernest E. Irons M.D.

UNIVERSITY OF CHICAGO THE SCHOOL OF MEDICINE OF THE DIVISION OF THE BIOLOGICAL SCIENCES Fifty Eighth Street and Ellis Avenue.—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899 in cooperation with Rush Medical College and that of the third and fourth clinical years was added in 1924 with the organization of this medical school and the construction on the Quadrangles of the university hospitals and clinics. Coeducational. A fifth year spent in successful internship in an approved hospital or in advanced work in some branch of medical science, is required for the degree of M.D. The faculty is composed of 98 professors 132 associates instructors and others a total of 230. The requirements for admission are three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The year is divided into four quarters of twelve weeks each the completion of the work of three of these quarters gives credit for a college year. Students are admitted at the beginning of the autumn quarter. The tuition fees for each of the

four years are \$375. Total registration for 1934-1935 was 339 graduates 34. The next session begins Oct 2 1935 and ends June 17, 1936. The Dean of Medical Students is B. C. H. Harvey M.D.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912 and was restored in March 1913, when the present title was assumed. Coeducational since 1898. Two years of collegiate work is required for admission. The curriculum covers four years of thirty-two weeks each and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 119 of professorial rank and 267 associates instructors and assistants a total of 386. The tuition is \$200 a year for students who are residents of Illinois \$300 a year for nonresident students. The total registration for 1934-1935 was 614 graduates 145. The next session begins Sept 30, 1935 and ends June 5, 1936. The Dean is David John Davis M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878) the Central College of Physicians and Surgeons (organized in 1879) and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers associates and assistants. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is \$205 a year for residents of Indiana and \$410 for nonresidents. The total registration for 1934-1935 was 448 graduates 93. The next session begins Sept 17, 1935 and ends June 15 1936. The Dean at Bloomington is Burton D. Myers, M.D. and the Dean at Indianapolis is Willis Dew Gatch M.D.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Camps.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 46 professors 63 lecturers demonstrators and assistants a total of 109. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is \$192 each year for residents of Iowa and \$456 for nonresidents. Total registration for 1934-1935 was 354 graduates 62. The next session begins Sept 23 1935 and ends June 1, 1936. The Dean is Ewen Murchison MacEwen M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894 and the Medico-Chirurgical College founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The choical courses are given at Kansas City. Coeducational since 1880. The faculty includes 56 professors and 134 instructors assistants and others a total of 190. The requirement for admission is two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are respectively \$126 \$113 \$117 and \$120. For nonresidents the fees are \$196 \$192 \$205 and \$207. The total registration for 1934-1935 was 287 graduates 67. The next session begins Sept 19 1935 and ends June 8 1936. The Dean is H. R. Wahl M.D. Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838 and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work is required for admission. The faculty numbers 69 professors and 85 assistants instructors and others, a total of 154. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively \$389 \$389 \$394 and \$404. Total registration for 1934-1935 was 340 graduates 79. The next session begins Sept 19, 1935 and ends June 6 1936. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY MEDICAL CENTER 1532 Tulane Avenue.—Organized January 1931 Coeducational First session October, 1931 with students of first and third years Faculty comprises 30 professors and 125 assistant professors instructors and assistants a total of 155 Course covers four years of no less than 32 weeks each and one year of general rotation or laboratory internship in approved hospital A minimum of three years collegiate work is required for admission Total fees \$92 each year for residents of Louisiana additional tuition of \$300 each year for nonresidents Total registration for 1934-1935 was 301 graduates 19 The next session begins Sept 16 1935, and ends June 1 1936 The Dean is Arthur Vidrine MD

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana Classes were graduated in 1835 and in all subsequent years except 1863 1865 inclusive It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884 Present title in 1913 Coeducational since 1915 The faculty comprises 30 professors and 135 associate and assistant professors instructors and assistants a total of 165 The course covers four years of thirty-two weeks each A minimum of two years of collegiate work is required for admission Total fees for each of the four years respectively are \$350 \$340 \$325 and \$355 The total registration for 1934-1935 was 471 graduates 125 The next session begins Sept 27 1935 and ends June 10 1936 The Dean is Charles Cassidy Bass MD

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE Washington and Monument Streets.—Organized in 1867 Offered preliminary course only until 1893 The first class graduated in 1897 Coeducational since organization The faculty consists of 73 professors and 307 instructors assistants and others a total of 380 The requirement for admission is a collegiate degree The course extends over four years of eight and one-half months each The total fees for each year are respectively \$621 \$620 \$620 and \$620 Total registration for 1934-1935 was 276 graduates 69 The next session begins Oct 1 1935 and ends June 9 1936 The Dean is Alan M Chesney MD

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland The first class graduated in 1810 In 1812 it became the University of Maryland School of Medicine Baltimore Medical College was merged into it in 1913 In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed Coeducational since 1918 The faculty consists of 96 professors and 158 instructors and assistants a total of 254 Two years of collegiate work is required for admission The course covers four years of eight months each The fees for the four years respectively are \$410 \$400 \$400 and \$415 for residents of the state for nonresidents the fees are \$175 additional each year Total registration for 1934-1935 was 437 graduates 105 The next session begins Sept 24 1935 and ends June 6 1936 The Dean is J M H Rowland MD

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE 80 East Concord Street.—Organized in 1873 as a homeopathic institution In 1874 the New England Female Medical College founded in 1848 was merged into it The first class was graduated in 1874 Became nonsectarian in 1918 Coeducational since organization Three years of collegiate work is required for admission The faculty includes 20 professors 152 associates and others a total of 172 The course covers four years Total fees for each of the four years respectively are \$426 \$421 \$421 and \$435 Total registration for 1934-1935 was 253 graduates 55 The next session begins Sept 26 1935 and ends June 15 1936 The Dean is Alexander S Begg MD

HARVARD UNIVERSITY MEDICAL SCHOOL, 25 Shattuck Street.—Organized in 1782 The first class graduated in 1788 It has a faculty of 146 professors and 347 other instructors and assistants a total of 493 Two years of collegiate work is required for admission The total fee for each of the four years is \$400 plus \$5 the first year for matriculation The total registration for 1934-1935 was 523 graduates 137 The next session begins Sept 23 1935 and ends June 18 1936 The Dean is Charles Sidney Burwell MD

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College The first class graduated in 1894 Coeducational since 1894 It has a faculty of 75 professors and 256 assistants lecturers and others a total of 331 A bachelor's degree is required for admission The course covers four years of eight months each The total fees for each of the four years are \$412 \$407 \$407 and \$417 Total registration for 1934-1935 was 484 graduates 119 The next session begins Sept 25 1935 and ends June 15 1936 The Dean is A Warren Stearns MD

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery The first class graduated in 1851 Present title assumed in 1915 Coeducational since 1870 It has a faculty of 26 professors 13 associate

professors 28 assistant professors 152 assistants instructors and lecturers a total of 219 The entrance requirements are ninety semester hours The curriculum covers four years of nine months each. The total fees for Michigan students are \$200 \$205 \$205 and \$202 for each of the four years respectively plus a matriculation fee of \$10 for nonresidents \$100 a year additional The matriculation fee for nonresidents is \$75 The total registration for 1934-1935 was 472 graduates 105 The next session begins Sept 30 1935 and ends June 22 1936 The Dean is A C Furstenberg MD

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE 1516 St Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College organized in 1868 and the Michigan College of Medicine organized in 1880 Reorganized with the title of Detroit College of Medicine and Surgery in 1913 The first class graduated in 1886 In 1918 it became a municipal institution under the control of the Detroit Board of Education In 1934 the name was changed by the action of the Detroit Board of Education to Wayne University College of Medicine as a part of the program of consolidation of the Detroit City Colleges into a university system Coeducational since 1917 Entrance requirement is an academic degree or 90 semester hours of academic credit with combined degree guaranteed by school of arts and sciences The faculty consists of 33 professors 101 lecturers and others a total of 134 The course covers four years of nine months each and a fifth year of intern work The total fees for each of the first four years are for Detroit residents \$283 for nonresidents who reside in Michigan \$383 and for nonresidents from outside the state \$408 For the fifth or intern year the resident student fee is \$50 the nonresident fee is \$85 The total registration for 1934-1935 was 310 graduates 74 The next session begins Sept 26 1935 and ends June 19 1936 The Assistant Dean is Wm J Stapleton Jr

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery reorganized in 1888 by absorption of St Paul Medical College and Minnesota Hospital College The first class graduated in 1889 In 1908 the Minneapolis College of Physicians and Surgeons organized in 1883 was merged In 1909 the Homeopathic College of Medicine and Surgery was merged Present title in 1913 Coeducational since organization The faculty includes 87 professors and 216 instructors a total of 303 The curriculum covers four years of nine months each and a year's internship in an approved hospital The school is operated on the four-quarter plan The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics thirteen credits of general chemistry qualitative and quantitative analysis and organic chemistry eight credits of zoology and a reading knowledge of scientific German with a C average in all subjects and in the sciences Students are required to meet the requirements for a degree of BS or BA before receiving the degree of Bachelor of Medicine (MB) which is granted at the end of the four year course The MD degree is conferred after a year of intern work, of advanced laboratory work or of public health work has been completed Students are graduated at the end of any quarter in which work is completed and examinations passed Total fees are \$243 for residents and \$318 for nonresidents each year of three quarters The total registration for 1934-1935 was 502 graduates 123 The next session begins Sept 30 1935 and ends June 15 1936 The Dean is Elias P Lyon PhD

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903 Coeducational since organization Gives only the first two years of the medical course A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class The session extends over eight and one-half months Entrance requirement is three years of collegiate work The BS degree in medicine is conferred at the end of the second year The faculty includes 8 professors 1 assistant professor and 9 instructors assistants and others, a total of 18 The total fees for the first year are \$392 and for the second year \$399 The nonresident fee is \$50 additional per year No freshman students will be enrolled during the session 1935-1936 The total registration for 1934-1935 was 52 The next session begins Sept 18 1935 and ends June 1 1936 The Acting Dean is B S Guyton MD

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St Louis in 1845 was discontinued in 1855 but was reorganized at Columbia in 1872 Teaching of the clinical years was suspended in 1909 Coeducational since 1872 The faculty includes 13 professors and 13 assistant professors lecturers and others a total of 26 The entrance requirements are 90 semester hours of collegiate work The BS degree in medicine is conferred at the end of the second year Total fees for the first year are \$167 for the second \$200 Nonresidents of the state pay \$25 per semester extra Total registration for 1934-1935 was 82 The next session begins Sept 9, 1935 and ends June 3 1936 The Dean is Dudley S Conley MD

St. Louis

ST LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard.—Organized in 1901 as the Marion Sims Beaumont Medical College by union of Marion Sims Medical College organized in 1890,

and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 77 professors and 238 instructors and assistants, a total of 315. The requirement for admission is a qualitative standard of two years of collegiate study in the customary subjects, but applicants presenting meritorious credit in excess of the two year minimum are accepted by preference. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years respectively are \$425 \$420 \$420 and \$455. The total registration for 1934-1935 was 518 graduates, 110. The next session begins Sept. 19, 1935 and ends June 1, 1936. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 106 professors and 204 lecturers, instructors and others, a total of 310. Four years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years of eight months each. The total fees for the four years are respectively \$425 \$419 \$419 and \$424. The total registration for 1934-1935 was 351 graduates, 92. The next session begins Sept. 26, 1935 and ends June 9, 1936. The Dean is W. McKim Marriott, M.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 68 professors and 70 instructors, lecturers and assistants, a total of 138. Two years of collegiate work required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees each year for the four years are respectively \$393 \$393 \$348 and \$356. Total registration for 1934-1935 was 303 graduates, 69. The next session begins Sept. 19, 1935 and ends June 4, 1936. The Dean is Bryan M. Riley, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 62 professors and 60 lecturers and instructors, a total of 122. Sixty-five semester hours of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for each of the four years respectively are \$219 \$214 \$214 and \$214. Total registration for 1934-1935 was 340 graduates, 77. The next session begins Sept. 23, 1935, and ends June 8, 1936. The Dean is C. W. M. Poynter, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 16 professors and 10 instructors, a total of 26. Three years of collegiate work is required for admission. The course covers nine calendar months in each year or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are \$410 and \$400 for the second year. The total registration for 1934-1935 was 39. The next session begins Sept. 19, 1935 and ends June 15, 1936. The Dean is John P. Bowler, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 27 professors and 61 instructors, assistants and others, a total of 88. A collegiate degree is required for admission. The curriculum covers four years of eight months each. The total fees for four years, respectively are \$445 \$420 \$405 and \$405. The total registration for 1934-1935 was 112 graduates, 28. The next session begins Sept. 30, 1935 and ends June 8, 1936. The Dean is Thomas Ordway, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 124 professors, associate assistant clinical and assistant clinical professors and 177 lecturers, instructors, assistants and others, a total of 301. Seventy-two semester hours of

collegiate work is required for admission. The course covers four years (first second and fourth years of eight months each and the third year of nine months). The total fees for each of the four years are respectively \$545 \$555 \$545 and \$565. Total registration for 1934-1935 was 407 graduates, 98. The next session begins Sept. 30, 1935 and ends June 2, 1936. The Acting Dean is Wade W. Oliver, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 89 professors and 152 associates, assistants and others, a total of 241. Two years of collegiate work is required for admission. The course covers four years of eight months each. The total fees for each of the four years are respectively, \$530 \$525, \$520 and \$530. Total registration for 1934-1935 was 277 graduates, 66. The next session begins Sept. 30, 1935 and ends June 10, 1936. The Dean is Edward W. Koch, M.D.

Ithaca-New York

CORNELL UNIVERSITY MEDICAL COLLEGE, York Avenue and Sixty Ninth Street, New York.—Organized in 1898. The work of the first year may be taken either in Ithaca or New York. Coeducational since organization. The faculty is composed of 118 professors and 267 assistants, lecturers, instructors and others, a total of 385. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the bachelor degree on the completion of the first year's work. The fees for each of the four years are, respectively \$510 \$500 \$510 and \$525. Total registration for 1934-1935 was 287 graduates, 64. The next session begins Sept. 30, 1935 and ends June 17, 1936. The Acting Dean is William S. Ladd, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty Eighth Street.—The medical faculty of Columbia College then known as King's College was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 180 professors and 420 instructors, demonstrators and others, a total of 600. Three years of collegiate work is required for admission. The work covers four years of eight months each. The total fees for the four years respectively are \$545 \$530 \$530 and \$550. Total registration for 1934-1935 was 403 graduates, 97. The next session begins Sept. 25, 1935 and ends June 13, 1936. The Dean is Willard C. Rappleye, M.D.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East Sixty Fourth Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title in 1908. The first class graduated in 1861. Coeducational since 1919. Two years of collegiate work is required for admission. The course covers four years of eight months each. It has a faculty of 53 professors and associate professors, 17 assistant professors and 121 lecturers and assistants, a total of 191. The total fees for the four years are respectively \$540 \$530 \$530 and \$560. Total registration for 1934-1935 was 328 graduates, 63. The next session begins Sept. 16, 1935 and ends June 2, 1936. The Dean is Claude A. Burrett, M.D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College organized in 1841 and the Bellevue Hospital Medical College organized in 1861. Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 130 professors, associate assistant clinical and assistant clinical professors and 314 lecturers, instructors and others, a total of 444. The course covers four years. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools or seniors in good standing in approved colleges or scientific schools on condition that their faculty will permit them to substitute the first year in the New York University College of Medicine for the fourth year of their college course and will confer the bachelor's degree on the satisfactory completion of the year's work. The fees for the four years respectively are \$552 \$543 \$527 and \$570. Total registration for 1934-1935 was 533 graduates, 126. The next session begins Sept. 18, 1935 and ends June 10, 1936. The Dean is John Wyckoff, M.D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Avenue and Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 53 professors, 160 lecturers, assistants, instructors and others, a total of 213. The work embraces a graded course of four years of nine months each. Three years of collegiate work is required for admission. The total fees for each year are \$400. The total registration for 1934-1935 was 167 graduates, 46. The next session begins Sept. 16, 1935 and ends June 15, 1936. The Dean is George Hoyt Whipple, M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309 311 South McBride Street—Organized in 1872 when the Geneva Medical College chartered in 1834 was removed to Syracuse under the title The College of Physicians and Surgeons of Syracuse University. Present title assumed in 1875 when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 43 professors and 141 associate and assistant professors lecturers and instructors a total of 184. Two years of a recognized college course is required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is \$500 for the fourth year \$510. The total enrollment for 1934-1935 was 191 graduates 45. The next session begins Sept 26 1935 and ends June 1 1936. The Dean is H G Weiskotten M D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE—Organized in 1890. Until 1902 this school gave only the work of the first two years when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year including 1910 when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work is required for admission. The B S degree in medicine is conferred at the end of the second year. The faculty is composed of 12 professors and 4 instructors a total of 16. The fees for each year are \$250 for residents nonresidents an additional fee of \$100. The total registration for 1934-1935 was 74. The next session begins Sept 19 1935 and ends June 9 1936. The Dean is C S Mangum M D.

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE—Organized in 1925. The first class was admitted Oct. 1 1930. Coeducational. The faculty is composed of 10 professors and 81 associate and assistant professors lecturers instructors and assistants a total of 91. The entrance requirements are seventy hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year and if satisfactory will receive the M D certificate after three calendar years or three quarters in each year and if satisfactory will be graduated after four calendar years. The B S degree in medicine is conferred after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. Total registration for 1934-1935 was 210 graduates 47. The next session begins Sept 30 1935 and ends June 13 1936. The Dean is Wilhurt C Davison M D.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE—Organized in 1902. The faculty numbers 9 professors and 8 assistants. Ninety semester hours of collegiate work is required for admission. Each annual course extends over nine months. The fees for the first year are \$235 and \$230 for the second year. The total registration for 1934-1935 was 63. The next session begins Sept 12 1935 and ends June 2 1936. The Dean is Thurman D Kitchin M D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts is required for admission. The B S degree in medicine is conferred at the end of the second year. The faculty consists of 5 professors and 8 instructors a total of 13. The fees are \$75 each year for resident students and \$165 for nonresidents. The total registration for 1934-1935 was 70. The next session begins Sept 17 1935 and ends June 9 1936. The Dean is H E. French M D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE Eden and Bethesda Avenues—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement March 2 1909 the Miami Medical College also merged into the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. The B S degree in medicine is conferred at the end of the second year. The faculty consists of 123 professors and 214 associates assistants etc a total of 337. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are respectively \$360 \$365 \$360 and \$370 and if not legal citizens of Cincinnati \$50 additional. The total registration for 1934-1935 was 288 graduates 73. The next session begins Sept. 23 1935 and ends June 5 1936. The Dean is Alfred Friedlander M D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 74 professors and 192 lecturers assistants and others a total of 266. The curriculum covers three years of eight and one-half months each and one year of nine months. Three years of collegiate work is required for admission. The total fees for each of the four years are respectively \$442 \$435 \$415 and \$425. The total registration for 1934-1935 was 277 graduates, 71. The next session begins Sept 19 1935 and ends June 10, 1936. The Dean is Torald Sollmann M D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues—Organized in 1907 as the Starling Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College which was chartered March 3 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 51 professors and assistant professors 91 lecturers instructors demonstrators and others a total of 142. Three years of collegiate work is required for admission. The course covers four years of thirty-four weeks each. Tuition fees are \$246 \$231 \$231 and \$241 each year respectively for residents of Ohio and \$150 additional for nonresidents. The total registration for 1934-1935 was 373 graduates 83. The next session begins Oct 1 1935 and ends June 15 1936. The Dean is J H J Upham M D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910 when a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September 1928 the entire course has been given at Oklahoma City. It has a faculty of 28 professors 52 associate and assistant professors and 49 instructors a total of 129. Two years of collegiate work is required for admission. The B S degree is conferred at the end of the second year. The course covers four years of nine months each. The total fees for the four years are, respectively \$128 \$95 \$23 and \$25. For students residing outside the state of Oklahoma there is an additional fee of \$200 a year. The total registration for 1934-1935 was 236 graduates 55. The next session begins Sept 16 1935, and ends June 8 1936. The Dean is Robert U Patterson M D.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill—Organized in 1887. The first class graduated in 1888 and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 71 professors and 190 lecturers assistants and others a total of 261. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees for the four years are respectively \$260 \$255 \$250 and \$250 for residents of Oregon and \$60 a year additional for nonresidents. The total registration for 1934-1935 was 234 graduates 54. The next session begins Oct 1 1935 and ends June 4 1936. The Dean is Richard B Dillehunt M D.

PENNSYLVANIA

Philadelphia

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 235 North Fifteenth Street—Organized in 1848 as the Homoeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Two years of collegiate work is required for admission. It has a faculty of 77 professors and 126 lecturers instructors and others in all 203. The work covers four years of eight and one-half months each. Fees for each of the four years are respectively \$455 \$427 \$427 and \$450. The total registration for 1934-1935 was 498 graduates 102. The next session begins Sept 30 1935 and ends June 11 1936. The Dean is William A Pearson Ph C.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 65 professors associate and assistant professors and 178 associates lecturers demonstrators and instructors a total of 243. A bachelor's degree is required for admission. The course of study covers four years of eight and one-half months each. The total fees for the four years are respectively \$445 \$430 \$425 and \$425. The total registration for 1934-1935 was 557 graduates 142. The next session begins Sept 23 1935 and ends June 5 1936. The Dean is Ross V Patterson M D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE Broad and Ontario Streets—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 31 professors and 201

associates assistants and others a total of 232 Three years of collegiate work is required for admission The fees for each of the four years respectively, are \$485 \$455 \$435 and \$455 The total registration for 1934-1935 was 448 graduates 100 The next session begins Sept 25 1935, and ends June 11 1936 The Dean is William N Parkinson M D

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets—Organized in 1765 Classes were graduated in 1768 and in all subsequent years except 1772 and 1775 1779, inclusive. The original title was the Department of Medicine College of Philadelphia The present title was adopted in 1909 It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school Coeducational since 1914 The faculty consists of 104 professors associate and assistant professors and 301 lecturers associates instructors and others a total of 405 Three years of collegiate work is required for admission The course covers four years of thirty three weeks each The tuition fee is \$500 each year with a deposit fee of \$15 a student health fee of \$10 and a matriculation fee of \$5 Total registration for 1934-1935 was 531 graduates 134 The next session begins Sept 23 1935 and ends June 17 1936 The Dean is William Pepper M D

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA Henry Avenue and Abbottsford Road East Falls—Organized in 1850 Classes were graduated in 1852 and in all subsequent years except 1862 It has a faculty of 48 professors and 58 assistants lecturers and others in all 106 Three years of collegiate work is required for admission The curriculum covers four years of eight months each Total fees for each of the four years are respectively \$439 \$433 \$433 and \$455 The total registration for 1934-1935 was 132 graduates 32 The next session begins Sept 25 1935 and ends June 3 1936 The Dean is Martha Tracy M D

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE Bigelow Boulevard—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh removing to the university campus in 1910 The first class graduated in 1887 Coeducational since 1899 The faculty is composed of 22 professors and 268 associates assistants and others 290 in all Entrance requirements are two years of collegiate work The course of study is four years of eight and one-half months each The total fees for the four years respectively are \$500 \$400 \$400 and \$415 The total registration for 1934-1935 was 263 graduates 65 The next session begins Sept. 23 1935 and ends June 10 1936 The Dean is R R Huggins M D

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA 16 Lucas Street—Organized in 1823 as the Medical College of South Carolina The first class graduated in 1825 In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838 Classes were graduated in all years except 1862 to 1865 inclusive. In 1913 by legislative enactment it became a state institution Coeducational from 1895 to 1912 when privileges for women were withdrawn being restored in 1917 It has a faculty of 37 professors and 38 lecturers instructors and others a total of 75 The course covers four years of eight months each Two years of collegiate work is required for admission The total fees are \$270 \$270 \$285 and \$285 each year respectively Fees for nonresidents of the state \$420 \$420 \$435 and \$435 Total enrolment for 1934-1935 was 162 graduates, 41 The next session begins Sept 26 1935 and ends June 4 1936 The Dean is Robert Wilson M D

SOUTH DAKOTA

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE—Organized in 1907 Coeducational since organization Offers only the first two years of the medical course. Two years work in a college of liberal arts is required for admission The B S degree in medicine is conferred at the end of the second year The faculty numbers 11 The fees are \$100 each year for residents and \$200 for nonresidents The total registration for 1934-1935 was 53 The next session begins Sept 18 1935 and ends June 8 1936 The Dean is J C Ohlmacher M D

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue—Organized in 1876 at Nashville as Nashville Medical College First class graduated 1877 and a class graduated each subsequent year Became Medical Department of University of Tennessee in 1879 In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911 The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor In 1911 it moved to Memphis where it united with the College of Physicians and Surgeons The Memphis Hospital Medical College was merged in 1913 Lincoln Memorial University Medical Department was merged in 1914 Coeducational since 1911 The faculty includes 85 professors and 115 assistants instructors and others a total of 200 Two years of collegiate work is required for admission The B S degree in medicine is conferred at the end of the second year The fees are for the first quarter \$136 second to sixth quarters \$116 each seventh to ninth quarters \$111 each tenth to twelfth quarters \$121 each For residents of the state the charge is reduced \$50 each quarter Total

registration for 1934-1935 was 429 graduates 99 During the academic year 1935-1936 the quarters begin July 10 Sept 26 Jan 1 and March 19 and end Sept 25 Dec 14 March 18 and June 6 The Dean is O W Hyman Ph D

Nashville

MEHARRY MEDICAL COLLEGE Eighteenth Avenue North and Heffernan Street—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College which became Walden University in 1900 First class graduated in 1877 Obtained new charter Independent of Walden University in 1915 Coeducational since 1876 The faculty is made up of 25 professors and 24 instructors demonstrators lecturers and others 49 in all Two years work in a college of liberal arts is required for admission The curriculum covers four years of thirty two weeks each Tuition fees are respectively \$270 \$250 \$250 and \$270 each year Total registration for 1934-1935 was 189 graduates 40 The next session begins Oct. 1 1935 and ends May 28 1936 The President is John Mallowney M D

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty First Street at Edgehill—This school was founded in 1874 The first class graduated in 1875 Coeducational since September 1925 The faculty numbers 215 For matriculation students must be seniors in absentia who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each The total fees for the four years respectively are \$315 \$315 \$315 and \$320 The total registration for 1934-1935 was 203 graduates 51 The next session begins Sept 25 1935 and ends June 10 1936 The Dean is Waller S Leathers, M D

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University It acquired the charter of Dallas Medical College in 1904 Coeducational since organization The first class graduated in 1901 The faculty consists of 69 professors and 76 instructors and assistants a total of 145 Entrance requirements are two years of collegiate work The course covers four years of eight months each The fees for each of the four years respectively are \$364 \$354 \$349 and \$374 Total registration for 1934-1935 was 376 graduates 79 The next session begins Sept 30, 1935 and ends June 1, 1936 The Dean is W H Moursund M D

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE 912 Avenue B—Organized in 1891 The first class graduated in 1892 Coeducational since organization It has a faculty of 42 professors and 15 lecturers and instructors a total of 57 The curriculum covers four years of eight months each The entrance requirement is two years of collegiate work The B S degree in medicine is conferred at the end of the second year The total fees for the four years respectively are \$100 \$102 \$102 and \$110 There is a matriculation fee of \$50 for each year Total registration for 1934-1935 was 359 graduates 82 The next session begins Oct. 1 1935 and ends May 30 1936 The Dean is W S Carter M D

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE—Organized in 1906 Coeducational since organization Gives only first two years of medical course Each school year covers thirty six weeks Three years of collegiate work is required for admission The medical faculty consists of 7 professors and 16 lecturers and assistants a total of 23 The fees are \$190 for the first year and \$200 for the second year There is a nonresident fee of \$35 for each year Total registration for 1934-1935 was 60 The next session begins Sept. 26 1935 and ends June 6 1936 The Dean is L L Daines M D

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE Pearl Street College Park—Organized with complete course in 1822 Classes graduated in 1823 to 1836 inclusive when the school was suspended It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years Coeducational since 1920 It has a faculty of 32 professors and 30 lecturers instructors preceptors and others a total of 62 Two years of collegiate work is required for admission The course of study covers four years of nine months each For residents of Vermont the tuition fee is \$300 each session Nonresidents are charged an additional \$75 each session A student activity fee of \$30 is charged all students not holding academic degrees or in attendance four years previously and a \$25 fee for the Doctor's degree The total registration for 1934-1935 was 173 graduates 35 The next session begins Sept 19, 1935 and ends June 22 1936 The Dean is J N Jenne M D

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE—Organized in 1827 Classes were graduated in 1828 and in all subsequent years except 1865 Coeducational since the session 1920 1921 It has a faculty of 32 professors and 35 lecturers instructors assistants and others a total of 67 Two years of collegiate work is required for admission The B S degree in medicine is conferred at the end of the second year For residents of Virginia the total fees for the four years respectively are

\$379 \$356 \$331 and \$326 Nonresidents are charged an additional \$50 each year. The total registration for 1934-1935 was 246 graduates 54. The next session begins Sept. 12, 1935 and ends June 9, 1936. The Dean is J. Carroll Flippin, M.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA Twelfth and Clay Streets—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 62 professors and 86 lecturers, instructors and others, a total of 148. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each. Total fees for the four years respectively are \$304 \$304 \$289 and \$319. Nonresidents are charged an additional \$100 each year. The total registration for 1934-1935 was 332 graduates 76. The next session begins Sept. 17, 1935 and ends June 2, 1936. The Dean is Lee E. Sutton Jr., M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1902 gives the first two years of the medical course. Coeducational since organization. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state \$250 nonresidents \$400 each year. The total registration for 1934-1935 was 140. The next session begins Sept. 16, 1935 and ends June 9, 1936. The Acting Dean is Edward J. Van Lierne, M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL 412 North Charter Street—Organized in 1907. Gave only first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees for each year are respectively \$212 \$192 \$165 and \$110. An additional fee of \$200 each year is charged nonresidents. The total registration for 1934-1935 was 317 graduates 55. The next session begins Sept. 25, 1935 and ends June 22, 1936. The Dean is Wm. S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE 561 North Fifteenth Street—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 159. Two years of collegiate work is required for admission. The curriculum covers four years of eight and a half months each and one year's internship in an approved hospital. The fees for the four years respectively are \$391 \$379 \$379 and \$364. The total registration for 1934-1935 was 312 graduates 66. The next session begins Sept. 30, 1935 and ends June 17, 1936. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE Edmonton—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 8 full-time and 66 part-time professors, instructors, assistants and others, a total of 74. Fees for the first year are \$150 for the second, third and fourth years \$215 for the fifth and sixth years \$225. The registration for 1934-1935 was 197 graduates 29. The next session begins Sept. 26, 1935 and ends April 30, 1936. The Dean is Allen Coats Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE Corner of Emily and Bannatyne Avenues, Winnipeg—Organized in 1883 as Manitoba Medical College. First class graduated in 1886 and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 31 professors, 79 instructors and assistants, total of 110. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees for the five years respectively are \$270 \$265 \$275 \$275 and \$145. Total registration for 1934-1935 was 202 graduates 44. The next session begins Sept. 20, 1935 and ends May 25, 1936. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE Halifax—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty separate from the Halifax Medical College in 1885. In 1911 in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College the work of the latter institution was discontinued and a full teaching faculty was established by the university. By an arrange-

ment between Dalhousie University and the Provincial Medical Board of Nova Scotia the final professional examinations are conducted conjointly by the university and the board and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Coeducational since 1871. It has a faculty of 23 professors and 43 demonstrators, lecturers and others, a total of 66. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$312 \$312 \$302 and \$302 for each year respectively. \$200 additional registration fee payable by students outside the British Empire. The total registration for 1934-1935 was 151 graduates 22. The next session begins Sept. 10, 1935 and ends May 12, 1936. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston—Organized 1854. First class graduated in 1855 and a class graduated each subsequent year. The faculty was originally a department of the university but a separation took place in 1866 when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. It admitted women from 1880 until 1883. In 1892 the school again became a part of Queen's University. The faculty numbers 56. The fee for the first year is \$175 and \$220 for each of the other five years. There is an additional registration fee of \$50 for students outside the British Empire. The course covers six years of thirty teaching weeks each. The total registration for 1934-1935 was 310 graduates 48. The next session begins Sept. 26, 1935, and ends May 20, 1936. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL Ottawa Avenue, London—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 83. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years respectively are \$225 \$225 \$233 and \$258. The registration for 1934-1935 was 229 graduates 34. The next session begins Sept. 23, 1935 and ends May 16, 1936. The Dean is F. J. H. Campbell, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE Toronto—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.S. degree in medicine is conferred at the end of the third or sixth year. It has a faculty of 62 professors and 255 lecturers, associates and others, a total of 317. The fees are \$195 for the first year for the second \$370 \$265 for the third year \$290 for the fourth and fifth years and \$322 for the sixth year. The total registration for 1934-1935 was 816 graduates 110. The next session begins Sept. 24, 1935 and ends May 16, 1936. The Dean is J. G. FitzGerald, M.D.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE 3640 University Street, Montreal—Founded 1824 as Montreal Medical Institution became the Medical Faculty of McGill University in 1829. First class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Coeducational since 1919. Three years of collegiate work is required for admission. The length of the medical course is five years. The faculty consists of 62 professors and 152 lecturers and others, a total of 214. The total fees for each of the five medical years are \$393. The total registration for 1934-1935 was 504 graduates 103. The next session begins Sept. 18, 1935 and ends April 28, 1936. The Dean is Charles F. Martin, M.D.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE 1265 St. Denis Street, Montreal—Organized in 1843 incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891 by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by act of Parliament in 1920. A class was graduated in 1843 and in each subsequent year. Coeducational since 1925. The faculty numbers 117. One year of premedical college work is required for admission to a five-year medical course. The total fees for each of the five years respectively are \$252 \$229 \$275 \$243 and \$218. The total registration for 1934-1935 was 184 graduates 35. The next session begins Sept. 15, 1935 and ends June 15, 1936. The Dean is Léopold Parizeau, M.D.

LAVAL UNIVERSITY FACULTY OF MEDICINE Quebec—The Quebec School of Medicine organized in 1848 became in 1852 the Laval University Faculty of Medicine. First class graduated in 1855 and a class graduated each subsequent year. The faculty numbers 88. The fees for each of the medical years are \$160 \$170 \$160 \$160 and \$180 for residents of Canada. Nonresidents are charged an extra fee of \$190 each year. The premedical requirement is a B.A. degree. Total registration for 1934-1935 was 246 graduates 32. The next session begins Sept. 10, 1935 and ends May 30, 1936. The Dean is P. C. Dagneau, M.D.

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES Saskatoon—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The medical faculty includes 8 professors and 4 lecturers and assistants, a total of 12. The fees are \$150 for each year. The total registration for 1934-1935 was 52. The next session begins Sept. 23, 1935 and ends May 8, 1936. The Dean is W. S. Lindsay, M.B.

HOSPITALS APPROVED FOR INTERNSHIPS

By the Council on Medical Education and Hospitals of the American Medical Association 535 North Dearborn Street Chicago

Revised to Aug 31 1935

The following general hospitals containing 217,834 beds are considered in position to furnish acceptable internships for medical graduates

HOSPITALS, 697 INTERNSHIPS, 6,443

The terms used in the column Type of Internship are defined as follows:
1 Rotating Internships include services in medicine surgery, pediatrics obstetrics and in the clinical and x-ray laboratories
2 Straight internships are limited to a single field
3 Mixed internships are those comprising more than one service but which do not include all of the six branches which constitute a rotating internship

ABBREVIATIONS

Army Co-Co Corp	United States Army City and County Corporation unrestricted as to profit	Fed Frat Indiv NP Assn Op	Federal Fraternal Individual Nonprofit association Optional	Part Req USPHS	Partnership Required United States Public Health Service
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Name of Hospital	Location	Control	Capacity	Classification of Patients		Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free and Part Pay	Full Pay									
ALABAMA														
Hillman Hospital	Birmingham	County	479	100		11 178	Mixed	10	12	July	No	Req	28	No
Norwood Hospital	Birmingham	Corp	226	78	22	3 494	Rotating	12	12	July	No	Req	18	\$25
Employees Hospital of the Tennessee Coal Iron and Railroad Company	Fairfield	Corp	310		100	0 339	Rotating	8	12	July	No	Req	47	\$25
John A. Andrew Memorial Hosp ¹ (col)	Tuskegee Institute	NP Assn	79	00	10	2 640	Rotating	8	12	June & Sept	No	Req	49	\$36
ARIZONA														
St. Joseph's Hospital	Phoenix	Church	188	27	73	5 215	Rotating	4	12	July	No	None	23	\$25
ARKANSAS														
Baptist State Hospital	Little Rock	Church	315	29	71	3 049	Rotating	4	12	July	No	None	17	\$25
Little Rock City Hospital	Little Rock	City	140	100		1 660	Rotating	5	12	July	No	Req	44	\$25
St. Vincent Infirmary	Little Rock	Church	160	41	59	3 562	Rotating	4	12	June	No	None	17	\$25
CALIFORNIA														
Fresno County General Hospital	Fresno	County	525	100		6 769	Mixed	10	12	July	No	Req	43	\$25
Glendale Sanitarium and Hospital ¹	Glendale	Church	254	21	79	2 843	Mixed	4	12	July	No	Op	53	\$250(a)
Loma Linda Sanitarium and Hospital	Loma Linda	Church	124			2 076	Mixed	4	12	July	(3)	Req	25	\$25(a)
California Hospital	Los Angeles	Church	307			6 415	Rotating	8	12	July	(4)	Op	27	\$25
Cedars of Lebanon Hospital	Los Angeles	NP Assn	238	23	77	6 850	Rotating	9	12	June	No	Req	42	\$25
Hollywood Clara Barton Mem. Hosp.	Los Angeles	Corp	274		100	7 113	Mixed	4	12	July	No	None	42	\$25
Los Angeles County Hospital ¹	Los Angeles	County	3 410	100		60 234	Mixed	125	12	(1 a)	No	Req	53	No
St. Vincent's Hospital	Los Angeles	Church	240	9	91	4 409	Mixed	3	12	July	No	None	40	\$40
Santa Fe Coast Lines Hospital	Los Angeles	NP Assn	150			1 974	Rotating	6	12	July	(6)	Req	72	\$23 75
White Memorial Hospital ¹	Los Angeles	Church	134	69	31	3 165	Rotating	10	12	July	(6)	Req	33	\$10(u)
Alameda County Hospital ¹	Oakland	County	1 473	100		10 670	Rotating	24	12	July	(7)	None	28	\$25
Orange County Hospital	Orange	County	293	100		3 190	Rotating	8	12	July	No	Req	62	\$15-20
Pasadena Hospital	Pasadena	NP Assn	210	39	80	4 062	Rotating	4	12	July	(8)	Req	59	\$30
Sacramento County Hospital	Sacramento	County	426	100		7 569	Rotating	10	12	July	No	Req	47	\$25
San Bernardino County Charity Hosp.	San Bernardino	County	328	100		7 651	Rotating	8	12	July	(8)	Req	44	\$25
San Diego County General Hospital	San Diego	County	672	100		8 297	Rotating	18	12	July	No	Req	45	\$15-20
French Hospital	San Francisco	Frat	246	69	81	3 423	Mixed	6	12	July	No	Req	44	\$30(b)
Hospital for Children ¹	San Francisco	NP Assn	60	32	68	4 421	Rotating	10	12	July	No	Req	31	No
Letterman General Hospital	San Francisco	Army	610	100		5 114	Rotating	4	12	July	No	Req	65	(d)
Mary's Help Hospital	San Francisco	Church	180	42	58	3 781	Rotating	5	12	July	No	Req	39	\$25
Mount Zion Hospital ¹	San Francisco	NP Assn	189	33	67	4 040	Rotating	6	12	June	No	Req	47	\$15
St. Joseph's Hospital	San Francisco	Church	243			4 757	Mixed	4	12	July	No	None	18	\$25
St. Luke's Hospital	San Francisco	Church	225	19	51	4 571	Rotating	4	12	July	No	Op	24	\$15(c)
San Francisco Hospital ¹	San Francisco	Co-Co	1 451	100		13 614	Rotating	45	12	July	(9)	Op	41	\$10
Southern Pacific General Hospital	San Francisco	NP Assn	400			4 457	Rotating	14	12	July	(10)	Req	69	\$30
Stanford University Hospitals ¹ (Including Lane Hospital)	San Francisco	NP Assn	523	51	49	8 773	Straight	13	12	July	No	Req	43	No
U. S. Marine Hospital	San Francisco	USPHS	493	100		4 294	Rotating	11	12	July	(11)	Op	23	(d)
University of California Hospital ¹	San Francisco	State	251	68	32	6 725	Straight	20	12	June	No	Req	76	No
St. Helena Sanitarium and Hospital ¹	Sanitarium	Church	140			1 844	Mixed	2	12	July	(12)	None	34	\$40(u)
Santa Clara County Hospital	San Jose	County	494	100		5 900	Rotating	0	12	July	No	Req	50	(e)
St. Francis Hospital	Santa Barbara	Church	100	27	73	1 782	Mixed	2	12	July	(13)	Req	29	\$20
Santa Barbara Cottage Hospital	Santa Barbara	NP Assn	252			2 965	Rotating	5	12	July	(13)	Req	50	\$20
Santa Barbara General Hospital	Santa Barbara	County	225	100		2 040	Rotating	5	12	July	(14)	None	54	\$15
COLORADO														
Boulder Colorado Sanit. and Hosp. ¹	Boulder	Church	307			1 204	Mixed	1	12	July	No	Req	15	\$30
Beth El General Hospital	Colorado Springs	Church	104	21	79	2 862	Rotating	2	12	June	No	Req	27	No
St. Francis Hospital and Sanitarium	Colorado Springs	Church	146	61	39	1 019	Mixed	1	12	July	No	None	18	\$25
Colorado General Hospital ¹	Denver	State	178	100		3 462	Rotating	10	12	July & Aug	No	Req	70	\$20
Denver General Hospital	Denver	Co-Co	689	100		17 142	Rotating	15	18	Jan & July	No	Req	28	\$30
Kittlinghaus General Hospital	Denver	Army	1 151	100		0 430	Rotating	2	12	July	(15)	Op	69	(d)
Mercy Hospital	Denver	Church	225			4 356	Mixed	4	12	July	No	None	23	\$25
Presbyterian Hospital	Denver	Church	170	9	91	3 642	Mixed	4	12	July	No	None	29	\$25
St. Anthony's Hospital	Denver	Church	228	87	13	3 726	Rotating	4	12	July	No	Req	20	\$25
St. Joseph's Hospital	Denver	Church	225	67	33	4 701	Rotating	4	12	July	(16)	None	27	\$30
St. Luke's Hospital	Denver	Church	249	52	48	5 221	Rotating	6	12	July	No	Req	35	\$25
St. Mary Hospital	Pueblo	Church	162	41	59	2 384	Mixed	2	12	July	No	None	17	(x)
CONNECTICUT														
Bridgeport Hospital	Bridgeport	NP Assn	400	51	49	0 517	Rotating	9	12	July	No	None	27	No
St. Vincent's Hospital	Bridgeport	Church	251	87	13	0 517	Rotating	6	12	July	No	Req	22	\$200 yr
Danbury Hospital	Danbury	NP Assn	133	51	19	2 740	Mixed	2	12	July	No	None	26	\$40
Hartford Hospital	Hartford	Corp	780	50	44	14 873	Rotating	24	24	Jan & July	(17)	None	47	(f)
Municipal Hospitals	Hartford	City	335	100		0 052	Rotating	10	24	July	No	Req	50	No
St. Francis Hospital	Hartford	Church	225	59	40	9 042	Rotating	9	12	July & Aug	No	Req	20	No
Meriden Hospital	Meriden	NP Assn	136	57	43	3 234	Rotating	4	12	July	No	Req	25	\$15(g)
Middlesex Hospital	Middletown	NP Assn	100	45	55	0 245	Rotating	3	12	May & July	No	None	18	\$10(h)

Numerical and other references will be found on pages 707 and 708

Name of Hospital	Location	Control	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
			Capacity	Free and Part Pay	Full Pay	Total Patients Treated								
CONNECTICUT—Continued														
New Britain General Hospital	New Britain	NPAasn	241	84	16	4,372	Rotating	5	12	July	No	Op	19	\$30
Grace Hospital	New Haven	NPAasn	286	53	47	6,012	Rotating	0	18	Jan & July	No	Req	33	\$10
Hospital of St Raphael	New Haven	Church	260	80	20	5,033	Rotating	0	12	July	No	Req	21	\$20
New Haven Hospital ¹	New Haven	NPAaso	439	77	23	8,073	Straight	31	12 20	(1 b)	No	Req	48	No
Lawrence and Memorial Associated Hospitals	New London	NPAasn	235	45	50	3,189	Rotating	3	12	July	No	Req	26	\$22.50
Norwalk General Hospital	Norwalk	NPAasn	105	73	27	3,145	Mixed	3	12	Jan & July	No	None	24	\$50
William W Backus Hospital	Norwich	NPAasn	150	93	7	2,530	Rotating	2	12	July	No	Req	27	No
Stamford Hospital	Stamford	Corp	260	73	27	5,709	Rotating	0	12	Jan & July	No	Req	27	\$45
St Mary's Hospital	Waterbury	Church	264	80	20	7,121	Rotating	4	12	July	No	Req	35	\$25
Waterbury Hospital	Waterbury	NPAasn	357	92	8	5,413	Rotating	7	12	July & Oct	No	Req	38	\$25
DELAWARE														
Delaware Hospital	Wilmington	Corp	200	64	36	4,137	Rotating	0	12	July	No	Req	20	\$25
Wilmington General Hospital	Wilmington	NPAasn	133	50	50	2,715	Mixed	3	12	July	No	Req	25	\$40(1)
DISTRICT OF COLUMBIA														
Central Disp and Emergency Hospital	Washington	NPAaso	270	43	57	7,157	Mixed	12	12	July	(18)	Req	31	\$10
Freedmen's Hospital ¹ (col)	Washington	Fed	374	87	13	5,271	Rotating	24	12	July & Oct	No	Req	31	\$8.50
Gallinger Municipal Hospital ¹	Washington	City	704	100		18,208	Rotating	24	12	July	No	None	40	\$13
Garfield Memorial Hospital ¹	Washington	Corp	311	42	58	5,848	Mixed	0	12	July	No	Req	30	\$10(h)
Georgetown University Hospital	Washington	NPAasn	264	41	50	4,487	Rotating	7	12	July	(19)	Req	27	\$10
George Washington University Hosp ¹	Washington	NPAasn	114	21	70	2,448	Mixed	4	12	July	No	Req	46	\$15
Providence Hospital	Washington	Church	265			4,511	Rotating	6	12	July	No	Req	21	\$10
St Elizabeths Hospital Medical and Surgical Department ¹	Washington	Fed	450			1,389	Rotating	8	24	July & Oct	(20)	Req	73	\$182.60
Sibley Memorial Hospital	Washington	Church	710			7,912	Rotating	7	12	July	No	Op	28	\$90
Walter Reed General Hospital	Washington	Army	1,132	100		8,350	Rotating		12	July			70	(d)
Washington Sanitarium and Hospital ¹	Washington	Church	180	37	63	2,229	Mixed	2	12	July	No	Req	24	\$60(n)
FLORIDA														
Duval County Hospital	Jacksonville	County	185	100		3,470	Rotating	8	24	July	No	Req	30	\$15-30
James M Jackson Memorial Hospital	Miami	City	350	01	89	0,720	Rotating	10	12	July	No	Req	16	\$25
Tampa Municipal Hospital	Tampa	City	194	43	57	5,240	Rotating	6	12	July & Oct	No	Req	21	\$25
GEORGIA														
Georgia Baptist Hospital	Atlanta	Church	150	16	84	5,739	Mixed	5	12	July	(21)	Op	17	\$30
Grady Hospital (White Unit)	Atlanta	City	304	100		10,722	Rotating	24	12	July	No	Req	22	\$15
Grady Hospital Emory University Division (Colored Unit)	Atlanta	City	203	100		8,648	Rotating	12	12	July	No	Req	22	\$15
Piedmont Hospital	Atlanta	Corp	126		100	2,634	Rotating	4	12	July	No	None	23	\$25
University Hospital ¹	Atlanta	City	250	50	44	7,102	Rotating	10	12	July	No	Req	30	\$10(j)
Emory University Hospital	Atlanta	NPAasn	160	10	81	3,183	Rotating	6	12	July	(22)	None	25	\$30
Macon Hospital	Macon	CyCo	155	82	18	5,016	Rotating	8	12	July	No	Req	18	\$30(m)
ILLINOIS														
Alexian Bros Hosp (male patients only)	Chicago	Church	258	51	40	2,890	Rotating	7	12	July	(23)	None	22	\$40
American Hospital ¹	Chicago	NPAasn	170	18	82	1,938	Rotating	4	12	June	No	None	33	No
Augustana Hospital	Chicago	Church	375	43	57	4,731	Rotating	10	18	Jan & July	No	None	33	No
Chicago Memorial Hospital	Chicago	NPAasn	109	90	10	2,455	Rotating	4	12	July	No	Req	51	No
Columbus Hospital	Chicago	Church	182	80	11	3,117	Rotating	4	12	July	No	None	64	\$25
Edgewater Hospital	Chicago	Corp	140			3,154	Rotating	5	12	June	No	None	28	\$10
Englewood Hospital	Chicago	NPAasn	133	64	36	2,844	Rotating	4	12	Jan & July	No	Req	18	\$20
Evangelical Hospital	Chicago	Church	200	25	75	5,769	Mixed	6	12	July	No	None	10	\$25
Frances E Willard Hospital ¹	Chicago	NPAasn	140	99	1	3,628	Rotating	6	12	Jan & July	No	None	33	No
Garfield Park Community Hospital	Chicago	NPAasn	182	30	70	3,647	Mixed	6	12	July	No	Req	10	No
Grant Hospital	Chicago	NPAasn	271	27	73	5,141	Rotating	7	12	July	No	Req	21	No
Holy Cross Hospital	Chicago	Church	100	25	75	3,703	Rotating	3	12	June	No	None	10	\$10
Hospital of St Anthony de Padua	Chicago	Church	240	11	89	4,615	Rotating	6	18	(1-c)	No	None	21	\$10
Illinois Central Hospital	Chicago	Corp	276	36	64	4,163	Rotating	8	12	(1-c)	No	Req	23	No
Illinois Masonic Hospital	Chicago	Frat	184	15	85	2,234	Rotating	6	12	July	No	Req	33	No
Jackson Park Hospital	Chicago	NPAasn	258	8	92	3,647	Rotating	10	12 18	Feb & July	No	Req	32	\$10
Lake View Hospital	Chicago	Corp	140	14	86	2,026	Rotating	3	12	July	No	Req	20	\$25
Lutheran Deaconess Home and Hospital	Chicago	Church	216	10	81	3,977	Mixed	5	12	July	No	None	22	\$15
Lutheran Memorial Hospital	Chicago	Church	211	10	90	3,038	Mixed	4	12	July	No	None	16	\$10
Mercy Hospital	Chicago	Church	300	41	59	5,324	Mixed	12	12	July	No	Req	20	No
Michael Reese Hospital ¹	Chicago	NPAasn	629	81	19	14,037	Rotating	34	12 24	Jan & July	(24)	Op	47	No
Mother Cabrini Memorial Hospital	Chicago	Church	168	93	7	2,848	Rotating	4	12	July	No	None	29	\$25
Mount Sinai Hospital ¹	Chicago	NPAasn	204	38	62	5,989	Rotating	12	24	July	(24)	Req	44	No
Norwegian American Hospital	Chicago	NPAasn	180	9	91	3,850	Rotating	6	12	Apr & July	No	Req	39	\$20
Passavant Memorial Hospital	Chicago	NPAasn	348	7	93	4,285	Rotating	6	12	(1-d)	No	None	64	No
Presbyterian Hospital	Chicago	Church	462	72	28	10,567	Mix & Str	28	12 10	(1 e)	No	Op	58	No
Provident Hospital ¹ (col)	Chicago	NPAasn	155	64	36	2,894	Rotating	6	12 16	(1 e)	No	Req	34	No
Ravenswood Hospital	Chicago	NPAasn	193	23	77	5,215	Rotating	6	12	July	No	Req	24	No
Research and Educational Hospital ¹	Chicago	State	332	100		6,342	Rotating	12	18	Jan & July	No	Op	21	No
Roseland Community Hospital	Chicago	Corp	133	27	73	2,532	Rotating	4	12	July	No	Req	17	\$15
St Ance Hospital	Chicago	Church	295	64	36	5,524	Rotating	7	12	July	No	None	20	No
St Bernard's Hospital	Chicago	Church	230	33	67	5,401	Rotating	6	12	July	No	None	23	No
St Joseph Hospital	Chicago	Church	185	29	71	3,286	Rotating	7	12	Apr & July	No	Req	22	No
St Luke's Hospital	Chicago	NPAasn	659	24	76	10,444	Rotating	24	12	(1 f)	No	Req	46	No
St Mary of Nazareth Hospital	Chicago	Church	200	13	87	4,518	Rotating	6	12	July	No	None	23	No
Swedish Covenant Hospital	Chicago	Church	209	34	66	3,408	Rotating	7	12	Apr & July	No	Req	32	\$16
U S Marine Hospital	Chicago	USPHS	188	100		1,770	Mixed	4	12	July	No	Op	28	(d)
University Hospital	Chicago	Corp	121	12	88	1,734	Rotating	4	12	(1 f)	No	Req	26	\$15
University of Chicago Clinics ¹	Chicago	NPAasn	292	95	5	0,735	Straight	30	12	Jan & July	(25)	Req	70	No
Washington Boulevard Hospital	Chicago	NPAasn	110			1,717	Rotating	6	18	(1 g)	No	None	18	No
Wesley Memorial Hospital ¹	Chicago	Church	250	36	64	3,885	Rotating	8	12	Jan & July	No	None	43	No
Womeo and Children's Hospital ¹	Chicago	NPAasn	125	60	46	3,175	Rotating	0	12	Jan & July	No	Req	53	No
Woodlawn Hospital	Chicago	NPAasn	174	65	35	2,940	Rotating	4	12	Jan & July	No	None	36	No
St Mary's Hospital	East St Louis	Church	295	53	47	3,089	Rotating	5	12	July	No	None	15	\$25
Frazer Hospital	Evanston	NPAasn	271	61	39	5,074	Rotating	12	12	(1-c)	No	Req	72	No
St Francis Hospital	Evanston	Church	370	64	36	5,759	Rotating	8	12	July	No	None	33	\$25
Little Company of Mary Hospital	Evergreen Park	Church	174	50	45	3,169	Rotating	3	12	Jan & July	No	Op	24	\$25
St Joseph Hospital	Joliet	Church	228	48	52	4,100	Rotating	3	12	Jan & July	No	None	16	\$25
Oak Park Hospital	Oak Park	Church	165	35	65	3,696	Rotating	0	12	July	No	Op	25	No
West Suburban Hospital	Oak Park	NPAaso	427			6,302	Rotating	10	12	July & Oct	No	Req	35	No
St Francis Hospital	Peoria	Church	330	32	68	6,783	Rotating	4	12	July	(26)	None	22	\$20
St Mary Hospital	Peoria	Church	215	87	13	3,511	Rotating	2	12	July	No	None	16	\$25
St Anthony's Hospital	Rock Island	Church	168	60	40	3,054	Mixed	2	12	July	No	Op	21	\$25

Name of Hospital	Location	Control	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
			Capacity	Free and Part Pay	Full Pay	Total Patients Treated								
INDIANA														
St Catherine's Hospital	East Chicago	Church	340	25	75	3,710	Rotating	0	12	June & July	No	None	24	\$25
Lutheran Hospital	Fort Wayne	Church	163	30	70	2,080	Mixed	2	12	July	No	None	22 1/2	\$25(n)
St Joseph Hospital	Fort Wayne	Church	300	41	59	4,721	Rotating	4	12	July	No	None	22 1/2	\$25
St Mary's Mercy Hospital	Gary	Church	270	42	58	6,066	Rotating	5	12	June & July	No	Req	16	\$25
St Margaret's Hospital	Hammond	Church	240	82	18	3,269	Rotating	8	12	(1 h)	No	Req	19	\$25
Indianapolis City Hospital	Indianapolis	City	572	90	1	10,516	Mixed	32	12	July	No	Req	43	\$10
Indiana University Hospitals	Indianapolis	State	480	83	17	8,638	Rotating	21	12	July	(27)	Req	48	\$12.50
Methodist Episcopal Hospital	Indianapolis	Church	600			14,228	Rotating	18	12	July	No	Op	28	\$10
St Vincent's Hospital	Indianapolis	Church	293	31	69	6,189	Rotating	7	12	July	No	None	21	\$25
St Elizabeth Hospital	La Fayette	Church	245	92	8	4,710	Rotating	4	12	July	No	Op	18	\$25
Bull Memorial Hospital	Muncie	NPAsen	162	24	70	2,708	Mixed	3	12	July	No	None	29	\$16(h)
Ipworth Hospital	South Bend	NPAsen	187	36	04	2,609	Rotating	8	12	July	No	Req	21	\$25
St Joseph Hospital	South Bend	Church	147	43	57	2,251	Rotating	2	12	July	No	Req	24	\$25(n)
IOWA														
Mercy Hospital	Cedar Rapids	Church	176	37	63	2,373	Mixed	2	12	July	No	Req	22	\$25
Jennie Edmundson Memorial Hospital	Council Bluffs	NPAsen	139		100	1,700	Rotating	3	12	June	No	Req	27	\$50
Mercy Hospital	Council Bluffs	Church	144			2,563	Rotating	1	12	June	No	None	22	\$25
Mercy Hospital	Davenport	Church	140	4	50	2,504	Rotating	2	12	July	No	None	19	\$25
Broadway Polk Co Public Hospital	Des Moines	County	112	100		4,021	Rotating	0	12	July	(28)	Req	04	\$25
Iowa Lutheran Hospital	Des Moines	Church	160			3,189	Rotating	8	12	July	No	None	24	\$40
Iowa Methodist Hospital	Des Moines	Church	240	6	90	6,887	Rotating	6	12	July	No	Req	20	\$30
Mercy Hospital	Des Moines	Church	170			8,391	Rotating	4	12	July	No	None	23	\$35
University Hospitals	Iowa City	State	944	92	8	15,783	Rotating	19	12	July	No	Req	60	(h)
St Joseph Mercy Hospital	Sioux City	Church	220	13	87	4,085	Rotating	4	12	July	No	None	40	\$25
KANSAS														
Bell Memorial Hospital	Kansas City	State	240	59	11	5,300	Rotating	8	12	July	(29)	Req	78	\$15
Bethany Methodist Hospital	Kansas City	Church	145	17	83	2,571	Rotating	3	12	July	No	None	47	\$25
St Margaret Hospital	Kansas City	Church	265	93	7	3,450	Rotating	5	12	July	No	Req	72	\$25
St Francis Hospital	Wichita	Church	340	40	00	4,790	Rotating	6	12	July	(30)	Req	26	\$40
Wesley Hospital	Wichita	Church	226			8,028	Mixed	6	12	July	(31)	None	20	\$25
Wichita Hospital	Wichita	Church	110	46	64	2,040	Mixed	8	12	July	(30)	Req	15	\$40
KENTUCKY														
St Elizabeth Hospital	Covington	Church	290	82	16	4,830	Mixed	6	12	July	No	Req	15	\$25
Good Samaritan Hospital	Lexington	Church	210	34	66	4,630	Rotating	3	12	July	No	Req	23	\$25
St Joseph's Hospital	Lexington	Church	210	39	01	5,109	Mixed	4	12	July	No	None	23	\$25(h)
Kentucky Baptist Hospital	Louisville	Church	160			3,100	Mixed	2	12	July	No	None	22	\$25
Louisville City Hospital	Louisville	City	550	100		11,007	Rotating	18	12	July	(12)	Req	12	\$40
Norton Memorial Infirmary	Louisville	NPAsen	139	07	33	2,856	Rotating	6	12	July	(33)	Req	42	\$10
St Anthony's Hospital	Louisville	Church	167	68	32	2,416	Mixed	3	12	July	No	Op	18	\$25
St Joseph Infirmary	Louisville	Church	350	43	57	5,640	Mixed	2	12	July	No	None	10	\$25
St Mary and Elizabeth Hospital	Louisville	Church	154			2,609	Mixed	2	12	July	No	None	18	\$40
LOUISIANA														
Charity Hospital	New Orleans	State	1,018	100		65,437	Rotat & Str	37	12	July	No	Req	53	\$3.10
Flint Goodridge Hospital of Dillard University	New Orleans	NPAsen	100	60	70	1,257	Rotating	3	12	July	No	Req	37	\$10
Hotel Dieu Hospital	New Orleans	Church	293	21	0	6,040	Rotating	7	12	July	No	None	27	\$25
Mercy Hospital-Soniat Memorial	New Orleans	Church	143	10	81	2,008	Rotating	5	12	July	No	Req	20	\$35
Southern Baptist Hospital	New Orleans	Church	222	50	50	6,574	Mixed	9	12	July	No	None	21	\$15
Touro Infirmary	New Orleans	NPAsen	360	68	22	8,292	Rotating	10	12	July	No	Req	38	\$10
U S Marine Hospital	New Orleans	USPHS	672	100		3,424	Rotating	11	12	July	(24)	Op	10	(d)
St Schumpert Memorial Hospital	Shreveport	Church	102	70	25	2,957	Mixed	1	12	July	No	Op	10	\$20
Shreveport Charity Hospital	Shreveport	State	624	100		14,107	Mixed	15	12	July	No	None	65	\$0
MAINE														
Eastern Maine General Hospital	Bangor	NPAsen	173	42	58	3,621	Mixed	1	12	July	No	Req	10	\$25
Central Maine General Hospital	Lewiston	NPAsen	183	38	62	8,239	Rotating	3	12	July	No	None	34	No
St Mary's General Hospital	Lewiston	Church	162	36	64	2,671	Mixed	2	12	July	No	Req	42	\$30
Maine General Hospital	Portland	NPAsen	261	76	24	5,633	Mixed	6	12	Apr & July	No	Req	22	No
MARYLAND														
Baltimore City Hospitals	Baltimore	City	1,240	100		6,360	Mix & Str	18	12	July	No	Req	33	No
Hon Secours Hospital	Baltimore	Church	130	50	50	2,128	Rotating	3	12	July	(75)	Req	06	\$25
Church Home and Infirmary	Baltimore	Church	184	82	18	2,804	Rotating	7	12	July	No	Req	42	\$15
Franklin Square Hospital	Baltimore	NPAsen	129	70	24	2,047	Mixed	3	12	July	No	None	17	\$12.50(o)
Hospital for Women	Baltimore	NPAsen	182	70	30	2,243	Mixed	5	12	July	(36)	Op	28	No
Johns Hopkins Hospital	Baltimore	NPAsen	860	76	24	13,341	Straight	62	12	July & Sept	No	Req	70	No
Maryland General Hospital	Baltimore	Church	229	49	61	4,451	Rotating	9	12	July	No	Req	16	\$10
Mercy Hospital	Baltimore	Church	290	04	36	6,379	Rotating	9	12	July	No	Op	27	No
Provident Hosp and Free Disp (col)	Baltimore	NPAsen	129	00	10	1,927	Rotating	8	12	July & Oct	No	Req	17	No
St Agnes Hospital	Baltimore	Church	223	09	31	3,693	Rotating	6	12	July	(23)	Req	26	No
St Joseph's Hospital	Baltimore	Church	290	59	42	5,289	Rotating	6	12	July	No	Req	40	\$15
Sinal Hospital	Baltimore	NPAsen	239	48	62	5,038	Straight	22	12	July	No	Req	23	No
South Baltimore General Hospital	Baltimore	NPAsen	110	71	27	2,630	Rotating	1	12	July	No	Req	16	\$20
Union Memorial Hospital	Baltimore	NPAsen	336	69	31	5,327	Mixed	1	12	July	No	Req	38	No
U S Marine Hospital	Baltimore	USPHS	278	100		2,213	Rotating	0	12	July	(17)	Req	40	(d)
University Hospital	Baltimore	State	400	80	20	6,137	Rotating	14	12	July	No	Req	37	No
West Baltimore General Hospital	Baltimore	NPAsen	200	34	66	2,443	Rotating	6	12	July	(38)	Req	10	\$15
MASSACHUSETTS														
Beverly Hospital	Beverly	NPAsen	141	53	47	4,102	Rotating	3	12	(11)	No	Req	40	\$25
Beth Israel Hospital	Boston	NPAsen	410			3,130	Straight	11	15 1/2 & 2 1/2	(1 j)	No	Req	53	No
Boston City Hospital	Boston	City	1,629	99	1	44,343	Straight	91	12 24	Varies	(39)	Req	24	No
Carney Hospital	Boston	Church	183	92	8	2,940	Mixed	12	10	(1 h)	No	Req	18	No
Faulkner Hospital	Boston	NPAsen	140	78	22	3,223	Mixed	2	12	June	No	Req	45	No
Long Island Hospital	Boston	City	441	100		2,349	Rotating	0	12	July	No	None	42	\$40
Massachusetts General Hospital	Boston	NPAsen	416	80	14	8,351	Straight	25	12 1/2	(1-c)	No	Req	50	No
Massachusetts Memorial Hospitals	Boston	NPAsen	397	66	34	5,930	Rotating	12	12	Aug	No	Req	41	No
New England Hospital for Women and Children	Roxbury	NPAsen	260	0	01	4,131	Rotating	8	12	July & Oct	No	Req	32	No
Peter Bent Brigham Hospital	Boston	NPAsen	246	61	39	4,373	Straight	24	12 & 16 1/2	(1 m)	(40)	Req	70	No
St Elizabeth's Hospital Brighton	Boston	Church	300	77	63	4,120	Mixed	7	21	(1-c)	No	Req	10	No
Brookline Hospital	Brookline	NPAsen	153	70	79	2,718	Rotating	1	12	June & Aug	No	Req	17	\$10(h)
Cambridge Hospital	Cambridge	NPAsen	307	84	16	5,687	Rotating	4	12	(1-c)	(41)	Req	25	No
Union Hospital	Fall River	NPAsen	140	17	83	3,240	Mixed	2	12	July	No	Req	17	\$30-40
Burbank Hospital	Richmond	NPAsen	211	89	11	2,811	Mixed	4	12	(1-c)	No	Req	27	\$25

Name of Hospital	Location	Control	Capacity	Percentage		Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Admitted Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free and Part Pay	Full Pay									
MASSACHUSETTS—Continued														
Providence Hospital	Holyoke	Church	146			4 556	Mixed	2	12	June	No	None	30	\$25
Lawrence General Hospital	Lawrence	NPAssn	152	32	63	3 128	Mixed	2	12	June	No	Req	28	\$10
Lowell General Hospital	Lowell	NPAssn	180	55	43	3 487	Mixed	2	12	July	No	Req	30	\$25
St John's Hospital	Lowell	Church	108	63	37	3 266	Mixed	4	12	June	No	Req	23	\$10
St Joseph's Hospital	Lowell	Church	111	46	51	3 520	Mixed	2	12	July	No	Req	31	\$10
Lynn Hospital	Lynn	NPAssn	205	47	63	4 540	Mixed	3	12	June & July	No	Req	17	\$10(g)
St Luke's Hospital	New Bedford	NPAssn	330	55	43	4 939	Rotating	6	12	July	No	Req	17	No
Newton Hospital	Newton	NPAssn	200	68	32	5 124	Rotating	6	12	June	No	Req	20	No
House of Mercy Hospital	Pittsfield	NPAssn	222	95	5	2 837	Mixed	2	12	July	No	Op	15	\$40
St Luke's Hospital	Pittsfield	Church	189	34	66	2 131	Mixed	2	12	May	No	Req	25	\$25
Quincy City Hospital	Quincy	City	209	17	83	5 738	Rotating	0	12	Jan & July	No	Op	23	No
Salem Hospital	Salem	NPAssn	180	67	33	3 819	Rotating	3	12	July & Aug	No	Req	24	\$25
Mercy Hospital	Springfield	Church	350	20	80	0 018	Rotating	7	12	July	(127)	Req	24	\$25
Springfield Hospital	Springfield	NPAssn	265	84	10	5 088	Rotating	6	18	Jan & July	(42)	Req	10	No
State Infirmary	Tewksbury	State	1 750	100		6 128	Mixed	4	12	July	No	None	16	No
Waltham Hospital	Waltham	NPAssn	216	7	63	2 918	Rotating	7	12	(1 n)	No	Req	31	\$15(l)
Memorial Hospital	Worcester	NPAssn	215	23	77	5 004	Rotating	9	18	(1 c)	No	Req	46	No
St Vincent Hospital	Worcester	Church	240	16	84	5 133	Rotating	4	12	(1 c)	No	Op	32	\$25
Worcester City Hospital	Worcester	City	400	72	28	9 464	Rotating	16	24	(1 o)	No	Req	24	No
Worcester Hahnemann Hospital	Worcester	NPAssn	140	71	29	2 474	Rotating	3	12	July	No	None	44	\$35
MICHIGAN														
St Joseph's Mercy Hospital	Ann Arbor	Church	110			2 361	Rotating	2	12	July	No	Req	44	\$25
University Hospital	Ann Arbor	State	1 250	75	25	21 243	Rotating	33	12	July	No	Req	52	No
Battle Creek Sanitarium	Battle Creek	NPAssn	1 000	44	56	3 602	Mixed	2	12	July	No	None	29	\$90
Mercy Hospital	Bay City	Church	161	28	72	3 671	Rotating	3	12	July	No	None	32	\$25
City of Detroit Receiving Hospital	Detroit	City	714	100		21 600	Rotating	33	12	July	(48)	Req	33	(p)
Evangelical Deaconess Hospital	Detroit	Church	138	29	71	3 023	Rotating	3	12	July	No	Req	21	\$15
Grace Hospital	Detroit	NPAssn	449	76	24	0 439	Rotating	22	12	July & Sept	(43)	Req	25	\$90
Harper Hospital	Detroit	NPAssn	750	13	87	13 478	Rotating	32	12	July	(44)	Req	32	No
Henry Ford Hospital	Detroit	NPAssn	616	40	64	0 628	Rotating	24	12	Sept	No	Op	44	\$100(a)
Providence Hospital	Detroit	Church	38	88	12	6 561	Rotating	10	12	July	(45)	None	20	\$20
St Joseph Mercy Hospital	Detroit	Church	246	21	79	4 122	Rotating	7	12	July	No	Req	10	\$25
St Mary's Hospital	Detroit	Church	390	30	64	4 588	Rotating	10	12	July	(46)	Req	18	\$10
Dr William T. Seymour Hospital	Eloise	County	1 368	100		17 189	Rotating	10	12	July	(48)	Req	33	\$25
Hurley Hospital	Flint	City	425			7 500	Rotating	12	12	June	No	None	27	\$25
Blodgett Memorial Hospital	Grand Rapids	NPAssn	130	26	74	2 812	Mixed	2	12	July	No	Req	38	No
Butterworth Hospital	Grand Rapids	NPAssn	272	6	61	3 478	Rotating	5	12	July	No	Req	39	\$7.50
St Mary's Hospital	Grand Rapids	Church	243	39	61	4 427	Rotating	4	12	July	(47)	Req	24	No
Highland Park General Hospital	Highland Park	City	190	11	89	3 162	Rotating	6	12	July & Sept	No	Req	10	\$15
W. A. Foote Memorial Hospital	Jackson	City	156	34	66	4 342	Mixed	3	12	July	No	Req	25	\$10.00
Edward W. Sparrow Hospital	Lansing	NPAssn	135			4 828	Mixed	2	12	July	No	Req	34	\$25
St Lawrence Hospital	Lansing	Church	128			4 462	Rotating	12	12	July	(48)	None	41	\$90
Hackley Hospital	Muskegon	NPAssn	125	70	24	2 157	Mixed	2	12	July	No	None	23	\$25
Mercy Hospital	Muskegon	Church	124	60	40	3 361	Mixed	1	12	July	No	None	27	\$50
Saginaw General Hospital	Saginaw	NPAssn	130	16	81	2 545	Rotating	3	12	July	No	Req	33	\$25
St Mary's Hospital	Saginaw	Church	140			3 601	Mixed	3	12	July	No	Req	17	\$45
MINNESOTA														
St Luke's Hospital	Duluth	NPAssn	276	25	75	4 001	Mixed	0	12	July	(40)	Req	74	\$12.50
St Mary's Hospital	Duluth	Church	290	61	39	4 683	Mixed	7	12	(1 f)	(49)	Req	70	\$12.50
Asbury Hospital	Minneapolis	Church	14	10	90	2 025	Mixed	3	12	Jan & July	No	None	33	\$25
Fitel Hospital	Minneapolis	NPAssn	120	61	39	4 250	Mixed	2	12	July	No	None	39	No
Fairview Hospital	Minneapolis	Church	225	60	40	3 552	Mixed	4	12	July	(50)	Req	24	\$25
Lutheran Deaconess Home and Hosp	Minneapolis	Church	150	61	39	3 041	Mixed	4	12	Jan & July	No	None	17	\$25
Minneapolis General Hospital	Minneapolis	City	681	9	5	14 291	Rotating	27	12	Jan & July	No	Req	50	No
Northwestern Hospital	Minneapolis	NPAssn	185	29	75	4 661	Rotating	7	12	July	No	None	43	\$25(b)
St Barnabas Hospital	Minneapolis	Church	166	4	96	3 402	Mixed	2	12	July	No	None	27	\$25
St Mary's Hospital	Minneapolis	Church	275	33	67	3 748	Rotating	5	12	July	No	Op	42	\$15(l)
Swedish Hospital	Minneapolis	NPAssn	313	3	97	4 906	Mixed	4	12	July	No	Req	24	\$25
University Hospitals	Minneapolis	State	450	70	25	8 030	Straight	22	12	Jan & July	(51)	Req	74	No
Ancker Hospital	St Paul	CyCo	1 646	100		12 387	Rotating	32	12	July	No	Req	50	No
Bethesda Hospital	St Paul	Church	120			3 645	Mixed	3	12	July	(52)	None	31	\$25
Charles T. Miller Hospital	St Paul	NPAssn	216	67	33	5 089	Rotating	6	12	July	No	Req	86	No
Northern Pacific Beneficial Association Hospital	St Paul	NPAssn	160			2 200	Rotating	2	12	July	No	Req	25	\$25
St Joseph's Hospital	St Paul	Church	246	100	84	6 102	Rotating	6	12	July	(50)	None	30	\$25
MISSOURI														
St. Louis County Hospital	Clayton	County	225	93	7	5 387	Rotating	8	12	July	No	Op	19	\$25
Kansas City General Hospital	Kansas City	City	475	100		6 672	Rotating	24	12	July	No	Req	78	\$90
Kansas City General Hospital No 2 (col)	Kansas City	City	274	100		2 819	Rotating	12	12	July	No	Req	51	\$17.50
Memorial Hospital	Kansas City	NPAssn	167	6	94	2 828	Rotating	6	12	July	No	Req	41	\$25
Research Hospital	Kansas City	NPAssn	225	11	89	3 834	Rotating	4	12	July	No	None	69	\$25
St Joseph's Hospital	Kansas City	Church	240	50	50	3 042	Mixed	7	12	July	No	Op	90	\$25
St Luke's Hospital	Kansas City	Church	234	57	43	4 285	Mixed	4	12	July	No	None	80	\$25
St Mary's Hospital	Kansas City	Church	176	41	59	3 716	Rotating	5	12	July	No	None	64	\$25
Trinity Lutheran Hospital	Kansas City	Church	146	11	89	2 087	Mixed	4	12	July	No	None	40	\$25(o)
Missouri Methodist Hospital	St Joseph	Church	220	38	62	4 981	Rotating	4	12	July	No	Req	25	\$25
St Joseph's Hospital	St Joseph	Church	141	43	57	2 767	Rotating	2	12	July	No	None	35	\$30
Alexian Bros Hosp (male patients only)	St Louis	Church	240	42	58	1 413	Mixed	5	12	July	(53)	Req	33	\$25
Barnes Hospital	St Louis	Church	246	34	66	7 389	Straight	32	12 & 18	Jan & July	(54)	Op	54	No
Christian Hospital	St Louis	NPAssn	129	25	75	1 555	Mixed	2	12	July	No	None	18	\$15(l)
De Paul Hospital	St Louis	Church	255	40	55	5 674	Rotating	7	12	July	No	Req	17	\$25
Evangelical Deaconess Home and Hosp	St Louis	Church	180	15	85	3 848	Rotating	4	12	July	No	None	30	\$25(b)
Jewish Hospital	St Louis	NPAssn	290	82	18	4 033	Rotating	16	12	July	(55)	Req	33	\$15
Lutheran Hospital	St Louis	Church	160	6	94	3 972	Mixed	3	12	July	No	None	22	\$25
Missouri Baptist Hospital	St Louis	Church	500	21	79	4 853	Mixed	8	12	July	No	None	22	\$25
St Anthony's Hospital	St Louis	Church	250	32	68	4 193	Rotating	5	12	July	(56)	Req	23	\$10
St John's Hospital	St Louis	Church	310	22	78	5 248	Rotating	9	12	July	No	Op	24	\$20
St. Louis City Hospital	St Louis	City	806	100		21 819	Rotating	47	12	July	(57)	Req	42	\$10(g)
St. Louis City Hospital No 2 (col)	St Louis	City	346	100		8 115	Rotating	20	12	July	(58)	Op	41	\$10(g)
St Luke's Hospital	St Louis	Church	216	46	60	4 320	Rotating	8	12	July	No	Req	30	\$20
St Mary's Group of Hospitals	St Louis	Church	746	61	39	9 299	Rotating	26	12	July	(59)	Req	48	No
MONTANA														
Murray Hospital	Butte	Corp	182			1 847	Mixed	2	12	Jan & July	No	Req	33	\$40
St James Hospital	Butte	Church	167	31	69	2 318	Rotating	2	12	July	No	Req	20	\$50

HOSPITALS APPROVED FOR INTERNSHIPS

Name of Hospital	Location	Control	Classification of Patients			Type of Internship	Number of Interns	Length of Service in Months	Service Commenced	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	
			Capacity	Free and Part Pay	Full Pay									
NEBRASKA														
St Francis Hospital	Grand Island	Church	140	70	30	1,803	Mixed	12	July	No	None	24	\$25	
Bryan Memorial Hospital	Lincoln	Church	114	18	87	2,040	Mixed	12	July	No	None	30	\$25	
Lincoln General Hospital	Lincoln	City	165	80	20	3,214	Mixed	12	July	No	None	40	\$25	
St Elizabeth's Hospital	Omaha	Church	300	71	29	2,135	Rotating	11	July	No	None	27	\$25	
Bishop Clarkson Memorial Hospital	Omaha	Church	103	71	29	3,664	Rotating	11	July	No	None	27	\$25	
Creighton Memorial St Joseph's Hosp	Omaha	County	412	100	12	6,061	Rotating	11	July	No	None	27	\$25	
Douglas County Hospital	Omaha	Church	125	66	34	3,684	Rotating	11	July	No	None	27	\$25	
Evangelical Covenant Hospital	Omaha	Church	144	11	89	2,027	Rotating	11	July	No	None	27	\$25	
Immanuel Deaconess Institute	Omaha	Church	144	11	89	3,789	Rotating	11	July	No	None	27	\$25	
Nebraska Methodist Episcopal Hospital	Omaha	Church	175	21	79	3,747	Rotating	11	July	No	None	27	\$25	
St Catherine's Hospital	Omaha	Church	195	11	89	3,927	Rotating	11	July	No	None	27	\$25	
University of Nebraska Hospital	Omaha	State	197	100		3,517	Rotating	12	July	No	None	27	\$25	
NEW HAMPSHIRE														
Mary Hitchcock Memorial Hospital	Hanover	NPAsso	142	80	20	2,804	Rotating	4	Jan & July	No	Req	81	\$100 yr	
NEW JERSEY														
Atlantic City Hospital	Atlantic City	NPAsso	310	73	27	5,980	Rotating	8	12	July	No	Req	23	\$25
Bayonne Hospital and Dispensary	Bayonne	NPAsso	200	82	18	3,734	Rotating	5	12	July	No	Req	33	\$25
Cooper Hospital	Camden	NPAsso	333	71	29	7,888	Rotating	10	12	July	No	Req	33	\$25
West Jersey Homeopathic Hospital	Camden	NPAsso	237	60	40	4,780	Rotating	7	12	July	No	Req	33	\$25
Homeopathic Hospital of Essex County	East Orange	NPAsso	120	60	35	2,838	Rotating	8	12	July	No	Req	33	\$25
Alexian Bros Hosp (male patients only)	Elizabeth	Church	165	59	41	1,763	Mixed	2	12	July	No	Req	33	\$25
St Elizabeth Hospital	Elizabeth	Church	255	51	49	5,400	Rotating	8	12	July	No	Req	33	\$25
Englewood Hospital	Elizabeth	Church	213	80	14	4,485	Rotating	6	12	July	No	Req	33	\$25
Hackensack Hospital	Hackensack	Church	272	83	17	5,042	Rotating	10	12	July	No	Req	33	\$25
Christ Hospital	Hoboken	Church	460	86	14	5,975	Rotating	10	12	July	No	Req	33	\$25
Medical Center of Jersey City	Jersey City	Church	200	21	79	4,805	Rotating	8	12	Jan & July	No	Req	21	\$15
St Francis Hospital	Jersey City	Church	200	21	79	3,022	Rotating	6	12	July	No	Req	21	\$15
Monmouth Memorial Hospital	Jersey City	City	239	94	6	10,026	Rotating	60	12	July & Oct	No	Req	21	\$15
Monmouth Memorial Hospital	Jersey City	NPAsso	204	81	10	3,747	Rotating	60	12	July	No	Req	21	\$15
All Souls Hospital	Log Branch	NPAsso	333	33	17	4,305	Rotating	7	12	July	No	Req	21	\$15
Morris Memorial Hospital	Montclair	Church	134	33	62	2,006	Rotating	9	12	July	No	Req	21	\$15
Borlinton County Hospital	Montclair	NPAsso	125	33	62	2,006	Rotating	9	12	July	No	Req	21	\$15
Fittin Memorial Hospital	Mount Holly	NPAsso	135	67	33	2,006	Rotating	9	12	July	No	Req	21	\$15
Hospital of St Barnabas and for Women and Children	Neptune	NPAsso	173	67	33	2,765	Rotating	4	12	July	No	Req	21	\$15
Newark Beth Israel Hospital	Newark	Church	282	44	56	7,200	Rotating	3	12	Jan & July	No	Req	21	\$15
Newark City Hospital	Newark	NPAsso	414	43	57	10,317	Rotating	12	12	July	No	Req	21	\$15
Newark Memorial Hospital	Newark	Church	700	100	0	10,317	Rotating	12	12	July	No	Req	21	\$15
Presbyterian Hospital	Newark	Church	157	09	31	2,410	Rotating	24	24	July	No	Req	21	\$15
St James Hospital	Newark	Church	267	12	58	5,535	Mixed	4	12	July	No	Req	21	\$15
St Michael's Hospital	New Brunswick	Church	333	50	60	2,825	Rotating	3	12	July	No	Req	21	\$15
St Peter's General Hospital	Orange	Church	107	71	29	4,973	Rotating	7	12	July	No	Req	21	\$15
Orange Memorial Hospital	Passaic	NPAsso	333	64	36	3,800	Rotating	4	12	July	No	Req	21	\$15
Passaic General Hospital	Passaic	Church	235	70	30	4,027	Rotating	4	12	July	No	Req	21	\$15
St Mary's Hospital	Paterson	Church	200	85	15	3,878	Rotating	4	12	July	No	Req	21	\$15
Nathan and Miriam Barnert Memorial Hospital	Paterson	NPAsso	117	63	34	2,888	Rotating	4	12	July	No	Req	21	\$15
Paterson General Hospital	Paterson	Church	326	49	20	5,710	Rotating	7	12	July	No	Req	21	\$15
St Joseph Hospital	Paterson	NPAsso	275	63	32	0,772	Rotating	0	12	July	No	Req	21	\$15
Muhlenberg Hospital	Paterson	Church	223	63	32	0,772	Rotating	0	12	July	No	Req	21	\$15
Holy Name Hospital	Paterson	NPAsso	200	44	56	4,066	Rotating	6	12	July	No	Req	21	\$15
Mercer Hospital	Tenoeck	Church	314	07	44	4,477	Rotating	8	12	July	No	Req	21	\$15
St Francis Hospital	Trenton	NPAsso	176	68	33	4,078	Rotating	8	12	July	No	Req	21	\$15
William McKinley Memorial Hospital	Trenton	NPAsso	165	44	56	3,211	Rotating	6	12	July	No	Req	21	\$15
North Hudson Hospital	Weehawken	Church	194	51	49	4,261	Rotating	8	12	July	No	Req	21	\$15
NEW YORK														
Albany Hospital	Albany	NPAsso	140	60	11	10,571	Rotating	10	12	July & Sept	No	Req	22	\$25
Memorial Hospital	Albany	Church	100	40	60	2,502	Mixed	5	12	July & Aug	No	Req	22	\$25
St Peter's Hospital	Albany	NPAsso	155	68	32	3,343	Rotating	3	12	July & Sept	No	Req	22	\$25
Auburn City Hospital	Auburn	NPAsso	238	60	42	0,180	Rotating	3	12	July	No	Req	22	\$25
Bloomington City Hospital	Brooklyn	NPAsso	224	40	40	0,831	Rotating	15	24	July	No	Req	22	\$25
Beth El Hospital	Brooklyn	NPAsso	420	25	75	4,044	Rotating	15	24	July	No	Req	22	\$25
Beth Mo'ed Hospital	Brooklyn	NPAsso	127	40	73	7,348	Rotating	15	24	July	No	Req	22	\$25
Brooklyn Hospital	Brooklyn	NPAsso	130	62	38	3,110	Rotating	0	24	July	No	Req	22	\$25
Bushwick Hospital	Brooklyn	NPAsso	300	100	33	1,420	Rotating	2	24	July	No	Req	22	\$25
Caledonia Hospital	Brooklyn	NPAsso	308	100	33	8,600	Rotating	20	24	July	No	Req	22	\$25
Coney Island Hospital	Brooklyn	NPAsso	430	71	29	10,671	Rotating	10	24	July	No	Req	22	\$25
Cumberland Hospital	Brooklyn	NPAsso	324	67	33	15,273	Rotating	10	24	July	No	Req	22	\$25
Greenpoint Hospital	Brooklyn	NPAsso	400	49	51	49,843	Rotating	12	24	July	No	Req	22	\$25
Israel Zion Hospital	Brooklyn	Church	194	51	49	4,261	Rotating	8	12	July	No	Req	22	\$25
Jewish Hospital	Brooklyn	Church	305	11	89	6,714	Rotating	14	24	July	No	Req	22	\$25
Kings County Hospital	Brooklyn	Church	325	25	75	5,270	Rotating	12	24	July	No	Req	22	\$25
Long Island College Hospital	Brooklyn	Church	264	78	28	2,823	Rotating	6	12	July	No	Req	22	\$25
Methodist Episcopal Hospital	Brooklyn	NPAsso	200	70	30	2,016	Rotating	16	12	July	No	Req	22	\$25
Norwegian Lutheran Deaconess Home	Brooklyn	NPAsso	340	80	90	7,227	Rotating	12	12	July	No	Req	22	\$25
St Catherine's Hospital	Brooklyn	NPAsso	467	47	53	10,238	Rotating	14	12	July	No	Req	22	\$25
St John's Hospital	Brooklyn	NPAsso	215	41	59	5,031	Rotating	6	12	July	No	Req	22	\$25
St Mary's Hospital	Brooklyn	NPAsso	209	56	44	6,836	Rotating	6	12	July	No	Req	22	\$25
St Peter's Hospital	Brooklyn	NPAsso	213	57	43	4,187	Rotating	12	12	July	No	Req	22	\$25
Trinity Hospital	Brooklyn	NPAsso	148	3	9	3,459	Rotating	3	12	July	No	Req	22	\$25
Wyckoff Heights Hospital	Brooklyn	NPAsso	173	4	56	5,429	Rotating	8	12	July	No	Req	22	\$25
Buffalo and Emergency Hospitals of the Sisters of Charity	Buffalo	Church	310	49	51	6,661	Rotating	14	24	July	No	Req	22	\$25
Buffalo City Hospital	Buffalo	Church	340	80	90	7,227	Rotating	12	12	July	No	Req	22	\$25
Buffalo General Hospital	Buffalo	NPAsso	1003	467	90	4,120	Rotating	17	12	July	No	Req	22	\$25
Deaconess Hospital	Buffalo	NPAsso	225	47	53	10,238	Rotating	14	12	July	No	Req	22	\$25
Mercy Hospital	Buffalo	NPAsso	215	41	59	5,031	Rotating	6	12	July	No	Req	22	\$25
Millard Fillmore Hospital	Buffalo	NPAsso	209	56	44	6,836	Rotating	6	12	July	No	Req	22	\$25
Arnot Ogden Memorial Hospital	Buffalo	NPAsso	213	57	43	4,187	Rotating	12	12	July	No	Req	22	\$25
St Joseph's Hospital	Buffalo	NPAsso	173	4	56	5,429	Rotating	8	12	July	No	Req	22	\$25
Ideal Hospital	Buffalo	Church	310	49	51	6,661	Rotating	14	24	July	No	Req	22	\$25
Jamaica Hospital	Jamaica	Church	310	49	51	6,661	Rotating	14	24	July	No	Req	22	\$25
Mary Immaculate Hospital	Jamaica	Church	310	49	51	6,661	Rotating	14	24	July	No	Req	22	\$25

Numerical and other references will be found on pages 707 and 708

Numerical and other references will be found on pages 707 and 708

Name of Hospital	Location	Control	Classification of Patients			Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
			Capacity	Free and Part Pay	Percentage Full Pay								
NEW YORK—Continued													
Charles S. Wilson Memorial Hospital	Johnson City	NP Assn	220	0	94	4,003	Rotating	3	12	July	No	Req 60	\$22.
Kingston Hospital ¹	Kingston	NP Assn	193	42	58	2,001	Rotating	3	12	Jan & July	(69)	None 21	\$25(j)
Our Lady of Victory Hospital	Lackawanna	Church	160	50	41	1,867	Rotating	3	12	July	(70)	Req 19	\$50
St. John's Long Island City Hospital	Long Island City	Church	304	67	33	7,077	Rotating	14	24	July	No	Req 48	No
Nassau Hospital	Mineola	NP Assn	205	73	27	5,091	Rotating	0	18	Jan & July	No	None 24	\$50
Mount Vernon Hospital ¹	Mount Vernon	NP Assn	193	41	50	4,303	Rotating	0	24	July	No	Req 24	(g)
New Rochelle Hospital	New Rochelle	NP Assn	147	38	62	4,618	Rotating	7	12	July	No	Req 36	\$25
Bellevue Hospital ¹	New York	City	2,418	100		64,340	Straight	124	12 24	Jan & July	No	Req 27	No
Beth David Hospital	New York	NP Assn	160	68	32	2,710	Rotating	7	24	Jan & July	No	Req 27	No
Beth Israel Hospital ¹	New York	NP Assn	438	53	47	9,780	Rotating	28	12 24	(1-c)	No	Op 44	No
Bronx Hospital	New York	NP Assn	313	88	02	9,115	Rotating	10	27	(1-s)	No	Req 30	No
Columbus Hospital	New York	Church	300	75	25	4,063	Rotating	0	18	(1-g)	No	Req 21	No
Fifth Avenue Hospital	New York	NP Assn	340	44	56	5,797	Straight	0	12 15	(1-c)	No	Req 20	No
Fordham Hospital	New York	City	609	100		15,249	Straight	28	12 24	(1-t)	No	Op 49	No
French Hospital	New York	Frat	200	40	64	3,738	Straight	12	24	(1-c)	No	Op 22	No
Gouverneur Hospital	New York	City	222	100		4,964	Mixed	10	12 24	Jan & July	No	Op 31	No
Harlem Hospital ¹	New York	City	325	100		12,842	Rotating	40	12 24	Jan & July	No	Op 30	No
Hospital for Joint Diseases	New York	NP Assn	365	63	37	5,208	Rotating	12	21	Jan & July	(71)	Req 31	No
Knickerbocker Hospital	New York	NP Assn	205	70	31	3,708	Rotating	10	24	(1-c)	No	Req 22	No
Lebanon Hospital	New York	NP Assn	182	94	6	3,632	Straight	12	24	(1-t)	No	Req 34	No
Lenox Hill Hospital ¹	New York	NP Assn	600	45	55	0,080	Rot & Mix	24	24	Jan & July	No	Op 42	No
Lincoln Hospital	New York	City	265	100		8,406	Rotating	20	24	Jan & July	No	Req 36	No
Manhattan General Hospital	New York	Corp	160	13	87	2,026	Mixed	3	12	June	No	Req 16	No
Metropolitan Hospital ¹	New York	City	1,020	100		14,861	Rotat & Strd	4	24	July	No	Req 25	No
Misericordia Hospital	New York	Church	322	45	55	4,700	Mixed	6	18	Jan & July	No	Req 27	No
Montefiore Hosp. for Chronic Diseases ¹	New York	NP Assn	711	05	5	2,491	Mixed	12	12	Jan & July	No	Req 60	\$25
Morrisania City Hospital ¹	New York	City	539	100		16,684	Rotating	39	24	Jan & July	No	Op 34	No
Mount Sinai Hospital ¹	New York	NP Assn	780	76	24	14,762	Mixed	14	12 29	(1-u)	No	Op 40	(r)
New York City Hospital	New York	City	1,000	100		9,633	Rotating	36	24	Jan & July	No	Req 22	No
New York Homeopathic Medical College and Flower Hospital	New York	NP Assn	225	74	26	6,534	Rotating	15	12	July	(72)	Req 24	No
New York Hospital ¹	New York	NP Assn	160	76	25	14,154	Straight	30	12	July	No	Req 57	No
New York Infirmary for Women and Children ¹	New York	NP Assn	162	45	55	3,240	Rotating	5	12	(1-v)	No	Req 09	\$10
New York Polytechnic Medical School and Hospital	New York	NP Assn	340	70	30	8,178	Rotating	8	24	(1-c)	No	Req 34	No
New York Post Graduate Medical School and Hospital	New York	NP Assn	415	17	83	9,780	Straight	27	12 25	(1-c)	No	Req 26	No
Presbyterian and Sloane Hospitals ¹	New York	NP Assn	076	71	29	17,007	Straight	41	12 25	Varies	No	Req 41	No
Roosevelt Hospital	New York	NP Assn	370	60	40	6,133	Straight	21	24	Jan & July	No	Req 30	No
St. Francis Hospital	New York	Church	425	64	10	5,887	Mixed	5	24	Jan & July	No	None 22	No
St. Luke's Hospital ¹	New York	Church	640	60	41	6,107	Mixed	10	24	Jan & July	No	Req 46	No
St. Vincent's Hospital	New York	Church	480	68	42	6,774	Rotating	32	24	Jan & July	No	Req 19	No
Sydenham Hospital ¹	New York	NP Assn	300	55	45	6,032	Rotating	12	24	Jan & July	No	Op 35	No
U. S. Marine Hospital (Ellis Island)	New York	USPHS	552	100		3,229	Mixed	2	12	July	(61)	Req 61	(d)
United Hospital	Port Chester	NP Assn	200	02	38	3,551	Rotating	1	12	July	No	Req 46	\$40(h)
Vassar Brothers Hospital	Poughkeepsie	NP Assn	225	34	66	4,463	Rotating	4	12	July	No	Req 17	\$30(j)
Genesee Hospital	Rochester	NP Assn	225	60	40	4,340	Rotating	7	12	July	No	Req 30	\$15
Highland Hospital	Rochester	NP Assn	177	67	13	4,111	Rotating	6	12	July	No	Req 33	\$22.50
Rochester General Hospital	Rochester	NP Assn	201	39	61	7,249	Rotating	8	12	July	No	Req 07	(g)
St. Mary's Hospital	Rochester	Church	210	48	52	4,474	Rotating	5	12	July	No	Req 32	\$50
Strong Memorial and Rochester Municipal Hospitals ¹	Rochester	NP Cy	560	52	48	11,892	Straight	30	12	July & Sept	No	Req 67	No
Ellis Hospital ¹	Schenectady	NP Assn	285	23	77	7,220	Rotating	8	12	July	No	Req 23	No
U. S. Marine Hospital	Stapleton	USPHS	258	100		4,023	Rotating	10	12	July	(73)	Req 43	(d)
St. Vincent's Hospital	Staten Island	Church	245			5,268	Rotating	0	18	(1-c)	No	Req 26	No
Staten Island Hospital	Staten Island	NP Assn	256	81	19	5,520	Rotating	7	18	(1-c)	No	Req 26	No
General Hospital of Syracuse	Syracuse	NP Assn	110	76	25	3,092	Rotating	3	12	July	No	Req 32	\$10
Hospital of the Good Shepherd Syracuse University	Syracuse	NP Assn	242	49	51	4,583	Mixed	0	12	July & Aug	(74)	None 38	No
St. Joseph Hospital	Syracuse	Church	231	82	18	5,853	Mixed	0	12	July	No	None 28	No
Syracuse Memorial Hospital	Syracuse	NP Assn	240	42	58	6,240	Rotating	7	12	July	No	Req 36	No
Samaritan Hospital ¹	Troy	NP Assn	181	21	79	2,502	Rotating	3	12	(1-l)	No	Req 26	\$40
Troy Hospital	Troy	Church	202	51	49	3,430	Rotating	4	12	July	(65)	Req 24	\$30
Grasslands Hospital ¹	Valhalla	County	000	00	10	0,895	Rotating	18	18	Jan & July	No	Req 72	(s)
St. John's Riverside Hospital	Yonkers	NP Assn	200	73	27	7,319	Mixed	5	12	Jan & July	No	Op 32	\$50
St. Joseph Hospital	Yonkers	Church	180	48	52	2,962	Rotating	4	12	July	No	Req 10	\$25
Yonkers General Hospital	Yonkers	NP Assn	197	81	19	2,301	Rotating	4	12	Jan & July	No	Req 22	\$50
NORTH CAROLINA													
Duke Hospital ¹	Durham	NP Assn	450	89	11	8,102	Straight	32	12	July & Sept	No	Req 61	No
Lincoln Hospital (col)	Durham	NP Assn	108	82	18	1,990	Rotating	3	12	June	No	Req 23	\$5
Watts Hospital	Durham	NP Assn	220	61	39	4,684	Rotating	5	12	July	No	Req 22	\$15(h)
Highsmith Hospital	Fayetteville	NP Assn	120	61	39	2,882	Mixed	2	12	July	No	Req 17	\$25
L. Richardson Memorial Hospital (col)	Greensboro	NP Assn	64	77	23	814	Mixed	2	12	July & Oct	No	Req 15	\$10
St. Agnes Hospital (col)	Raleigh	Church	100	90	10	670	Mixed	2	12	July & Oct	No	Req 22	(h)
Park View Hospital ¹	Rocky Mount	NP Assn	100	32	68	2,125	Mixed	2	12	July	No	Req 24	No
Davis Hospital	Statesville	Corp	132	60	40	2,501	Mixed	1	12	July	No	Req 24	No
James Walker Memorial Hospital	Wilmington	NP Assn	162	64	36	4,646	Rotating	4	12	July	No	Req 18	\$25(h)
City Memorial Hospital	Winston Salem	City	260	53	47	3,621	Mixed	7	12	July	(75)	Req 18	\$15(i)
NORTH DAKOTA													
St. John's Hospital	Fargo	Church	165	32	68	3,435	Mixed	2	12	July	No	None 35	\$20
Trinity Hospital	Minot	Church	170	55	45	2,908	Rotating	4	12	July	No	None 08	No
OHIO													
City Hospital	Akron	NP Assn	350	40	60	7,846	Rotating	12	12	July	(76)	Req 60	\$20
Peoples Hospital	Akron	NP Assn	160	35	65	3,150	Rotating	5	12	July	(76)	Req 38	\$25
St. Thomas Hospital	Akron	Church	183	61	39	4,268	Rotating	4	12	July	No	None 30	\$20
Mercy Hospital	Ontario	Church	200	81	19	5,382	Mixed	4	12	July	No	None 10	\$25
Bethesda Hospital ¹	Cincinnati	Church	230	85	15	6,618	Rotating	7	12	July	(77)	Req 10	\$25(j)
Christ Hospital	Cincinnati	Church	318	65	35	5,646	Rotating	9	12	July	(78)	Req 29	\$22.50
Cincinnati General Hospital ¹	Cincinnati	City	825	94	6	16,902	Rotating	36	12	July	(79)	Req 41	No
Deaconess Hospital	Cincinnati	Church	175	60	40	4,007	Rotating	5	12	July	(80)	None 35	\$25
Good Samaritan Hospital	Cincinnati	Church	535	72	28	8,600	Rotating	12	12	June	No	Req 18	\$12.50
Jewish Hospital	Cincinnati	NP Assn	292	64	36	4,949	Rotating	8	12	July	(81)	Req 26	\$20
Charity Hospital	Cleveland	Church	301	39	61	5,242	Rotating	13	12	July	(82)	Req 45	No
City Hospital ¹	Cleveland	City	1,600	100		14,307	Rotating	30	12	July	(83)	Req 46	No

HOSPITALS APPROVED FOR INTERNSHIPS

Name of Hospital	Location	Control	Classification of Patients			Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month		
			Capacity	Free and Part Pay	Full Pay										
OHIO—Continued															
Huron Road Hospital	Cleveland	NPAasn	120	18	82	2,236	Rotating	11	12	July	No	Req	44	\$50	
Mount Sinai Hospital	Cleveland	NPAasn	240	92	8	7,478	Rotating	11	12	July	(84)	Req	37	\$10	
St Alexis Hospital	Cleveland	Church	220	34	66	3,927	Rotating	8	12	July	(82)	Req	23	\$10	
St John's Hospital	Cleveland	Church	207	21	70	8,841	Rotating	14	12	July	No	Nooc	23	\$10	
St Luke's Hospital	Cleveland	NPAasn	502	27	73	4,597	Rotating	14	12	July	No	Req	24	No	
University Hospitals	Cleveland	NPAasn	120	46	51	14,882	Rotating	14	12	July	(11)	No	Req	63	(u)
Woman's Hospital	Cleveland	NPAasn	120	27	73	2,012	Rotating	8	12	July	(85)	Req	30	\$25	
Graet Hospital	Columbus	Church	160	69	31	6,408	Rotating	8	12	July	(83)	Nooc	30	\$25	
St Francis Hospital	Columbus	State	276	88	12	3,142	Rotating	8	12	July	(87)	Nooc	31	\$125 yr	
Starling Lovlog University Hospital	Columbus	Church	273	18	82	4,606	Mixed	0	12	July	(87)	Nooc	47	(m)	
White Cross Hospital	Columbus	NPAasn	420	39	61	6,023	Rotating	8	12	July	No	Req	31	\$25	
Miami Valley Hospital	Columbus	City	220	78	22	2,365	Rotating	8	12	July	(88)	Nooc	58	\$25	
St Elizabeth Hospital	Columbus	County	125	68	34	3,833	Rotating	2	12	July	No	Nooc	23	\$25	
Mercy Hospital	Dayton	Church	316	38	62	2,511	Rotating	3	12	July	No	Req	29	\$25(v)	
Springfield City Hospital	Dayton	Church	121	82	18	4,742	Rotating	10	12	July	No	Nooc	37	\$40	
Flower Hospital	Hamilton	NPAasn	275	59	41	9,082	Rotating	9	12	July	No	Req	48	\$25	
Lucas County General Hospital	Springfield	Church	300	30	70	4,117	Rotating	6	12	July	No	Nooc	32	\$25	
Mercy Hospital	Toledo	NPAasn	414	57	43	7,302	Rotating	12	12	July	No	Nooc	29	\$20	
St Vincent's Hospital	Toledo	Corp	112							July	No	Req	29	\$25	
Toledo Hospital	Toledo	Church	200	84	30	3,300	Rotating	4	12	July	No	Nooc	33	\$15	
St Elizabeth's Hospital	Toledo	State	622	61	6	7,251	Rotating	14	12	July	No	Req	37	\$10	
Youngstown Hospital	Youngstown	Part	175	50	50	4,320	Rotating	4	12	July	No	Req	27	\$25	
	Youngstown	Corp	240	40	50	5,171	Rotating	5	12	July	No	Req	15	\$25	
	Youngstown	Church	273	40	50	4,210	Rotating	5	12	July	No	Req	30	\$25(w)	
OKLAHOMA															
Oklahoma City General Hospital	Oklahoma City	Corp	112							July	(80)	Nooc	38	\$20	
St Anthony Hospital	Oklahoma City	Church	200	84	30	3,300	Rotating	4	12	July	No	Req	36	\$20	
State University Hospitals	Oklahoma City	State	622	61	6	7,251	Rotating	14	12	July	No	Req	37	\$10	
Wesley Hospital	Oklahoma City	Part	175	50	50	4,320	Rotating	4	12	July	No	Req	27	\$25	
Mormons Hospital	Tulsa	Corp	240	40	50	5,171	Rotating	5	12	July	No	Req	15	\$25	
St John's Hospital	Tulsa	Church	273	40	50	4,210	Rotating	5	12	July	No	Req	30	\$25	
OREGON															
Emanuel Hospital	Portland	Church	280							July	(80)	Nooc	38	\$20	
Good Samaritan Hospital	Portland	Church	350	6	94	5,159	Rotating	8	12	July	No	Req	36	\$20	
Portland Sanitarium and Hospital	Portland	Church	139							July	No	Req	37	\$10	
St Vincent's Hospital	Portland	Church	402	50	50	3,720	Rotating	2	12	July	No	Req	27	\$25	
Univ of Oregon Medical School Hosps	Portland	Co-Sta	300	100		6,673	Rotating	8	12	July	No	Req	48	\$25	
PENNSYLVANIA															
Ablington Memorial Hospital	Ablington	NPAasn	275	54	40	4,990	Rotating	8	24	July	No	Req	50	No	
Allentown Hospital	Allentown	NPAasn	325	54	46	6,392	Rotating	8	12	July	No	Req	40	No	
Sacred Heart Hospital	Allentown	Church	300	63	37	6,392	Rotating	6	12	July	(91)	Req	25	\$25	
Altoona Hospital	Altoona	NPAasn	180	58	42	2,559	Rotating	5	12	July	No	Req	21	\$25	
St Luke's Hospital	Bethlehem	NPAasn	124	65	35	2,033	Rotating	4	12	July	No	Req	35	(h)	
Braddock General Hospital	Braddock	NPAasn	206	60	40	4,050	Rotating	7	12	July	No	Req	37	No	
Bryn Mawr Hospital	Bryn Mawr	NPAasn	130	62	38	2,307	Rotating	4	12	July	No	Req	21	\$25	
Chester Hospital	Chester	NPAasn	204	62	38	4,121	Rotating	8	12	July	No	Req	35	(h)	
G F Gelsinger Memorial Hospital	Easton	NPAasn	283	67	33	3,602	Rotating	6	12	July	No	Req	33	No	
Easton Hospital	Easton	NPAasn	108	62	38	2,828	Rotating	10	12	July	No	Req	30	(h)	
Hamot Hospital	Easton	NPAasn	210	69	41	4,403	Rotating	6	12	July	No	Req	35	\$16(d)	
St Vincent's Hospital	Frie	Church	210	60	40	5,243	Rotating	7	12	July	No	Req	30	\$20	
Harrisburg Hospital	Harrisburg	NPAasn	246	63	37	9,470	Rotating	6	12	July	No	Req	33	No	
Harrisburg Polytechnic Hospital	Harrisburg	NPAasn	246	63	37	9,470	Rotating	6	12	July	No	Req	30	(h)	
Conemaugh Valley Memorial Hospital	Johnstown	NPAasn	180	40	50	4,808	Rotating	8	12	July	No	Req	35	\$25	
Lancaster General Hospital	Lancaster	NPAasn	200	60	40	5,233	Rotating	6	12	July	No	Req	38	\$20	
McKeeseport Hospital	McKeeseport	NPAasn	272	44	56	5,233	Rotating	6	12	July	No	Req	30	\$20	
Jameson Memorial Hospital	McKeeseport	NPAasn	164	40	50	4,176	Rotating	6	12	July	No	Req	30	\$20	
Montgomery Hospital	New Castle	NPAasn	263	40	50	5,233	Rotating	6	12	July	No	Req	30	\$20	
Chestnut Hill Hospital	Norristown	NPAasn	110	40	50	3,331	Rotating	4	12	July	No	Req	20	No	
Frankford Hospital	Philadelphia	NPAasn	114	40	50	2,208	Rotating	4	12	July	No	Req	50	\$17 50	
Germantown Dispensary and Hospital	Philadelphia	NPAasn	142	46	54	3,498	Rotating	7	12	July	No	Req	18	\$25	
Graduate Hospital of the University of Pennsylvania	Philadelphia	NPAasn	300	50	45	8,550	Rotating	12	24	July	No	Req	24	\$30	
Hahnemann Hospital	Philadelphia	NPAasn	475	46	52	7,340	Rotating	8	24	July	No	Req	27	No	
Hospital of the Protestant Episcopal	Philadelphia	NPAasn	502	62	38	12,897	Rotating	24	24	July	No	Req	27	No	
Hosp of the Univ of Pennsylvania	Philadelphia	Church	320	94	0	0,541	Rotating	16	24	July	(92)	Req	44	No	
Hosp of the Woman's Medical College	Philadelphia	State	504	59	41	9,307	Rotating	28	24	July	No	Req	34	No	
Jefferson Medical College Hospital	Philadelphia	NPAasn	173	60	31	2,300	Rotating	6	12	July	No	Req	38	No	
Jewish Hospital	Philadelphia	NPAasn	688	64	4	12,003	Rotating	28	27	July & Sept	No	Req	40	No	
Lankenau Hospital	Philadelphia	NPAasn	400	40	60	7,723	Rotating	18	24	July	No	Req	33	No	
Mercy Hospital (col)	Philadelphia	NPAasn	280	40	60	4,013	Rotating	10	24	July	No	Req	40	No	
Methodist Episcopal Hospital	Philadelphia	NPAasn	110	40	60	2,033	Rotating	6	12	July	(80)	Req	43	No	
Mt Sinai Hospital	Philadelphia	Church	242	33	7	3,672	Rotating	8	12	July	(89)	Req	39	No	
Northeastern Hospital	Philadelphia	NPAasn	310	41	59	4,309	Rotating	6	12	July	(94)	Req	23	No	
Pennsylvania Hospital	Philadelphia	NPAasn	101	27	73	2,014	Rotating	14	12	July	No	Req	33	No	
Philadelphia General Hospital	Philadelphia	City	2,660	100	0	8,533	Rotating	4	12	July	No	Req	62	No	
Presbyterian Hospital	Philadelphia	Church	420	53	47	20,488	Rotating	18	24	July	No	Req	45	\$20	
St Agnes Hospital	Philadelphia	Church	420	53	47	20,488	Rotating	18	24	July	(100)	Req	45	No	
St Joseph's Hospital	Philadelphia	Church	221	61	9	6,246	Rotating	10	12	July	No	Req	41	No	
St Luke's and Childers Hospital	Philadelphia	NPAasn	309	61	39	2,538	Rotating	6	12	July	No	Req	41	No	
St Mary's Hospital	Philadelphia	Church	230	73	27	4,314	Rotating	8	12	July	No	Req	22	No	
Women's Homeopathic Hospital	Philadelphia	NPAasn	141	66	34	9,090	Rotating	13	12	July	No	Req	22	No	
Allegheny General Hospital	Pittsburgh	NPAasn	200	40	50	3,130	Rotating	6	12	July	No	Req	18	No	
Homeopathic Medical and Surgical Hospital and Dispensary	Pittsburgh	NPAasn	400	63	37	0,347	Rotating	12	12	July	(96)	Req	37	No	
Mercy Hospital	Pittsburgh	Church	320	40	60	4,546	Rotating	8	12	July	(97)	Req	24	No	
Passavant Hospital	Pittsburgh	Church	670	60	30	10,121	Rotating	24	12	July	No	Req	20	\$90	
Pittsburgh Hospital	Pittsburgh	Church	141	47	53	5,307	Rotating	8	12	July	(98)	Req	27	No	
Presbyterian Hospital	Pittsburgh	Corp	206	40	50	2,404	Rotating	5	12	July	(99)	Req	27	No	
St Francis Hospital	Pittsburgh	Church	163	43	57	4,708	Rotating	5	12	July	No	Req	23	\$10	
St John's Hospital	Pittsburgh	Church	537	53	47	2,716	Rotating	15	12	July	No	Req	21	No	
St Joseph's Hospital	Pittsburgh	Church	592	53	47	9,724	Rotating	15	12	July	(100)	Req	24	No	
Margaret Memorial Hospital	Pittsburgh	Church	140	86	14	2,877	Rotating	4	12	July	No	Req	24	\$25	
	Pittsburgh	Church	152	82	18	1,000	Rotating	4	12	July	No	Req	21	No	
	Pittsburgh	Church	152	82	18	2,170	Rotating	4	12	July	No	Req	23	No	

Numerical and other references will be found on pages 70* and 70s

Numerical and other references will be found on pages 70 and 705

Name of Hospital	Location	Control	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
			Capacity	Free and Part Pay	Full Pay	Total Patients Treated								
PENNSYLVANIA—Continued														
South Side Hospital	Pittsburgh	NPAasn	225	74	26	4 162	Rotating	7	12	July	No	Req	31	No
Western Pennsylvania Hospital ¹	Pittsburgh	NPAasn	651	40	54	9 636	Rotating	10	12	July	No	Req	27	No
Pottsville Hospital ¹	Pottsville	NPAasn	140	57	43	2,223	Rotating	4	12	July	No	Req	3	\$25
Reading Hospital ¹	Reading	Corp	263	55	41	5 158	Rotating	8	12	July	No	Req	61	No
St. Joseph's Hospital	Reading	Church	203	60	31	3,669	Rotating	6	12	July	(101)	Req	56	No
Robert Paeker Hospital	Sayre	NPAasn	253	60	40	6 080	Rotating	8	12	Jan & July	No	Req	44	No
Hahnemann Hospital	Scranton	NPAasn	125	60	40	2 937	Rotating	4	12	July	No	Req	16	\$13.50
Moses Taylor Hospital	Scranton	NPAasn	160			1 610	Rotating	3	12	July	(102)	Req	42	No
Scranton State Hospital	Scranton	State	188	92	8	3 263	Rotating	8	12	July	No	Req	21	\$3.33
Valley Hospital ¹	Sewickley	NPAasn	135	44	56	2 045	Rotating	4	12	July	No	Req	23	No
Uniontown Hospital	Uniontown	NPAasn	225	31	69	3 715	Rotating	5	12	July	No	Req	4	\$25
Washington Hospital	Washington	NPAasn	166	44	56	2 792	Rotating	4	12	July	No	Req	31	\$25
Chester County Hospital	West Chester	NPAasn	162	44	56	2 692	Rotating	4	12	July	No	Req	28	\$25
Mercy Hospital ¹	Wilkes Barre	Church	220	52	48	4 443	Rotating	6	12	July	No	Req	21	\$40 yr
Wilkes-Barre General Hospital	Wilkes Barre	NPAasn	407	62	38	8 107	Rotating	10	12	July	No	Req	24	No
Columbia Hospital ¹	Wilkesburg	Church	200	01	39	2 662	Rotating	5	12	July	No	Req	21	\$20
Williamsport Hospital ¹	Williamsport	NPAasn	275	50	50	3 897	Rotating	6	12	July	No	Req	33	No
Windber Hospital ¹	Windber	NPAasn	117	10	90	2 648	Rotating	2	12	June	No	Req	82	No
York Hospital	York	NPAasn	217	62	38	4 104	Rotating	6	12	July	No	Req	16	\$25
RHODE ISLAND														
Memorial Hospital	Pawtucket	NPAasn	190	40	51	2 707	Rotating	6	12	(1 c)	No	Req	23	No
Homeopathic Hospital	Providence	NPAasn	200	53	47	4 140	Rotating	4	12	July	No	Req	15	\$50
Rhode Island Hospital	Providence	NPAasn	600	75	25	9,360	Mixed & Str	20	24	Monthly	(103)	Req	43	No
St. Joseph's Hospital	Providence	Church	343	60	40	4 015	Rotating	6	24	(1 t)	No	Req	10	No
SOUTH CAROLINA														
Roper Hospital	Charleston	NPAasn	325	72	28	6 545	Rotating	14	12	July	No	Req	42	\$10
Columbia Hospital	Columbia	County	205	47	53	4 600	Mixed	3	12	July	No	Req	18	\$40(h)
Greenville City Hospital	Greenville	City	140	77	23	4 110	Rotating	5	12	July	No	Req	34	\$25
Spartanburg General Hospital	Spartanburg	County	250	67	33	4,230	Rotating	5	12	July	No	Req	25	\$15(h)
TENNESSEE														
Baroness Erlanger Hospital	Chattanooga	CyCo	240	70	30	6 778	Rotating	10	12	July	(104)	Op	18	\$25
Knoxville General Hospital	Knoxville	City	380	69	31	7 254	Rotating	9	18	(1 c)	(105)	Req	18	\$25
Baptist Memorial Hospital	Memphis	Church	400	40	51	13 640	Rotating	12	18	(1 c)	No	None	16	\$22
Memphis General Hospital ¹	Memphis	City	400	100		13,837	Rotating	10	18	Monthly	No	Req	18	\$70
Methodist Hospital	Memphis	Church	190	45	55	3,344	Mixed	2	12	Jan & July	No	None	10	\$50
St. Joseph's Hospital	Memphis	Church	256			6 037	Mixed	4	12	(1 c)	No	Req	16	\$30
George W. Hubbard Hospital (col)	Nashville	NPAasn	166	68	2	2 123	Rotating	6	12	July & Sept	No	Req	20	\$10
Nashville General Hospital	Nashville	City	305	85	15	6 784	Rotating	10	12	July	No	Req	35	\$25
St. Thomas Hospital	Nashville	Church	225	48	52	4 380	Rotating	4	12	July	No	None	27	\$40
Vanderbilt University Hospital	Nashville	NPAasn	210	68	32	4 487	Straight	10	12	July	(106)	Op	63	\$23.75
TEXAS														
Hotel Dieu Hospital	Beaumont	Church	187	50	50	2,760	Mixed	2	12	July	No	Req	16	\$50
Baylor University Hospital ¹	Dallas	Church	344	22	78	11 101	Rotating	12	12	July	(107)	Req	36	\$25
Parkland Hospital	Dallas	CyCo	293	97	J	9 181	Rotating	20	18	Jan & July	No	Req	20	\$10
St. Paul's Hospital	Dallas	Church	300	35	65	7 164	Rotating	8	12	July	No	Req	10	\$25
El Paso City County Hospital	El Paso	CyCo	168	100		3 393	Rotating	4	12	July	No	Req	62	\$50
William Beaumont General Hospital	El Paso	Army	519	100		7 629	Rotating	2	12	July	No	Op	58	(d)
City and County Hospital	Fort Worth	CyCo	115	100		3 051	Rotating	4	12	July	No	Req	27	\$25
Harris Clinic Hospital	Fort Worth	Indiv	100			1 040	Mixed	3	12	July	No	Req	10	No
St. Joseph's Hospital	Fort Worth	Church	292	41	50	3 167	Rotating	3	12	July	No	None	10	\$25
John Sealy Hospital ¹	Galveston	City	374	77	23	5 070	Rotating	8	12	June & July	(108)	Req	52	No
St. Mary's Infirmary	Galveston	Church	105	20	80	3 447	Mixed	3	12	June	No	None	25	\$30
Hermann Hospital	Houston	NPAasn	199	75	25	5 297	Rotating	6	12	July	No	Req	47	\$25
Jefferson Davis Hospital ¹	Houston	CyCo	204	100		7 827	Rotating	10	12	July	No	Req	27	\$25
Medical and Surgical Hospital	San Antonio	NPAasn	115	2	98	2,511	Mixed	3	12	July	No	Req	31	\$25
Robert B. Green Memorial Hospital	San Antonio	County	135	100		3,218	Rotating	9	12	June	No	Req	21	\$10
Santa Rosa Hospital	San Antonio	Church	380	28	92	4 740	Mixed	6	12	July	No	Req	18	\$25
Station Hospital	San Antonio	Army	670	100		6,331	Rotating	12	12	July	No	Op	81	(d)
Gulf, Colorado and Santa Fe Hospital	Temple	NPAasn	150			966	Rotating	1	12	July	(109)	None	16	\$50
Kings Daughters Hospital	Temple	NPAasn	118			6,882	Mixed	2	12	July	No	Req	16	\$50
Scott and White Hospital	Temple	Corp	175			3,621	Rotating	6	12	July	(109)	Req	10	\$50
UTAH														
Thomas D. Dee Memorial Hospital	Ogden	Church	185	0	01	5 283	Rotating	5	12	July	No	Req	10	\$20
Dr. W. H. Groves Latter Day Saints Hospital ¹	Salt Lake City	Church	466	10	90	5 730	Rotating	8	12	July	(125)	Req	16	\$15(J)
Holy Cross Hospital	Salt Lake City	Church	270	24	76	2 978	Mixed	2	12	July	No	None	31	\$15(m)
St. Mark's Hospital ¹	Salt Lake City	Church	135	15	85	2 275	Mixed	2	12	July	No	Req	29	\$30
Salt Lake General Hospital	Salt Lake City	County	249	99	1	3,395	Mixed	8	12	July	No	Req	20	\$20(1)
VERMONT														
Bishop DeGoesbriand Hospital	Burlington	Church	122	55	45	2 622	Rotating	3	12	Jan & July	No	None	24	\$20
Mary Fletcher Hospital	Burlington	NPAasn	150	67	33	3 683	Rotating	5	12	July & Sept	No	Req	41	\$50
VIRGINIA														
Hospital of St. Vincent de Paul	Norfolk	Church	240	55	45	3 877	Rotating	5	12	July	No	Req	34	\$25
Norfolk Protestant Hospital	Norfolk	Church	200	55	45	5,239	Rotating	4	12	July	No	Req	32	\$35
U. S. Marine Hospital	Norfolk	USPHS	300	100		2 082	Rotating	8	12	July	(110)	Op	76	(d)
Johnston Willis Hospital	Richmond	Corp	123	8	92	3 002	Rotating	3	12	July	No	Req	23	\$15
Medical College of Virginia Hospital	Richmond	NPAasn	456	89	11	9 118	Mix & Rotat	20	12	July	(111)	Req	20	No
Division ¹ (Memorial Dooley St. Philip and Crippled Children's Hospitals)	Richmond	Corp	108	51	40	2,481	Mixed	3	12	July	No	Req	37	\$25(m)
Stuart Circle Hospital	Richmond	Corp	109			2 130	Mixed	2	12	July	No	Req	21	\$50
Jefferson Hospital	Roanoke	State	330	60	81	6 842	Rotating	20	12	July	(112)	Req	40	No
University of Virginia Hospital ¹	University													
WASHINGTON														
Columbia Hospital	Seattle	Church	236	80	20	2 706	Rotating	4	12	July	(113)	None	19	\$25
King County Hospital Unit No. 1 ¹ (Harborview)	Seattle	County	445	100		10,859	Rotating	24	24	July	(114)	Req	40	\$30
Providence Hospital	Seattle	Church	460	15	85	6,897	Rotating	6	12	July	(115)	Req	25	\$30
Seattle General Hospital	Seattle	Church	120	100		2 450	Rotating	3	12	July	(116)	None	28	\$30
Swedish Hospital	Seattle	NPAasn	260	1	99	4 051	Rotating	8	12	July & Oct	(117)	Op	29	\$30
U. S. Marine Hospital	Seattle	USPHS	300	100		2,803	Rotating	6	12	July	(118)	Req	80	(d)

Name of Hospital	Location	Control	Capacity	Classification of Patients		Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free and Part Pay	Full Pay									
WASHINGTON—Continued														
Virginia Mason Hospital	Seattle	NPAasn	180		100	3,022	Rotating	4	12	July	No	None	33	\$30
Deaconess Hospital	Spokane	Church	257			4,032	Rotating	4	12	July	(119)	None	30	\$24
Sacred Heart Hospital	Spokane	Church	347	60	40	6,140	Mixed	4	12	July	(120)	None	10	\$25
St Luke's Hospital ¹	Spokane	NPAasn	110	43	50	2,003	Rotating	3	12	July	(121)	None	23	\$24
Northern Pacific Beneficial Ass'n Hosp	Tacoma	NPAasn	118	78	22	1,800	Mixed	2	12	July	(122)	Req	17	\$24
Levee County Hospital	Tacoma	County	220	100		3,836	Mixed	2	12	July	No	Op	21	\$24.40
St Joseph's Hospital	Tacoma	Church	150	37	63	3,091	Mixed	3	12	July	No	None	62	\$30
Tacoma General Hospital	Tacoma	NPAasn	257		100	4,185	Rotating	4	12	July	(122)	Op	24	\$30
WEST VIRGINIA														
Charleston General Hospital	Charleston	Corp	165	70	80	4,379	Rotating	5	12	July	No	Req	30	\$24
Chesapeake and Ohio Railway Hospital	Huntington	NPAasn	130	100		2,492	Rotating	3	12	July	No	Req	24	\$30
St Mary's Hospital	Huntington	Church	120			2,261	Mixed	3	12	July	No	Op	18	\$40
Ohio Valley General Hospital	Wheeling	NPAasn	210	51	49	4,400	Mixed	5	12	July	No	Req	20	\$24
Wheeling Hospital	Wheeling	Church	325	45	55	2,671	Mixed	4	12	July	No	Req	10	\$40
WISCONSIN														
St Elizabeth Hospital	Appleton	Church	200	22	78	3,472	Mixed	2	12	June & July	No	None	28	\$25
St Agnes Hospital	Fond du Lac	Church	250	41	59	4,331	Mixed	4	12	June	No	None	27	\$24
Mercy Hospital	Janesville	Church	150	50	50	1,000	Mixed	1	12	July	No	None	19	\$24
La Crosse Lutheran Hospital	La Crosse	Church	124	20	70	2,231	Mixed	1	12	July	No	Req	19	\$25
St Francis Hospital ¹	La Crosse	Church	315			3,948	Rotating	5	12	July	No	Req	27	\$24
Madison General Hospital	Madison	NPAasn	160	33	67	4,640	Rotating	4	12	July	No	None	33	\$30
Methodist Hospital	Madison	Church	120	27	73	2,330	Rotating	4	12	July	No	None	24	\$30
St Mary's Hospital	Madison	Church	205	44	56	4,563	Rotating	4	12	July	No	Req	44	\$25
State of Wisconsin General Hospital ¹	Madison	State	632	93	7	10,221	Rotating	16	12	July	No	Op	71	\$30
St Joseph's Hospital ¹	Marshfield	Church	170	20	74	3,557	Mixed	2	12	July	No	Req	27	\$20
Columbia Hospital	Milwaukee	NPAasn	205			2,544	Rotating	5	24	July	(123)	Req	43	\$24
Franciscan Deaconess Hospital	Milwaukee	Church	170	23	72	2,822	Rotating	3	12	June	(124)	Op	19	\$24
Milwaukee Hospital "The Passavant"	Milwaukee	Church	250	72	28	5,823	Rotating	7	12	July	No	Req	36	\$24
Misericordia Hospital	Milwaukee	Church	154	10	90	2,387	Mixed	2	12	July	No	None	15	\$15
Mount Sinai Hospital	Milwaukee	NPAasn	170	77	23	4,729	Rotating	5	12	July	No	Req	62	\$24
St Joseph's Hospital ¹	Milwaukee	Church	350	32	68	4,900	Rotating	6	12	June	No	Req	19	\$24
St Mary's Hospital	Milwaukee	Church	255			5,368	Mixed	4	12	June	No	Op	16	\$25
Mercy and St Mary's Hospitals	Oshkosh	Church	160			2,678	Rotating	3	12	July	No	Op	27	\$24
Milwaukee County General Hospital ¹	Wauwatosa	County	1125	100		15,171	Rotating	38	12	June	No	Req	20	\$10
CANAL ZONE														
Gorgas Hospital	Accon	Fed	850	100		0,303	Rotating	8	12	July	No	Op	65	(1 y)
HAWAII														
Queros Hospital	Honolulu	Corp	282			6,854	Rotating	6(y)	18	(1-c)	(125)	None	44	\$71
PHILIPPINE ISLANDS														
Philippine General Hospital ¹	Manila	Fed	567	90	10	16,488	Rotating	31(x)	12	March	(126)	Req	74	No

Numerical and other references will be found on pages 707 and 708

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood however that this statement applies only to hospitals that are unqualifiedly approved under the Canadian plan and does not apply to that group referred to as Recommended.

The following list of hospitals revised to Jan 1 1935 has been furnished by the Department of Hospital Service

Name of Hospital	Location	Name of Hospital	Location	Name of Hospital	Location
Victoria General Hospital	Halifax, N S	Grace Hospital	Toronto Ont	Children's Hospital	Winnipeg Man
St John General Hospital	St John N B	Hospital for Sick Children	Toronto Ont	Winnipeg General Hospital	Winnipeg Man
Hospital du St Sacrement	Quebec Que	St Joseph's Hospital	Toronto Ont	St Boniface Hospital	St Boniface Man
Children's Memorial Hosp	Montreal Que	St Michael's Hospital	Toronto Ont	Regina General Hospital	Regina Sask
Hospital Notre Dame	Montreal Que	Toronto East General Hosp	Toronto Ont	Saskatoon City Hospital	Saskatoon Sask
Hospital Ste Justine	Montreal Que	Toronto General Hospital	Toronto Ont	Edmonton General Hospital	Edmonton Alta
Hôtel Dieu St Joseph	Montreal Que	Toronto Western Hospital	Toronto Ont	Misericordia Hospital	Edmonton Alta
Hospital Ste Luc	Montreal Que	Hamilton General Hospital	Hamilton Ont	Royal Alexandra Hospital	Edmonton Alta
Montreal General Hospital	Montreal Que	St Joseph's Hospital	London Ont	University of Alberta Hosp	Edmonton Alta
Royal Victoria Hospital	Montreal Que	Victoria General Hospital	London Ont	St Paul's Hospital	Vancouver B C
Woman's General Hospital	Montreal Que	Metropolitan General Hosp	Walkerville Ont	Vancouver General Hospital	Vancouver B C
Ottawa Civic Hospital	Ottawa Ont	Hôtel Dieu of St Joseph Hosp	Windsor Ont	Provincial Royal Jubilee Hosp	Victoria B C
Kingston General Hospital	Kingston Ont	MacEwan General Hospital	Fort William Ont		

NOTES

- 1 Women interns admitted
- 2 Women interns only
- (a) In lieu of maintenance
- (b) Bonus of \$110
- (c) Bonus of \$10 for satisfactory records
- (d) Salary established by government pay tables
- (e) \$25 per month for first 11 months \$28 the twelfth month
- (f) Bonus of \$25
- (g) Bonus of \$180
- (h) Bonus of \$100
- (i) Bonus of \$120
- (j) Bonus of \$20
- (k) \$25 per month second year
- (m) Bonus of \$50
- (n) Bonus of \$300
- (o) Bonus of \$150
- (p) \$20 per year less deductions
- (q) \$25 per month first year \$50 per month second year bonus of \$100
- (r) Bonus of \$50 on completion of 20 months service

- (s) \$15 per month for 6 months \$20 for 12 months bonus of \$100
- (t) Bonus of \$125
- (u) \$20 per month after completion of 12 months service
- (v) Bonus of \$200
- (w) Bonus of \$25
- (x) Bonus of \$200
- (y) Prefer aspirants going into foreign missions or boys born and raised in Hawaii
- (z) All internships reserved for the fifth year students of the College of Medicine University of the Philippines
- (1a) January, April May July August October and November
- (1b) January March July and November
- (1c) Quarterly
- (1d) April July and November
- (1e) Every two months
- (1f) January April and July
- (1g) January July and October
- (1h) January June July and September
- (1i) July August and September

- (1j) Surgery March July and November Medical January, April June and September
- (1k) January May and September
- (1l) January February June July and October
- (1m) June July and August
- (1n) Every six weeks
- (1o) July September and November
- (1p) January July and September
- (1q) July August, September and October
- (1r) March June September and December
- (1s) March July and November
- (1t) February July and November
- (1u) January June and September
- (1v) July August September November and December
- (1w) April June and August
- (1x) Appointments made by chief of office, The Panama Canal Washington D C Net salary \$70 per month

Affiliation as Referred to in Column Headed "Affiliated Service"

- 3 Patton State Hospital Patton psychiatry
- 4 Los Angeles Receiving Hospital emergency service
- 5 Children's Hospital and Los Angeles County Hospital pediatrics and obstetrics
- 6 Los Angeles County Hospital surgery medicine pathology and pediatrics
- 7 Internship in these hospitals includes service in Alameda County Hospital Oakland Fairmont Hospital San Leandro and Arroyo Sanatorium Livermore
- 8 Woman's Hospital Pasadena obstetrics
- 9 Napa State Hospital Injola and Jassier Health Home Redwood City psychiatry and tuberculosis
- 10 St. Francis Hospital San Francisco obstetrics and pediatrics
- 11 San Francisco Hospital obstetrics gynecology and pediatrics
- 12 White Memorial Hospital Los Angeles obstetrics pediatrics and surgery
- 13 Santa Barbara General Hospital
- 14 Santa Barbara Cottage Hospital diabetes and medicine
- 15 St. Joseph's Hospital and Children's Hospital Denver obstetrics and pediatrics
- 16 Fitzsimons General Hospital Denver tuberculosis
- 17 Municipal Hospitals Department of Communicable Diseases Hartford
- 18 Columbia Hospital for Women and Lying In Asylum Washington
- 19 Gallinger Municipal Hospital Children's Hospital and Providence Hospital Washington pediatrics obstetrics and surgery
- 20 Columbia Hospital for Women and Lying In Asylum and Children's Hospital Washington obstetrics and pediatrics
- 21 Grady Hospital Atlanta pediatrics
- 22 Grady Hospital Atlanta obstetrics
- 23 Misericordia Hospital and Home for Infants Chicago obstetrics gynecology and pediatrics
- 24 Winfield Sanitarium Winfield tuberculosis
- 25 Internship in the University of Chicago Clinics includes service in Albert Merritt Billings Hospital Robert Roberts Memorial Hospital Nancy Adele McElwee Memorial and Gertrude Dunn Hicks Memorial Hospital and Max Epstein Clinic also Chicago Lying In Hospital
- 26 Peoria State Hospital and Peoria Municipal Tuberculosis Sanitarium
- 27 Iba Indiana University Hospitals include the Robert W. Long Hospital the James Whitcomb Riley Hospital for Children the William H. Coleman Hospital for Women and the Indiana Rotary Convalescent Home
- 28 Broadlawn Des Moines tuberculosis and communicable disease units
- 29 Watkins Memorial Hospital Lawrence
- 30 Sedgwick County Hospital Wichita general and outpatient
- 31 Salvation Army Home and Hospital and Sedgwick County Hospital Wichita obstetrics and general
- 32 Children's Free Hospital Louisville pediatrics
- 33 Louisville City Hospital Children's Free Hospital Louisville and Waverly Hills Sanatorium Waverly Hills
- 34 Charity Hospital and Touro Infirmary New Orleans pediatrics gynecology and obstetrics
- 35 Johns Hopkins Hospital Baltimore pathology
- 36 Johns Hopkins Hospital Baltimore urology
- 37 University Hospital and Sydenham Hospital Baltimore obstetrics pediatrics and communicable diseases
- 38 Sydenham Hospital communicable diseases
- 39 Boston City Hospital includes the Main Hospital South Department for Contagious Diseases Haymarket Square Relief Station and Boston Relief Station and the Sanatorium Division for Tuberculosis
- 40 Boston State Hospital and Boston Psychopathic Hospital psychiatry
- 41 Evangeline Booth Maternity Hospital and Home Boston
- 42 Shriner's Hospital for Crippled Children Health Department Hospital and Vesson Maternity Hospital Springfield orthopedics communicable diseases and obstetrics
- 43 Herman Kiefer Hospital Detroit
- 44 Herman Kiefer Hospital obstetrics and communicable diseases and Children's Hospital pediatrics
- 45 Herman Kiefer Hospital tuberculosis and communicable diseases and St. Joseph's Retreat Dearborn neurology and psychiatry
- 46 Children's Hospital Detroit pediatrics
- 47 Sunshine Sanatorium and City General Hospital Grand Rapids tuberculosis and general
- 48 Ingham Sanatorium and Boys Vocational School Hospital Lansing tuberculosis and otolaryngology
- 49 Miller Memorial Hospital Duluth outpatient service
- 50 Gillette State Hospital for Crippled Children St. Paul
- 51 Glen Lake Sanatorium Oak Terrace tuberculosis
- 52 Children's Hospital St. Paul pediatrics
- 53 St. Anthony's Hospital St. Louis obstetrics gynecology and pediatrics
- 54 St. Louis Maternity Hospital St. Louis City Hospital and City Isolation Hospital obstetrics medicine and communicable diseases
- 55 Jewish Sanatorium Robertson tuberculosis
- 56 Alexian Brothers Hospital, St. Louis outpatient service
- 57 Robert Koch Hospital and City Sanitarium St. Louis tuberculosis and psychiatry
- 58 St. Louis City Hospital pathology
- 59 St. Mary's Group of Hospitals includes St. Mary's Hospital Falmouth Desloge Hospital and Mt. St. Rose Sanatorium
- 60 St. Elizabeth Hospital Elizabeth obstetrics and gynecology
- 61 Margaret Hague Maternity Hospital Jersey City obstetrics
- 62 New Jersey State Hospital Marlboro and Allenwood Sanatorium Allenwood psychiatry and tuberculosis
- 63 Bergen Plines Bergen County Hospital Ridgewood tuberculosis and communicable diseases
- 64 Trenton Municipal Hospital tuberculosis
- 65 Anthony N. Brady Maternity Hospital Albany
- 66 Kingston Avenue Hospital Brooklyn communicable diseases
- 67 St. Mary's Hospital and Providence Retreat Buffalo obstetrics and psychiatry
- 68 Children's Hospital Buffalo pediatrics
- 69 Ulster County Tuberculosis Hospital Kingston
- 70 Our Lady of Victory Infants Home, Lackawanna obstetrics and pediatrics
- 71 Jewish Maternity Hospital New York City
- 72 New York Ophthalmic Clinic New York City
- 73 Perth Amboy General Hospital, obstetrics gynecology and pediatrics
- 74 Syracuse Memorial Hospital City Hospital and Syracuse Psychopathic Hospital obstetrics communicable diseases and psychiatry
- 75 Forsyth County Tuberculosis Sanatorium Winston Salem
- 76 Children's Hospital Akron, pediatrics and orthopedics
- 77 Catherine Booth Home and Hospital Cincinnati obstetrics gynecology and pediatrics
- 78 Children's Hospital Cincinnati pediatrics
- 79 Christian R. Holmes Hospital Hamilton County Tuberculosis Sanatorium and Hamilton County Home and Chronic Disease Hospital Cincinnati
- 80 Longview State Hospital Cincinnati psychiatry
- 81 Cincinnati General Hospital pediatrics and otolaryngology
- 82 St. Anne's Maternity Hospital Cleveland
- 83 Mt. Sinai Hospital Cleveland
- 84 City Hospital Cleveland psychiatry and communicable diseases
- 85 University Hospitals of Cleveland include the Lakeside Hospital, Maternity Hospital Babies and Children's Hospital Cleveland, and the Rainbow Hospital for Crippled and Convalescent Children South Euclid
- 86 Philadelphia Hospital for Contagious Diseases
- 87 Starling Loving University Hospital and Children's Hospital Columbus obstetrics and pediatrics
- 88 Stillwater Sanatorium Dayton tuberculosis
- 89 Shriner's Hospital for Crippled Children Portland orthopedics
- 90 University of Oregon Medical School Hospitals include Multnomah Hospital and Doernbecher Memorial Hospital for Children
- 91 Allentown State Hospital psychiatry
- 92 Hospital of the University of Pennsylvania Philadelphia obstetrics
- 93 Children's Hospital of the Mary T. Drexel Home Philadelphia pediatrics
- 94 Henry Phipps Institute of the University of Pennsylvania Philadelphia tuberculosis
- 95 Children's Hospital Philadelphia pediatrics
- 96 Shriner's Hospital for Crippled Children and Philadelphia Hospital for Contagious Diseases
- 97 Pennsylvania Hospital Department for Mental and Nervous Diseases
- 98 Municipal Hospital for Contagious Diseases Pittsburgh
- 99 Rosalia Foundling and Maternity Hospital and Municipal Hospital for Contagious Diseases Pittsburgh
- 100 Elizabeth Steel Nagee Hospital Children's Hospital and Eye and Ear Hospital Pittsburgh obstetrics gynecology pediatrics and eye and ear
- 101 Berks County Tuberculosis Sanatorium Reading
- 102 Pittston Hospital Pittston obstetrics
- 103 Providence Lying In Hospital
- 104 Children's Hospital and Pine Breeze Sanatorium Chattanooga pediatrics and tuberculosis
- 105 Eastern State Hospital and Beverly Hills Sanatorium Knoxville neurology psychiatry and tuberculosis
- 106 William Parker Hospital New York City pediatrics
- 107 Bradford Memorial Hospital for Babies Dallas, pediatrics
- 108 Galveston State Psychopathic Hospital
- 109 Gulf Colorado and Santa Fe Hospital and the Scott and White Hospital affiliated furnish one internship
- 110 Norfolk Protestant Hospital Florence Crittenton Home and Children's Clinic of the Kings Daughters Norfolk obstetrics and pediatrics
- 111 Pine Camp Hospital Brook Hill tuberculosis and orthopedics
- 112 Blue Ridge Sanatorium Charlottesville tuberculosis
- 113 King County Tuberculosis Hospital Seattle
- 114 Includes service in King County Hospital Unit No. 2 Seattle
- 115 King County Hospital Unit No. 1 Seattle outpatient service
- 116 Children's Orthopedic Hospital and Florence Crittenton Home Seattle orthopedics pediatrics and obstetrics
- 117 Children's Orthopedic Hospital Seattle and Firland Sanatorium Richmond Highlands pediatrics orthopedics tuberculosis and communicable diseases
- 118 King County Hospital Unit No. 1 Seattle obstetrics gynecology and pediatrics
- 119 Edgell Sanatorium and Shriners Hospital for Crippled Children, Spokane tuberculosis and orthopedics
- 120 Edgell Sanatorium Spokane tuberculosis
- 121 Edgell Sanatorium and Salvation Army Women's Hospital and Home Spokane tuberculosis and obstetrics
- 122 Pierce County Hospital Tacoma
- 123 Milwaukee Children's Hospital and South View Isolation Hospital, Milwaukee pediatrics and communicable diseases
- 124 Milwaukee Children's Hospital pediatrics
- 125 Kaulkeolani Children's Hospital Honolulu pediatrics
- 126 Santol Tuberculosis Sanatorium Santol
- 127 Health Department Hospital Springfield tuberculosis and communicable diseases
- 128 Utah State Hospital Provo psychiatry

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

By the Council on Medical Education and Hospitals of the American Medical Association
Revised to Aug 31 1935

Note—The following hospitals are considered in position to furnish acceptable residencies in the several specialties designated for graduates who have already had a general internship or its equivalent in practice. A list of hospitals approved for internships will be found on pages 692-708. Statistical material is based on reports received for the calendar year 1934. Reported salaries should be verified through correspondence with individual hospitals.

The abbreviations under the column headed Control are as follows:

CyCo Corp
City and county Corporation unrestricted as to profit
Fed Frat Indiv
Federal Fraternal Individual

NPAssn Nonprofit association
Part Partnership
USPHS United States Public Health Service

HOSPITALS 392 RESIDENCIES 2563

HOSPITALS	Control	Capacity	Classification of Patients			Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Percentage	Salary per Month
			Free	Part Pay	Full Pay							
ANESTHESIA												
Massachusetts General Hospital		410	53	33	14			Varies	12	59		\$41.00
Jersey City Hospital		100	94		0			Jan & July	12	188	15	\$50
Grasslands Hospital		903	88	2	10			Jan & July	12	327	72	Varies
State University Hospitals		622	52	39	0			Dec	12	147	39	\$25
Philadelphia General Hospital		2,650	100					Jan	12	1,020	48	\$100
State of Wisconsin General Hospital		632	86	7	7				12	254	71	\$50
CARDIOLOGY												
Indiana University Hospitals		430	83	17				Jan	12	146	43	\$33.33
Pennsylvania Hospital		560	42	33	25			Varies	12	183	45	\$20-60
St Francis Hospital		537	30	23	47			Nov	12	134	30	\$50
COMMUNICABLE DISEASES												
Los Angeles County Hospital		3,410	100					Jan & July	18	2,497	59	\$10
Hospital for Children		239	12	20	68			Jan	12	29	31	\$25
Municipal Hospitals		335	83	10	6			Feb	12	117	70	\$100
Contagious Disease Hospital		423	100					Varies	12	114	76	\$150
Belmont Hospital		1,702	83	14	1,464			Varies	Indef	740	24	\$33.33
Herman Kiefer Hospital		2,615	71	29	3,393			Varies	12	155	29	\$125
City Isolation Hospital		1,400	68	3	2,064			Varies	12	90	32	\$75
Essex County Hosp for Contag Dis		250	82	3	2,409			Varies	Indef	37	44	\$200
Kings Avenue Hospital		410	100		3,411			Varies	12	93	49	\$100
Willard Parker Hospital		424	100		3,990			Jan	12	635	40	\$100
City Hospital		1,600	100						12			\$37
DERMATOLOGY SYPHILOLOGY												
Los Angeles County Hospital		3,410	100					Jan & July	18	2,497	59	\$10
Cook County Hospital		3,522	100					Jan & July	12	1,900	18	None
University of Chicago Clinics		202	20	70	5			Varies	12	170	70	Varies
Massachusetts General Hospital		410	53	33	14			Varies	12	104	31	\$10
University Hospital		1,235	76	20	6			Jan	12	145	64	None
Minneapolis General Hospital		631	60	16	6			Dec	12	457	75	\$33.33
Barnard Free Skin and Cancer Hosp		44	100		330			Jan or July	12	121	37	\$25
Kings County Hospital		3,240	100		330			Feb	12	700	17	\$25
Buffalo City Hospital		1,063	60	30	4			July	12	302	35	\$50
Metropolitan Hospital		1,020	100		673			Jan & July	12	281	25	\$25
Montefiore Hosp for Chronic Diseases		711	90	6	752			Jan	12	354	69	\$75
Cincinnati General Hospital		825	81	13	6			Feb	12	734	41	Up to \$27.50
City Hospital		1,093	100		448			July	12	337	63	\$25
University Hospitals		530	40	0	51			Jan	12	134	40	\$50
University of Virginia Hospital		330	20	49	31			Dec	24			
EPILEPSY												
Monson State Hospital		1,510	100					Varies	Indef	20	30	\$158.33
Craig Colony		2,129	00	5	1,490			Varies	Indef	56	44	None
FRACTURES												
Cook County Hospital		3,522	100					Jan & July	12	1,900	18	None
Rhode Island Hospital		600	75	20	303			Varies	12	299	43	\$41.00
GYNECOLOGY (Also see Obstetrics Gynecology)												
Los Angeles County Hospital		3,410	100					Jan & July	18	2,497	59	\$10
Freedmen's Hospital (col)		374	87	0	618			Jan	12	104	31	\$10
Passavant Memorial Hospital		848	67	13	834			June	12	145	64	None
Indiana University Hospitals		480	83	17	1,194			Dec	12	457	75	\$33.33
Johns Hopkins Hospital		560	50	20	420			Jan & July	12	121	37	\$25
University Hospital		400	84	0	1,334			Feb	12	257	60	\$50
Jersey City Hospital		900	66	30	1,175			Varies	12	170	35	\$25
Albany Hospital		685	0	83	1,175			Jan	12	81	20	\$4.00
Buffalo City Hospital		1,063	60	30	4			Jan to April	12	33	69	\$118.75
Buffalo General Hospital		467	13	34	1,012			Jan & Feb	12	101	44	None
Mount Sinai Hospital		416	12	5	442			July	12	211	44	\$25
N Y Post-Grad Med School & Hosp		322	6	57	38			Varies	12	54	34	\$25
Sinano Hospital for Women		303	40	0	1,188			Varies	12	203	18	\$25
Woman's Hospital		594	30	24	41			Jan & Feb	12			
University Hospitals		427	33	27	40			July	12			
Graduate Hospital of the Univ of Pa		572	97	2	1,144			March	12			
Hospital of the Univ of Pennsylvania		572	97	2	1,144			Varies	12			
Elizabeth Steel Magee Hospital		572	97	2	1,144			Varies	12			
Memphis General Hospital		572	97	2	1,144			Varies	12			
INDUSTRIAL SURGERY												
Indiana City Hospital		572	97	2	1,144			March	12			
LEPROSY												
U S Marine Hospital		572	97	2	1,144			March	12			
MALIGNANT DISEASES												
Los Angeles County Hospital		572	97	2	1,144			March	12			
Albert Steiner Clinic for Cancer and Allied Diseases		572	97	2	1,144			March	12			

Numerical references will be found on page 720

MALIGNANT DISEASES—(Continued)													
	Control	Capacity	Classification of Patients Percentage			Patients Treated Under Listed Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
			Free	Part Pay	Full Pay								
Michael Reese Hospital	Chicago	NPAasn	699	53	28	19	Yes	3	Jan & July	12	230	47	\$100
Collis P. Huntington Memorial Hosp	Boston	NPAasn	2	17	8	70	Yes	4	Sept	Indef	12	69	\$45
Pondville Hospital	Walpole Mass	State	122	60	60	1 087	Yes	0	Varies	Indef	173	01	\$150
Barnard Free Skin and Cancer Hosp	St Louis	NPAasn	44	100			Yes	1	Dec	12	10	68	\$25
Jersey City Hospital	Jersey City	City	600	04	6	3.0	Yes	1	Jan & July	12	188	15	\$50
Memorial Hospital for the Treatment of Cancer and Allied Diseases	New York City	NPAasn	109	7	71	22	Yes	0	Jan & July	36	84	60	\$125
New York City Cancer Institute Hosp	New York City	City	102			8.2	No	4	Varies	12	172	35	\$30
Jeunes Hospital	Philadelphia	NPAasn	68	24	64	22	Yes	2	April	24	60	13	\$50
MAXILLOFACIAL SURGERY													
Graduate Hospital of the Univ of Pa	Philadelphia	NPAasn	475	39	0	52	Yes	1	Jan to April	12	101	44	None
MEDICINE													
Hillman Hospital	Birmingham Ala	County	4.0	100		1 930	Yes	1	Jan	12	200	28	\$36
Employees Hospital of the Tennessee Coal Iron and Railroad Co	Fairfield Ala	Corp	310			1 4.0	Yes	1	Jan	12	110	47	\$100
Fresno County General Hospital	Fresno Calif	County	528	98	2	2,525	Yes	2	Jan	12	261	43	\$60
Cedars of Lebanon Hospital	Los Angeles	NPAasn	298	20	3	77	Yes	1	Dec	12	116	42	\$100
Los Angeles County Hospital	Los Angeles	County	3 410	100			Yes	4	Jan & July	36	2 490	60	\$110
White Memorial Hospital	Los Angeles	Church	174	1	68	31	Yes	1	July	36	42	33	\$20
San Bernardino County Charity Hosp	San Bernardino Calif	County	328	100		1 416	Yes	1	Jan	12	137	44	\$75
Hospital for Children	San Francisco	NPAasn	250	12	20	68	Yes	1	Jan	12	20	31	\$25
Mount Zion Hospital	San Francisco	NPAasn	189	19	14	07	No	1	Feb	12	78	47	\$50
San Francisco Hospital	San Francisco	CyCo	1 451	100		2,066	No	7	Feb or March	12	571	41	\$50
Stanford University Hospitals	San Francisco	NPAasn	323	8	43	49	Yes	4	Jan	12	70	43	\$25
University of California Hospital	San Francisco	State	261	08	32	10.0	Yes	0	Feb	12	133	70	\$25
Santa Clara County Hospital	San Jose Calif	County	477	96	2		Yes	1	Jan	12	216	50	\$100
Colorado General Hospital	Denver	State	178	75	25		No	1	Dec	12	162	70	\$50
Denver General Hospital	Denver	CyCo	580			1 201	No	1	Jan or July	12	210	23	\$50
New Haven Hospital	New Haven Conn	NPAasn	410	40	37	23	Yes	5	Jan & July	12	183	43	\$100
Central Disp and Emergency Hospital	Washington D C	NPAasn	2 0	29	14	57	No	2	Jan or Feb	12	55	31	\$50
Freedmen's Hospital (col)	Washington D C	Fed	374	87	13	624	Yes	1		12	104	31	\$50
Gallinger Municipal Hospital	Washington D C	City	704	00	1	3 839	No	2	Jan	12	556	40	\$30-50
Grady Hospital, Emory University	Atlanta Ga	City	963	100		1,508	Yes	3	Jan	24	107	22	\$50
Division (colored unit)	Augusta Ga	City	270	1	0	44	Yes	3	July	12	101	30	\$50
University Hospital	Chicago	County	3 522	100		1,871	No	5	Jan & July	60	1 300	18	None
Cook County Hospital	Chicago	NPAasn	345	5	2	03	No	2	Jan & July	12	54	04	None
Passavant Memorial Hospital	Chicago	Church	402	24	45	23	Yes	1	Varies	24	178	58	None
Presbyterian Hospital	Chicago	NPAasn	150	56	8	30	Yes	1	July	12	51	34	\$50
Provident Hospital (col)	Chicago	State	382	100		035	Yes	2	July	12	107	01	\$50
Research and Educational Hospital	Chicago	Church	609	4	20	70	Yes	4	Jan	12	124	40	None
St. Luke's Hospital	Chicago	NPAasn	202	25	70	6	Yes	5	Varies	12	175	70	Varies
University of Chicago Clinics	Chicago	NPAasn	271	7	54	39	Yes	1	March	12	77	72	
Frampton Hospital	Evansville Ill	State	480	63	17	697	Yes	2	Jan	12	14	48	\$33.33
Indiana University Hospitals	Indianapolis	State	0.4	84	6	8	Yes	0	Jan	12	267	50	Up to \$70.83
University Hospitals	Iowa City	State	250	4	44	11	Yes	0	Dec	12	193	78	\$40
Bell Memorial Hospital	Kansas City Kan	City	580	100		2,500	Yes	6	Feb	36	332	62	\$15.50
Louisville City Hospital	Louisville Ky	State	1 913	100		10 885	Yes	5	July	24-48	1,384	153	\$25
Charity Hospital	New Orleans	NPAasn	306	30	35	32	Yes	1	Jan	12	110	28	\$25
Touro Infirmary	Baltimore	City	700	100		1 739	Yes	6	Jan	12	357	33	\$50
Baltimore City Hospitals (General)	Baltimore	Church	184	23	59	18	Yes	1	Dec	12	43	42	\$50
Church Home and Infirmary	Baltimore	NPAasn	800	56	20	24	Yes	0	June	12	457	75	\$50.83
Johns Hopkins Hospital	Baltimore	Church	229	43	0	01	No	1	Jan	12	33	16	\$50
Maryland General Hospital	Baltimore	Church	290	44	20	36	Yes	2	Jan	12	03	27	\$50
Mercy Hospital	Baltimore	NPAasn	129	85	6	10	No	1	Dec	12	21	17	\$25
Provident Hosp and Free Disp (col)	Baltimore	Church	223	40	29	31	Yes	1	Dec	12	67	26	None
St. Agnes Hospital	Baltimore	Church	290	47	11	42	Yes	1	Dec	12	60	40	None
St. Joseph's Hospital	Baltimore	NPAasn	209	40	8	62	Yes	1	Jan	12	70	28	\$17.50
Binal Hospital	Baltimore	NPAasn	115	35	58	27	Yes	1	Dec	12	20	10	\$25
South Baltimore General Hospital	Baltimore	NPAasn	330	10	60	31	Yes	3	Jan	12	01	38	\$12.50
Union Memorial Hospital	Baltimore	State	450	54	25	20	Yes	3	Dec	12	121	37	\$25
University Hospital	Baltimore	NPAasn	200	34	60	30	Yes	1	Jan	12	15	19	\$20
West Baltimore General Hospital	Baltimore	NPAasn	215			1 4.0	No	2	Varies	12	129	53	
Beth Israel Hospital	Boston	City	1 762	85	14	1	Yes	10	Varies	12	740	24	\$33.33
Boston City Hospital	Boston	City	471	100		1 406	No	2	June	12	77	42	\$112.50
Long Island Hospital	Boston	NPAasn	416	53	33	14	Yes	0	Varies	12	59	59	\$11.66
Massachusetts General Hospital	Boston	NPAasn	307	24	42	34	Yes	1	March	12	83	41	\$12.00
Massachusetts Memorial Hospitals	Boston	NPAasn	240	28	33	39	Yes	5	Varies	24	220	75	\$11.66
Peter Bent Brigham Hospital	Boston	State	1,285	75	25		Yes	8	Jan	12	310	52	\$25
University Hospital	Ann Arbor Mich	NPAasn	1 000	3	41	60	No	1	March	12	7	29	\$125.11
Battle Creek Sanitarium	Battle Creek Mich	City	714	90	10		Yes	2	Jan	12	634	33	\$33.33
City of Detroit Receiving Hospital	Detroit	NPAasn	443	32	44	24	Yes	1	July & Sept	12	125	25	\$37.50
Grace Hospital	Detroit	NPAasn	750	13		87	Yes	4	Feb	12	105	22	\$20.30
Harper Hospital	Detroit	NPAasn	610	46	54		Yes	4	March	12	151	44	\$110
Henry Ford Hospital	Detroit	NPAasn	63	3	15	80	Yes	1	Jan	12	6	20	\$50
Jefferson Clinic and Diagnostic Hosp	Detroit	Church	355	26	62	12	Yes	1	Jan	12	104	85	\$50
Providence Hospital	Detroit	County	1,468	100		3 108	Yes	2	March	24	387	88	\$37.50
Dr. William J. Seymour Hospital	Eloise Mich	City	425				No	1	May	12	104	25	\$50
Hurley Hospital	Flint Mich	City	681	60	15	5	Yes	0	Jan & July	36	451	60	\$25
Minneapolis General Hospital	Minneapolis	CyCo	1 050	100		2,000	Yes	4	March	12	530	60	\$50
Ancker Hospital	St Paul	Church	270	20	9	06	Yes	3	Dec	12	168	54	\$25
Barnes Hospital	St Louis	NPAasn	200	28	54	18	No	2	Nov	12	64	33	\$40
Jewish Hospital	St Louis	City	800	100		5 743	Yes	4	March	12	704	42	\$100
St. Louis City Hospital	St Louis	City	340	100		1 470	No	2	June	36	361	41	\$100
St. Louis City Hospital No 2 (col)	St Louis	Church	210	15	20	60	Yes	1	Dec	12	41	30	\$50
St. Luke's Hospital	St Louis	Church	605	35	25	39	Yes	0	April	30	140	41	\$25
St. Mary's Group of Hospitals	St Louis	City	900	94	6	3,830	Yes	2	Jan & July	24	188	1	\$50
Jersey City Hospital	Jersey City	NPAasn	585	6	83	11	Yes	4	Feb	12	257	60	\$50
Albany Hospital	Albany N Y	City	318	100		1,238	Yes	1	July	12	197	42	\$100
Cumberland Hospital	Brooklyn	City	3,240	67		33 10,388	Yes	4	Jan & July	12	760	17	\$50
Kings County Hospital	Brooklyn	NPAasn	480	17	84	40	Yes	2	Jan	12	168	39	\$50
Long Island College Hospital	Brooklyn	Church	104	13	38	40	Yes	1	March	12	78	31	None
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn	CyCo	1 063	66	30	4	Yes	2	Feb	12	352	35	\$50
Buffalo City Hospital	Buffalo	NPAasn	407	13	34	53	Yes	7	July	24	170	35	\$25
Buffalo General Hospital	Buffalo	NPAasn	309	24	32	44	Yes	2	Dec	12	115	39	\$50
Millard Fillmore Hospital	Buffalo	NPAasn	482	10	30	60	No	1	Varies	12	25	60	\$50
Clifton Springs Sanitarium and Clinic	Clifton Springs N Y	NPAasn	220	1	5	94	Yes	1	Dec	12	98	60	\$50
Charles S. Wilson Memorial Hospital	Johnson City N Y	Corp	300	100		508	Yes	2	Varies	Indef	2	25	\$100
Metropolitan Life Insurance Co Sanat	Mt. McGregor N Y	City	2 418	100		12 314	Yes	4	July	12	980	27	\$33.33
Bellevue Hospital	New York City	City											

MEDICINE—(Continued)

Hospital	City	State	Capacity	Classification of Patients			Patients Treated Under List Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay								
Fifth Avenue Hospital	New York City	N.Y.	340	12	48	3,040	Yes	6	1	Jan	12	372	67	\$21.66
Metropolitan Hospital	New York City	N.Y.	1,020	100	100	1,000	Yes	1	1	Jan	12	372	67	\$21.66
Montefiore Hosp for Chronic Diseases	New York City	N.Y.	711	63	63	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Mount Sinai Hospital	New York City	N.Y.	780	76	76	2,882	Yes	1	1	Jan	12	372	67	\$21.66
New York Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
N.Y. Post Grad Med School & Hosp	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Presbyterian Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Rochester General Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Strong Memorial and Rochester Munie	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Upstate Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Hospital of the Good Shepherd	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Grasslands Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Duke Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Davis Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
City Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Cincinnati General Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Deaconess Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Good Samaritan Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Jewish Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
City Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Mount Sinai Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Alex's Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. John's Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Luke's Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
University Hospitals	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Starling Loving University Hospitals	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Miami Valley Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
State University Hospital	Cincinnati	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Univ of Oregon Med School Hosp	Dayton	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Geo F Gelsinger Memorial Hospital	Dayton	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Graduate Hospital of the Univ of Pa	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Hospital of the Univ of Pa	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Jewish Hospital	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Pennsylvania Hospital	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Allegheny General Hospital	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Mercy Hospital	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Francis Hospital	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Western Pennsylvania Hospital	Pittsburgh	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Reading Hospital	Pittsburgh	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Roper Hospital	Pittsburgh	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Memphis General Hospital	Memphis	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Nashville General Hospital	Nashville	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Vanderbilt University Hospital	Nashville	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Baylor University Hospital	Nashville	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Norfolk Protestant Hospital	Norfolk	Va.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Medical College of Va Hosp Division	Norfolk	Va.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
University of Virginia Hospital	Richmond	Va.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
State of Wisconsin General Hospital	Madison	Wis.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Joseph's Hospital	Madison	Wis.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Belchertown State School	Belchertown	Mass.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Michigan Home and Training School	Lapeer	Mich.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Polk State School	Polk	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Philadelphia General Hospital	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Golden State Hospital	Los Angeles	Calif.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Luke's Hospital	Los Angeles	Calif.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Fairmont Hospital of Alameda County	San Francisco	Calif.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
James M. Jackson Memorial Hospital	San Francisco	Calif.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Emory University Hospital	Atlanta	Ga.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
West Suburban Hospital	West Suburban	Ill.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Massachusetts Memorial Hospital	Boston	Mass.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Mary's Hospital	Boston	Mass.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Atlantic City Hospital	Atlantic City	N.J.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Arnot Ogden Memorial Hospital	Elmira	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Jamaica Hospital	Jamaica	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Genesee Hospital	Genesee	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Rochester General Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
James Walker Memorial Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Thomas Hospital	Rochester	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Charity Hospital	Wilmington	N.C.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Women and Children's Hospital	Akron	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
St. Anthony Hospital	Toledo	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Presbyterian Hospital	Youngstown	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Baroness Erlanger Hospital	Youngstown	O.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Knoxville General Hospital	Knoxville	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Medical Arts Hospital	Chattanooga	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Hermann Hospital	Knoxville	Tenn.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Salt Lake General Hospital	Salt Lake City	Utah	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Jefferson Hospital	Roanoke	Va.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Los Angeles County Hospital	Los Angeles	Calif.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
University Hospitals	Los Angeles	Calif.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Boston City Hospital	Boston	Mass.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Massachusetts General Hospital	Boston	Mass.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
University Hospital	Boston	Mass.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Bellevue Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Central Neurological Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Lenox Hill Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Metropolitan Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Montefiore Hosp for Chronic Diseases	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Mount Sinai Hospital	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Neurological Institute of New York	New York City	N.Y.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Philadelphia Orthopaedic Hospital and	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
Admiralty for Nervous Diseases	Philadelphia	Pa.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66
State of Wisconsin General Hospital	Madison	Wis.	1,160	116	116	2,882	Yes	1	1	Jan	12	372	67	\$21.66

		Control	Capacity	Percentage			Patients Treated Under Listed Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service In Months	Number of Autopsies	Autopsy Percentage	Salary per Month	
				Free	Part Pay	Full Pay									
NEUROSURGERY															
Presbyterian Hospital ¹⁰	Chicago	Church	402	24	48	28		Yes	1	Varies	12	178	58	None	
Boston City Hospital	Boston	City	1,702	85	14	1	1,016	No	2	Varies	12	740	24	\$93.33	
Kings County Hospital	Brooklyn	City	3,246	67	31			Yes	1	Jan & July	12	700	17	4	
Neurological Institute of New York	New York City	NPA Assn	211	11	16	70		No	3	July	12	68	48	\$100	
Strong Memorial and Rochester Municipal Hospitals	Rochester N Y	NP Oy	579	12	40	48		Yes	1	Jan	12	372	67	\$41.66	
Medical College of Va Hosp Division	Richmond	NPA Assn	456	6	80	11	902	Yes	2	Dec	12	122	20	\$50	
OBSTETRICS (Also see Obstetrics Gynecology)															
Los Angeles County Hospital	Los Angeles	County	3,410	100				Yes	4	Jan & July	18	2,497	50	\$0	
Hospital for Children	San Francisco	NPA Assn	240	12	20	68	702	Yes	1	Jan	12	20	31	\$25	
Santa Clara County Hospital	San Jose Calif	County	497	98	2			Yes	1	Jan	12	210	60	\$100	
Freedmen's Hospital (col)	Washington D C	Fed	174	87	17		881	Yes	1		12	104	31		
University Hospital	Augusta Ga	City	270	51	6	44	1,201	Yes	1	July	12	161	30	\$50	
Chicago Maternity Center ²⁰	Chicago	NPA Assn	100				4,483	Yes	1	Jan	12	3	50	Nones	
Cook County Hospital	Chicago	County	3,522	100				No	4	Jan & July	48	1,300	18	Nones	
Provident Hospital (col)	Chicago	NPA Assn	165	50	8	30	516	Yes	1	July	12	51	34	\$50	
Research and Educational Hospital	Chicago	State	382	100			831	Yes	1	July	12	197	01	\$50	
Indiana University Hospitals	Indianapolis	State	480	83	17		1,048	Yes	1	Jan	12	145	48	\$33.33	
Louisville City Hospital	Louisville Ky	City	586	100			1,640	Yes	3	Feb	12	332	52	\$135.50	
Johns Hopkins Hospital	Baltimore	NPA Assn	600	50	20	24	1,630	Yes	4	June	12	467	75	\$20.83	
Provident Hosp and Free Disp (col)	Baltimore	NPA Assn	129	85	5	16		No	1	Dec	12	21	17	\$25	
Sinal Hospital	Baltimore	NPA Assn	260	40	8	62	759	No	1	Jan	12	10	28	\$14.50	
University Hospital	Baltimore	State	450	54	26	20	487	Yes	2	Dec	12	121	97	\$25	
Boston Lying In Hospital	Boston	NPA Assn	434	0	01		3,140	No	2	May & Nov	12	34	47	\$53.33	
Massachusetts Memorial Hospitals	Boston	NPA Assn	307	24	42	34	647	Yes	2	March	12	83	41	\$25.50	
Providence Hospital	Detroit	Church	385	26	62	12	1,070	No	1	Jan	12	104	20	\$100	
Margaret Hague Maternity Hospital	Jersey City	County	556	68	30	4	6,025	Yes	1	Quarterly	15	08	61	\$66.66	
Cumherland Hospital	Brooklyn	City	318	100			1,274	Yes	1	July	12	197	42	\$100	
Jewish Hospital	Brooklyn	NPA Assn	174	73	28	20	2,040	Yes	1	Dec	12	232	46	\$50	
Methodist Episcopal Hospital	Brooklyn	Church	400	17	23	60			2	July	18	108	26	\$100	
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn	Church	104	16	38	40		Yes	1	March	12	78	31	None	
Buffalo City Hospital ⁵	Buffalo	CyCo	1,093	66	30	4	509	Yes	2	Feb	12	332	35	\$50	
Buffalo General Hospital	Buffalo	NPA Assn	467	13	44	43	769	Yes	1	July	12	170	35	\$25	
Morrisania City Hospital	New York City	City	539	100			411	Yes	2	Jan & July	12	340	34	None	
Sloane Hospital for Women	New York City	NPA Assn	322				2,770	Yes	1	Varies	12	1	16	\$50	
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	2,284	Yes	2	Feb	12	734	41	Up to \$27.50	
City Hospital	Cleveland	City	1,090	100			1,642	Yes	1	Jan	24	635	40	\$37	
Mount Sinai Hospital	Cleveland	NPA Assn	270	34	53	8	1,312	Yes	1	Dec	12	70	37	\$50	
St John's Hospital	Cleveland	Church	207	13	8	70	767	No	1	Dec	12	54	23	\$50	
St Luke's Hospital	Cleveland	Church	792	23	4	73	1,277	Yes	2	Dec	12	60	24	\$25	
University Hospitals	Cleveland	NPA Assn	630	40	9	51	2,063	Yes	5	Varies	12	373	63	\$25	
Miami Valley Hospital	Dayton O	NPA Assn	343				881	No	1	Jan	12	240	68	\$100	
State University Hospitals	Oklahoma City	State	622	62	30	0	510	Yes	1	Dec	12	147	39	\$25	
Hospital of the Univ of Pennsylvania	Philadelphia	State	604	35	24	41	921	Yes	1	Jan & Feb	12	211	44	None	
Elizabeth Steel Macee Hospital	Pittsburgh	NPA Assn	427	33	27	40	2,540	Yes	4	Jan	12	54	34	\$41.66	
Memphis General Hospital	Memphis Tenn	City	460	99	10		1,869	Yes	1	July	12	248	18	\$25	
Baylor University Hospital	Dallas Tex	Church	344	11	11	78	2,051	Yes	1	April	12	100	36	\$100	
Medical College of Va Hosp Division	Richmond	NPA Assn	456	9	80	11	1,017	Yes	1	Dec	12	122	20	\$50	
OBSTETRICS GYNECOLOGY (Also see Obstetrics and Gynecology)															
Hillman Hospital	Birmingham Ala	County	4,0	100			2,912	Yes	2	Jan	12	200	28	\$30	
Whita Memorial Hospital	Los Angeles	Church	174	1	63	31	439	Yes	1	July	12	47	33	\$50	
San Francisco Hospital	San Francisco	CyCo	1,451	100			2,827	No	8	Feb or March	12	571	41	\$50	
Stanford University Hospitals	San Francisco	NPA Assn	323	8	43	40	1,280	Yes	2	Jan	12	70	41	\$25	
University of California Hospital	San Francisco	State	281	68			32	1,068	Yes	3	Feb	12	133	76	\$25
New Haven Hospital	New Haven Conn	NPA Assn	439	40	37	23	1,308	Yes	1	Jan & July	12	183	48	\$100	
Columbia Hospital for Women and Lying In Asylum	Washington D C	Corp	200		58	42	3,071	Yes	4	Jan & July	12	23	21	None	
Gallinger Municipal Hospital	Washington D C	City	754	99	1		5,097	No	2	Jan	12	55	40	\$20.50	
Grady Hospital Emory University	Atlanta Ga	City	263	100			4,001	Yes	1	Jan	24	157	23	\$50	
Division (colored unit)	Chicago	NPA Assn	332	30	45	25	6,908	Yes	6	Jan & July	12	44	62	\$33.33	
Chicago Lying In Hospital and Disp	Chicago	Church	402	24	48	28	1,46	Yes	1	Varies	12	178	58	None	
Presbyterian Hospital	Chicago	Church	659	4	20	76	1,642	Yes	2	Jan	12	124	40	None	
St Luke's Hospital	Chicago	Church	659	4	20	76	1,642	Yes	2	Jan	12	124	40	None	
University of Chicago Clinics (see Chicago Lying In Hosp and Disp)	Chicago														
University Hospitals	Iowa City	State	954	84	8	8		Yes	6	Jan	12	267	50	Up to \$70.83	
Bell Memorial Hospital	Kansas City Kan	State	250	45	44	11	878	No	3	Dec	12	193	78	\$45	
Charity Hospital	New Orleans	State	1,613	100			9,035	Yes	2	July	24	1,384	58	\$25	
Touro Infirmary	New Orleans	NPA Assn	360	30	38	32	1,908	Yes	2	Jan	12	116	38	\$25	
Mercy Hospital	Baltimore	Church	290	44	20	36	889	Yes	1	Jan	12	63	27	\$50	
St Joseph's Hospital ¹⁴	Baltimore	Church	290	47	11	42	954	No	2	Dec	12	60	46	None	
University Hospital	Ann Arbor Mich	State	1,285	75	25			Yes	2	Jan	12	370	62	\$25	
City of Detroit Receiving Hospital ²¹	Detroit	City	714	00	10		1,697	Yes	2	Jan	48	694	33	\$83.33	
Grace Hospital	Detroit	NPA Assn	443	32	44	24		Yes	1	July & Sept	12	125	25	\$37.50	
Harper Hospital	Detroit	NPA Assn	760	13	87	1	1,103	No	2	Feb	12	105	22	\$20.30	
Herman Klefer Hospital ²²	Detroit	City	1,400	98	2	3	2,269	No	2	Varies	12	155	20	\$125	
Woman's Hospital	Detroit	NPA Assn	320	6	8	86		Yes	2	Feb	12	46	32	\$25	
Minneapolis General Hospital ¹	Minneapolis	City	681	80	15	5	2,939	Yes	2	Jan & July	36	481	60	\$25	
Acker Hospital ¹	St Paul	CyCo	1,050	100				Yes	1	March	12	530	69	\$50	
Jewish Hospital	St Louis	NPA Assn	200	28	54	18		No	1	Nov	12	64	33	\$50	
St Louis City Hospital	St Louis	City	806	100			5,436	Yes	3	March	12	704	42	\$100	
St Louis Maternity Hospital ²³	St Louis	NPA Assn	195	23	43	29		Yes	11	July	12	68	77	\$25	
St Luke's Hospital	St Louis	Church	210	15	25	60	969	Yes	1	Dec	12	41	30	\$50	
St Mary's Group of Hospitals	St Louis	Church	635	35	20	39	1,393	Yes	5	April	36	140	41	\$25	
Kings County Hospital	Brooklyn	City	3,246	67	31	40	1,715	Yes	4	Jan & July	12	760	17	\$50	
Long Island College Hospital	Brooklyn	NPA Assn	489	17	34	49	1,715	Yes	3	Jan	12	158	30	\$50	
Bellevue Hospital	New York City	City	2,418	100			6,232	Yes	2	July	36	685	27	\$33.33	
Lenox Hill Hospital	New York City	NPA Assn	600	45	55	432		Yes	1	Varies	12	139	42	\$100	
Metropolitan Hospital	New York City	City	1,620	100			2,331	Yes	2	July	24	281	25	0-\$100	
New York Hospital	New York City	NPA Assn	1,150	11	64	25	4,094	Yes	10	Feb	12	264	57	\$25	
Sloane Hospital for Women	New York City	NPA Assn	322				8,806	Yes	6	Varies	12	3	16	\$50	
Woman's Hospital	New York City	NPA Assn	303	5	57	38		Yes	8	Quarterly	24	33	50	None	
Strong Memorial and Rochester Municipal Hospitals	Rochester, N Y	NP-Oy	579	12	40	48	2,900	Yes	4	Jan	12	372	67	\$41.66	
Duke Hospital	Durham N C	NPA Assn	456	60	23	11	1,455	Yes	3	Jan	30-48	182	61	\$12.50	
Univ of Ore Med School Hospitals ¹⁸	Portland	County	393	100			1,694	Yes	3	Feb	36	173	39	\$30	
Kennington Hospital for Women	Philadelphia	NPA Assn	261	31	11	58	2,431	Yes	2	Jan. & July	12	18	30	\$50	

OBSTETRICS GYNECOLOGY—(Continued)												
Control	Capacity	Free	Part Pay	Full Pay	Patients Treated Under List Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
Pennsylvania Hospital	Philadelphia	NPAsen	560	42	83	25	3,214	Yes	12	183	45	\$25-60
Philadelphia General Hospital	Philadelphia	City	2,560	100				Yes	12	1,076	48	\$100
Nashville General Hospital	Nashville Tenn	City	305	85	15	1,560	Yes	12	12	163	85	\$35
Vanderbilt University Hospital	Nashville Tenn	NPAsen	110	31	87	32	683	Yes	12	164	63	\$35-40
John Sealy Hospital	Galveston Tex	City	374	73	4	23	1,038	Yes	12	163	52	None
University of Virginia Hospital	University	State	330	20	49	31	805	Yes	24	134	40	\$-0
State of Wisconsin General Hospital	Madison	State	652	86	7	7		Yes	12	254	71	\$-0
Milwaukee County General Hospital	Wauwatosa Wis	County	1,125	100			2,771	Yes	12	344	29	\$100
OPHTHALMOLOGY (Also see Ophthalmology and Otolaryngology)												
Los Angeles County Hospital	Los Angeles	County	3,410	100				Yes	2	2,407	50	\$10
White Memorial Hospital	Los Angeles	Church	134	1	68	31		Yes	12	42	33	\$60
Stanford University Hospitals	San Francisco	NPAsen	873	8	43	49	466	Yes	12	70	44	\$25
University of California Hospitals	San Francisco	State	281	68	32		176	Yes	12	133	76	\$25
Colorado General Hospital	Denver	State	118	70	25		180	No	24	162	70	\$90
New Haven Hospital	New Haven Conn	NPAsen	439	40	37	23	243	Yes	12	185	48	\$100
Episcopal Eye Ear and Throat Hosp	Washington D C	Church	100	22	39	39	1,368	Yes	3	6	20	\$-
Illinois Eye and Ear Infirmary	Chicago	State	200	100				Yes	0	6	32	None
Michael Reese Hospital	Chicago	NPAsen	629	63	28	10	442	Yes	12	230	47	\$-0
Presbyterian Hospital	Chicago	Church	462	24	43	28	169	Yes	12	178	58	None
University of Chicago Clinics	Chicago	NPAsen	262	25	70	5		Yes	4	175	70	Varies
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	183	Yes	12	384	43	\$20-81
University Hospitals	Iowa City	State	934	84	8	8		Yes	3	267	50	Up to \$10 S.
Johns Hopkins Hospital	Baltimore	NPAsen	890	50	20	24	1,146	Yes	6	457	76	\$20-83
Massachusetts Eye and Ear Infirmary	Boston	NPAsen	291	11	17	72		Yes	7	20	47	None
University Hospital	Ann Arbor Mich	State	1,283	75	23			Yes	1	316	52	\$25
Barnes Hospital	St Louis	Church	240	25	0	66		Yes	1	103	64	\$25
St Louis City Hospital	St Louis	City	806	100			153	Yes	1	764	42	\$100
Jersey City Hospital	Jersey City	City	900	94	6		539	Yes	1	183	10	\$30
Kings County Hospital	Brooklyn	City	3,240	67	33		149	Yes	1	760	17	\$-
Buffalo City Hospital	Buffalo	City	1,033	68	30	4	137	Yes	2	362	35	\$-0
Bellevue Hospital	New York City	City	2,418	100			661	Yes	6	93	27	None
Herman Knapp Memorial Eye Hospital	New York City	NPAsen	10	14	75	11	835	Yes	2	18		None
Mount Sinai Hospital	New York City	NPAsen	780	70	8	27		Yes	1	359	46	None
New York Eye and Ear Infirmary	New York City	NPAsen	176	15	8	77	2,742	Yes	7	21		\$45
Presbyterian Hospital	New York City	NPAsen	648	87	34	29	1,701	Yes	6	217	41	None
Strong Memorial and Rochester Municipal Hospitals	Rochester N Y	NPAsen	579	12	40	48		Yes	2	372	67	\$41-66
Cincinnati General Hospital	Cincinnati	City	626	61	13	6	316	Yes	2	734	41	Up to \$27.50
City Hospital	Cleveland	City	1,620	100			164	Yes	1	633	40	\$37
University Hospitals	Cleveland	NPAsen	539	40	9	51	329	Yes	2	373	63	\$25
Univ of Oregon Med School Hosps	Portland	County	395	100			127	Yes	1	178	39	\$30
Graduate Hospital of the Univ of Pa	Philadelphia	NPAsen	475	39	0	52	833	Yes	7	101	44	None
Wills Hospital	Philadelphia	NPAsen	200	75	8	17		Yes	1	4		None
Medical College of Va Hosp Division	Richmond	NPAsen	456	9	80	11	278	Yes	1	122	20	\$30
OPHTHALMOLOGY OTOLARYNGOLOGY (Also see Ophthalmology and Otolaryngology)												
Hillman Hospital	Birmingham Ala	County	470	100			707	Yes	1	269	28	\$36
Hospital for Children	San Francisco	NPAsen	229	12	20	69	070	Yes	1	29	31	\$25
Gallinger Municipal Hospital	Washington D C	City	764	99	1		1,020	No	1	556	40	\$30-50
Grady Hospital Emory University	Atlanta Ga	City	293	100			732	Yes	2	157	22	\$-0
Cook County Hospital	Chicago	County	3,622	100				No	3	1,300	16	None
Passavant Memorial Hospital	Chicago	NPAsen	348	6	2	93		No	1	54	84	None
St Lukes Hospital	Chicago	Church	659	4	20	76	2,068	Yes	2	12	40	None
Indiana University Hospitals	Indianapolis	State	450	83	17	1	1,077	Yes	2	145	48	\$33.33
Eye Ear Nose and Throat Hospital	New Orleans	Corp	70	33	50	15		Yes	7	2	33	None
Touro Infirmary	New Orleans	NPAsen	368	30	33	32	1,496	Yes	1	110	38	\$25
Baltimore Eye Ear and Throat Charity Hospital	Baltimore	NPAsen	60	50	45	2	2,478	Yes	3	12	4	None
University Hospital	Baltimore	State	450	64	26	20	53	Yes	1	121	37	\$25
Boston City Hospital	Boston	City	1,782	85	14	1		No	1	740	24	\$33.33
City of Detroit Receiving Hospital	Detroit	City	714	90	10		1,007	Yes	1	624	33	\$33.33
Grace Hospital	Detroit	NPAsen	443	82	44	24		Yes	1	103	20	\$37.50
Harper Hospital	Detroit	NPAsen	750	13	87		2,693	No	2	12	22	\$20-30
Dr William J Seymour Hospital	Flint Mich	County	1,303	100			1,102	Yes	2	337	33	\$37.50
Minneapolis General Hospital	Minneapolis	City	681	80	10	5	506	Yes	2	481	50	\$25
Ancker Hospital	St Paul	City	1,050	100				Yes	1	530	59	\$30
Jewish Hospital	St Louis	NPAsen	260	28	54	18		No	1	64	33	\$80
Newark City Hospital	Newark N J	City	700	100			2,342	No	1	294	27	None
Newark Eye and Ear Infirmary	Newark N J	NPAsen	68	44	1	5	2,773	Yes	1	12	30	None
Long Island College Hospital	Brooklyn	NPAsen	480	17	34	49	1,122	Yes	2	158	39	\$-0
Warren Eye and Ear Hospital	New York City	NPAsen	50	26	19	55	1,257	Yes	3	12		None
Lenox Hill Hospital	New York City	NPAsen	600	45	55		237	Yes	1	139	42	None
Manhattan Eye Ear and Throat Hosp	New York City	NPAsen	216					Yes	14	6	25	None
Metropolitan Hospital	New York City	City	1,670	100			1,128	Yes	1	261	20	\$100
N Y Polyclinic Med School and Hosp	New York City	NPAsen	346	70	70		2,115	Yes	4	74	34	None
N Y Post Grad Med School and Hosp	New York City	NPAsen	416	12	5	83	3,137	Yes	7	61	26	\$60-2
Grasslands Hospital	Yonkers N Y	County	903	89	2	10	904	Yes	1	327	72	Varies
Duke Hospital	Durham N C	NPAsen	456	66	23	11	829	Yes	2	182	61	\$12.50
State University Hospitals	Oklahoma City	State	122	52	39	3	638	Yes	1	147	39	\$2
Eye and Ear Hospital	Pittsburgh	NPAsen	101	15	48	37		Yes	2	24		None
Memphis Eye Ear Nose and Throat Hospital	Memphis Tenn	NPAsen	69	45	17	37	1,837	Yes	7	18		None
University of Virginia Hospital	University	State	350	20	42	31	1,147	Yes	2	24	134	\$-0
State of Wisconsin General Hospital	Madison	State	652	86	7	7		Yes	2	254	71	\$-0
Milwaukee County General Hospital	Wauwatosa Wis	County	1,125	100			414	Yes	1	344	29	\$100
ORTHOPEDICS												
Hillman Hospital	Birmingham Ala	County	470	100			503	Yes	1	269	28	\$36
Children's Hospital	Los Angeles	NPAsen	193	59	70	11	366	Yes	1	157	92	\$76
Los Angeles County Hospital	Los Angeles	County	3,410	100				Yes	3	2,407	50	\$70
Orthopaedic Hospital School	Los Angeles	NPAsen	85	78	16	6	1,702	Yes	1	1		\$10
Shriners Hospital	San Francisco	Frnt	60	100			330	Yes	2	1	33	\$-
University of California Hospital	San Francisco	State	251	68	32		250	Yes	1	12		\$25
New Haven Hospital	New Haven Conn	NPAsen	439	40	37	23		Yes	1	133	76	\$25
Children's Memorial Hospital	Chicago	NPAsen	264	85	41	1		Yes	1	153	43	\$100
Cook County Hospital	Chicago	County	3,522	100				No	1	97	52	\$-0
Research and Educational Hospital	Chicago	State	352	100			353	Yes	2	1,300	18	None
University of Chicago Clinics	Chicago	NPAsen	262	25	70	5		Yes	4	197	91	\$-0

		Control	Capacity	Classification of Patients Percentage			Patients Treated Under Listed Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay								
ORTHOPEDICS—(Continued)														
Indiana University Hospitals	Indianapolis	State	480	83	17	925	Yes	2	Jan	12	145	48	\$33.33	
University Hospitals	Iowa City	State	954	84	8	8	Yes	7	Jan	12	267	50	Up to \$70.83	
Charity Hospital	New Orleans	State	1,913	100		872	Yes	2	July	24	1,384	58	\$25	
Shriners Hosp for Crippled Children	Shreveport, La	Frnt	60	100		1,341	Yes	1	Varies	12	2		\$135	
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	Yes	3	June	12	457	75	\$20.83	
Boston City Hospital	Boston	City	1,762	85	14	1	No	1	Varies	12	740	24	\$33.33	
Children's Hospital	Boston	NPAssn	283	2	19	30	Yes	1	Varies	12	71	44	\$6.50	
Massachusetts General Hospital	Boston	NPAssn	410	53	33	14	Yes	1	Varies	12	50		\$41.66	
Shriners Hosp for Crippled Children	Springfield Mass	Frnt	60	100		380	Yes	1	July	12	2		\$25	
City of Detroit Receiving Hospital	Detroit	City	714	90	10	2,100	Yes	2	Jan	12	624	33	\$33.33	
Blodgett Memorial Hospital	Grand Rapids Mich	NPAssn	150	20	0	74	320	Yes	1	Dec	12	42	38	\$75
Gillette State Hospital for Crippled Children	St Paul	State	200	100		794	Yes	1	March	12	15	100	\$100	
University Hospitals	Columbia, Mo	State	108			330	Yes	1	July	12	1	33	None	
Shriners Hosp for Crippled Children	St Louis	Frnt	100	100		430	Yes	1	Varies	12	2			
Jersey City Hospital	Jersey City	City	900	94	6	1,238	Yes	2	Jan & July	24	188	15	\$50	
New Jersey Orthopaedic Hospital and Dispensary	Orange	NPAssn	36	41	31	28	364	Yes	1	Varies	12	2		\$50
Kings County Hospital	Brooklyn	City	3,240	67	33	632	Yes	1	Jan & July	12	760	17	\$50	
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	336	Yes	1	Jan	12	158	39	\$50
Bellevue Hospital	New York City	City	2,418	100		67	Yes	3	July	12	985	27	None	
Hospital for Joint Diseases	New York City	NPAssn	3,55	41	22	37	2,260	Yes	8	March	24	42	31	\$25
N Y Orthopaedic Disp and Hospital	New York City	NPAssn	132	1	00	9	209	Yes	8	Quarterly	12	2		\$50
N Y Post-Grad Med School and Hosp	New York City	NPAssn	415	12	6	83	1,446	Yes	1	Dec	12	81	26	\$90.25
New York Society for the Relief of the Ruptured and Crippled	New York City	NPAssn	260	13	14	73	1,723	Yes	6	Jan & July	24	7	39	\$20
Strong Memorial and Rochester Municipal Hospitals	Rochester N Y	NP Cy	570	12	40	48	Yes	1	Jan	12	372	67	\$41.66	
Sea View Hospital	Staten Island N Y	City	1,440			154	Yes	2	Jan & July	12	250	44	\$100	
New York State Reconstruction Home	West Haverstraw	State	310		100	230	Yes	3	Jan & July	18	2		\$100-150	
Duke Hospital	Durham N C	NPAssn	400	00	23	11	446	Yes	2	Jan	30-48	182	61	\$12.50
Cincinnati General Hospital	Cincinnati	City	920	51	13	0	407	Yes	1	Feb	12	734	41	Up to \$75.50
Mount Sinai Hospital	Cleveland	NPAssn	270	34	68	8	Yes	1	Dec	12	0	35	\$50	
University Hospitals	Cleveland	NPAssn	539	40	9	51	475	Yes	1	Varies	12	373	63	\$25
State University Hospitals	Oklahoma City	State	622	12	39	0	793	Yes	4	Dec	12	147	39	\$25
Shriners Hosp for Crippled Children	Portland Ore	Frnt	50	100		320	Yes	1	Jan	12	2		\$50	
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases	Philadelphia	NPAssn	140	37	30	33	254	Yes	1	July	12	0	60	\$40
Wills O Campbell Clinic	Memphis Tenn	Part	40				Yes	3	Jan & July	24	2		\$50	
Texas Scottish Rite Hospital for Crippled Children	Dallas	Frnt	42	100		594	Yes	1	Jan	12	2		\$100	
University of Virginia Hospital	University	State	330	20	40	31	301	Yes	2	Dec	24	184	40	\$50
State of Wisconsin General Hospital	Madison	State	652	80	7	7	Yes	3	Jan	12	254	71	\$50	
OTOLARYNGOLOGY (Also see Ophthalmology Otolaryngology)														
Children's Hospital	Los Angeles	NPAssn	193	50	30	11	Yes	1	March	12	157	92	\$50	
Los Angeles County Hospital	Los Angeles	County	3,410	100			Yes	3	Jan & July	24	2,497	59	\$10	
White Memorial Hospital	Los Angeles	Church	134	1	68	31	Yes	1	July	12	42	33	\$50	
San Francisco Hospital	San Francisco	CyCo	1,451	100		1,609	No	2	Feb or March	12	571	41	\$50	
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	1,407	Yes	2	Jan	12	79	43	\$25
University of California Hospital	San Francisco	State	231	68	32	733	Yes	1	Feb	12	133	70	\$25	
New Haven Hospital	New Haven Conn	NPAssn	439	40	37	23	1,013	Yes	2	Jan & July	12	188	48	\$100
Episcopal Eye, Ear and Throat Hosp	Washington D C	Church	100	22	39	39	4,437	Yes	3	Mar, July Nov	12	0	29	\$5
Lincoln Eye and Ear Infirmary	Chicago	State	200	100			Yes	9	Varies	12	0	32	None	
Presbyterian Hospital	Chicago	Church	402	24	43	28	1,946	Yes	1	Varies	12	178	66	None
Research and Educational Hospital	Chicago	State	382	100		1,030	Yes	1	July	12	197	91	\$50	
University of Chicago Clinics	Chicago	NPAssn	262	20	70	5	Yes	3	Varies	12	170	70	Varies	
Indianapolis City Hospital	Indianapolis	City	5,2	97	2	1	1,898	Yes	1	March	12	385	43	\$20.51
University Hospitals	Iowa City	State	954	84	8	8	Yes	11	Jan	12	267	50	Up to \$70.83	
Charity Hospital	New Orleans	City	1,913	100		5,956	Yes	8	July	24	1,384	58	\$25	
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	Yes	2	June	12	457	75	\$20.83	
Beth Israel Hospital	Boston	NPAssn	215			1,092	No	1	Varies	12	129	53		
Massachusetts Eye and Ear Infirmary	Boston	NPAssn	231	11	17	2	Yes	7	Quarterly	21	20	47	None	
Memorial Hospital	Worcester Mass	NPAssn	215	15	8	77	1,178	No	1	March or April	12	64	40	\$41.66
University Hospital	Ann Arbor Mich	State	1,235	75	25		Yes	2	Jan	12	376	52	\$25	
Barnes Hospital	St Louis	Church	270	25	9	66	Yes	1	Dec	12	163	54	\$23	
St Louis City Hospital	St Louis	City	806	100		1,472	Yes	1	March	12	764	42	\$100	
Jersey City Hospital	Jersey City	City	900	94	6	3,091	Yes	2	Jan & July	24	188	15	\$150	
Kings County Hospital	Brooklyn	City	3,240	67	33	3,320	Yes	2	Jan & July	12	760	17	\$50	
Buffalo City Hospital	Buffalo	CyCo	1,063	66	30	4	1,010	Yes	2	Feb	12	352	35	\$50
Buffalo General Hospital	Buffalo	NPAssn	407	13	34	53	1,143	Yes	1	July	12	170	85	\$25
Bellevue Hospital	New York City	City	2,418	100		3,148	Yes	6	July	12	885	27	\$33.33	
Mount Sinai Hospital	New York City	NPAssn	780	76	24		Yes	2	Varies	12	389	46	\$40	
New York Eye and Ear Infirmary	New York City	NPAssn	175	15	8	77	2,807	Yes	7	March & Sept	21	2		None
Strong Memorial and Rochester Municipal Hospitals	Rochester N Y	NP Cy	570	12	40	48	Yes	2	Jan	12	372	67	\$41.66	
Sea View Hospital	Staten Island N Y	City	1,440			2,800	Yes	2	Jan & July	12	250	44	\$100	
Cincinnati General Hospital	Cincinnati	City	920	51	13	6	1,401	Yes	2	Feb	24	734	41	Up to \$75.50
City Hospital	Cleveland	City	1,690	100		1,250	Yes	2	Jan	24	635	40	\$37	
St Luke's Hospital	Cleveland	Church	392	23	4	73	1,390	Yes	2	Dec	12	80	24	\$25
University Hospitals	Cleveland	NPAssn	539	40	9	51	1,846	Yes	3	Varies	12	373	63	\$25
Univ of Ore Med School Hospitals	Portland	County	395	100		373	Yes	1	Feb	12	173	39	\$50	
Graduate Hospital of the Univ of Pa	Philadelphia	NPAssn	476	39	9	52	2,821	Yes	1	Jan to April	12	101	44	None
Medical College of Va Hosp Division	Richmond	NPAssn	456	9	80	11	1,169	Yes	1	Dec	12	122	20	\$50
PATHOLOGY														
Hillman Hospital	Birmingham Ala	County	470	100			Yes	1	Jan	12	266	28	\$35	
Los Angeles County Hospital	Los Angeles	County	3,410	100			Yes	2	Jan & July	24	2,497	59	\$10	
White Memorial Hospital	Los Angeles	Church	134	1	68	31	Yes	1	July	12	42	33	\$50	
Mount Zion Hospital	San Francisco	NPAssn	189	19	14	67	No	2	Feb	12	78	47	\$50	
San Francisco Hospital	San Francisco	CyCo	1,451	100			Yes	1	Feb or March	12	571	41	\$50	
University of California Hospital	San Francisco	State	231	68	32		Yes	1	Feb	12	133	70	\$25	
Denver General Hospital	Denver	CyCo	559				No	1	Jan or July	12	219	28	\$50	
New Haven Hospital	New Haven Conn	NPAssn	439	40	37	23	Yes	2	Jan & July	12	188	48	\$100	
Gallinger Municipal Hospital	Washington D C	City	754	99	1		No	2	Jan	12	566	40	\$30-50	
Garfield Memorial Hospital	Washington D C	Corp	311	42	58		Yes	1	Dec	12	70	30	\$50	
Children's Memorial Hospital	Chicago	NPAssn	254	58	41	1	Yes	1	Jan & July	12	97	52	\$50	
Cook County Hospital	Chicago	County	3,522	100			No	4	Jan & July	48	1,900	18	None	
Michael Reese Hospital	Chicago	NPAssn	629	68	28	19	Yes	1	Jan & July	12	230	47	\$100	
Presbyterian Hospital	Chicago	Church	402	24	43	28	Yes	2	Varies	12	178	58	None	
Research and Educational Hospital	Chicago	State	332	100			Yes	1	July	12	197	91	\$50	
St Luke's Hospital	Chicago	Church	659	4	20	78	Yes	1	Jan	12	124	40	None	

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

PATHOLOGY—(Continued)

Hospital	City	Control	Capacity	Classification of Patients			Patients Treated Under Speciality	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay								
University of Chicago Clinics	Chicago	NPAsen	282	25	70	5	Yes	1	Varies	12	175	70	Varies	
Evanston Hospital	Evanston Ill.	NPAsen	271	7	54	39	Yes	1	March	12	77	72		
Indiana University Hospitals	Indianapolis	City	572	97	2	1	Yes	1	March	12	385	43	\$20.81	
Methodist Episcopal Hospital	Indianapolis	State	490	83	2	17	Yes	1	Dec	12	145	48	\$33.33	
University Hospital	Iowa City	Church	630	83	2	17	Yes	1	Jan	12	129	28		
Bell Memorial Hospital	Kansas City Kan	State	854	84	8	8	No	1	Jan	12	207	50	Up to \$0.83	
Louisville City Hospital	Louisville Ky	State	230	45	44	11	Yes	1	Dec	12	183	78		
Charity Hospital	New Orleans	State	1913	100			No	1	Jan	12	267	50		
Touro Infirmary	Baltimore	NPAsen	886	100			Yes	1	Dec	12	193	78		
Baltimore City Hospitals (General)	Baltimore	State	1913	100			Yes	1	Feb	12	332	32		
Johns Hopkins Hospital	Baltimore	City	760	100			Yes	1	July	24	1,384	58	\$13.60 10	
Beth Israel Hospital	Boston	NPAsen	215	68	20	24	Yes	3	Jan	12	110	88	\$25	
Boston City Hospital	Boston	NPAsen	1782	85	14	1	No	1	June	12	357	33	\$50	
Massachusetts General Hospital	Boston	NPAsen	283	2	50	39	No	5	Varies	12	457	75	\$20.83	
New England Deaconess Hospital	Boston	Church	285	8	64	28	Yes	1	Varies	12	129	63		
Peter Bent Brigham Hospital	Boston	NPAsen	418	53	33	14	Yes	1	Varies	12	74	44	\$83.33	
University Hospital	Boston	City	1285	75			Yes	1	Jan	12	50		\$36.50	
City of Detroit Receiving Hospital	Ann Arbor Mich	State	1060	100			Yes	1	Varies	12	156	65		
Ancker Hospital	Detroit	City	270	25	9	66	Yes	1	Jan	12	220	75	\$25	
Barnes Hospital	St Paul	City	806	100			Yes	1	Jan	12	376	52	\$41.66	
St Louis City Hospital	St Louis	City	1285	75			Yes	1	March	12	624	83	\$20	
Newark Beth Israel Hospital	Newark N J	CyCo	1060	100			Yes	1	Dec	12	530	50	\$33.33	
Bender Hygienic Laboratory	Albany N Y	Church	270	25	9	66	No	2	March	12	103	64	\$30	
Kings County Hospital	Albany N Y	NPAsen	414	21	22	57	Yes	1	May	12	764	42	\$100	
Loog Island College Hospital	Brooklyn	NPAsen	585	6	83	11	Yes	2	Feb	24	181	45	\$25	
Buffalo City Hospital	Brooklyn	City	3240	67			Yes	1	Varies	12	237	60	\$30	
Buffalo General Hospital	Buffalo	CyCo	1063	66	30	4	Yes	1	Jan & July	12	780	17	\$75	
Lincoln Hill Hospital	New York City	NPAsen	467	13	34	53	Yes	4	Jan	12	158	89	\$30	
Montefiore Hosp for Chronic Diseases	New York City	NPAsen	600	45			Yes	1	Feb	12	352	35	\$30	
Mount Sinai Hospital	New York City	City	265	100			Yes	1	July	12	170	85	\$25	
New York Hospital	New York City	NPAsen	711	95			Yes	1	Varies	12	139	42	None	
NY Post Grad Med School and Hosp	New York City	NPAsen	780	76			Yes	8	July	12	222	36	None	
Presbyterian Hospital	New York City	NPAsen	1,150	11	64	25	Yes	2	Varies	12	354	69	\$30	
St Luke's Hospital	New York City	NPAsen	416	12	5	53	Yes	1	Feb	12	389	46	\$45	
Willard Parker Hospital	New York City	Church	640	57	34	29	Yes	2	Dec	12	264	57	\$25	
Strong Memorial and Rochester Municipal Hospitals	New York City	City	424	100			No	1	Jan & July	12	217	41	\$90.25	
Grasslands Hospital	Rochester, N Y	NP Cy	579	12	40	48	Yes	3	Varies	12	188	49	\$83.33	
Duke Hospital	Yonkers N Y	City	903	88	2	10	Yes	1	Jan	12	95	49	\$100	
Cincinnati General Hospital	Cincinnati	NPAsen	456	66	23	11	Yes	3	Jan & July	12	372	67	\$41.66	
City Hospital	Cincinnati	City	925	81	13	6	Yes	4	Feb	36-48	327	72	Varies	
Mount Sinai Hospital	Cleveland	NPAsen	1,690	100			Yes	1	Jan	12	182	61	\$12.50	
St Luke's Hospital	Cleveland	Church	270	34	53	8	Yes	4	Jan	12	734	41	Up to \$27.50	
University Hospitals	Cleveland	NPAsen	539	40	9	61	Yes	2	Dec	12	630	40	\$37	
Miami Valley Hospital	Dayton O	County	885	100			No	1	Varies	24	79	87	\$30	
Univ of Ore Med School Hospitals	Portland	State	475	39	9	52	Yes	2	Jan	12	80	24	\$25	
Graduate Hospital of the Univ of Pa	Philadelphia	NPAsen	504	85	24	41	Yes	1	Feb	12	813	63	\$25	
Hospital of the Univ of Pennsylvania	Philadelphia	NPAsen	600	42	33	25	Yes	1	Jan to April	12	246	59	\$100	
Philadelphia General Hospital	Philadelphia	City	2,600	100			Yes	1	Jan & Feb	12	101	44	\$30	
Presbyterian Hospital	Pittsburgh	NPAsen	425	42	11	47	Yes	2	Varies	12	211	64	None	
Allegheny General Hospital	Pittsburgh	NPAsen	405	67	2	31	Yes	2	Jan	12	153	45	None	
Children's Hospital	Pittsburgh	Church	670	55	12	33	No	2	Varies	12	1,926	48	\$20.60	
Mercy Hospital	Pittsburgh	Corp	268	62	3	40	Yes	2	Jan & July	12	107	41	\$100	
St Francis Hospital	Pittsburgh	NPAsen	600	75	3	20	Yes	1	Nov	12	84	25	\$31	
Reading Hospital	Providence	City	400	80	10		No	1	Jan	12	126	27	\$35	
Rhode Island Hospital	Memphis Tenn	NPAsen	110	31	87	32	Yes	2	Varies	12	134	36	\$30.33	
Memphis General Hospital	Nashville Tenn	City	400	80	10		No	1	July	12	239	43	\$41.66	
Vanderbilt University Hospital	Nashville Tenn	City	400	80	10		No	2	July	12	238	18	\$25	
Children's Hospital	Los Angeles	NPAsen	103	59	90	11	Yes	8	March	12	157	92	\$30.40	
Los Angeles County Hospital	Los Angeles	County	3,410	100			Yes	3	Jan & July	36	2,497	69	\$30	
White Memorial Hospital	Los Angeles	Church	134	1	63	31	Yes	1	July	12	42	33	\$10	
Children's Hospital of the East Bay	San Francisco	NPAsen	239	2	61	37	Yes	2	Feb	12	19	41	\$60	
Hospital for Children	San Francisco	CyCo	1,451	100			Yes	1	Jan	12	29	31	\$15	
Stanford University Hospitals	San Francisco	NPAsen	323	100			Yes	2	Feb or March	12	671	41	\$25	
University of California Hospitals	San Francisco	State	281	8	43	49	No	1	Jan	12	70	43	\$50	
Children's Hospital	San Francisco	NPAsen	165	68	32	473	Yes	2	Feb	12	571	41	\$25	
New Haven Hospital	San Francisco	State	480	40	27	23	Yes	2	Dec	12	133	76	\$25	
Freedmen's Hospital	Denver	NPAsen	374	57	62	4	Yes	3	Jan & July	12	168	48	\$30	
Frederick's Hospital (col)	New Haven Conn	City	754	89	1	13	Yes	0	Jan & July	12	113	38	\$100 10	
Gallagher Municipal Hospital	Washington D C	NPAsen	263	100			No	2	Jan	12	550	40	\$30.50	
Grady Hospital	Washington D C	City	52	60	8	82	Yes	1	Jan	12	157	22	\$30	
Division (colored unit)	Washington D C	NPAsen	270	51	8	43	Yes	2	Jan & July	12	161	30	\$27	
Henrietta Egerton Hosp for Children	Atlanta Ga	County	284	68	41	431	Yes	1	July	12	97	52	\$30	
University Hospital	Atlanta Ga	NPAsen	3,522	100	41	103	No	6	Jan & July	12	107	52	\$30	
Children's Memorial Hospital	Chicago	Church	629	53	28	19	Yes	16	Jan & July	12	130	18	None	
Cook County Hospital	Chicago	NPAsen	462	24	48	28	Yes	1	Varies	12	230	18	\$100	
Michael Reese Hospital	Chicago	State	155	56	8	36	Yes	1	July	12	168	48	\$30	
Providence Hospital	Chicago	NPAsen	282	100			Yes	1	Jan	12	113	38	\$100 10	
Research and Educational Hospital	Chicago	State	262	25	0	5	Yes	1	July	12	157	22	\$30	
Indiana University Hospitals	Chicago	NPAsen	480	84	8	17	Yes	2	Varies	12	51	58	None	
Bell Memorial Hospital	Indianapolis	State	954	84	8	17	Yes	2	Jan	12	177	01	\$30	
Louisville City Hospital	Iowa City	NPAsen	586	100			Yes	3	Jan	12	145	48	\$33.33	
Charity Hospital	Kansas City Kan	State	1,913	100			Yes	4	Dec	12	267	50	Up to \$0.83	
Touro Infirmary	Louisville Ky	NPAsen	326	30	38	32	Yes	2	Feb	12	193	78	\$40	
Johns Hopkins Hospital	New Orleans	City	860	56	20	24	Yes	1	July	24	332	32	\$13.60 10	
Unioo Memorial Hospital	New Orleans	NPAsen	336	19	50	31	Yes	3	Jan	12	110	38	\$25	
Boston City Hospital	Baltimore	City	1,702	83	14	1	No	2	Jan	12	407	70	\$25	
Boston Floating Hospital	Boston	NPAsen	233	2	59	39	Yes	4	July	12	91	38	\$30.83	
Children's Hospital	Boston	City	471	100			Yes	2	Varies	12	740	24	\$12.50	
Loog Island Hospital	Boston	State	1,253	70	33	14	Yes	1	June	12	27	84	\$33.33	
Massachusetts General Hospital	Boston	City	471	100			Yes	1	Varies	12	71	44	\$30	
University Hospital	Ann Arbor Mich	State	1,253	70	33	14	Yes	5	Jan	12	77	42	\$30.60	

		Control	Capacity	Classification of Patients Percentage			Patients Treated Under Listed Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month		
				Free	Part Pay	Full Pay										
PEDIATRICS—(Continued)																
Children's Hospital	Detroit	NPAasn	230				0.440	Yes	0	Jan	12	225	52	\$25		
Minneapolis General Hospital ¹	Minneapolis	City	681	80	15	5	2,371	Yes	1	Jan & July	12	491	50	\$25		
Wheatley Provident Hospital (col)	Kansas City Mo	Corp	63				225	Yes	1	Varies	12	108	64	\$25		
St. Louis Children's Hospital	St. Louis	NPAasn	203	61	30	14	3,493	Yes	9	July	12	764	42	\$25		
St. Louis City Hospital	St. Louis	City	806	100			2,103	Yes	1	March	12	103	64	\$100		
St. Mary's Group of Hospitals	St. Louis	Church	605	35	25	39	934	Yes	1	April	36	140	41	\$25		
Jersey City Hospital	Jersey City	City	600	94			815	Yes	1	Jan & July	12	183	15	\$25		
Cumberland Hospital	Brooklyn	City	318	100			871	Yes	1	July	12	197	42	\$100		
Jewish Hospital	Brooklyn	NPAasn	674	33	38	29	614	Yes	1	Dec	12	252	46	\$50		
Kings County Hospital	Brooklyn	City	3,240	67	33		2,171	Yes	1	Jan & July	12	700	17	\$4		
Long Island College Hospital	Brooklyn	NPAasn	480	17	34	49	464	Yes	8	Jan	12	163	39	\$50		
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn	Church	194	13	38	49		Yes	1	March	12	78	31	None		
Buffalo City Hospital ²	Buffalo	CyCo	1,063	68	30	4	264	Yes	2	Feb	12	302	35	\$40		
Children's Hospital	Buffalo	NPAasn	260	53	6	42	4,865	Yes	2	Jan	12	121	69	\$50		
Babies Hospital	New York City	NPAasn	154	47	45	8	2,044	Yes	2	Varies	12	76	55	\$100		
Bellevue Hospital	New York City	City	2,418	100			2,039	Yes	10	July	12	985	27	\$33.33		
Fifth Avenue Hospital	New York City	NPAasn	340	22	22	6	1,287	Yes	1	Jan	12	23	20	\$50		
Harlem Hospital	New York City	City	320	100				No	1	Jan & July	12	440	30	None		
Metropolitan Hospital	New York City	City	1,020	100			1,235	Yes	2	July	12	231	25	\$118		
Mount Sinai Hospital	New York City	NPAasn	780	76		24		Yes	2	Varies	12	350	46	\$45		
New York Foundling Hospital	New York City	Church	300	1	85	14	2,033	Yes	9	Jan & July	12	29	69	\$25		
New York Hospital	New York City	NPAasn	1,160	11	64	25	769	Yes	6	Feb	12	264	67	\$25		
N. Y. Post-Grad Med School and Hosp	New York City	NPAasn	415	12	6	83	559	Yes	1	Dec	24	81	26	\$90.25		
St. Luke's Hospital	New York City	Church	540	53				Yes	2	Varies	12	183	49	\$33.33		
Strong Memorial and Rochester Municipal Hospitals	Rochester N. Y.	NPAasn	570	12	40	48	1,056	Yes	4	Jan	12	372	67	\$41.66		
Sea View Hospital	Staten Island N. Y.	City	1,446				250	Yes	4	Jan & July	12	250	44	\$100		
Grasslands Hospital	Valhalla N. Y.	County	903	88	2	10	680	Yes	2	Jan & July	12	327	72	Varies		
Duke Hospital	Durham N. C.	NPAasn	46	66	23	11	337	Yes	2	Jan	36-48	182	61	\$12.50		
Children's Hospital	Akron O.	NPAasn	110				2,488	Yes	1	Jan	12	61	43	\$50		
Children's Hospital	Cincinnati	Church	145	60	27	13	3,511	Yes	0	Dec	12	49	29	\$25		
Cincinnati General Hospital	Cincinnati	City	625	81	13	6	2,586	Yes	7	Feb	12-24	734	41	Up to \$7.50		
Good Samaritan Hospital	Cincinnati	Church	635	20	62	23		Yes	1	Jan	12	75	18	\$50		
Charity Hospital	Cleveland	Church	301	79		61		Yes	1	Jan	12	161	45	\$50		
University Hospitals ²²	Cleveland	NPAasn	539	40	6	51	786	Yes	7	Varies	12	373	63	\$25		
Children's Hospital	Columbus O.	NPAasn	100	87	12	1	2,014	Yes	2	Jan	12	54	55	\$75		
Univ. of Oregon Med School Hosps ¹⁸	Portland Ore	County	395	100			2,327	Yes	2	Feb	12	173	39	\$50		
Children's Hospital	Philadelphia	NPAasn	130	77	10	7	2,221	Yes	11	Quarterly	12	70	54	None		
Children's Hospital of the Mary J Drexel Home	Philadelphia	Church	63	30	23	47	1,111	Yes	1	April	12	9	36	\$100		
Hospital of the Univ. of Pennsylvania	Philadelphia	State	504	35	24	41	925	Yes	1	Jan & Feb	12	211	64	None		
Philadelphia General Hospital	Philadelphia	City	2,660	100				Yes	1	Jan	12	1,225	48	\$100		
St. Christopher's Hosp for Children	Philadelphia	NPAasn	75	64	15	21	1,557	Yes	4	Feb	12	40	47	\$75		
Children's Hospital	Pittsburgh	NPAasn	196	65	12	23	2,219	Yes	4	Jan & July	12	44	28	\$35		
Vanderbilt University Hospital	Nashville Tenn	NPAasn	110	31	37	32	870	No	3	July	12	164	63	\$35.40		
Medical College of Va. Hosp Division	Richmond	NPAasn	456	9	50	11	871	Yes	1	Dec	12	122	20	\$50		
University of Virginia	University	State	330	20	49	31	692	Yes	1	Dec	12	134	40	\$50		
Children's Orthopedic Hospital	Seattle	NPAasn	135	67	27	10	1,379	Yes	1	Jan	12	32	55	\$37.85		
State of Wisconsin General Hospital	Madison	State	652	86	7	7		Yes	1	Jan	12	254	71	\$50		
Milwaukee Children's Hospital	Milwaukee	NPAasn	155	13	19	68	2,023	Yes	4	Jan	12	79	62	\$50		
PLASTIC SURGERY																
Kings County Hospital	Brooklyn	City	3,240	07		33		Yes	1	Jan & July	12	760	17	\$4		
PSYCHIATRY																
Compton Sanitarium	Compton Calif	Corp	155			100	295	No	1	Varies	Indef	3	27	Varies		
Stanford University Hospitals	San Francisco	NPAasn	323	8	43	49	479	Yes	2	Jan	12	79	43	\$25		
Mendocino State Hospital	Talmage Calif	State	2,700	84	3	13	3,000	No	2	July	12	35	23	\$50		
Colorado Psychopathic Hospital ¹	Denver	State	78			03	780	Yes	6	March	36	17	81	\$100		
Neuro-Psychiatric Institute and Hospital of the Hartford Retreat ¹	Hartford Conn	NPAasn	200				657	No	2	Varies	Indef	*		\$100		
Connecticut State Hospital	Middletown	State	3,024				39.0	Yes	3	Varies	Indef	58	24	\$175		
New Haven Hospital	New Haven Conn	NPAasn	439	40	37	23	301	Yes	3	Jan & July	12	188	48	\$100		
Delaware State Hospital	Farmhurst Del	State	978	84	7	9		Yes	1	Jan or June	12	39	44	\$50		
Gallinger Municipal Hospital	Washington D. C.	City	754	99	1		3,292	No	2	Jan	12	566	46	\$30.50		
St. Elizabeths Hospital	Washington, D. C.	Fed	5,275				5,700	No	7	July & Oct	12	200	73	\$100.66		
Cook County Psychopathic Hospital	Chicago	County	185	100				No	2	Varies	12	24	20	\$170		
Research and Educational Hospital	Chicago	State	382	100			124	Yes	3	July	12	197	91	\$50		
East Moline State Hospital	East Moline Ill	State	1,601	100			2,474	Yes	2	Varies	Indef	55	26	\$135		
Elgin State Hospital	Elgin Ill	State	3,000	100			5,636	Yes	2	Varies	12-24	118	28	\$50		
Central State Hospital	Indianapolis	State	1,729	100			1,761	No	4	Varies	Indef	45	31	\$157.50		
Indianapolis City Hospital	Indianapolis	City	672	97	2	1	541	Yes	1	March	12	385	43	\$20.81		
Logansport State Hospital	Logansport Ind	State	1,682	97	1	2	1,837	No	2	Varies	36	34	22	\$135		
Iowa State Psychopathic Hospital	Iowa City	State	60	85	6	8	400	Yes	4	April & Nov	12	3	100	\$125		
Osawatomie State Hospital	Osawatomie Kan	State	1,589	92	8		2,090	No	1	July	Indef	41	19	\$25		
Menninger Sanitarium	Topeka Kan	Corp	45			100	95	Yes	2	Jan	12			\$75		
Baltimore City Hosps (Psychopathic)	Baltimore	City	320	100			684	No	2	Jan	Indef	27	66	\$150		
Johns Hopkins Hospital	Baltimore	NPAasn	860	66	20	24	320	Yes	5	June	12	457	76	\$20.83		
Spring Grove State Hospital	Oatonsville Md	State	1,700	98	1	1	2,067	Yes	1	July	12	25	19	\$140.66		
Springfield State Hospital	Sykesville Md.	State	2,600	99			2,699	No	1	May	12	40	26	\$22.50		
Sheppard and Enoch Pratt Hospital	Towson Md	NPAasn	300	6	63	26	671	No	3	Varies	Indef	6	29	\$150		
McLean Hospital	Belmont Mass	NPAasn	232	7	42	51	375	Yes	5	June	12			\$50		
Boston Psychopathic Hospital	Boston	State	110	90	16		2,080	No	10	Varies	12-36	14	74	\$50		
Boston State Hospital	Boston	State	2,435	83			3,006	No	4	Varies	Indef	167	49	\$150		
Massachusetts General Hospital	Boston	NPAasn	418	83	33	14		Yes	2	Varies	12	69		\$41.66		
Gardner State Colony	Gardner Mass	State	1,342	97	2	1	1,672	Yes	1	Varies	12	20	81	Varies		
Danvers State Hospital	Hathorne Mass	State	2,220	90		16	3,415	Yes	2	Varies	12	62	20	\$150		
Medford State Hospital	Medford Mass	State	1,850	97	3		2,080	Yes	2	Varies	12	41	38	\$150		
Grafton State Hospital	North Grafton Mass	State	1,500	98	2		1,529	No	1	Varies	Indef	24	30	\$150		
Taunton State Hospital	Taunton Mass	State	1,545	89	5	6	2,038	Yes	5	July	Indef	117	56	\$150		
Worcester State Hospital	Worcester Mass	State	2,260					Yes	6	July	12	165	61	None		
State Psychopathic Hospital	Ann Arbor Mich	State	64	97	1	2	289	Yes	1	May	12	1	50	\$150		
Battle Creek Sanitarium	Battle Creek Mich	NPAasn	1,000	3	41	56		No	1	March	12	7	29	\$125 ¹¹		
City of Detroit Receiving Hospital	Detroit	City	714	90	10		5,653	Yes	1	Jan	12	624	33	\$83.33		
Kalamazoo State Hospital	Kalamazoo Mich	State	2,700					Yes	1	July	Indef	36	19	\$50		
Pontiac State Hospital	Pontiac Mich	State	1,768				1,753	Yes	1	Varies	Indef	30	33	\$141.66		
Traverse City State Hospital	Traverse City, Mich	State	1,905	100				No	3	Varies	Indef	24	16	\$141.66		
Ypsilanti State Hospital	Ypsilanti Mich	State	1,485	88	2	12	2,010	Yes	2	Varies	Indef	42	40	\$141.66		
Minneapolis General Hospital ¹	Minneapolis	City	681	88	15	5	941	Yes	1	Jan & July	12	481	50	\$25		
State Hospital No. 1	Fulton Mo	State	1,763	97			3,177	No	3	Varies	Indef	39	21	\$150		
State Hospital No. 2	St. Joseph Mo	State	2,480	98			2,429	No	1	Varies	Indef	80	29	\$150		
City Sanitarium	St. Louis	City	3,450	84	16	6	4,452	Yes	5	June	12	67	80	\$150		

PSYCHIATRY—(Continued)

PSYCHIATRY—(Continued)														
	Control	Capacity	Classification of Patients			Outpatient Service	Number of Residences	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month		
			Free	Part Pay	Full Pay									
St. Louis City Hospital	St. Louis	City	800	100	2	103	Yes	1	March	12	764	42	\$100	
Hastings State Hospital	Hastings	State	1,500	83	7	1 074	No	2	May & Dec.	Indef	18	18	\$125	
Norfolk State Hospital	Norfolk	State	1 044	22	11	1 035	No	1	Varies	Indef	36	62	\$90	
New Jersey State Hospital	Greystone Park	State	4,520	22	71	6 105	Yes	8	Varies	Indef	111	23	\$163.33	
Albany Hospital	Albany	NPA Assn	585	6	83	11	560	Yes	1	Feb	12	257	60	\$30
Binghamton State Hospital	Binghamton	State	2 974	84	6	3 504	Yes	4	Jan	Indef	181	54	\$150	
Brooklyn State Hospital	Brooklyn	State	1 300	100	30	3 347	Yes	12	Varies	Indef	134	27	\$30	
Buffalo City Hospital	Buffalo	CyCo	1 063	66	30	4 137	Yes	2	Feb	Indef	352	35	\$108.66	
Buffalo State Hospital	Buffalo	State	2,704	88	12	3 463	Yes	2	Varies	Indef	49	21	\$100	
Hastings Memorial and Rochester Municipal Hospitals	Hastings upon Hudson	NPA Assn	40	8	91	1	131	1	July	12	68	67	\$150	
Gowanda State Hospital	Gowanda	State	1,303			1,756	Yes	2	Varies	Indef	72	28	\$150	
Kings Park State Hospital	Kings Park	State	4 651	87	13	4 600	Yes	11	Varies	Indef	71	50	\$20	
Middletown State Hospital	Middletown	State	3,097	86	14	3 521	No	2	Feb	12	264	57	\$20	
New York State Hospital	New York City	NPA Assn	1 150	11	64	204	Yes	7	Varies	12	2	67	\$20	
N.Y. State Psychiatric Inst. and Hosp.	New York City	State	200	100		504	Yes	6	Varies	12	75	81	\$106.66	
U.S. Marine Hospital	New York City	USPHS	642	100			Yes	2	Varies	12	72	28	\$166.66	
St. Lawrence State Hospital	Ogdensburg	State	2 317	91	2	2 652	No	4	Varies	12	105	34	\$100	
Hudson River State Hospital	Poughkeepsie	State	4 378	89	6	4 384	No	4	Varies	12	41	22	\$100	
Rochester State Hospital	Rochester	State	2,168	87	13	3 209	Yes	5	Jan	12	372	67	\$41.66	
Strong Memorial and Rochester Municipal Hospitals	Rochester	NP Oy	579	12	40	48	Yes	1	Varies	Indef	37	25	Varies	
Utica State Hospital	Utica	State	1 040	100		2 299	Yes	1	Jan & July	24	327	72	\$125	
Grasslands Hospital	Valhalla	County	903	83	2	1 176	Yes	6	Varies	24	2	60	\$125	
Bloomington Hospital	White Plains	NPA Assn	300	5	44	61	499	Yes	1	Jan	24	36	\$125	
Duke Hospital	Durham	NPA Assn	456	66	23	11	Yes	1	July	12	17	37	\$70-100	
North Dakota State Hosp. for Insane	Jamestown	State	2,000			2,400	No	2	Feb	12-36	734	41	Up to \$27.50	
Cincinnati General Hospital	Cincinnati	City	925	61	18	6	1,503	Yes	3	Varies	Indef	635	40	\$37
Cincinnati Sanitarium	Cincinnati	Corp	100			165	No	1	Jan	24	53	19	\$141.66	
City Hospital	Cleveland	City	1 690	100		673	Yes	2	Varies	Indef	29	25	\$150	
Cleveland State Hospital	Cleveland	State	2,600			2 938	No	4	Varies	Indef	53	19	\$100	
Columbus State Hospital	Columbus	State	2 846	100		3,040	Yes	2	Varies	Indef	22	21	\$150	
Allentown State Hospital	Allentown	State	1 610	82	6	2,334	Yes	2	Varies	Indef	83	20	\$100	
Danville State Hospital	Danville	State	1 947	85	6	2,409	Yes	1	June	Indef	53	18	\$100	
Norristown State Hospital	Norristown	State	3 420	90		3,427	No	1	Varies	12			\$100	
Friends Hospital	Philadelphia	NPA Assn	190	2	25	212	No	1	Jan	Indef	3	15	\$100	
Pennsylvania Hospital Department for Mental and Nervous Diseases	Philadelphia	City	2,650	100			Yes	2	Jan	12	1 920	48	\$30	
Philadelphia General Hospital	Philadelphia	Church	437	30	23	47	1 678	Yes	1	Nov	12	134	35	\$100
St. Francis Hospital	Pittsburgh	State	2 000			2,735	No	2	Varies	Indef	54	82	\$100	
Warren State Hospital	Warren	State	2,301	94	3	2,868	Yes	1	Varies	12	72	42	\$100	
State Hospital for Mental Diseases	Howard	NPA Assn	174	7	69	24	143	Yes	4	Jan & July	12	2	\$30	
Butler Hospital	Providence, R. I.	City	285	76	10	14	632	Yes	1	Varies	12	55	57	\$30
Charles V. Chapin Hospital	Providence, R. I.	State	1,800	90		2,550	No	6	Quarterly	12	30	24	\$30	
Western State Hospital	Bolivar, Tenn.	State	55						Sept	24	2	40	\$137.50	
Galveston State Psychopathic Hosp.	Galveston	State	330	20	49	31	283	Yes	1	Dec	12	134	40	\$30
University of Virginia Hospital	University	State	643	55	7	7		Yes	1	Jan	12	254	71	\$50
State of Wisconsin General Hospital	Madison	County	686	94	1	5	1 400	No	2	July	12	10	33	\$50
Milwaukee Hosp. for Mental Diseases	Wauwatosa	Corp	180	3	5	62	330	No	1	Varies	36			\$100
Milwaukee Sanitarium	Wauwatosa	Corp	180	3	5	62	330	No	1	Varies	36			\$100
RADIOLOGY														
Los Angeles County Hospital	Los Angeles	County	3,410	100			Yes	2	Jan & July	24	2 497	50	\$10	
San Francisco Hospital	San Francisco	CyCo	1 451	100			No	2	Feb or March	12	571	41	\$50	
Stanford University Hospitals	San Francisco	NPA Assn	823	8	48	49	Yes	1	Jan	12	70	43	\$25	
University of California Hospital	San Francisco	State	251	68		32	Yes	2	Feb	12	133	76	\$25	
New Haven Hospital	New Haven	NPA Assn	489	40	37	23	Yes	2	Jan & July	12	188	48	\$100	
Garfield Memorial Hospital	Washington D. C.	Corp	811	42	58		Yes	1	Dec	12	70	30	\$100	
Michael Reese Hospital	Chicago	NPA Assn	629	53	28	19	Yes	1	Jan & July	12	230	47	\$100	
St. Luke's Hospital	Chicago	Church	659	4	20	76	Yes	2	Jan	12	124	40	None	
University of Chicago Clinics	Chicago	NPA Assn	262	25	70	5	Yes	3	Varies	12	175	70	Varies	
University Hospitals	Iowa City	State	954	84	8	8	Yes	8	Jan	12	267	50	Up to \$8.83	
Charity Hospital	New Orleans	State	1 913	100			Yes	1	July	24	1,284	68	\$25	
Touro Infirmary	New Orleans	NPA Assn	366	80	38	32	Yes	1	Jan	12	110	88	\$20	
Johns Hopkins Hospital	Baltimore	NPA Assn	860	60	20	24	Yes	1	June	12	467	75	\$20.83	
University Hospital	Baltimore	State	450	64	26	20	Yes	1	Dec	12	121	37	\$20	
Boston City Hospital	Boston	City	1 762	85	14	1	No	1	Varies	Indef	740	24	\$53.33	
Massachusetts General Hospital	Boston	NPA Assn	410	63	33	14	Yes	2	Varies	12	59		\$41.66	
Massachusetts Memorial Hospital	Boston	NPA Assn	367	24	42	34	Yes	2	March	12	83	41	\$92.50	
Peter Bent Brigham Hospital	Boston	NPA Assn	246	28	33	30	Yes	1	Varies	12	220	75	\$41.66	
University Hospital	Ann Arbor	State	1 295	75		25	Yes	3	Jan	12	876	62	\$25	
City of Detroit Receiving Hospital	Detroit	City	714	90	10		Yes	1	Jan	12	624	33	\$53.33	
Hurley Hospital	Flint	City	425				No	1	May	12	164	27	\$30	
St. Louis City Hospital	St. Louis	City	800	100			Yes	1	March	12	704	42	\$100	
University of Nebraska Hospital	Omaha	State	197	100			No	1	July	12	108	78	\$50	
Kings County Hospital	Brooklyn	City	3 240	67		33	Yes	2	Jan & July	12	760	17	\$40	
Long Island College Hospital	Brooklyn	NPA Assn	480	11	34	49	Yes	1	Jan	12	168	39	\$30	
Buffalo City Hospital	Buffalo	CyCo	1 063	66	30	4	Yes	2	Feb	12	352	35	\$30	
Bellevue Hospital	New York City	City	2 416	100			Yes	6	July	12	955	27	\$88.33	
Lenox Hill Hospital	New York City	NPA Assn	600	45		55	Yes	1	Varies	12	139	42	None	
Montefiore Hosp. for Chronic Dis.	New York City	NPA Assn	711	95		5	Yes	2	Jan & July	12	324	63	\$25.50	
Mount Sinai Hospital	New York City	NPA Assn	760	76		24	Yes	3	Varies	12	330	40	\$45	
New York Hospital	New York City	NPA Assn	1 150	11	64	25	Yes	2	Feb	12	284	57	\$20	
N.Y. Post Grad Med School and Hosp.	New York City	NPA Assn	415	12	5	63	Yes	1	Dec	12	81	26	\$20.25	
Presbyterian Hospital	New York City	NPA Assn	648	87	34	29	Yes	2	Jan & July	12	217	41	\$33.33	
St. Luke's Hospital	New York City	Church	640	59		41	No	1	Varies	12	183	49	\$53.33	
Strong Memorial and Rochester Municipal Hospitals	Rochester	NP Oy	579	12	40	48	Yes	2	Jan	12	372	67	\$41.66	
Sea View Hospital	Staten Island	City	1 446	66	23	11	Yes	1	Jan & July	12	255	44	\$100	
Duke Hospital	Durham	NPA Assn	456	66	23	11	Yes	1	Jan	12	182	61	\$12.50	
Cincinnati General Hospital	Cincinnati	City	925	61	13	6	Yes	1	Feb	12-36	784	41	Up to \$27.50	
City Hospital	Cleveland	City	1 690	100			Yes	1	Jan	12	635	40	\$37	
University Hospitals	Cleveland	NPA Assn	539	40	9	51	Yes	1	Varies	12	373	63	\$25	
Univ. of Oregon Med School Hosps	Portland	County	355	100			Yes	1	Feb	12	178	83	\$30	
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	Yes	1	Jan & Feb	12	211	64	None	
Pennsylvania Hospital	Philadelphia	NPA Assn	560	42	33	25	Yes	1	Varies	12	183	45	\$25.50	
Philadelphia General Hospital	Philadelphia	City	2,560	100			Yes	1	Jan	12	1 926	48	\$100	
St. Francis Hospital	Pittsburgh	Church	537	30	23	47	Yes	1	Nov	12	134	36	\$30	
John Seely Hospital	Galveston	City	374	73	4	23	Yes	1	Dec	24	168	52	None	
Medical College of Va. Hosp. Division	Richmond	NPA Assn	450	9	80	11	Yes	1	Dec	12	122	30	\$50	
University of Virginia Hospital	University	State	330	20	49	31	Yes	2	Dec	24	184	40	\$30	
State of Wisconsin General Hospital	Madison	State	632	86	7	7	Yes	1	Jan	12	254	71	\$40	

SURGERY		Control	Capacity	Classification of Patients				Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty							
Hillman Hospital	Birmingham Ala	County	479	100			2 202	Yes	2	Jan	12	260	23	\$38
Employees Hospital of the Tennessee	Fairfield Ala	Corp	310		100	871	Yes	1	Jan	12	119	47	\$100	
Coal Iron and Railroad Co	Fresno Calif	County	523	98	2	4,244	Yes	2	Jan.	24	261	43	\$80	
Fresno County General Hospital	Los Angeles	NPAssn	288	20	3	77 1 826	Yes	1	Dec	12	118	42	\$100	
Cedars of Lebanon Hospital	Los Angeles	County	3,410	100			Yes	0	Jan & July	36	2 497	59	\$10	
Los Angeles County Hospital	Los Angeles	Church	134	1	63	31 1 606	Yes	1	July	36	42	33	\$60	
White Memorial Hospital	San Bernardino Calif	County	328	100		2 235	No	1	Jan	12	137	44	\$75	
San Bernardino County Charity Hosp	San Francisco	NPAssn	259	12	20	68 808	Yes	1	Jan	12	29	81	\$25	
Hospital for Children	San Francisco	NPAssn	189	19	14	07 1 765	No	1	Feb	12	78	47	\$50	
Mount Zion Hospital	San Francisco	CyCo	1 461	100		2 347	No	5	Feb or March	12	571	41	\$50	
San Francisco Hospital	San Francisco	NPAssn	323	8	43	49 1 241	Yes	8	Jan	12	79	43	\$25	
Stanford University Hospitals	San Francisco	State	281	63	32	1,357	Yes	7	Feb	12	133	76	\$25	
University of California Hospital	San Francisco	County	497	63	2		Yes	1	Jan	12	216	50	\$100	
Santa Clara County Hospital	San Jose Calif	State	178	75	25		729	No	1	Dec.	12	162	79	\$50
Colorado General Hospital	Denver	NPAssn	439	40	37	23 2,219	Yes	8	Jan & July	12	188	48	\$100	
New Haven Hospital	New Haven Conn	NPAssn	270	29	14	67	No	4	Jan or Feb	12	55	31	\$40	
Central Disp and Emergency Hosp	Washington D C	Fed	874	87	13	1 016	Yes	1						
Freedmen's Hospital (col)	Washington D C	City	754	99	1		890	No	4	Jan	12	566	40	\$30.50
Gallinger Municipal Hospital	Washington D C	Corp	311	42	58			Yes	2	Dec.	12	70	80	\$70
Garfield Memorial Hospital	Washington D C	City	263	100		1 709	Yes	3	Jan	24	157	22	\$50	
Grady Hosp Emory Univ Div (col)	Atlanta Ga	City	270	51	5	44 2,851	Yes	3	July	12	161	30	\$50	
University Hospital	Augusta Ga	Church	375	9	34	57	No	1	Oct	12	54	33	Nons	
Augustana Hospital	Chicago	NPAssn	348	5	2	93	No	2	Jan & July	12	54	64	Nons	
Passavant Memorial Hospital	Chicago	Church	402	24	48	23 3 222	Yes	2	Varies	24	178	58	Nons	
Presbyterian Hospital	Chicago	NPAssn	155	56	8	36 2,333	Yes	1	July	12	51	34	\$50	
Provident Hospital (col)	Chicago	State	382	100		2 027	Yes	3	July	12	197	91	\$60	
Research and Educational Hospital	Chicago	Church	659	4	20	76 4 229	Yes	7	Jan	12	124	40	Nons	
St Luke's Hospital	Chicago	NPAssn	262	25	70	5	Yes	5	Varies	12	175	70	Varies	
University of Chicago Clinics	Indianapolis	City	572	07	2	1 2 733	Yes	3	March	12	385	43	\$20.81	
Indianapolis City Hospital	Indianapolis	State	480	83	17	1 337	Yes	2	Jan	12	145	48	\$33.33	
Indiana University Hospitals	Iowa City	State	954	84	8			Yes	10	Jan	12	267	50	Up to \$70.53
University Hospitals	Kansas City Kan	State	200	45	44	11 1 043	No	3	Dec.	12	193	78	\$40	
Bell Memorial Hospital	Louisville Ky	City	630	100		5 137	Yes	11	Feb	36	332	32	\$15.50 10	
Louisville City Hospital	New Orleans	State	1 913	100		30 320	Yes	5	July	48	1,334	58	\$25	
Charity Hospital	New Orleans	NPAssn	366	30	38	32 2,330	Yes	1	Jan	12	110	33	\$25	
Touro Infirmary	Baltimore	City	760	100		2 759	Yes	4	Jan	12	357	33	\$50	
Baltimore City Hospitals (General)	Baltimore	Church	135	35	15	50 995	Yes	2	Jan.	12	35	66	\$75	
Bon Secours Hospital	Baltimore	Church	184	23	59	18 2,134	Yes	3	Dec	12	43	42	\$30	
Church Home and Infirmary	Baltimore	NPAssn	660	60	20	24 3,368	Yes	7	June	12	457	75	\$20.83	
Johns Hopkins Hospital	Baltimore	Church	229	43	6	51	No	2	Jan	12	33	16	\$35	
Maryland General Hospital	Baltimore	Church	290	44	20	30 1 631	Yes	4	Jan	12	63	27	\$50	
Mercy Hospital	Baltimore	NPAssn	129	85	5	10	No	1	Dec.	12	21	17	\$25	
Provident Hosp and Free Disp (col)	Baltimore	Church	223	40	29	31 1 983	Yes	3	Dec.	12	57	28	Nons	
St Agnes Hospital	Baltimore	Church	200	47	11	42 2 909	No	2	Dec.	12	66	40	Nons	
St Joseph's Hospital	Baltimore	NPAssn	269	40	8	52 2 472	No	1	Jan	12	70	23	\$47.50	
Sinal Hospital	Baltimore	NPAssn	115	35	38	27 1 067	Yes	1	Dec.	12	20	16	\$25	
South Baltimore General Hospital	Baltimore	NPAssn	338	19	50	31 3 544	Yes	6	Jan	12	91	33	\$12.50	
Union Memorial Hospital	Baltimore	State	450	54	26	20 1,894	Yes	5	Dec	12	121	87	\$20	
University Hospital	Baltimore	NPAssn	200	34	66	1,833	Yes	3	Jan	12	15	19	\$20	
West Baltimore General Hospital	Boston	NPAssn	215			2,214	No	2	Varies	12	129	53		
Beth Israel Hospital	Boston	City	1 762	85	14	1 13 283	No	10	Varies	12	740	24	\$33.33	
Boston City Hospital	Boston	NPAssn	233	2	50	39 1 406	Yes	1	Varies	12	71	44	\$36.50	
Children's Hospital	Boston	City	471	100		210	No	1	June	12	77	42	\$112.50	
Long Island Hospital	Boston	NPAssn	416	63	33	14	Yes	4	Varies	12	59	49	\$41.65	
Massachusetts General Hospital	Boston	NPAssn	367	24	42	34 2,841	Yes	2	March	12	83	41	\$92.50	
Massachusetts Memorial Hospitals	Boston	NPAssn	246	23	33	39 2,504	Yes	5	Varies	16	220	75	\$41.66	
Peter Bent Brigham Hospital	Fall River, Mass	NPAssn	125	10	46	33 2 434	Yes	2	Jan & June	12	54	47	Nons	
Truesdals Hospital	Worcester Mass	NPAssn	215	15	8	77 1 766	Yes	1	March or April	12	64	40	\$30	
Memorial Hospital	Ann Arbor Mich	State	1,285	75	25		Yes	12	Jan	12	376	62	\$25	
University Hospital	Battle Creek Mich	NPAssn	1 000	3	41	66	Yes	1	March	12	7	29	\$125 11	
Battle Creek Sanitarium	Detroit	City	714	90	10		4 462	Yes	2	Jan	12	624	33	\$33.33
City of Detroit Receiving Hospital	Detroit	NPAssn	443	32	44	24	Yes	1	July & Sept	12	125	25	\$37.50	
Grace Hospital	Detroit	NPAssn	759	13	43	87 6,876	No	4	Feb	16	105	22	\$20.50	
Harper Hospital	Detroit	NPAssn	610	46	54		Yes	4	March	12	161	44	\$110	
Henry Ford Hospital	Detroit	City	63	5	15	80	Yes	1	Feb	24	8	20	\$40	
Jefferson Clinic and Diagnostic Hosp	Detroit	Church	335	26	62	12 4 520	No	1	Jan	12	104	28	\$100	
Providence Hospital	Detroit	County	1 393	100		2,455	Yes	4	March	24	337	33	\$37.50	
Dr William J Seymour Hospital	Eloise Mich	City	681	80	15	5 2,320	Yes	7	Jan. & July	36	431	60	\$25	
Minneapolis General Hospital	Minneapolis	CyCo	1 050	100			Yes	2	March	12	530	59	\$40	
Ancker Hospital	St Paul	NPAssn	225	63			No	1	Dec	12	64	19	\$100	
St Louis County Hospital	Clayton Mo	NPAssn	44	100			7 917	No	1	Dec	12	19	63	\$25
Barnard Free Skin and Cancer Hosp	St Louis	Church	270	25	9	66	Yes	7	Dec.	12	163	54	\$25.35	
Barnes Hospital	St Louis	NPAssn	290	23	54	13	No	2	Nov	12	64	33	\$40	
Jewish Hospital	St Louis	City	808	100			4 844	Yes	4	March	12	764	42	\$100
St Louis City Hospital	St Louis	City	340	100			2,251	No	2	June	36	351	41	\$100
St Louis City Hospital No 2 (col)	St Louis	Church	210	15	25	60 2 450	Yes	2	Dec	12	41	30	\$50	
St Luke's Hospital	St Louis	Church	605	35	26	29 2,137	Yes	5	April	36	140	41	\$25	
St Mary's Group of Hospitals	St Louis	City	900	94	6		4,142	Yes	3	Jan & July	36	183	15	\$50
Jersey City Hospital	Jersey City	NPAssn	135	38	29	33 1,834	Yes	1	April	12	72	50	\$100	
Burlington County Hospital	Albany N Y	NPAssn	585	6	83	11 2,940	Yes	3	Feb	12	257	60	\$50	
Albany Hospital	Brooklyn	City	318	100			1 917	Yes	2	July	12	197	42	\$100
Cumberland Hospital	Brooklyn	City	3,240	67			33 625	Yes	4	Jan & July	12	760	17	\$4
Kings County Hospital	Brooklyn	NPAssn	480	17	34	49 2 017	Yes	3	Jan	12	188	39	\$50	
Long Island College Hospital	Brooklyn	Church	194	13	38	49	Yes	1	March	12	78	31	Nons	
Norwegian Lutheran Deaconesses Home and Hospital	Buffalo	CyCo	1 063	66	80	4 2,233	Yes	2	Feb		352	35	\$50	
Buffalo City Hospital	Buffalo	NPAssn	467	13	34	53 2,589	Yes	5	July	24	170	35	\$25	
Buffalo General Hospital	Buffalo	NPAssn	309	24	32	44 2,523	Yes	2	Dec.	12	115	39	\$50	
Millard Fillmore Hospital	Buffalo	NPAssn	432	10	30	60	No	1	Varies	12	25	50	\$50	
Clifton Springs Sanitarium and Clinic	Clifton Springs N Y	NPAssn	220	1	5	94 1,541	Yes	1	Dec.	12	98	60	\$30	
Charles S Wilson Memorial Hospital	Johnson City N Y	City	2,418	100			12,973	Yes	3	July	12	985	27	\$33.33
Bellevue Hospital	New York City	NPAssn	340	22	22	56 2,574	Yes	2	Jan	12	28	20	\$40	
Fifth Avenue Hospital	New York City	City	1 620	100			2 613	Yes	2	July	24	281	25	\$118
Metropolitan Hospital	New York City	NPAssn	711	95			5	Yes	2	Jan or July	12	354	69	\$50-100
Montefiore Hosp for Chronic Diseases	New York City	NPAssn	780	78		24	Yes	6	Varies	12	359	46	\$45	
Mount Sinai Hospital	New York City	NPAssn	1 160	11	64	25 3,855	Yes	16	Feb	12	264	57	\$25	
New York Hospital	New York City	NPAssn	348	70			30 1,989	Yes	8	Varies	24	74	34	Nons
N Y Polytechnic Med. School and Hosp	New York City	NPAssn	415	12	5	83 2 738	Yes	1	Dec.	12	81	26	\$90.25	
N Y Post Grad Med. School and Hosp	New York City	NPAssn	269	13	14	73 1 560	Yes	3	Jan & July	12	7	39	\$20	
New York Society for the Relief of the Raptured and Crippled	New York City	NPAssn	269	13	14	73 1 560	Yes	3	Jan & July	12	7	39	\$20	

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

SURGERY—(Continued)

Hospital	City	Control	Capacity	Percentage of Patients			Classification of Patients	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay								
Presbyterian Hospital	New York City	NPAsn	643				Yes	Yes	9	Jan & July	12	217	41	\$25
Rochester General Hospital	Rochester N Y	NPAsn	361				Yes	Yes	1	Jan	12	173	67	\$41.66
Strong Memorial and Rochester Municipal Hospitals	Rochester N Y	NPAsn	579	12	40	48	4,522	Yes	4	Jan	12	372	67	\$37.50
Hospital of the Good Shepherd	Syracuse N Y	NPAsn	242	3	46	51		No	1	Dec	12	89	33	Varies
Grasslands Hospital	Valhalla N Y	NPAsn	903	88	2	10	1,506	Yes	2	Jan & July	12	327	72	\$12.50
Duka Hospital	Durham N C	NPAsn	456	66	23	11	1,433	Yes	2	Jan	12	182	61	\$50
Watts Hospital	Durham N C	NPAsn	225	29	39	32	1,860	Yes	3	Jan or Feb	36-48	34	22	\$50
City Hospital	Akron O	City	350	41	8	51	4,332	No	1	Feb	12	246	60	\$27.50
St Thomas Hospital	Cincinnati	Church	925	22	39	39	1,023	Yes	13	Dec. or Jan	12	784	41	Up to \$27.50
Cincinnati General Hospital	Cincinnati	Church	175	6	44	50	4,500	Yes	1	Dec	12-60	63	35	\$75
Deaconess Hospital	Cincinnati	NPAsn	635	20	62	28	5,232	Yes	3	Jan	12	75	18	\$80
Good Samaritan Hospital	Cincinnati	Church	262	20	44	36	2,181	Yes	1	Dec	12	50	27	\$75
Jewish Hospital	Cincinnati	City	1,030	100				Yes	1	Jan	12	161	45	\$37.50
Charity Hospital	Cincinnati	NPAsn	270	34	58	8	3,940	Yes	6	Jan	12	635	40	\$37
Mount Sinai Hospital	Cleveland	Church	220	13	4	66	2,990	No	3	Dec	24	79	37	\$37
St Alexis Hospital	Cleveland	Church	322	23	4	73	2,752	Yes	4	Dec	12	56	23	\$50
St John's Hospital	Cleveland	NPAsn	539	40	9	51	3,252	Yes	7	Dec	12	54	28	\$50
St Lukes Hospital	Cleveland	Church	246	60	18	32		Yes	4	Varies	12	373	63	\$25
University Hospitals	Cleveland	State	290	12	51	36	2,833	Yes	1	Jan	12	246	58	\$100
Starling Loving University Hospital	Cleveland	County	522	52	30	9	2,902	Yes	3	Jan	12	141	47	\$37.50
Miami Valley Hospital	Columbus O	NPAsn	108	17	20	54	1,774	Yes	2	Dec	12	170	33	\$50
St Anthony Hospital	Dayton O	NPAsn	475	39	0	52	1,894	Yes	1	Feb	12	147	59	\$37.50
Univ of Oregon Med School Hospital	Oklahoma City	NPAsn	426	34	11	55	1,234	Yes	2	Jan	24	178	39	\$30
Geo F Geisinger Memorial Hospital	Oklahoma City	NPAsn	600	42	33	25	1,917	Yes	2	Jan to April	12	68	33	\$30
Graduate Hospital of the Univ of Pa	Portland	City	2,660	100				Yes	1	Feb	12	101	44	None
Jewish Hospital	Danville Pa	Church	400	67	2	31	3,694	Yes	1	Varies	12	137	43	None
Pennsylvania Hospital	Philadelphia	NPAsn	537	30	23	47	879	Yes	2	Jan	12	1,926	43	\$25-60
Allegheny General Hospital	Philadelphia	NPAsn	208	62	6	40	4,457	Yes	1	Jan	12	184	25	\$31
St Francis Hospital	Philadelphia	NPAsn	325	68	6	28	3,043	Yes	1	Nov	12	142	61	\$33.33
Reading Hospital	Pittsburgh	City	400	60	10			Yes	1	Jan	12	63	18	\$30
Roper Hospital	Pittsburgh	NPAsn	805	63	15	3	4,566	Yes	3	Dec	12	253	18	\$30
Baroness Erlanger Hospital	Reading Pa	Church	110	31	37	32	1,782	Yes	2	July	12	163	30	\$30
Memphis General Hospital	Charleston S C	NPAsn	344	11	11	78	5,596	Yes	1	April	12	164	38	\$30
Nashville General Hospital	Charlottesville Tenn	Church	374	73	4	23	1,276	Yes	1	Dec	12	109	52	\$100
Vanderbilt University Hospital	Memphis Tenn	City	460	10	20	30	2,915	Yes	1	March	12	89	16	\$35
Baynor University Hospital	Nashville Tenn	NPAsn	456	9	80	11	3,511	Yes	7	Dec	12	122	20	\$50
John Sealy Hospital	Nashville Tenn	City	330	20	49	31	1,236	Yes	3	Dec	12	134	40	\$50
Dr W H Graves Latter Day Saints Hospital	Dallas Tex	NPAsn	652	56	7			Yes	2	Sept	12	62	30	\$25
Anrluk Protestant Hospital	Salt Lake City	Church	460	10	20	30	2,915	Yes	1	Jan	12	89	16	\$35
Medical College of Va Hosp Division	Anrluk Va	NPAsn	456	9	80	11	3,511	Yes	7	Dec	12	122	20	\$50
University of Virginia Hospital	Richmond	City	330	20	49	31	1,236	Yes	3	Dec	12	134	40	\$50
Charlottesville General Hospital	Charlottesville W Va	NPAsn	652	56	7			Yes	2	Sept	12	62	30	\$25
State of Wisconsin General Hospital	Madison	City	404					Yes	1	Jan	12	24	71	\$50

THORACIC SURGERY

Anrluk Protestant Hospital	Anrluk Va	NPAsn	456	9	80	11	3,511	Yes	7	Dec	12	122	20	\$50
University of Virginia Hospital	Richmond	City	330	20	49	31	1,236	Yes	3	Dec	12	134	40	\$50
Charlottesville General Hospital	Charlottesville W Va	NPAsn	652	56	7			Yes	2	Sept	12	62	30	\$25
State of Wisconsin General Hospital	Madison	City	404					Yes	1	Jan	12	24	71	\$50

TROPICAL DISEASES

Boston City Hospital	Boston	City	1,702	80	14	1		Yes	1	Jan	12	23	23	\$144
University Hospital of the School of Tropical Medicine	San Juan P R	City	50	74	14	12	544	Yes	1	Jan	12	205	41	\$100

TUBERCULOSIS

Arroyo Sanatorium	San Juan P R	City	1762	80	14	1		Yes	3	Jan & July	12		23	\$144
Barlow Sanatorium	Livermore Calif	Govt	50	74	14	12	544	An	1	Varies	Indef	740	24	\$37
Los Angeles County Hospital	Los Angeles	County	180	100				Yes	2	May	Indef	31	60	\$93.23
Pottenger Sanatorium and Clinic	Los Angeles	NPAsn	100	14	86		240	Yes	1	Jan	12			\$150
Santa Clara County Hospital	Menrovia Calif	County	100				172	Yes	2	Varies	12			
Union Printers Home and Tuberculo-Sanatorium	San Jose Calif	Cnsp	120		18	82	457	Yes	1	Jan & July	12	5	50	\$125
National Jewish Hospital	Colorado Springs	County	497	98	2			Yes	3	Varies	Indef	2	497	\$100
Sanatorium of the Jewish Consump-tives Relief Society	Denver	NPAsn	176					Yes	2	Jan	12			\$10
Underhill Meriden State Tuberculosis Sanatorium	Spirak Conn	NPAsn	252	100			527	No	1	Varies	Indef	5	38	\$50
New Haven Hospital	Meriden Conn	NPAsn	301	100			460	Yes	3	Jan	12	216	60	\$100
Sanatorium of the Jewish Consump-tives Relief Society	New Haven Conn	NPAsn	439	40	37	23	4.2	Yes	5	Varies	Indef	10	19	\$100
City of Chicago Municipal Tubercu-losis Sanatorium	Norwich Conn	NPAsn	404					Yes	3	Varies	Indef	12	60	\$100
Macon County Tuberculosis Sanat-orium	Decatur Ill	State	1,206	100			738	Yes	2	Jan & July	Indef	3	25	\$100
Boerne Tuberculosis Hospital	Rockford Ill	City	80	90			3160	No	2	Varies	Indef	185	43	\$100
Indiana State Sanatorium	Evansville Ind	County	110	100		10	109	Yes	1	Varies	Indef	22	23	\$144
Western Maine Sanatorium	Greenwood Mountain	State	115	28	62	10	158	No	1	Varies	Indef	108	41	\$175
Baltimore City Hosp (Tuberculosis)	Baltimore	State	211	98			573	Yes	1	Varies	Indef	12		\$150
Bayland Tuberculosis Sanatorium	Baltimore	City	160		2	40	293	Yes	1	Varies	Indef	12		\$100
Plymouth County Hospital	State Sanatorium	State	179	100			240	Yes	2	Varies	Indef	12		\$150
Middlesex County Sanatorium	Rutland Mass	County	510	66			648	An	2	Varies	Indef	16	89	\$100
Belmont Hospital	South Hanson Mass	NPAsn	3/0	100	14		769	Yes	1	Jan	12	15	63	\$50
University Hospital	Waltham Mass	County	138				705	Yes	1	July	Indef	12		\$10
American Legion Hospital	Worcester Mass	City	252				203	Yes	1	Varies	Indef	12		\$50
Michigan Kiefer Hospital	Ann Arbor Mich	State	275	71			428	Yes	2	Varies	Indef	12		\$58.33
Jackson County Sanatorium	Battle Creek Mich	State	1,283	70	29			Yes	1	Varies	Indef	12		\$133.33
Morgan Heights Sanatorium	Detroit	City	375	100				Yes	1	Varies	Indef	12		\$160
Wm H Maybury Sanatorium	Howell	State	1,400	98			361	An	2	Varies	Indef	12		\$150
Glen Lake Sanatorium	Jackson Mich	County	481	99	2	2,033	No	12	Varies	Indef	12	36		\$150
City Isolation Hospital	Marquette Mich	County	64	90	4	1	670	Yes	2	Varies	Indef	12	36	\$133.33
Mount St Rose Sanatorium	Northville Mich	City	90	80	1	107	Yes	2	Varies	Indef	12	48		\$25
Robert Koch Hospital	Nepomig Minn	County	230	90	2	1	180	Yes	1	Jan or July	Indef	155	29	\$125
	Oak Terrace Minn	City	709	93	5	2	1,476	Yes	5	July	Indef	12	43	\$125
	St Louis	City	250	82	3	5	173	No	1	Jan or July	Indef	12	3	\$25
	St Louis	Church	135	40	40	10	201	An	1	April	12	8	17	\$125
	St Louis	City	500	100			313	Yes	1	April	12	13	62	\$150
							820	No	5	April	12	56	50	\$75
										March	Indef	90	30	\$10
												53	35	\$75
												39	42	\$25
														\$150

Additional references will be found on page 720

TUBERCULOSIS—(Continued)														
	Control	Capacity	Classification of Patients Percentage			Patients Treated Under Listed Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service In Months	Number of Autopsies	Autopsy Percentage	Salary per Month	
			Free	Part Pay	Full Pay									
New Jersey Sanatorium	Glen Gardner	State	420	68	1	612	Yes	1	Varies	Indef	1	17	\$150	
Jersey City Hospital	Jersey City	City	900	94	6	530	Yes	1	Jan & July	12	188	15	\$30	
Hudson County Tuberculosis Hospital and Sanatorium	Secaucus N J	County	207			1 280	Yes	3	June	12	17	24		
Albany Hospital	Albany N Y	NPAAsn	585	6	83	11	1a2	Yes	2	Feb	12	257	60	\$30
Montefiore Hosp Country Sanatorium	Bedford Hills N Y	NPAAsn	230	97	3		4a1	No	3	Jan	12	1		\$100
Kings County Hospital	Brooklyn	City	3 240	67	33	1 538	Yes	2	Jan & July	12	760	17	\$4	
Loomis Sanatorium	Loomis, N Y	NPAAsn	128	7	70	23	237	No	1	Varies	12			\$12.5
Metropolitan Life Insurance Co Sanat	Mt McGregor N Y	Corp	320	100		568	Yes	3	Varies	Indef	2	25	\$0	
Bellevue Hospital	New York City	City	2,418	100		2 303	Yes	11	July	12	98.5	27	\$70-83.33	
Lenox Hill Hospital	New York City	NPAAsn	600	4	55	10	Yes	1	Varies	12	139	42	\$30	
Metropolitan Hospital	New York City	City	1 090	100		1 114	Yes	5	July	12	251	25	\$70-100	
Montefiore Hosp for Chronic Diseases	New York City	NPAAsn	711	0	6		Yes	2	Jan & July	12	80.4	69	\$50-100	
Municipal Sanatorium	Ottaville N Y	City	383			807	No	2	Jan & July	12			\$120	
New York State Hospital	Ray Brook	State	900	100		290	Yes	2	Varies	Indef	5	38		
Iola Monroe County Tuberculosis Sanatorium	Rochester N Y	County	400	98	2	947	Yes	3	Varies	Indef	32	52	\$150	
Sea View Hospital	Staten Island, N Y	City	1 440			3 702	No	10	Jan & July	12	230	44	\$100	
Trudeau Sanatorium	Trudeau N Y	NPAAsn	181	9	10	61	4.0	No	2	Varies	12	1	20	\$183.33
Grasslands Hospital	Valhalla N Y	County	993	58	2	10	501	Yes	3	Jan & July	12	327	72	Varies
North Carolina Sanatorium	Sanatorium	State	484	10	8	3	1 043	No	3	Varies	12	10	81	\$1.0
City Hospital	Cleveland	City	1 690	100		512	Yes	1	Jan	24	630	40	\$17	
Ohio State Sanatorium	Mt Vernon	State	240			664	Yes	2	Varies	Indef			\$141.66	
Sunny Acres Cleveland Tuberculosis Sanatorium	Warrensville O	CyCo	401	97	1	804	Yes	3	Jan & July	12	11	37	\$112.50	
Eagleville Sanat for Consumptives	Eagleville Pa	NPAAsn	188	51	14	33	379	No	2	Varies	Indef		\$125	
Philadelphia General Hospital	Philadelphia	City	2 600	100			Yes	1	Jan	12	1,920	48	\$100	
White Haven Sanatorium	White Haven Pa	NPAAsn	2.0	2	1.8	544	No	1	Varies	12	43	49	\$30	
Pino Breeze Sanatorium	Chattanooga Tenn	NPAAsn	210	92	4	4	417	Yes	2	Jan or July	12	7	10	\$120-200
St Joseph's Sanatorium	El Paso Tex	Church	70	11	00	29	129	No	1	June	12	7	78	\$100
Hopemont Sanitarium	Hopemont W Va	State	420	62	43		836	Yes	2	July	12	2	40	\$150
Wisconsin State Sanatorium	Statenan	State	240	69	1	310	No	3	Varies	Indef	5	17	\$160-225	
UROLOGY														
Hillman Hospital	Birmingham, Ala	County	479	100		520	Yes	1	Jan	12	209	28	\$35	
Los Angeles County Hospital	Los Angeles	County	1 410	100			Yes	3	Jan & July	24	2 497	60	\$10	
Stanford University Hospitals	San Francisco	NPAAsn	523	8	43	49	400	Yes	1	Jan	12	79	43	\$20
New Haven Hospital	New Haven Conn	NPAAsn	430	40	1	23	Yes	1	Jan & July	12	183	48	\$00	
Grady Hospital Emory University Division (colored unit)	Atlanta Ga	City	203	100		104	Yes	1	Jan	12	157	22	\$30	
University of Chicago Clinics	Chicago	NPAAsn	202	25	70	5	Yes	1	Varies	12	1	70	Varies	
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	254	Yes	1	March	12	88.5	49	\$90.51
University Hospitals	Iowa City	State	904	84	8	8	Yes	3	Jan	12	267	50	Up to \$0.53	
Charity Hospital	New Orleans	State	1,613	100		2 803	Yes	2	July	24	1,584	68	\$20	
Touro Infirmary	New Orleans	NPAAsn	306	30	38	32	Yes	1	Jan	12	110	88	\$20	
Johns Hopkins Hospital	Baltimore	NPAAsn	860	50	20	24	600	Yes	3	June	12	437	75	\$20.23
Beth Israel Hospital	Boston	NPAAsn	215				275	No	1	Varies	12	129	63	
Massachusetts General Hospital	Boston	NPAAsn	410	53	33	14	Yes	2	Varies	12			\$41.66	
Battle Creek Sanitarium	Battle Creek Mich	NPAAsn	1 000	3	41	50	No	1	March	12	7	29	\$12.11	
City of Detroit Receiving Hospital	Detroit	City	714	90	10	1 039	Yes	1	Jan	12	624	33	\$33.33	
Dr William J Seymour Hospital	Eloise Mich	County	1,308	100		800	Yes	2	March	24	387	33	\$37.0	
Ancker Hospital	St Paul	CyCo	1,050	100			Yes	1	March	12	530	59	\$30	
St Louis City Hospital	St Louis	City	800	100		691	Yes	2	March	12	764	42	\$100	
Bayonne Hospital and Dispensary	Bayonne N J	NPAAsn	200	80	2	18	277	Yes	1	Varies	12	74	33	None
Jersey City Hospital	Jersey City	City	900	94	6	1 180	Yes	1	Jan & July	12	183	15	\$0	
Newark City Hospital	Newark N J	City	700	100		547	No	1	July	12	294	27	None	
Kings County Hospital	Brooklyn	City	3 240	67	33	1 289	Yes	2	Jan & July	12	760	17	\$4	
Long Island College Hospital	Brooklyn	NPAAsn	480	17	34	49	330	Yes	2	Jan	12	158	39	\$30
Bellevue Hospital	New York City	City	2 418	100		1 630	Yes	3	July	12	985	27	\$83.33	
Morrisania City Hospital	New York City	City	539	100		634	Yes	3	Jan & July	18	3.0	34	None	
New York Hospital	New York City	NPAAsn	1 150	11	04	25	464	Yes	3	Feb	12	264	57	\$20
N Y Post-Grad Med School and Hosp	New York City	NPAAsn	415	12	5	83	342	Yes	1	Dec	12	81	20	None
Presbyterian Hospital	New York City	NPAAsn	648	37	34	29	1 209	Yes	5	Jan & July	12	217	41	
Strong Memorial and Rochester Municipal Hospitals	Rochester N Y	NP Cy	579	12	40	48	Yes	2	Jan	12	372	67	\$41.66	
Sea View Hospital	Staten Island N Y	City	1 440			400	Yes	1	Jan & July	12	255	44	\$100	
Duke Hospital	Durham N C	NPAAsn	400	60	23	11	496	Yes	2	Jan	36-48	182	61	\$12.50
City Hospital	Cleveland	City	1 690	100			Yes	1	Jan	12	630	40	\$37	
University Hospitals	Cleveland	NPAAsn	539	40	9	51	730	Yes	1	Varies	12	378	63	\$25
Starling Loving University Hospital	Columbus O	State	276	50	16	32	Yes	1	Dec	12	141	47	\$25	
Graduate Hospital of the Univ of Pa	Philadelphia	NPAAsn	475	39	9	52	209	Yes	1	Jan to April	12	101	44	None
Hospital of the Univ of Pennsylvania	Philadelphia	State	594	35	24	41	282	Yes	1	Jan & Feb	12	211	64	None
Pennsylvania Hospital	Philadelphia	NPAAsn	560	42	33	25	310	Yes	1	Varies	12	183	46	\$20-60
Presbyterian Hospital	Philadelphia	Church	425	42	11	47	121	Yes	1	Varies	12	107	41	
Mercy Hospital	Pittsburgh	Church	670	30	35	35	308	Yes	1	Nov	12	120	27	
University of Virginia Hospital	University	State	330	20	49	31	512	Yes	2	Dec	24	134	40	\$30
State of Wisconsin General Hospital	Madison	State	652	80	7	7	Yes	2	Jan	12	234	71	\$20	
Milwaukee County General Hospital	Wauwatosa Wis	County	1 120	100		490	Yes	1	May	12	344	29	\$100	

1 Fellowships

2 Because of low death rate, autopsy figures not compiled

3 Includes urology

4 No salary first six months \$100 a month thereafter

5 Residences at Buffalo City Hospital are three year appointments

6 Including Internship Salary and bonus paid in lieu of maintenance

7 Usually twelve months but may be extended

8 Subject to reappointment

9 Salary established by government pay tables

10 Dental and medical degrees required

11 \$100 bonus

12 In lieu of maintenance

13 Includes obstetrics

14 One appointment is a fellowship

15 Includes pediatrics

16 University of Oregon Medical School Hospitals include Multnomah

17 County Hospital and Doernbecher Memorial Hospital for Children

18 (state control)

19 Two appointments are fellowships length of service indefinite

20 Includes medicine obstetrics and pediatrics

21 Includes psychiatry

22 Includes neurology

23 Not a hospital, outpatients only

24 Two years at Herman Kiefer Hospital Detroit in obstetrics

25 Two years at City of Detroit Receiving Hospital in gynecology

26 Affiliated with Barnes Hospital St. Louis gynecology

27 No salary first eight months \$25 a month last four months

28 Affiliated with Crippled Children's Hospital School and Hospital for

29 Crippled Adults, Memphis

30 Clinical material available through affiliation with Anthony N. Brady

31 Maternity Hospital Memorial Hospital St. Peter's Hospital and

32 St. Margaret's House and Hospital Albany and Hudson City

33 Hospital Hudson N. Y.

34 Affiliated with Infants Hospital and Boston Lying in Hospital

35 Boston

36 Includes neurosurgery

37 Two appointments are fellowships

38 Three months training in pediatric neurology at Emma Pendleton

39 Bradley Home East Providence

40 Three residents on roentgenology and three on radiation therapy

41 Training in radiation therapy only

42 Three appointments include four months on obstetrics

43 Two of the residents spend six months on surgery and six months

44 on urology

45 Includes six months on pathology

46 \$50 bonus

47 Three months on medical service at University Hospitals Minneapolis

48 First six months spent at New York Post Graduate Medical School

49 New York City

50 Includes dermatology syphilology

THE JOURNAL OF THE
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SATURDAY, AUGUST 31, 1935

PROGRESS IN MEDICINE DURING THE
LAST TWENTY-FIVE YEARS

Three distinguished English physicians¹ have recently viewed in retrospect the major lines of advance in the fields of medicine, surgery, and obstetrics and gynecology, the occasion being the celebration of the jubilee of King George. There is in medicine, as in other lines of endeavor, a continuity of development that precludes the acceptance of any line of demarcation twenty-five years ago which is not based on previous accumulated experience.

In the recognition and practical applications of the deficiency diseases, including some of the anemias, a well-nigh new outlook has been reached. In the study of the hormones knowledge has progressed far, though, as Langdon-Brown points out, Starling's theory of chemical control of the body had been enunciated by 1905. The applications of chemistry and physics to medicine have also increased enormously during this time. The chemical analysis of the tissues, especially of the blood, has improved diagnosis, prognosis and treatment in manifold ways. The last twenty-five years has seen the dawn of a new era in psychotherapy, though internecine struggles and dictatorships have delayed its more general applications.

In surgery, as in medicine, much accomplishment can be visualized. Aside from technical improvements the physiologic relations of surgery have gained as compared with the anatomic. The application of such principles has been especially conspicuous in the fields of orthopedic, thoracic and plastic surgery. During this period roentgen therapy has developed remarkably as an aid to surgery, though its indications and limitations are not yet completely defined.

Fairbairn calls attention to the permeation of the fields of obstetrics and gynecology by the principles of constructive hygiene and preventive medicine. In the

knowledge and spread of the value of antepartum care, obstetrics has received one of its most useful adjuncts. Coincidentally there has been a trend toward conservatism in the management of the toxemias of pregnancy. The management of both normal and abnormal delivery itself has benefited much by improvement in bacteriologic and technical refinements. More precise knowledge of the relations between the hormones and the menstrual cycle has done much for gynecology. The application of the Aschheim-Zondek test in the diagnosis of early pregnancy is only one indication of the specific advantages that may be expected from further pursuit of these problems.

A constant dissatisfaction with knowledge may thus be tempered by the consideration of the progress that has actually occurred during the last twenty-five years. There is no ground for complacency, however, in the present state of our information, but it is pleasant to realize that, by comparison with the course of progress elsewhere, medicine has no cause to feel that it has stood still.

METHYLENE BLUE IN CYANIDE
POISONING

Agreement as to the mechanism of the action of methylene blue in cyanide poisoning has not yet been reached. Wendel¹ has studied this question by a series of carefully planned observations on dogs. He corroborated other observers in failing to note an accumulation of methemoglobin in the blood of dogs twenty minutes or more after intravenous injection of therapeutically employed quantities of methylene blue. In his opinion, however, this fact does not signify the nonformation of methemoglobin or its failure to play the essential part in the protective mechanism. In order to test this opinion, blood was withdrawn from normal dogs and defibrinated. The erythrocytes were separated from the serum by centrifugation, treated with physiologic solution of sodium chloride containing amyl nitrite to convert the hemoglobin to methemoglobin, freed from excess nitrite by repeated washing, and finally suspended in an equal volume of salt solution. This was reinjected intravenously into the animal from which it was taken either before or after injection of 1 minimum lethal dose of hydrocyanic acid (4 mg per kilogram subcutaneously). The two animals that received the cell suspension before the cyanide showed only mild and fleeting symptoms of poisoning, although less than three minutes was devoted to injection of the cyanide and the amount of cyanide injected was calculated to react with more than half of the methemoglobin in the circulation. A fraction of this quantity produces death in unprotected animals almost immediately. The two dogs that received cyanide before the cell suspension were quickly revived from advanced symptoms of poisoning. Recovery following injection

¹ Langdon Brown, Walter. Progress in Medicine During the Last Twenty Five Years. Brit. M. J. 1: 909 (May 4) 1935. Wallace Guthbert. Progress in Surgery During the Last Twenty Five Years. Ibid. p. 912. Fairbairn, J. S. Progress in Obstetrics and Gynecology During the Last Twenty Five Years. Ibid. p. 914.

¹ Wendel, W. B. Methylene Blue, Methemoglobin and Cyanide Poisoning. J. Pharmacol. & Exper. Therap. 54: 283 (July) 1935.

of methemoglobin-containing cells was much more rapid than that afforded by injection of either methylene blue or nitrite. It was thus demonstrated that cyanide reacts rapidly and firmly with intracorporeal methemoglobin *in vivo*.

The conflicting observations on methemoglobin accumulation following injection of methylene blue alone has led to confusion regarding the mechanism of its action in cyanide poisoning. In order to determine this action a dog was given 21 cc of a 1 per cent solution of methylene blue intravenously and shortly thereafter 1 minimum lethal dose of cyanide subcutaneously. The procedure was repeated about one hour and twenty minutes later with 14.5 cc of methylene blue and 1 minimum lethal dose of cyanide. Blood samples were collected before and after the injections. After centrifugation, the cells were washed twice with and suspended in sufficient Locke's solution to attain the original volume. The suspension of cells was then analyzed manometrically for oxygen capacity and spectrophotometrically for total pigment. The difference between these two values, the oxygen capacity being corrected for physically dissolved oxygen, is taken as a measure of preformed (in *vivo*) cyanmethemoglobin. About 70 per cent of administered cyanide was bound in the blood by methemoglobin. In another experiment a dog received subcutaneously in a single injection 2 minimum lethal doses of cyanide. This was followed by a slow continuous intravenous injection of 0.5 per cent methylene blue solution over a period of thirty minutes. In this instance 86 per cent of administered cyanide was bound in the circulating erythrocytes.

The apparently anomalous situation is explained by the known effects of cyanide on the reactions occurring within erythrocytes containing methylene blue. The principal action of methylene blue in counteracting the toxic effects of cyanide appears to depend, therefore, on methemoglobin formation. In the absence of experimental demonstrations that methylene blue can replace the cyanide-sensitive catalysts that are concerned with vital processes, the methemoglobin explanation appears to be all that is required.

CLINICAL ENDOCRINOLOGY

In February THE JOURNAL began publication of a series of articles on Glandular Physiology and Therapy, prepared under the auspices of the Council on Pharmacy and Chemistry. This series, which comprises thirty-two sections covering practically every known phase of endocrinology, is now completed and will soon be issued in book form. Preparation of the series was undertaken primarily to provide a convenient and authoritative source of information for physicians so that glandular therapy might be placed on a more rational plane. Investigators and teachers, however, will find it a valuable reference work. In addition, many of the reviews will be of assistance to the Council

on Pharmacy and Chemistry in evaluating the various endocrine preparations now so extravagantly extolled by pharmaceutical manufacturers. Almost without exception, the conclusions of the authorities in their respective fields have upheld the action of the Council in refusing to accept for New and Nonofficial Remedies, without more evidence, many of the widely used glandular products.

Commercial propaganda, together with an insufficient skepticism on the part of physicians, has led to widespread misapplication of present knowledge in endocrinology. Estrogenic and gonadotropic preparations are extensively employed in clinical syndromes in which they can hardly be expected to produce therapeutic benefit and in which they may even do harm. Commercial extracts of the adrenal cortex, recently shown to be practically devoid of the essential life-sustaining principle of the gland, are being used in the treatment not only of Addison's disease but even of such conditions as glaucoma. A variety of glandular products are administered by mouth, by which route many of them cannot be expected to prove effective even if they contain active material. Most of them do not! Pluriglandular products are widely employed with little rational basis and less therapeutic effect.

Misapprehensions in endocrinology are also extended to surgery and to radiology. The practice of partial adrenalectomy or adrenal denervation for the relief of hypertension, diabetes, hyperthyroidism, peptic ulcer and other conditions is by no means established as of value. Operation on this gland is an exceedingly hazardous procedure, and the mortality rates are most discouraging. The adrenal gland is essential to life, it lies in a nest of highly sensitive nerve structures. Even if therapeutic benefit might be expected to accrue from such surgical manipulations, the hazard to the life and health of the individual may prove greater than that of the disease it is proposed to alleviate. Furthermore, Addison's disease may be added to the original condition.

Radiologists have been irradiating the pituitary in the treatment of certain menstrual disorders, hypertension and other conditions, the adrenals have also been exposed to roentgen rays in the hope of lowering high blood pressure or decreasing the insulin requirement in diabetes. These procedures, too, may have effects more serious than the original disorder.

The cooperative efforts of the twenty-six authors who have prepared the series on Glandular Physiology and Therapy, in which all these questions are considered, should fill an important place in the armamentarium of both physician and investigator. Requests have been received from many foreign countries for the rights to translate this series of articles into other languages. It is hoped that American physicians will avail themselves of this book and use it as a guide to sound endocrine therapy.

Current Comment

HISTORY REPEATS IN AMERICAN MEDICAL EDUCATION

Thirty years ago there were in the United States 160 medical schools with an enrolment of 26,147. Ten years later, as a result of the investigations of the Council on Medical Education and of the publicity afforded by the Carnegie Foundation for the Advancement of Teaching, the number of schools had been reduced to ninety-six and the enrolment to 14,891. Shortly after 1918, when the war ended, there was manifested a tendency to increase, in 1925 the number of students was 18,200. During the academic year just closed it was 22,888. We have returned nearly to the place where we were when the Council was created. True, the number of schools has not increased with the growing enrolments of recent years. Our 23,000 medical students today are distributed among fewer and better medical schools than were the students of a generation ago. But the factors that caused such deplorable conditions then are evidently again at work. These factors are the almost complete dependence on the income from tuition fees for the maintenance of the school and consequent failure to limit admissions to carefully selected and well qualified students. Unless this tendency is overcome there must result, inevitably, a lowering of the standards of medical education and practice. The tendency has been receiving the attention of the Council. Educators, state boards of examination, physicians and public authorities may well also give it their consideration.

INCOMPLETE SCHOOLS

When the American Medical Association undertook, more than a quarter of a century ago, to appraise the medical schools of that day, some were located in small communities where, for obvious reasons, clinical material sufficient for teaching purposes was not available. Such schools, therefore, finding themselves quite unable to carry out the full four-year program of medical instruction, restricted their efforts to the first two years of the curriculum. At that time the first two years were wholly occupied with preclinical subjects, such as anatomy, physiology and chemistry. In recent years there has been, among those schools teaching the full course, a strong trend in the direction of bringing the clinical subjects into closer coordination with the preclinical. This means that physical and laboratory diagnosis are usually taught in the second year, that gross and microscopic anatomy are likewise a part of the second year curriculum, and that introductory clinical lectures are closely correlated with the so-called laboratory subjects. Those schools which, because of their limitations, offered only two years of medicine were unable to participate in this development because, located as they were, clinical facilities were nonexistent. It has become increasingly difficult for the students of such institutions to make the transfer that is necessary to enable them to complete their training. The present

status of these incomplete schools is therefore unsatisfactory. With the completion of the current survey of medical education it is hoped that a solution of this problem will be found.

NEW OBJECTIVES FOR THE BUREAU OF THE CENSUS

For about a third of a century the fundamental task of the Bureau of the Census in the field of vital statistics was to extend the registration areas for births and deaths. With the completion of both areas in 1933, when Texas was admitted, the primary responsibility of the bureau was ended. New tasks are now to be undertaken, and a reorganization of the division of vital statistics has been announced. The Bureau of the Census now looks forward to country-wide registration as a means of furnishing comprehensive data for the first time. More intensive efforts are foreseen in analyzing the data and presenting more refined results, thus giving a better statistical basis for public health work and for studies of changes in the structure of the population. It is still necessary, however, to work toward more accurate and complete recording of births and deaths. Physicians are vitally interested in the Bureau of the Census, since they initiate the reports on which figures compiled by the bureau must be based. The medical profession may well endorse the stated ambition of the director of the census "to build up the bureau to a point where it may, without challenge, be regarded as the best statistical organization in the world."¹

GRADUATE SCHOOLS OF MEDICINE

Growing demands for training in special fields of medicine have given greater significance to the available types of graduate instruction. To present, as clearly as possible, a picture of existing opportunities for advanced study, the Council on Medical Education and Hospitals has obtained reports from all universities having faculties of medicine and has presented the results in table 16 of its report in this issue (page 689). Two universities have separately organized graduate schools of medicine. Twenty-nine report that they offer systematic courses of instruction for physicians. An apprenticeship type of training through residencies or fellowships is available in fifty-three institutions. Extension teaching of a less formal sort is conducted by nineteen schools, and as many more do not engage in any form of postgraduate work. Graduate teaching is a heavy tax on the resources of an institution, and not many of our schools are equipped to engage extensively in this work. This is particularly true of the intensive courses demanded by physicians who have already engaged in practice. Generally speaking, they are able to pay in cash for what they want, but because of greater earning power and social responsibilities they cannot devote any unnecessary time to this phase of training. Younger men who have never practiced may be quite willing to pay for experience with time and services after the traditional manner of apprentices.

¹ Department of Commerce, Bureau of the Census. Communication "To Those Professionally Interested," under date of July 1, 1935.

Association News

RADIO BROADCASTS

The American Medical Association will broadcast over the Blue network of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) October 1 and each Tuesday thereafter, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program will be *Your Health*. The program will be recognizable by a musical salutation through which the voice of the announcer will offer a toast: "Ladies and Gentlemen, Your Health!" The theme of the program will be repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The October schedule is as follows:

October 1	Burns	Morris Fishbein M.D.
October 8	Hazards from Foreign Shores	W. W. Bauer M.D.
October 15	Unconsciousness	Morris Fishbein M.D.
October 22	Asphyxiation	W. W. Bauer M.D.
October 29	To be announced	

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CONNECTICUT

One July Fourth Accident—One injury from a Fourth of July accident was reported in New Haven this year, as compared with a record of one death and 103 injuries in fireworks accidents in 1934. The reduction is credited to the city's new fireworks ordinance, which forbids the use and sale of fireworks and which was adopted by the board of aldermen following an educational campaign sponsored by the New Haven Department of Health. The educational campaign last year followed a meeting of representatives of civic organizations with the department of health, July 18, at which a resolution was adopted urging the passage of the ordinance. The one injury this year was that of a policeman, who was slightly injured when taking a blank cartridge pistol from a youth in the act of discharging it.

The Eleventh Clinical Congress—The Connecticut State Medical Society will hold its eleventh clinical congress in New Haven, September 17-19. A commercial exhibit will be shown in the new Tompkins East I of the New Haven Hospital, a new feature this year. Afternoon sessions each day will be devoted to demonstrations and round table discussions by Connecticut physicians on the subjects discussed at the morning sessions. Papers will be read by the following physicians:

William D. Stroud	Philadelphia	Factors That Lead to Vascular Degeneration
Herrman L. Blumgart	Boston	Value of Total Thyroidectomy in Treating Patients with Congestive Heart Failure and Angina Pectoris
Perrin H. Long	Baltimore	The Common Cold
Soma Weiss	Boston	Clinical Use of Sedatives with Particular Reference to the Barbituric Acid Derivatives
Donald Munro	Boston	Modern Treatment of Cranio-cerebral Injuries with Especial Reference to the Maximum Permissible Mortality Rate
Frank H. Lahey	Boston	Newer Conceptions of Anesthesia and Anesthetists
Dudley Merrill	Boston	Dangers Inherent in the Clinical Diagnosis of Cancer
Dana W. Atchley	New York	Occurrence and Treatment of Shock in Clinical Medicine
Edward A. Schuman	Philadelphia	Labor
Charles Hendee Smith	New York	Care of the Tuberculosis of Childhood in the Home
Francis W. O'Connor	New York	Common Parasitic Diseases in the New England States
John J. Moorhead	New York	Early Treatment of Fractures of Long Bones

At one evening session, Dr. Louis P. Hamburger, associate in medicine, Johns Hopkins University School of Medicine, Baltimore, will speak on "The Importance of a Discussion of Minor Ailments in the Medical Curriculum."

GEORGIA

Date of Annual Meeting Changed—To avoid conflict with the annual session of the American Medical Association, the eighty-seventh annual meeting of the Medical Association of Georgia will be held April 21-24, 1936, instead of May 11-15 as previously announced.

Campaign Against Diphtheria—The state department of health is conducting an immunization campaign against diphtheria, it is announced. In a statement urging parents to cooperate with the department, the director of public health, Dr. Thomas F. Abercrombie, Atlanta, points out that the death rate from diphtheria has increased from 4.6 per cent in 1930 to 6 per cent in 1934.

Society News—Dr. William W. Anderson, Atlanta, was elected president of the Georgia Pediatric Society at the recent annual meeting, and Dr. Roger W. Dickson, Atlanta, was named secretary. The next annual session will be held at Atlanta. At a meeting of the First District Medical Society in Savannah, July 17, speakers included Drs. Carl C. Aven, Atlanta, on "Prevention and Treatment of Lung Abscesses," and John D. Martin Jr. and Alfonso J. Mooney Jr., Atlanta, "Tannic Acid Treatment of Burns." The Spalding County Medical Society was addressed at Griffin, June 18, by Drs. Thomas P. Goodwyn and Henry Walker Jernigan, Atlanta, on "Fractures of the Ankle." Speakers before the Fourth District Medical Society at Warm Springs, August 7, included Drs. David Henry Poer, Atlanta, treatment of thyroid diseases and Charles E. Irwin, problems of poliomyelitis. Dr. Leonard R. Massengale read a paper on "Acute Glomerulonephritis" before the Randolph County Medical Society in Cuthbert, August 1. At a meeting of the Tenth District Medical Society in Elberton, August 14, speakers included Drs. Joseph E. Johnson Jr., Elberton, on chorea, and Henry W. Birdsong, Athens, agranulocytosis.

ILLINOIS

Public Health Survey—Illinois will receive \$425,000 from a federal appropriation of \$3,450,000 for a public health survey in representative urban and rural communities under the Works Progress Administration. A house to house canvass will be made to determine the prevalence of chronic diseases and illnesses of long standing in samples of the general population of various income levels. Physical examinations of a smaller sample of the surveyed persons will be made by physicians to supplement available hospital records to evaluate the accuracy of the canvass reports. A survey of medical facilities will also be made, with especial reference to chronic diseases.

Chicago

Personal—Dr. Hubbard Prather Saunders is the winner of the VanDerslice Cup of the Chicago Medical Society with a gross score of 80. Dr. Saunders and Dr. Frank S. Needham tied for first place with an 84 in the society's annual golf tournament at the Medinah Country Club, August 7, and the tie was played off, August 13.

IOWA

Society News—The Linn County Medical Society will be addressed, September 12, by Dr. John F. Erdmann, New York, on "Cholecystitis, Cholangitis, Choledochitis." Speakers before the Buchanan County Medical Society, July 18, were Drs. Joseph G. Mayo and Hugh Cabot, both of Rochester, Minn., on hyperinsulinism and tuberculosis of the genito-urinary tract, respectively. At a meeting of the Dallas Guthrie Counties Medical Society, July 30, Dr. John T. Strawn, Des Moines, discussed carcinoma of the stomach and Dr. Keith W. Diddy, Perry, differential diagnosis of acute conditions of the upper part of the abdomen. At a joint meeting of the Dickinson and Emmet county medical societies in Estherville, July 18, speakers were Drs. Oscar H. Miller, Estherville, on aplastic anemia, Elam E. Lashbrook, Estherville, purpura, and William E. Bullock, Lake Park, hemophilia. Dr. James B. Carey, Minneapolis, discussed the anemias before the Floyd County Medical Society at a meeting in Charles City, July 23.

KENTUCKY

Personal—Dr. Theodore W. Singer, Louisville, celebrated his one hundredth birthday July 25. Dr. Singer was born in Cleveland and studied medicine at Hudson Medical College, which became a part of the Western Reserve University School of Medicine. He has practiced in Cleveland, Milwaukee and Chicago and still has a limited practice, it is reported. He served in the Civil and Spanish-American wars. A group of physicians headed by Dr. Leon L. Solomon gave a small reception for Dr. Singer on his birthday.

Society News—A graduate course in pediatrics was presented before the Hopkins County Medical Society, Madisonville, June 19, by Drs Philip F Barbour and Harry S Andrews, Louisville. Dr Barbour discussed birth injuries, appendicitis in children and rheumatism. Dr Andrews anemias in children, communicable diseases and diarrhea.—Drs Wallace Frank and Charles D Enfield Louisville, as guest speakers discussed cancer before the Seventh District Medical Society in Somerset June 20.—At a meeting of the Muldraugh Hill Medical Society at Elizabethtown August 8, speakers were Drs Nelson D Widmer, Lebanon "Medical Treatment of Peptic Ulcer," Walter I Hume Louisville "Thyroid Problems," Virgil E Simpson, Louisville, "Preview of Economic Security in Kentucky" and William Hamilton Long, Louisville, "Status Lymphaticus"

MASSACHUSETTS

Relief Project for Physicians—The *New England Journal of Medicine* announces a plan whereby resident physicians of Boston who are in urgent need of financial relief will be given medical employment. The project will be maintained by the state emergency relief association and will be under the direction of Dr Charles F Wilensky of the Boston Health Department. Applicants must be legal practitioners of medicine residents of Boston, and in such financial need that they are eligible for aid from the emergency relief association. Applications should be made first to the secretary of the proper district medical society.

MICHIGAN

Grants to University—Fourteen thousand dollars has been appropriated by the Rockefeller Foundation to the University of Michigan for study of the application of spectroscopic methods to medical problems under the general direction of Dr Louis H Newburgh professor of clinical investigation in internal medicine, and Harrison M Randall, Ph.D., professor of physics University of Michigan Ann Arbor. Funds not to exceed \$5,000 annually have been provided for a five year period to end June 30 1940 for special research in the physiology of respiration under the direction of Dr Robert Gesell.

Uncommon Diseases Reported—Although in very small numbers the following variety of diseases have been reported to the Detroit Health Department since January 1: one case of leprosy, eleven cases of undulant fever, twenty-one cases of malaria and, since April 1 nine cases of typhoid. One paratyphoid fever carrier was reported and four carriers of typhoid. Thirteen cases of amebic dysentery have been recorded since January 1 four cases of trichinosis, three cases of tularemia, and one case of tetanus. The department points out that the last case of smallpox reported in Detroit was on Aug 3, 1931, and the last death from this disease occurred in 1925.

The Children's Institute—The work of caring for orphan children in Michigan will in the future be handled in Ann Arbor under the name of the Michigan Children's Institute, in accordance with recent legislation. These children have in the past been housed in an institution in Coldwater. Under the new plan, an attempt will be made to have them placed in private homes so that they may be brought up in a more normal condition than that provided in an institution. Ann Arbor was selected because the University Hospital can give the medical and psychologic examinations necessary for successful placement. It was reported that the state welfare commission had available \$202,840 for the project. A large residence with accommodations for about thirty children will be maintained in the city for temporary shelter.

MINNESOTA

Personal—Dr Charles R Drake has been elected president of the Minneapolis board of education.—Dr William W Will Bertha newly elected president of the Minnesota State Medical Association was recently guest of honor at a dinner given by the Todd County Medical Society.

Society News—Dr Eugene T Leddy Rochester, was elected president of the Minnesota Radiological Society at its annual meeting in Minneapolis June 24. Dr John Richards Aurelius St Paul vice president and Dr Leo G Rigler, Minneapolis secretary.—At a meeting of the Scott-Carver Counties Medical Society in Arlington July 9 Dr Harry G Irvine Minneapolis discussed therapy of dermatitis and Dr Earl A Loomis Minneapolis diseases of the eye, ear, nose and throat.—At the annual meeting of the Wabasha County Medical Society at Old Frontenac, July 11, speakers included Drs Rudolph C Radabaugh, Hastings. Fecal Impaction. Following Cholecystitis. Alfred E. Belitz, Pepin, Wis., Breech Presentation. George A. Earl, St. Paul, "Injection

Method versus Open Treatment of Hernia', Harold E. Hullsiek St Paul, "Diagnosis and Office Treatment of Diseases of the Rectum," and Edward H Rynearson, Rochester, "Summary of the Present Knowledge of the Hormones of the Anterior Lobe of the Pituitary Gland"

MISSISSIPPI

Society Makes Rules for Members Testifying in Malpractice Suits—The Central Medical Society recently adopted a resolution forbidding its members to give voluntary evidence in any malpractice action, unless the proposed testimony has been previously examined and approved by those designated by the society for the purpose. In an action of this sort, the president of the society will appoint an "investigator" to call on medical witnesses of the plaintiff to submit to him their proposed testimony in writing. The investigator after impartial consideration will submit the testimony and his opinion to three members who will be known as "consultants." If the results of the investigation and the opinion of the consultants support the testimony on the part of the plaintiff, the physician will be encouraged to testify, on the other hand should the report indicate that the proposed testimony will wrongfully disparage the defendant's reputation and will not serve justice, the plaintiff's physician will be notified that the testimony is not approved and that members of the society will so state in court. If, irrespective of this decision and advice the testimony deemed objectionable is given, the member giving it will be expelled from the society for unprofessional conduct.

MISSOURI

Joint Health Meeting—The Missouri Public Health Association and the Missouri Tuberculosis Association will hold a joint session at the Muehlebach Hotel Kansas City, September 5-7. The following persons will speak:

William De Kleene, M.D. medical adviser, American Red Cross Washington D C. The Medical and Health Aspect of Red Cross Disaster Work.
Paul A Witte, Ph.D. Chicago Relation of Mental to Physical Health.
Caroline Hedger, M.A. Chicago Health of the Adolescent.
Edwin Lee Miller, M.D. Kansas City The State and Public Health.
Reginald M Atwater, M.D. New York Team Work in Public Health.
Chester A Stewart, M.D. Minneapolis The Lymanhurst Interpretation of Tuberculosis.

NEW YORK

Personal—Dr Harold Jackson Davis, assistant director of local health administration of the state department of health Albany has been assigned as part-time consultant in medical care to the Works Progress Administration. Dr Davis will pass on the professional aspects of all projects of the administration submitted from upstate New York, which involve the employment of physicians, dentists, nurses and other health workers on a security wage. He will act also as liaison officer between the administration, the state and local departments of health and the state, and local medical and other professional societies. He will serve also as technical adviser to the state compensation officer in regard to the professional aspects of the medical care and treatment provided to workers of the Works Progress Administration who are disabled in line of duty.

New York City

Course in Psychoanalysis—The New York Psychoanalytic Institute announces an introductory course in 'Psychoanalysis in Medicine' for physicians, to begin October 3 and continue for twelve Thursdays except November 28. The lectures will be given by Drs Clarence P Oberndorf, A A Brill Sandor Lorand and Philip R. Lehman.

Changes at New York University—The following promotions were recently announced by New York University College of Medicine:

Dr James A Shannon to be assistant professor of physiology.
Dr Meyer J Kautsky assistant clinical professor of surgery.
Dr Edward M Livingston assistant clinical professor of surgery.

A plan for graduate study in radiology leading to the degree of doctor of medical science was approved at a recent meeting of the council and added to the list of similar courses already offered in other departments.

Opening for Bacteriologist—The Municipal Civil Service Commission announces an examination for the position of associate director of the bacteriologic laboratories in the health department. Applications will be received up to October 4, and the dates for the examination will be announced later. All qualified citizens of the United States are eligible for the examination, but the appointee must reside in New York after he has accepted the position. Applicants must be not more than 55 years of age and have not less than five years of satisfactory

experience in a bacteriologic laboratory of recognized standing. Applications should be sent to William H. Allen, secretary, Municipal Civil Service Commission, Room 1400, Municipal Building, Manhattan. An examination for the position of director of the division of psychiatry, department of hospitals, Bellevue Hospitals, was announced in *THE JOURNAL*, August 10, page 443.

PENNSYLVANIA

District Meetings—Dr. Nathan B. Van Etten, New York, Speaker of the House of Delegates of the American Medical Association, addressed the annual meeting of the Third Council District of the Medical Society of the State of Pennsylvania at Skytop Lodge in the Pocono Mountains, July 31, on medical economics. Officers of the state society also made addresses and the afternoon was spent at golf, tennis, cards, shooting, bathing, horseback riding and quarts. At a meeting of the Fourth Council District at Eagles Mere, July 11, speakers included Drs. Moses Behrend, Philadelphia, on "Open Operation for Fractures", Stuart W. Harrington, Rochester, Minn., "Clinical Diagnosis and Surgical Treatment of Tumors of the Breast," and Walter F. Donaldson, Pittsburgh, secretary of the Medical Society of the State of Pennsylvania, "County Medical Society Membership—A Privilege and a Social Obligation."—The Eighth and Ninth Council Districts of the Medical Society of the State of Pennsylvania held a combined meeting at the Pinecrest Country Club near Brookville, August 1. The following speakers were on the scientific program: Drs. Joseph A. Hepp, Pittsburgh, on "Differential Diagnosis of Leukorrhea", James Andrew Merle Russell, Erie, "Deafness", John W. Shirer, Pittsburgh, "Present Status of Endocrine Therapy," and Hubert C. King, Lakewood, Ohio, "Manifestations of Heart Failure in Middle Life." Officers of the state society discussed organization problems.

Philadelphia

Personal—Dr. Stanley P. Reimann, director of the Lankenau Hospital research laboratory, has gone to Germany to attend cancer conferences at the biologic laboratory at Oppau, near Heidelberg. He will also visit the Free Cancer Hospital in London.

Medical Seminars Deferred—The Philadelphia County Medical Society announces that the opening of its first medical seminar, on "Laboratory Methods and Clinical Application," has been postponed until November 29. This change has been made in view of the seminars on anesthesia that will be offered by the Philadelphia County Dental Society on six consecutive Fridays beginning October 18. The medical society will start its second seminar on Friday afternoon, January 3. Parasites will be the theme of this series. The duration of these seminars will be four Fridays.

UTAH

State Medical Meeting at Logan—The forty-first annual meeting of the Utah State Medical Association will be held in Logan, September 5-7, with headquarters at the Hotel Eccles and under the presidency of Dr. David C. Budge, Logan. The following guest speakers will present the program:

- George E. Brown, M.D., Rochester, Minn., General Survey of Diseases of the Blood Vessels; Disorders of the Sympathetic Nervous System; Recent Developments in Investigations of Essential Hypertension.
- Dean D. Lewis, M.D., Baltimore, Diseases of the Blood Vessels (Surgical); Differential Diagnosis of Bone Tumors; Differential Lesions of the Breast.
- Karl F. Meyer, Ph.D., San Francisco, Sepsis; Present Status of Undulant Fever.
- Claude F. Dixon, M.D., Rochester, Minn., Surgical Lesions of the Colon; Motion Picture Demonstration; Management of Acute Appendicitis; Prevention and Curative Measures Against Peritonitis.
- George H. Gardner, M.D., Chicago, Retrodisplacement of the Uterus, Its Significance, the Indications for Treatment and the Choice of Treatment; Uterine Fibroids; Leukorrhea; Differential Diagnosis and Treatment.
- William H. Holmes, M.D., Chicago, Common Neurologic Syndromes; Bright's Disease.
- John A. Wolfer, M.D., Chicago, Consideration of the Nutritional Status of the Surgical Patient; Pancreatic Juice as a Factor in the Etiology of Gallbladder Disease.
- William R. Cubbins, M.D., Chicago, Injured Cruciate Ligaments of the Knee Joint; Diagnosis and Methods of Repair; Fractures of the Humerus and Both Bones of the Arm; Fractures of the Acetabulum and Pelvis.

Dr. Meyer will address an evening public meeting at Logan Tabernacle, September 5, on "Plagues, Past and Present," illustrated by motion pictures. There will be a banquet Friday evening. The women's auxiliary to the society will hold its annual session Thursday and Friday.

WISCONSIN

Drive Against Diphtheria—The Milwaukee County Medical Society and the county health department conducted their annual campaign against diphtheria, July 15 to August 15. The city has had only fourteen cases thus far this year, it was said. Seventy-five clinics were to be held and it was hoped to immunize 7,500 children.

State Medical Meeting at Milwaukee—The ninety-fourth annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, September 17-20, at the Milwaukee Auditorium. The preliminary program announces the following guest speakers with their subjects:

- Dr. Fred L. Knowles, Fort Dodge, Iowa, Treatment of Fracture of the Neck of the Femur.
- Dr. Albert Graeme Mitchell, Cincinnati, Nonspecific Factors Affecting the Tuberculin Reaction.
- Dr. Arthur J. Patek, Jr., Boston, Present Day Concepts in the Treatment of Anemia.
- Dr. Aaron Arkin, Chicago, Tumors of the Lung and Their Differential Diagnosis.
- Dr. Uras V. Portmann, Cleveland, Factors that Influence the Curability of Cancer.
- Dr. Louis G. Herrmann, Cincinnati, Treatment of Peripheral Vascular Diseases.
- Dr. Ernest M. Hammes, St. Paul, Spinal Cord Injuries.
- Dr. Henry W. F. Woltman, Rochester, Minn., Some Neurologic Post-operative Complications.
- Dr. Frederick A. Collier, Ann Arbor, Mich., Water Balance of Sick Patients.
- Dr. Simon Levin, Houghton, Mich., Dangers and Their Prevention in Operative Treatment of Goiters.
- Dr. Charles M. McKenna, Chicago, Operative Technic for Cryptorchidism.
- Dr. Vernon C. David, Chicago, Surgical Aspects of Carcinoma of the Rectum and Sigmoid (part of a symposium).
- Dr. Fremont A. Chandler, Chicago, Aseptic Necrosis of the Head of the Femur.
- Dr. Percival Bailey, Chicago, Peculiarities of Intracranial Tumors in Childhood.
- Dr. Harold E. Robertson, Rochester, Minn., Value of Postmortem Examination to the Practice of Medicine.
- Dr. Waltham Walters, Rochester, Operative Procedures Indicated in the Treatment of Peptic Ulcers.

Other visiting speakers will be Drs. Hugh Cabot and Gershom J. Thompson, Rochester, Minn., on the scientific program, and Dr. Edward H. Carv, Dallas, Texas, who will speak at the annual banquet at the Hotel Schroeder, Thursday evening, September 19. Dry clinics will be held at the Milwaukee County Hospital and the Milwaukee Children's Hospital Wednesday morning. There will be a hobby exhibit arranged by the Medical Society of Milwaukee County.

PUERTO RICO

Personal—Dr. William Branch Porter, professor of medicine, Medical College of Virginia, Richmond, Va., has spent the past two months in San Juan, Puerto Rico, doing special investigative work on the blood flow in cases of anemia. Dr. Porter has carried on his experiments among patients hospitalized in the University Hospital of the School of Tropical Medicine, Mimiya Clinic and the Municipal Hospital.

Pan American Medical Congress—En route to New York City from its cruise to Rio de Janeiro, Brazil, the Sixth Floating Congress of the Pan American Medical Association stopped off at San Juan, Puerto Rico, July 29. The School of Tropical Medicine contributed as its share in the entertainment program for the Congress a series of exhibits of the various phases of tropical diseases, on which the faculty of the school has been working. All departments of the school were represented. After viewing the exhibits the visitors attended a symposium on tuberculosis, held under the auspices of the insular department of health.

Monthly Hospital Staff Conferences—The medical men on the staffs of the various hospitals of San Juan, have planned a series of conferences, one of which will take place every month. These conferences are to be limited to scientific problems of actual interest in the daily work of the physicians taking part. At the last conference, August 9, the following program was presented:

- Dr. Isaac F. Gonzalez Martinez, Ray, Studies of Ulcers of the Duodenum.
- Dr. Manuel Diaz Garcia, Surgical Aspects Presented in an Operation for Ulcers of the Duodenum.
- Dr. Antonio Martinez Alvarez, Histopathologic Study of the Autopsies of Three Cases of Intestinal Perforation.

Four New Hospitals for the Indigent—Governor Blanton Winship of Puerto Rico has approved a project of the house of representatives (P. de la C. 55) authorizing the construction of four district hospitals to care for the indigent sick of the island. The administration of these hospitals will be vested in a board of seven members appointed by the governor, two will be ex officio members from the insular legislature, one will be a lawyer, one an engineer, one a pharmacist.

and the other two doctors of more than three years' experience. The construction of these hospitals is to be financed by a half a million dollar loan, their maintenance afterward to be cared for by special appropriations made from the yearly insular budget

GENERAL

Committee to Study Sex Variants—Announcement is made of the establishment of a committee for the study of sex variants with Dr Eugen Kahn, Sterling professor of psychiatry and mental hygiene, Yale University School of Medicine, New Haven, as chairman. The committee will correlate the various scientific interests in this field, serve as a scientific sponsoring agency to further research on sexual variation, and appoint advisory subcommittees for projects sponsored or to be sponsored by the committee. A study of homosexuals of cultured background is already under way. The committee will be glad to consider any research projects that may be presented, which have a bearing on the physiologic, psychologic, psychiatric or sociological problems of sex variants, and to act in a sponsoring and advisory capacity should such projects be approved. All communications should be addressed to the secretary, Dr Robert W Laidlaw at 199 Fort Washington Avenue, New York City. Dr Laidlaw and Dr Kahn, together with the treasurer, Carney Landis, Ph D, Columbia University, Dr Robert L Dickinson of the National Committee on Maternal Health and Dr Josephine H Kenyon, New York University, constitute the executive committee.

Sight Conservation Activities—According to the annual report of the National Society for the Prevention of Blindness, for the first time, executives of practically all national safety, health and recreation agencies concerned with accidents from fireworks conferred on methods of procedure to eliminate such casualties. The society believes that the reduction of these accidents lies in the control of the manufacture of fireworks and in education of the public. About 250,000 publications were distributed at the request of 1,419 local communities in the United States and of forty-three foreign communities. There were about 420 showings of the society's film "Preventing Blindness and Saving Sight" reaching an audience of 29,532. Staff members participated in local sight conservation activities in eighty-six cities in twenty-one states. The District of Columbia, Canada and Europe. During the year a study of blindness among 2,700 children in schools for the blind was undertaken by a committee on statistics, which the society and other organizations are sponsoring. The results are expected to determine more clearly along what lines prevention must proceed. It collaborated in the formulation of a national code on safety glass and cooperated with various local agencies interested in legislation requiring the use of safety glass in motor vehicles. It also sponsored the special training of several young women for duty in the social service departments of eye hospitals and eye clinics in Chicago, Pittsburgh and New Orleans. In 1934 the society's income was \$96,900 and its expenditure \$131,900, necessitating the use of \$35,000 from its reserve fund.

Medical Bills in Congress—*Changes in Status*. S J Res 169 has passed the Senate, authorizing Drs Hugh S Cumming, Surgeon General of the United States Public Health Service, John D Long, Medical Director, United States Public Health Service, Bohvar J Lloyd, Medical Director, United States Public Health Service, and Clifford R. Eskey, surgeon, United States Public Health Service, to accept and wear certain decorations bestowed on them by the governments of Ecuador, Chile, Peru and Cuba. S 3060 has passed the House, proposing among other things to extend the provisions of existing law providing hospitalization and domiciliary care for veterans so as to include men discharged from the Army, Navy, Marine Corps or Coast Guard who are in receipt of pension for service connected disability. H R 9116 has passed the House and Senate extending the provisions of veterans laws and regulations to persons who served in Russia during the World War. H R 9185 the Liquor Tax Administration Act has passed the House. It provides among other things, that alcohol may be obtained tax free for the use of any clinic operated for charity and not for profit including use in the compounding of bona fide medicines for treatment outside of such clinics of patients thereof but not for sale. *Bills Introduced*. H R 9145 introduced by Representative Lundeen, Minnesota proposes to provide for the refunding of all benefits to Spanish-American War veterans and their widows and dependents of which they were deprived by the Economy Act. H R 9218, introduced by Representative Kramer, California, proposes to provide that certain service-connected disabilities shall be deemed to have been incurred in World War service.

FOREIGN

Society News—There will be an International Congress for the Scientific Investigation of Population Problems in Berlin, August 26-September 1.—The International Association for Preventive Pediatrics (the medical section of the Save the Children International Union) will meet in Basle, Switzerland, September 20-21. Headquarters of the association are at 15, rue Levrier, Geneva.—Physicians in Tientsin, China, recently organized the Tientsin Medical Society, with Dr Joseph A Mendelson as president. Physicians visiting Tientsin are invited to attend the meetings, which are held the last Thursday in each month.

Conference on Tuberculosis—At a meeting of the executive committee and the council of the International Union Against Tuberculosis in Paris July 10-11, plans were made for the conference to be held in Lisbon, Portugal, September 8-10, 1936. The following subjects will be treated: "Radiologic Aspects of the Pulmonary Hilus and Their Interpretation," with the opening report by Prof Lopo de Carvalho, Brazil, "Primary Tuberculous Infection in the Adolescent and the Adult," by Dr Olaf Scheel, Norway, "The Open Case of Tuberculosis in Relation to Family and Domestic Associates," by Sir Henry Gauvain, London. At the scientific session Professor Thorvald Madsen, Copenhagen, reported on "Tuberculin Standardization and Tuberculin Tests," and Dr Kendall Emerson, New York, on the work of American investigators of tuberculosis.

Government Services

Dr Dunham Named Director of Division of Maternal Health

Dr Ethel C. Dunham, acting director of the division of maternal and child health, U S Children's Bureau, has been named director of the division, succeeding Dr Martha M Eliot, who was appointed assistant chief of the bureau last December. Dr Dunham has been associate clinical professor of pediatrics at Yale University School of Medicine, New Haven, Conn, and has recently been designated lecturer in pediatrics at the school (THE JOURNAL, March 23, p 1017). She graduated from Johns Hopkins University School of Medicine in 1918.

General Patterson Retires and Accepts Deanship

Major Gen Robert U Patterson, formerly surgeon general of the U S Army, will retire from the army, September 1, to become dean of the University of Oklahoma School of Medicine and superintendent of its hospital. Dr Patterson applied for retirement on his return from Brussels, Belgium, where he represented the state department and the secretary of war at the International Medical Congress of Surgeons and Physicians. Born in Montreal, Canada, in 1877, Dr Patterson graduated from McGill University in 1898 and from the Army Medical School in 1902. For his services abroad, General Patterson received the Distinguished Service Medal, also citations for "gallantry in action."

Dr Hasseltine Ill with Psittacosis for Second Time

Dr Hermon E. Hasseltine, U S Public Health Service, is ill in San Francisco with psittacosis. This is the second time that Dr Hasseltine has had the disease. The first attack having occurred in 1930 in Washington, where he was making laboratory studies of the epidemic that then prevailed. For three years Dr Hasseltine was in charge of the psittacosis laboratory of the public health service at Pasadena, which was closed several months ago. He was then detailed to San Francisco to make a study of bubonic plague. While he has not been in contact with parrots recently, it is believed he acquired the infection in Pasadena July 10, from instruments used in previous studies, which he handled while packing them for shipment. He became ill July 25 and on July 28 was admitted to the marine hospital. He is now much improved. So far as the public health service is informed, this is the only instance of psittacosis occurring a second time of which there is record. In March 1930 Dr Hasseltine suffered a moderately severe infection with psittacosis apparently acquired at the National Institute of Health, although definite history of his contact with infected birds could not be traced. His illness occurred at the time that ten other persons connected with the institution were infected. Two of this group were in direct contact with infected birds, but the means of transmission of the disease was not determined in the other cases. Dr Hasseltine has been with the public health service for twenty-six years.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 3, 1935

Alcohol and Road Accidents

The question of alcohol and road accidents has received much attention recently. At a meeting of the National Temperance League Mr. Ransom Pickard, president of the ophthalmologic section of the Royal Society of Medicine, pointed out that alcohol diminishes the vision of the peripheral retina before it affects central vision, the opposite to the rule that functions latest developed suffer first. The result is that moving objects are not so well discerned. The Carnegie Institution found that the taking of a little dilute alcohol affected the central vision less than 2 per cent while it affected the peripheral vision up to 11 per cent. Moreover, alcohol prolongs the reaction time, particularly in a street where a bewildering choice of possibilities occur. A pint and a half of ale prolongs a simple reaction time by 97 per cent. Moreover, alcohol increases the sense of satisfaction at impaired performances and engenders a false security, sometimes even bravado, so that driving may be undertaken when dangerous. If a driver who took alcohol were conscious of his defects and took care and drove slowly little harm might result but this he cannot do. The same criticism applies to the pedestrian for one who crosses the road with impaired neuromuscular equipment and similar cocksureness is likely to contribute to the casualty list.

At the invitation of the minister of transport a special committee of the British Medical Association consisting of some fifteen eminent physicians and surgeons has been studying the relation of alcohol to road accidents. Its report has now been presented. It concentrated on the effects of amounts of alcohol insufficient to produce what might be called drunkenness. Small amounts of alcohol lead many persons to make rapid decisions less judiciously than they otherwise would. To what extent this is responsible for automobile accidents there is no means of estimating, but it is a serious objection to the taking of alcohol, even in small amounts by any one who is to drive a car. Amounts corresponding to 2 or 3 ounces of whisky usually affect adversely the power of rapid and accurate coordination. At the same time the person may believe himself to be driving better. Last year 2,016 automobile drivers were certified by a physician to be under the influence of alcohol. It is beyond dispute that they were a potential source of accidents. But there must be a much larger number of drivers who would not be so certified and yet have their driving powers impaired by alcohol.

This report of the committee of the British Medical Association has produced considerable resentment among motorists who declare that the conclusions are too sweeping. An official of the Automobile Association said: "These scientific deductions, while valuable in their own sphere, have no legislative weight. In some cases a stimulant may be beneficial to a motorist who is tired and may improve his driving ability."

Nutrition and Public Health

The League of Nations has issued a bulletin entitled "Nutrition and Public Health," by Edward Burnet and W. R. Aykroyd. No country in the world, it is stated, can claim that the whole of its population is satisfactorily fed. Poverty is mainly to blame, ignorance to a less extent. The so-called protective foods, richest in minerals and vitamins—milk, green vegetables, fresh fruit, eggs—are also the most expensive and in all countries are beyond the means of great masses of the population. The report alleges that in Great Britain between 10 and 25 per cent of the population cannot afford a diet of

the type and quality now known to be essential as a safeguard against malnutrition and disease." The existence of a group that could afford a complete diet but do not secure it, because of ignorance, is admitted. The report also claims that more than 22 per cent of the children in the United States investigated up to 1924 showed symptoms of malnutrition. "The fact that the greater part of the population of Africa and Asia suffer from insufficient and faulty feeding is no longer a secret."

While a world wheat surplus threatens economic stability, pellagra and beriberi, both diseases which consumption of wheat would eliminate, continue to take thousands of lives every year. One of the greatest needs of modern statesmanship is that governments seeking to dispose of food and governments needing such for the health of their citizens should find some basis of agreement.

In reply to the allegations and conclusions of this report it may be pointed out that the chief medical officer of the ministry of health has stated that the nutrition of the people of Great Britain is better than in any period of which there is record. Also the export of food is not a matter of government arrangement but of business. The surplus wheat of America can be brought to the doors of the millions of Asia and Africa only by payment of the cost of the article and its transport from the farm to the coast across thousands of miles of ocean and then again up country. In many cases the natives could not pay a fraction of this cost if indeed they are not in totally inaccessible places. The truth is that primitive and backward peoples must necessarily live on their local produce.

Report of Committee of House of Lords on Osteopaths Bill

The collapse of the osteopaths' attempt to obtain registration was reported in a previous letter. The house of lords referred the bill to a select committee, an unprecedented procedure in the case of the bill of a private member. When eminent witnesses testified that osteopathy had no scientific foundation, the osteopaths could not face this issue and withdrew their application, giving as the ostensible reason that the committee was not competent to try the issue. In spite of the withdrawal, the committee considered it a duty to report on the bill. The committee states that in all comparable cases of vocations for which a statutory register has been authorized three conditions have been fulfilled: 1. The sphere within which the vocation operates has been clearly defined. 2. The vocation has already long been in general use. 3. There has already been in existence a well established and efficient system of voluntary examination and registration. In the case of the osteopaths, none of these conditions have been fulfilled. No definition of osteopathy was included in the bill as introduced, and although one was subsequently proposed and others were suggested, none emerged which satisfactorily differentiated the osteopathic sphere of activity. Though widespread in the United States and Canada, osteopathy is carried on in the United Kingdom by not more than 2,000 or 3,000 practitioners, of whom only about 170 can claim to be "qualified." It is practically unknown on the continent of Europe. The only establishment in this country for the education and examination of osteopaths was exposed, in the course of evidence, as being of negligible importance, inefficient and, above all, in thoroughly dishonest hands. The only training ground for the qualified osteopath would be in North America, and it was pointed out by a representative of the ministry of health that "it is alien to the general principles which have so far been followed in comparable legislation to recognize qualifications which are conferred by foreign educational institutions." From the inquiry it emerged that osteopathy is not, as is popularly supposed, a craft limited to the treatment of maladies of bones, joints, muscles and ligaments by manipulation. In this sphere the committee has no doubt that qualified osteopaths perform valuable services.

Osteopathy claims to be a method of treating all diseases. The committee finds that this claim has not been established and therefore reports that it would not be safe to recognize osteopaths on a footing similar to that of physicians. The question of a register for osteopaths should be deferred until the sphere of osteopathy has been defined and a system of education in its principles and practice has been developed in one or more well equipped institutions.

This report is satisfactory in its condemnation of the ridiculous claims of osteopaths, especially as it is unanimous, although the committee contained avowed supporters of osteopathy. These evidently had their eyes opened. But in their limited commendation the committee makes the mistake of confounding osteopathy with bone setting. As stated previously in *THE JOURNAL*, the osteopaths have encouraged and taken advantage of this mistake. The committee in using the phrase "education in the principles and practice of osteopathy" shows that it is in need of further enlightenment as to the nature of this fantastic cult.

A Polished Floor Costs Hospital Thousands of Dollars

A widow when visiting her son, a paying patient in the Westminster Hospital, put her foot on a mat, which slipped on a polished floor. She fell on her side and as a result of the accident her left leg was an inch shorter than the other. The injury sustained is not described in the report but it appears to have been a fracture of the femur. She brought an action against the hospital, contending that it was negligent in having on a slippery floor a mat without taking steps to ensure that it would be stable when trodden on. She admitted that in 1911 all her toes except the big toes had been amputated, but she stated that this had not made it difficult for her to keep her balance or in any way interfered with her activities. The judge said that the hospital authorities must have known that the floor was highly polished and the secretary had said that it was kept highly polished for antiseptic purposes. They ought to have known that it was dangerous to place a mat on a highly polished floor and that it might slip. They ought to have secured the mat. He awarded damages of \$14,000.

The British Medical Association and Protection Against Chemical Warfare

At the representative meeting of the British Medical Association, held in London, three resolutions were submitted by the Kingston-on-Thames Division urging that instruction in anti-chemical warfare should be given to medical students that similar instruction should be available for postgraduates, and that, in view of the necessity for educating the public in measures of protection against chemical warfare, the British Medical Association should ask for the cooperation of its members. It was urged that in the event of this country being involved in conflict with a European power we would quickly be subjected to attack by airplanes with all sorts of incendiary and gas bombs. At present all countries on the continent are realizing this. Mr. H. S. Souttar, chairman of the representatives and surgeon to the London Hospital, stated that recently he and the medical secretary were invited to a conference at the ministry of health, at which many other educational bodies were invited, to discuss the matter. The ministry of health and the war office were fully alive to the necessity of educating the civilian population in the matter. The authorities wished to make use of the British Medical Association for the purpose. Through their divisions they were in an exceptional position for diffusing the necessary knowledge among the physicians of the country. Every conceivable precaution would be taken to insure that the medical and nursing services of the country and the civilian population were trained in those matters. The resolutions were carried.

On behalf of the North Glamorgan and Brecon Division a resolution was then moved that the association should concentrate on the abolition of chemical warfare. An objection was made that it was not a political association. This was due to the fact that such resolutions generally emanate from socialists and extreme pacifists. The chairman, however, ruled that the resolution was not political. This resolution was carried and was referred to the council.

The Medical Work of the Mission to Lepers

The Mission to Lepers celebrated its diamond jubilee last year and has now published its sixtieth annual report. On the medical side larger numbers than ever have received special leprosy treatment and the results are as encouraging as in previous years. At fifty different stations—in India, China, Korea and Africa—9,157 patients were under treatment for not less than three months. Of these, 5,572 improved in varying degree and 1,413 were declared symptom free. Of the latter, 1,054 had arrested cases without deformity, and 704 were able to return to their own homes. Upward of 6,900 lepers were also treated as outpatients at the different homes. Injections of chaulmoogra or hydrocarpus oil and its derivatives continue to form the basis of most of the treatment. At some of the homes the patients under treatment have been trained to give injections and to act as nurses. More recently Christian ex-patients have taken charge of leprosy clinics in outlying villages. The constructive value of work among the children of lepers is being increasingly emphasized.

Standardized Dimensions for Hospital Wards

The Hospitals and Medical Services Committee of the London County Council has made a report proposing standardized dimensions for the wards of hospitals to be erected in the future. The committee stated that the standards in the past were mainly of cubic capacity and appear to have been based on such considerations as air pollution, about which there were no exact data. There was no real scientific foundation. The comfort and well being of the patient and his efficient treatment should be the determining factors. If these are provided for, all other considerations and theoretical formulas may be disregarded. The committee recommends a standard width of 26 feet for all wards in general hospitals. In wards for acute diseases (including maternity, tuberculosis, venereal and acute mental cases) the wall space per bed is to be 8 feet, height 11 feet up to a length of 50 feet and 12 feet above this length. In wards for chronic diseases the wall space per bed is to be 7 feet but for offensive cases 8 feet, the height is the same as for the wards for acute cases. In cot wards the wall space per bed is to be 7 feet with the height as before. Single-bedded wards are to be not less than 11 by 10 feet with a height of 10 feet, or in conformity with the general plan. The resulting cubic capacity is less than was formerly considered necessary, when importance was attached to the height of wards as providing additional air space and heights up to 16 feet were the rule. It is now known that any height above 12 feet does little or nothing for ventilation, which depends on adequate window space. No ruling as to length of wards is laid down but wards of 100 feet will probably not be constructed again.

Report on the Quetta Earthquake

The medical report on the Quetta earthquake throws new light on that appalling disaster. Col. A. J. H. Russell, public health commissioner, states that no fewer than 31,500 persons were evacuated from Quetta by rail. This suggests that previous official reports overestimated the death roll. In the early days of the disaster 2,500 dead were excavated. Assuming the original population of the city and cantonments to have been between 66,000 and 70,000, Colonel Russell infers that between 12,000 and 16,000 bodies lie under the ruins of Quetta city,

although he admits that these figures are mere approximations. In his opinion the general health arrangements are adequate for the protection of both the troops and the civilian population. He upholds the prompt action of the authorities in sealing up the city on health grounds. The whole population in the refugee camps has been vaccinated and inoculated against epidemic diseases. Experimental excavations of the debris will be conducted in order to determine whether a general clearance of the buried city may be proceeded with without danger to the 18,000 people still living in the vicinity. There are difficulties and dangers in excavating an area which is a veritable graveyard of thousands of human beings and animals. Colonel Russell considers it inadvisable to undertake exhumations on any extensive scale, because of the nuisance that would arise from the stench and flies. For health reasons alone he considers it unwise to recruit a large force of workers.

The Methodist Church and Spiritual Healing

For the first time in the history of Methodism, the question of spiritual healing was raised at the annual conference. The question has often been discussed at meetings of the Church of England. Rev. L. D. Weatherhead moved a resolution urging that a special committee be set up to consider the whole question of spiritual healing. Mr. Weatherhead, who has published a number of books on psychology, said that in a large number of people who were ill the trouble was not physical in origin and also not mental. It was spiritual in origin. Such people were not adequately treated by the physician or the psychotherapist. Many methods practiced under the heading of spiritual healing were not sound. Any method that was practiced must be one that would go hand in hand with the discoveries of medicine and surgery. A committee of physicians, ministers and laymen was wanted to find out what methods were sound, to correlate ideas, collect evidence, and see whether any valuable rapprochement was possible between their profession and the medical profession. The resolution was passed unanimously.

The Smell Society

The Smell Society has just been formed 'with the intention of restoring the sense of smell to the high position it holds among all higher animals other than man'. Its work will be to replace the unpleasant and noxious smells that civilization has introduced by the pleasant smells that have been lost. In a letter to the *Times* announcing the formation of this society, the writer assures readers that, though they may at present be mildly amused, the Smell Society will in a year's time be a powerful body. He says that the subject is a wide one and goes far beyond appreciation and pleasure into the realms of health. For instance, an essential part of good cooking is the fact that smell prepares the body for the reception of food. The *Times* takes the project seriously, devoting to it an editorial three fourths of a column long. The society proposes to make people more smell conscious. But here the difficulty begins, for many people prefer not to be smell conscious. There is the difficulty that civilization has brought with it so many bad smells that the disadvantages of being sensitive to smells will outweigh the advantages. But sanitation has left our cities smelling good because they smell of nothing.

Salaried Midwives

In considering methods of improving the midwifery service, the low earnings of midwives and the consequent attraction into that calling of an inferior class of women has received attention. One remedy proposed was the support by the state of salaried midwives. At a meeting of the London County Council it was decided to inform the minister of health that the council supported a recommendation to establish a salaried midwives service under the local authorities, subject to a satisfactory grant-in-aid from national funds.

PARIS

(From Our Regular Correspondent)

July 19, 1935

Discontentment over Social Insurance Deficits

The social insurance law is now five years old, but from all sides come complaints that it has not proved to be the success that was expected. In attempting to balance its budget, the government has planned to save 400 million francs (about 25 million dollars) annually through economies in the administration of the law. One of the members of the chamber of deputies has asked for an emergency revision of the law because the premiums that insured workers are obliged to pay are a burden hard to bear. More than four billion francs (about 250 million dollars) is taken "out of the pockets of employers and employees every year and most of it is stowed away (thesaurized) in the sinking funds of the various organisms of the law," according to this legislator. The premiums must be reduced in line with a general effort to lower the cost of living in France.

Finally, in the *Sidèle médical* of recent date appears an article entitled 'a decisive change,' which states that one of the chief objectives of the social insurance law, an effort to prevent disease by better sanitary organization of the country, is at last in the first stages of fulfilment. One is also much concerned about deficits in the budgets of the primary distributing agencies, or "caisses," of the social insurance law. These collect the premiums from the employers and employees and disburse benefits for illness, maternity cases and deaths. These "caisses primaires" insure themselves in a sort of central government agency termed the 'Union of reinsurance.'

At a recent meeting of all of these reinsurance societies it was found that the "caisses primaires" were in a bad way financially and that surely next year, if not already this year, there would be deficits.

These "caisses primaires" during 1930-1931 distributed only 40 per cent of their income, whereas in 1934 the proportion rose to 89.5 per cent. The average premium dropped from 70 francs (\$3.75) a month in 1930-1931 to 63.7 francs in 1934, or about 10 per cent. This drop in revenue is more marked in the departments outside Paris than in the latter city. The reverse is true of the disbursements.

Out of 103 of the "caisses primaires" (primary collecting and distributing agencies) insuring 1,220,000 workers, thirty nine are in deficit for sickness insurance, seventeen for maternity insurance and nineteen for death benefits. These financial difficulties will be combated in the future by the Reassurance Union lending money on more liberal and longer terms to the caisses primaires. As stated in previous letters, one of the drawbacks to the present social insurance law is the thesaurization, i. e., keeping out of circulation vast sums of money by the central organizations which are constituted by the "Union of Reassurance" and by the 'guaranty fund.' The former is the custodian of sickness, maternity and death insurance premiums and the latter for old age insurance premiums.

These huge sums of money under the control of these "higher-up" links in the social insurance chain are not always wisely invested and there has been much open criticism of this feature of the law. The latter dates only from 1930 and it will be many years before those who are now paying for old age insurance will reach the age of 65 and demand reimbursement for sums paid in many cases over a period of from thirty to forty years. No secret is made of the criticism of the poor investments, entailing much loss of money, which have been made by the trustees of some of these funds.

The experiment in social insurance in France has been far less successful than was hoped or promised. The attitude of the medical profession is becoming more and more bitter in these days of crisis.

Hemiplegia Following Exploratory Puncture of Chest

At the May 10 meeting of the Société médicale des hopitaux, Sergent and his associates called attention to embolism as an accident in exploratory puncture of the chest. They reported a case in 1933 and now report a second case. One can best explain such a complication as being due to the entrance into the pulmonary circulation of an embolus composed of blood mixed with air, as demonstrated experimentally by Komis and others.

In Sergent's second case, an exploratory puncture was made preliminary to operation for a pulmonary abscess, following removal under anesthesia of infected teeth. The embolism occurred during the second step of the drainage of the abscess, adhesions having been established during a first intervention under local anesthesia four days previously.

Immediately after exploratory puncture of the exposed lobe containing the abscess and withdrawal of a bloody, frothy fluid, a right hemiplegia with aphasia, right conjugate deviation and amaurosis appeared. All these symptoms disappeared during the three days following the exploratory puncture. One can best explain such accidents by the existence of a simultaneous injury of a bronchus and a pulmonary vein and the transportation of an embolus composed of blood and air.

A vascular spasm of the left sylvian and right posterior cerebral arteries is believed by Sergent to have played an important part in the brain symptoms as the mechanical obliteration of the vessels by the embolus.

In the discussion, Justin Besançon reported some experimental work on dogs which confirmed the role of vascular spasm. Following embolism of the vessels of the right eye one finds a bilateral spasm of the retinal vessels, which extends to the cerebral vessels. One can eliminate these vascular spasms by the injection of choline, so as to be able to study the effects of the embolism alone.

Hillemand reported a case of jacksonian epilepsy ending fatally following exploratory puncture.

Dr Harvier Elected Professor of Therapeutics

Dr Harvier until recently associate professor of therapeutics at the Faculté de médecine, has been named professor to succeed Professor Loeper, who has been elected to the chair of clinical medicine.

BERLIN

(From Our Regular Correspondent)

July 1, 1935

Secondary Effects Following the Use of Amidopyrine

In a recent address before the Berlin Medical Society Professor Dennig spoke on the secondary effects following the use of amidopyrine and related drugs, a subject much discussed in various countries, especially in connection with the appearance of agranulocytosis following the ingestion of amidopyrine. Usually it is a question of relatively harmless idiosyncrasies, but a form of idiosyncrasy that leads to agranulocytosis may take a fatal course. Hence, in manifestations of angina under which picture an agranulocytosis first presents itself clinically, patients should be warned against the use of amidopyrine and related drugs likewise in mild disorders in which medicines are not needed. On the other hand, Dennig and other clinicians have not observed these injuries following the application of large doses of amidopyrine (even of several grams) in articular rheumatism.

Prof Werner Schultz, who was one of the first to describe the disease termed "agranulocytosis" stated during the discussion that he had not observed such connections. The incidence of agranulocytosis is far from uniform. In Denmark it appears to be common. In any event, in cases of agranulocytosis all preparations should be omitted that contain amidopyrine in any

form since they effect a marked exacerbation of the disease. Professor Schittenhelm pointed out that a diminution of leukocytes, such as occurs in agranulocytosis, may be produced not only by amidopyrine but also by salicylic acid, cinchophen and other substances.

Meeting of Microbiologists

The May session of the Deutsche Vereinigung für Mikrobiologie opened with commemorative exercises for Robert Koch. The first topic, "Diphtheria," was introduced by Schlossberger of the federal bureau of health, who discussed the new division of diphtheria bacilli according to definite cultural characteristics, into the three types "gravis," "mitis" and "intermedius," a division which appears to be acceptable, whereas an immunologic division of the various stocks is not so useful. Gundel of Berlin emphasized the importance of the three types in epidemiology and termed the distribution of diphtheria bacilli as "practically ubiquitous." In diphtheria outbreaks one may speak of a quantitatively graduated contamination of one's environment. What causes diphtheria to appear and to disappear is not perfectly understood.

Kleinschmidt emphasized the great difference in the aspects of the disease and spoke of a pathomorphosis, since now there is much more pharyngeal than laryngeal diphtheria, which is just the opposite of formerly. Toxic diphtheria is for a time rare and then for a time frequent. In specific therapy one must bear in mind that normal horse serum always contains a few units of antitoxin. Death may intervene, however, in spite of maximal serum doses of from 100,000 to 500,000 units. But every physician is morally obligated to use the serum. Intravenous injections of serum are best given in a clinic. Clauberg brought out that in diphtheria one must count on a third of the population as bacillus carriers, it is useless therefore to isolate those who happen to come down with the disease.

Several unofficial papers were presented. According to Uhlenhuth and Zimmermann, Weil's disease may be transmitted even by the bite of tame rats. This disease may resemble meningitis without icterus. Schöffner of Amsterdam reported that among 105 cases in the Netherlands seventeen were fatal. The therapeutic serum gave favorable results. Bathing in open waters is the most frequent source of the infection, which was confirmed by observations in the navy.

In the determination of the blood groups, Laubenheimer of Frankfurt advised great caution particularly in the determination of the M and N factors in court trials in which the paternity of a child is involved, since the courts are coming to accept the testimony of experts in this field.

Veneral Disease in Thuringia

According to the federal census of venereal diseases for 1934, there are in Germany every year 346 new infections with venereal disease to each 10,000 inhabitants. In Thuringia there are 32.2 new cases. Dr. W. Schultze stated in an address before the Medical Society of Jena. In the reich, from 1927 to 1934, the number of new infections dropped from 585 to 346 per 10,000 of population. In Thuringia, during the same period, there was a decline from 399 to 323. The most common venereal disease is gonorrhea (78 per cent), while soft chancre with only 0.5 per cent plays but a small part. Congenital syphilis has decreased one half. In Thuringia, which comprises a part of "central Germany," one has to count on 1,400 new cases of syphilis and 4,200 new cases of gonorrhea each year. The principal center for the detection and registration of venereal patients is a consultation center at the Landesversicherungsanstalt in Weimar, the capital of Thuringia. A working merger with the Krankenkassen has been established, so that the cost of treating infectious patients is regulated on a large scale. In cities in which brothels still exist the morbidity figures are higher than elsewhere. The cost in

caring for prostitutes who were ill for some individuals reached as high as 2,750 marks (\$1,100) in a single year. In October 1934 a special department for asocial female venereal patients was established, which is under the control of the University Dermatologic Clinic in Jena. As asocial are designated such persons as have promiscuous intercourse and thus expose themselves to infection, venereal patients who have recurrences continually, and patients who refuse to be classed as members of any recognized working body. To this group belong all venereal patients who manifest indolent or criminal tendencies. In this special department patients become accustomed to a regular mode of living, they are obliged to work and have a definite daily schedule for labor and rest. A similar department for asocial male venereal patients is to be created. If these patients show that they have actually changed their attitude toward life and desire to secure permanent work, a carefully chosen opening is provided in which they must voluntarily submit to a special form of supervision. Patients with mental defects are placed in corresponding institutions. Asocial patients who show no signs of regeneration or social improvement are retained in "closed" institutions.

Malignant Tumors of the Mouth

Professor Lindemann, who is the director of the large West German clinic in Düsseldorf, where the treatment of diseases of the jaws is a specialty, has made a careful study of more than 200 cases of carcinoma and sarcoma. The results of a radical surgical treatment of these malignant tumors have improved greatly, chiefly owing to a better knowledge of the early symptoms and to refinements in the surgical accomplishments as regards radical excisions of tumors, and because of the great advances in plastic surgery as applied to large defects of the face. The ability to avoid postoperative disturbances through the progress in local and regional anesthesia has been a great advantage. According to the experiences of Lindemann, an irradiation effects frequently a reduction in the size of such a tumor, so that a radical excision becomes possible. Another important question is as to whether an ulcerated tumor or a tumor that has led to regional metastases should be irradiated. Professor Schreus stated that the radiologic treatment will vary widely, depending on the site and the degree of extension to the deep-lying tissues, for which adequate methods have been worked out. In accordance with the special indications, the specialist will apply fractionated irradiation with short intervals, contact treatment with application of radium, radium needle treatment, and irradiation by the Coutard method in the form of percutaneous therapy. Schreus has an increasing preference for radium treatment within the tumor, particularly in glandular metastases. In suitable cases the radial application of radium needles to the tumor is recommended. Some patients who were irradiated several years ago are still alive. If recurrences are to take place after unsuccessful irradiations, they usually appear promptly. From the experiences of Schreus, irradiation appears to be the preferred method in carcinoma of the upper jaw, also in lingual and in pharyngeal tumors.

Sixtieth Birthday of Professor Sauerbruch

Prof. Ferdinand Sauerbruch, the directing surgeon of the Berlin University Surgical Clinic, celebrated his sixtieth birthday, July 3. In the beginning of his career he served as assistant to Langerhans. In Breslau, under Mikulicz, his reputation became established. After serving in the university clinics of Greifswald and Marburg, he was offered in 1910 a chair in the University of Zurich. In 1918 he accepted a call to the University of Munich, and in 1928 to the University of Berlin. His reputation was now great enough to take a position alongside August Bier. The subpressure procedure introduced by him makes it possible to open the thoracic cavity without collapse

of the lung, which is under negative pressure. This procedure enables the operator to undertake extensive operations on the lungs, which denotes a distinct advance. Since then Sauerbruch has worked out this procedure more in detail, introducing many improvements. During the World War he invented a movable prosthesis for persons with amputated limbs. The idea was to utilize the movable muscles of the stump for the control of the prosthesis. Sauerbruch has carried on researches on surgery of the pericardium, the heart and the large blood vessels of the thorax, and on thoracoplasty. His researches on diet in tuberculosis are well known. He is the editor or collaborator of some of the most important textbooks on surgery. As a teacher he charms by his enthusiastic presentation. His lectures, which he often delivers in foreign countries, are noteworthy presentations of surgical doctrine.

BELGIUM

(From Our Regular Correspondent)

July 17, 1935

Supervision of Adolescents in Industry

Dr. Langelez, "inspector general" of the Service médical du travail, has an article in the *Revue du travail* on the sanitary supervision of adolescents. In 1920 the work begun by Dr. Glibert in this field was sanctioned by a royal decree. Dr. Langelez, who for a number of years has been in a position to observe how the prescribed measures are applied and what results are secured, gives a summary of his observations.

The sanitary supervision of adolescents in industry, as organized in Belgium, is designed to render to the adolescent man power in our industrial plants constant service. In guiding youth's first step in the industrial life, in aiding young persons in the choice of a means of livelihood and in their adaptation to the trades, in supervising their first years of industrial activity, in watching over the less alert and in discovering at the start disturbances of health, this organization deserves a special place among the movements whose avowed task is the protection of workers. As Dr. Glibert said one day, "What finer service can physicians render than to watch over the normal development and the physical growth of the future generation of producers of wealth?"

To say that the organization as it exists is perfect would be an error. But does it reach all those that it is designed to aid, namely, boys and girls from 14 to 18 years of age in all industries except that of the home and the exploitation of agricultural work? One may reply that the organization functions efficiently in the major industries, in the middle-sized industries, and in a large portion of the minor industries. Its principles are the most difficult to apply in the minor industries in which there are only one or two apprentices, but in the trades presenting appreciable dangers the health of adolescents is periodically observed.

"Are the medical examinations made with sufficient care?" "Is there, in the organization of this service, nothing mechanical in the administration and in the paper work?" In reply to these questions, it should be said that sanitary supervision is as all other human endeavors. The better the physician the better the work is done that is entrusted to him, whether it is a question of industrial medicine, inspection of schools, consultations for nurslings or antituberculosis dispensaries. There are, however, certain organizations that are practically perfect, in which the physicians perform their tasks with the zeal and conscience of an apostle. Men of their caliber understand that the medicine of today demands more than formulas for treatment and prescriptions of drugs. The physician of the future must not devote his entire attention to therapeutics but must take on new activities born of modern hygiene and of preventive medicine. The protection of childhood, the medical surveillance of school children, and the sanitary supervision of adolescents in industry are movements the social value of which is apparent.

to every one, but their value in an individual case depends on the type of physician that administers them

In one sense, the sanitary supervision of adolescents is only a continuation of the guardianship to which school children in Belgium are subject. The mode of functioning of the service may be summarized as follows: examination one month after the new work is begun, an annual general survey of adolescents with supplementary examinations after one month, three months or six months. The examinations are given either by the medical inspectors of the ministry of health or by physicians selected by the industrial heads.

Diphtheria Carriers in Children's Colonies

In the children's colonies it has become customary to examine the whole group to discover carriers of diphtheria bacilli. In the Dongelberg colony during 1931 and 1932, Nelis searched for the Loeffler bacillus in 1,779 children. He discovered it in thirty-five cases, or 2 per cent. In the Wesembeek colony, twenty-four germ carriers were discovered in a group of 548 children (4.4 per cent), in the Cortil colony, five in a group of 175 (3 per cent) at the Jaspar Institute, six in a group of 109, at the Ecole d'Evere, one in a group of ninety-one, or seventy-one carriers of diphtheria bacilli (2.6 per cent) in the 2,702 children examined.

While the elimination of carriers improves the sanitary situation, one must not count too much on this method for between the arrival of a new contingent and the time when the results of the bacteriologic examinations become known, several days elapse, during which the carriers disseminate bacilli. Furthermore, in some subjects the presence of pathogenic organisms in the throat is intermittent. Then again, isolation of carriers is not practicable in these colonies.

The measure that is most effective is vaccination with anatoxin. Nelis considered that in the colonies that receive the whole contingent on a fixed date it is preferable to vaccinate all the children at the start, without applying first the Schick test to eliminate those with a negative reaction. In the colonies that receive children continually, one should either vaccinate every six months the children with a positive Schick reaction or vaccinate the children at once as they arrive.

Should the children be vaccinated in case of an epidemic? It is advisable to administer first an injection of anatoxin, to follow it up immediately with an injection of preventive serum, and later to return to vaccination.

Maritime Medical Aid

The story of the organization of maritime medical aid by means of the radio as a result of the initiative taken in Belgium by Dr. Bernard is well known. Dr. Bernard, in collaboration with Dr. Haack, has just published an interesting monograph on the subject. The International Radiomedical Service with its ninety-three equipped stations is having a world-wide development. One of its principal aids, the Manuel medical international, has been prepared and is expected to appear soon. The authors feel justified in appealing to the nations that have not yet established coastal radiomedical service. This applies to the vast expanses of the South Atlantic, the Indian Ocean and a part of the Pacific.

Likewise medicine chests should be standardized as that would contribute greatly to the efficacy of the service. Until such standardization can be effected all the radiomedical stations should be supplied with a pamphlet giving the composition of the medicine chests of each country.

The program of the service should include also study courses leading up to examinations for marine officer and also elementary courses theoretical and practical in radio medicine.

Great importance attaches to the creation of a central organization for the establishing of criteria to control radiomedical diagnoses.

BUDAPEST

(From Our Regular Correspondent)

July 3, 1935

The Eleventh National Medical Congress

The attendance at the eleventh National Medical Congress, held in May at the picturesque resort of Lake Balaton, exceeded all previous records. The program was unusually instructive.

INSUFFICIENCY OF THE CORONARY CIRCULATION

Prof. Arthur Hasenfeld said that insufficiency of the coronary circulation is in the foreground among investigators of cardiac disease. He emphasized that the increase in heart lesions is due to disorders of the coronary arteries. These can be prevented and in many instances cured. He strongly condemns attempts to cure angina pectoris by surgical operations. He never had a patient with angina operated on, nor will he ever operate for this condition. He is of the opinion that such methods are dangerous and unjustified. The preservation of the coronary arteries is one of the most important requirements for longevity. Sparing the heart means at the same time sparing the coronary arteries and is best insured by adequate rest after work, annual vacations of a fortnight or two and reasonable bathing, if possible in water containing carbon dioxide.

NEW DOCTRINES IN THE STUDY OF TUBERCULOSIS

Prof. Johann Angyan expressed the opinion that the sanatorium system of treatment of tuberculosis gave unsatisfactory results. In the postwar years valuable data were accumulated mainly as the result of the development of artificial pneumothorax and of serial roentgenograms. Tuberculosis affects the whole duration of life in cycles. The character of the disease varies in different periods of life. This cyclic course is attributable to the fact that people are usually infected prior to their tenth year of life, consequently the campaign against tuberculosis in infancy is of the greatest importance. In this field much can be expected from the social service system. But simply making the campaign one of housing, clothing and feeding leads to dependence on the daily trend of politics, and the campaign against tuberculosis should be free from politics. The chief endeavor of the campaign should be to remove the children from the sphere of grown-ups who are infected. Therefore the work of asylums should be directed toward serving these child groups, placing children in healthy homes. In the children's sanatoriums, the number of which is relatively small in place of convalescent and holiday measures tuberculous children should be cured.

THE PREVENTION OF CANCER

Endre Kubany stated that the strides made in the last decade have definitely demolished the false dogma that no scientific knowledge exists regarding the etiology of cancer. In the origin of cancer there are two factors to be reckoned with. One is the local stimulus which incites the cells to propagation, in most cases without any cause, the other is the individual tendency whereby the cell propagation caused by external stimuli passes into a cancerous growth. The individual predisposition is inheritable. The cancer of workers dealing with aniline, arsenic or tar corroborates the statement that already there are known causative agents. The therapeutic achievements of the last three decades established that cancer in its initial stage is curable. Hungary and chiefly its capital Budapest, despite its financial difficulties, will shortly extend all branches of research to achieve the utmost in this field. The Swedish, English, American, French and Belgian anticancer movements show that curing cancer is, in a great measure, a question of financing and organization. While discovery of the etiology of cancer is a scientific question, the prevention of cancer is a problem of organization.

ITALY

(From Our Regular Correspondent)

June 30, 1935

Chronic Appendicitis

Under the chairmanship of Professor Donati of the University of Milan, the Società medicochirurgica lombarda held a session devoted entirely to chronic appendicitis. According to Ferrata, chronic appendicitis from the start follows its clinical course uninfluenced by acute, subacute or recurrent appendicitis. He regards chronic appendicitis as an inflammatory disturbance of Peyer's patches and the enclosed follicles. Constitutional factors play a large part in its causation. Ferrata expressed the view that medical treatment is not effective and that the problem is essentially surgical.

Maioocchi gave statistical data on 1,600 appendectomies performed in the Ospedale Maggiore in Milan. He believes in the existence of chronic appendicitis from the start, but he regards it as a rare type (about 6 per cent). Timely intervention avoids the necessity of making changes in the other abdominal organs, particularly the stomach and the gallbladder.

Perussia, radiologist, discussed the value of roentgenologic symptoms of chronic appendicitis, none of which are pathognomonic.

Castiglione demonstrated the existence of those forms of appendicular disease which sometimes are induced by changes in the elastic and the nervous tissues. Clinically important are the disturbances that may simulate changes in the urinary apparatus and make one suspect the existence of an appendiculo-urinary reflex. It is necessary, he emphasized, to distinguish carefully the syndrome of appendicular disease from numerous other syndromes that might lead to useless appendectomies.

Solaro, in 1,300 operations for appendicitis in fourteen years, found chronic appendicitis in 40 per cent. Only in 21 per cent of these were the lesions confined to the appendix so that appendectomy constituted an adequate intervention. In the majority of cases, the lesions of the appendix were associated with symptoms of perivisceritis of the right side, hence the need of adhering to ample incisions sufficient to explore not only the appendix but also all the organs of the right half of the abdomen.

Zaccardi and Mucchi discussed the diagnostic difficulties that arise in connection with chronic inflammatory tumors of appendicular origin, especially in differential diagnosis as against a neoplasm of the ascending cecum.

Ettorre considered the diarrheic type of chronic appendicitis—a clinical form little known, which differs from the ordinary picture in that attacks of diarrhea alternate with periods of regular functioning, without any evident symptoms involving the appendix.

Analgesia and Anesthesia

A new society, the Società italiana di chirurgia e anestesia, has been founded in Rome. At the first session Prof. Roberto Alessandri, clinical surgeon, spoke on the more extensive use of local anesthesia, together with the preparation of patients by means of basal anesthesia. Local anesthesia has great merit and constitutes an ideal method, owing to the absence of harmful effects on the organism. Its greatest disadvantage is the incomplete character of the analgesia. The basal anesthesia strengthens its action and makes the patient more sensitive to the drug used locally. Scopolamine dilaudid (a combination of hydromorphone and scopolamine) is an optimal substance for basal anesthesia. Alessandri has used this preparation in a large number of cases for grave interventions, mostly cases of gastric surgery, such as resection for ulcer and cancer, and thoracoplastic surgery. He thinks that the custom of combining basal anesthesia with local anesthesia will be more widely adopted by surgeons.

Professor Testoni spoke on his direct experiments to determine the mechanism of vomiting due to chloroform. He excludes the gastric mucosa as the starting point of the vomiting reflex. Chloroform is not eliminated through the stomach, as occurs in the case of other indirect emetics, and Testoni holds that the anesthetic acts principally by exciting directly the bulbar center that controls vomiting. He does not, however, deny that vomiting due to chloroform may be also of reflex origin, in that case the starting point of the reflexes would have its seat not in the gastric mucosa but in other reflexogenic areas, the most important of which are the heart and the sinus caroticus.

Blood Transfusion

The public health service has brought to the attention of the prefects a decree of the minister of the interior outlining the norms pertaining to blood transfusion and to the use of human blood serum. The preparation for curative and prophylactic purposes of serums derived from persons convalescent (or cured) from poliomyelitis, measles, scarlet fever or other infective diseases will be subject to surveillance according to the norms established for serums and vaccines of animal origin. The collection of human blood and the preparation of serum may be carried out only at special collection centers or at institutes authorized by the minister of the interior. Blood donors for the preparation of serums must be at least 10 years old, of a sound constitutional type, and free from infectious diseases in general, particularly syphilis, tuberculosis and malaria.

Blood donors for blood transfusion must be found suitable as a result of rigorous clinical and laboratory examinations and must belong to a blood group compatible with that of the recipient.

The bureau of health in each commune shall keep a list of the voluntary and professional blood donors. They shall be provided with a special record card showing the blood group to which they belong, and they must subject themselves to a control examination at least every three months.

A physician who intends to give a blood transfusion must prefer his request for a donor to the communal health officer. In case of urgent need he may make use of a donor who appears suitable even though not enrolled in the communal register.

The formation of an association of blood donors, under the supervision of the sanitary authorities, is authorized.

Marriages

BRUCE NEWCOMER WOLFF, Gettysburg, Pa. to Miss Dorothy Burg Seiple, at Boiling Springs, Pa., June 8.

HARRY EARL PFEIFFER to Miss Edlee May Robinson, both of Cedar Rapids, Iowa, in Chicago, June 29.

GEORGE W. SIPPOLA, Detroit, to Miss Gladys H. H. Niemi of Riverside, Ont., Canada, June 6.

JOHN W. HOUR, Cleveland, to Miss Mary Hammond O'Brien of New Haven, Conn., July 27.

S. MILES BOUTON JR., Sykesville, Md., to Miss Martha Turnquist of Chicago, July 24.

HENRY F. CARMAN JR., Butte, Mont., to Miss Margaret E. Smith of Chicago, June 25.

JOHN ROBERT ANDREWS, Cleveland, to Miss Anne Cosgrove, at Philadelphia, June 15.

ROBERT B. WALKER to Miss Helen Grace Young, both of Philadelphia, June 8.

HAROLD O. GARDNER, Waterloo, Iowa, to Miss Vera Bittle of Lisbon, July 9.

LESTER L. LONG to Miss Esther May Payne, both of Seattle, June 29.

HARRY MEYER to Miss Marion Hirsch, both of New Orleans, June 11.

Deaths

Edwin Raymond Le Count * professor of pathology in Rush Medical College since 1892, died in Chicago at the Presbyterian Hospital August 23 of coronary thrombosis. Dr Le Count was born in Wisconsin, April 1, 1868. After graduation from Carroll College he attended Rush Medical College and received his M.D. degree in 1892. Thereafter he pursued graduate studies in Johns Hopkins Hospital in 1893 and 1894, in the Pasteur Institute in Paris in 1896 and in Berlin in 1905. He served at various times as attending pathologist in the Cook County, Presbyterian and St. Luke's hospitals and also at St. Elizabeth's and St. Anthony's hospitals. He was a member and once president of the American Association of Pathologists and Bacteriologists and was a president of the Association for Cancer Research. He was also a member of

the American Association for the Advancement of Science and of the Society of American Bacteriologists. In the American Medical Association he served as a member of the House of Delegates in 1903 and as chairman of the Section on Pathology and Physiology from 1920 to 1921. He was the author of numerous contributions to the literature of his specialty, particularly on such subjects as the relative frequency of the various forms of coma, automobile injuries, skull fractures, air and fat embolism and blastomycosis. In his long service as pathologist to so many institutions he performed approximately 20,000 postmortem examinations. He was noted particularly for his training of young men in pathology, and many of the younger leaders in this field today were associated at various times with him. At the time of his death he had completed postmortem records extending over a period of twenty-five years, completely indexed and annotated, and presented these as a permanent contribution to the library of Rush Medical College.



EDWIN RAYMOND LE COUNT
1868-1935

Otto L. Schmidt * an educator, a medical historian of considerable note, a sportsman, and a beloved family physician, died in Chicago, August 20, of carcinoma of the prostate with metastasis, aged 72. Dr Schmidt was the son of a physician, Dr E. S. Schmidt. He received his M.D. degree from the Chicago Medical College in 1883 and after postgraduate work abroad took up the practice of medicine in Chicago. He was a consultant to the Alexian Brothers Hospital and a member of the staff of other Chicago institutions. From 1915 to 1919 he served as chairman of the Illinois Centennial Commission. He was a past president of the Institute of Medicine in Chicago, the Illinois Historical Society, the Illinois Historical Library and the Chicago Historical Society. He was also president of the Inland Lake Yachting Association. Dr Schmidt served as a member of the Board of Education of the City of Chicago during the Dever administration and took a prominent part in maintaining the ideals of education during the attacks on Superintendent of Schools William McAndrew. He was decorated by the Austrian government in 1923 for postwar relief work. His two daughters are wives of physicians.

George Gregory Carroll * Rochester, N. Y. University of Pennsylvania Department of Medicine, Philadelphia 1900 member of the American Academy of Ophthalmology and Otolaryngology, the American Laryngological Rhinological and Otolological Society and the American Bronchoscopic Society, fellow of the American College of Surgeons, aged 61, on the staffs of the Genesee Hospital, Monroe County Hospital, St. Mary's Hospital, St. Mary's Boys Orphan Asylum and the Park Avenue Hospital, where he died, July 23, of heart disease and diabetes mellitus.

William L. Callaway, Chicago, Barnes Medical College, St. Louis, 1897, member of the Illinois State Medical Society, formerly professor of clinical medicine, Chicago College of Medicine and Surgery, Bennett Medical College and Loyola University School of Medicine, on the staff of the West Side Hospital, aged 65, died, July 24, of angina pectoris.

Martha Jane Bledsoe, Chickasha, Okla., Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa, 1906, member of the Oklahoma State Medical Association, past president and secretary of the Grady County Medical Society, formerly on the staff of the Chickasha Hospital, aged 72, died, July 3, of chronic myocarditis.

Henry Bierman * Bloomsburg, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1888, past president of the Columbia County Medical Society, served during the World War, on the staff of the Bloomsburg Hospital, aged 70, died, July 22, in the Geisinger Hospital, Danville, of carcinoma of the sigmoid with metastasis to the liver.

William Mack Elliott, Lancaster, Ky., Kentucky School of Medicine, Louisville, 1896, member of the Kentucky State Medical Association, city judge, formerly superintendent of the Central State Hospital, Lakeland and the Western State Hospital, Hopkinsville, aged 61, died, June 29, of diabetes mellitus and cerebral hemorrhage.

George Parker Holden, Yonkers, N. Y., New York Homeopathic Medical College and Hospital, 1894, member of the Medical Society of the State of New York, fellow of the American College of Surgeons, aged 65, on the staff of the Yonkers General Hospital, where he died, July 15, of cerebral hemorrhage.

Luther Samuel Hirt, Brazil, Ind., University and Bellevue Hospital Medical College, New York, 1899, member of the Indiana State Medical Association, past president of the Clay County Medical Society, on the staff of the Clay County Hospital, aged 60, died, July 31, of carcinoma of the lung.

Oscar Raoul Talon L'Esperance * Boston, Boston University School of Medicine, 1909, member of the American Urological Association, assistant urologist to the Massachusetts General Hospital, 1925-1928, aged 56, died, July 15, at his home in Centerville, of acute dilatation of the heart.

Andrew Crozier Cameron, Birmingham, Ala., University of Pennsylvania Department of Medicine, Philadelphia, 1904, member of the Medical Association of the State of Alabama, on the staff of St. Vincent's Hospital, aged 55, was found dead in bed, June 10, of heart disease.

John Loy Arnold, Harrisburg, Pa., Jefferson Medical College of Philadelphia, 1911, member of the Medical Society of the State of Pennsylvania, served during the World War, aged 47, on the staff of the Harrisburg Hospital, where he died, July 26, of coronary thrombosis.

Andrew J. Brislen * Chicago, Northwestern University Medical School, Chicago, 1895, at one time instructor in anatomy at his alma mater, on the staff of the Woodlawn Hospital, aged 61, died, July 23, in the Albert Merritt Billings Hospital, of cerebral thrombosis.

William Jones Thomas * Ravenna, Ohio, Western Reserve University Medical Department, Cleveland, 1898, past president of the Portage County Medical Society, aged 65, on the staff of the Robinson Memorial Hospital, where he died, June 24, of Banti's disease.

Anthony Joseph Caffrey * Milwaukee, Baltimore Medical College, 1898, formerly assistant professor of medicine, Marquette University School of Medicine, on the staffs of St. Joseph's Hospital and St. Anthony's Hospital, aged 64, died, July 11, of cerebral hemorrhage.

George A. Macdiarmid * New Orleans, Victoria University Medical Department, Coburg, Ont., Canada, 1886, formerly bank president, aged 71, died, June 29, in the Baptist Hospital of a fracture of the neck of the femur and traumatic ileus, following a fall.

Perry Engle, Newton, Iowa, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1871, member of the Iowa State Medical Society, formerly member of the state legislature, aged 91, died, June 29, of Ludwig's angina.

Samuel Thomas Blades * Salina, Kan., University Medical College of Kansas City, Mo., 1903, past president of the Saline County Medical Society, on the staff of St. John's Hospital, aged 60, died, May 6, of nephritis and hypertension.

Frank M. Barden, Hamilton, Ohio, Medical College of Ohio, Cincinnati, 1890, past president of the Butler County Medical Society, on the staffs of the Fort Hamilton and Mercy hospitals, aged 70, died, July 25, of carcinoma of the lung.

Julian Augustine Chase * Pawtucket, R. I., Harvard University Medical School, Boston, 1872, past president of the Rhode Island Medical Society, on the staff of the Memorial Hospital, aged 86, died August 12, of chronic myocarditis.

Emanuel de Marnay Baruch * New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889, aged 64, died, July 1, at his summer home in Valhalla, N. Y., of cerebral hemorrhage.

Richard Franklin Hinman * Chicago, Bennett Medical College Chicago, 1912, on the staffs of the Garfield Park Hospital and the Frances Willard Hospital, aged 60, died, July 20, of brain tumor and arteriosclerosis.

Camillus I. Holt, Olton, Texas, Jefferson Medical College of Philadelphia, 1885, member of the State Medical Association of Texas, county health officer, aged 72, died, May 7, in a sanatorium at Plainview, of pneumonia.

William Alonzo Moon, Bellbuckle, Tenn., University of Tennessee Medical Department, Nashville, 1894, aged 75, died, July 1, in the Protestant Hospital, Nashville, as the result of fracture of the hip, received in a fall.

Joseph R. Beckley, Lebanon, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1885, member of the Medical Society of the state of Pennsylvania, aged 75, died July 3, of coronary thrombosis.

Samuel Bennehoff, Franklin, Pa., Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1873, aged 86, died, July 23, of cerebral hemorrhage and pneumonia.

Eugene Thompson, East St. Louis, Ill., Missouri Medical College, St. Louis, 1890, member of the Illinois State Medical Society, served during the World War, aged 70, died, June 19, of cerebral hemorrhage.

George Russell Thompson, Luzerne, N. Y., Eclectic Medical College of the City of New York, 1896, health officer and school physician, aged 60, died, May 14, of chronic nephritis and endocarditis.

Frank Harlan Frederick, Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1897, member of the Medical Society of the State of Pennsylvania, aged 65, died, June 21, of coronary occlusion.

John Locke Churchill, Halifax, N. S. Canada, McGill University Faculty of Medicine, Montreal, Que., 1896, superintendent of the Nova Scotia Hospital, aged 63, was found dead in bed, June 22.

Russell William Kapp * San Jose, Calif., Hahnemann Medical College and Hospital of Philadelphia, 1925, aged 35, died, May 5, of rupture of the right ventricle and fatty degeneration of the heart.

William Daniel Webb, St. Joseph, Mo., Ensworth Medical College, St. Joseph, 1909, member of the Missouri State Medical Association, aged 59, died, May 8, of chronic rheumatic heart disease.

Clarence S. Bates, Lumberport, W. Va., Baltimore University School of Medicine, 1904, member of the West Virginia State Medical Association, aged 60, died, June 9, of coronary occlusion.

Irwin Carson Carlisle, West Dover, Ohio, University of Wooster Medical Department, Cleveland, 1875, member of the West Virginia State Medical Association, aged 82, died, June 22, of heart disease.

Charles Francis McCarthy, Point Loma, Calif., University of California Medical Department, San Francisco, 1893, aged 68, died, June 27, of duodenal ulcer, arteriosclerosis and coronary sclerosis.

George McKenzie, Concord, Calif., University of Toronto (Ont.) Faculty of Medicine, 1891, aged 72, died, May 17, in the Merritt Hospital, Oakland, of myocarditis, chronic nephritis and prostatitis.

John A. Richardson * Seymour, Texas, Memphis (Tenn.) Hospital Medical College, 1892, past president of the Baylor County Medical Society, aged 67, died, May 29, of cerebral thrombosis.

Clark Samuel Long * Lansdale, Pa., University of Maryland School of Medicine, Baltimore, 1916, for many years member of the school board, aged 47, died, July 17, of coronary thrombosis.

Lacy Newton Conolly * Camden, N. J., Jefferson Medical College of Philadelphia, 1919, aged 43, on the staff of the Cooper Hospital, where he died, July 9, of essential hypertension.

Albert E. Mieding * Milwaukee, Milwaukee Medical College, 1906, aged 69, died, July 23, at Three Lakes, Wis., of a fractured neck, received when he dived into shallow water.

Harvey Lee Tadlock, Holt, Mo., Ensworth Medical College, St. Joseph, 1903, aged 65, died, June 13, of undulant fever, nephritis, angina pectoris, arteriosclerosis and hypertension.

Lewis Munthe Berg * Chicago, Tulane University of Louisiana Medical Department, New Orleans, 1890, aged 79, died, July 31, of chronic myocarditis and arteriosclerosis.

Robert Lewis Hill Jr., Santa Paula, Calif., Hahnemann Hospital College of San Francisco, 1895, aged 63, died, May 30, of chronic nephritis, arteriosclerosis and myocarditis.

Joseph Sesansky * Buffalo, Long Island College Hospital, Brooklyn, 1915, on the staff of the Memorial Hospital, aged 40, died, July 15, in the Buffalo General Hospital.

Raymond O. Hathaway, Monroe, Mich., Detroit College of Medicine and Surgery, 1913, on the staff of the Monroe Hospital, aged 46, died, July 15, of erysipelas.

Darius Burtch, Watsonville, Calif., College of Physicians and Surgeons, Keokuk, Iowa, 1884, aged 73, died, June 19, of valvular heart disease and chronic myocarditis.

William H. Stoakes, Albion, Neb., State University of Iowa College of Homeopathic Medicine, Iowa City, 1901, aged 80, died, June 28, of senile dementia.

George Robert Fellows, Seabrook, N. H., Druidic University of Maine, Lewiston, 1886, aged 86, died, June 20, at Lake Mary, Fla., of cerebral hemorrhage.

Joseph Borak * Brooklyn, University and Bellevue Hospital Medical College, New York, 1925, aged 35, died, July 20, when he was struck by lightning.

Jacob Harper Bain * New Concord, Ohio, Ohio Medical University, Columbus, 1902, aged 58, died, June 12, of coronary thrombosis and arteriosclerosis.

George Ray Hill, Charter Oak, Iowa, Homeopathic Medical College of Missouri, St. Louis, 1904, aged 58, died, May 23, of streptococcal pneumonia.

Winfield Murray Bishop, Baltimore, Temple University School of Medicine, Philadelphia, 1923, aged 41, died, June 17, of myocardial insufficiency.

George Duling Carter, Anthony, N. M., Barnes Medical College, St. Louis, 1898, aged 61, died, July 4, of angina pectoris and arteriosclerosis.

Alphonse Leon Beardslee, Chicago, State University of Iowa College of Medicine, Iowa City, 1918, aged 41, died, May 5, of lobar pneumonia.

William Warnock Bailey * Davenport, Iowa, Marion Sims College of Medicine, St. Louis, 1897, aged 69, died, August 6, of myocarditis.

Frank Monroe Cain, Pittsburgh, Jefferson Medical College of Philadelphia, 1889, aged 73, died, June 23, of coronary occlusion and arteriosclerosis.

James Irvin Allen, Oshkosh, Neb., College of Physicians and Surgeons, Keokuk, Iowa, 1890, aged 72, died, July 4, of perforated gastric ulcer.

Peter Phelps Collins, Denver, Chicago Homeopathic Medical College, 1895, aged 62, died, June 19, in St. Luke's Hospital, of pneumonia.

Fred Flanagan Gremore, Saranac Lake, N. Y., Albany (N. Y.) Medical College, 1905, aged 53, died, May 7, of Huntington's chorea.

John Logue, Red Rock, N. Y., University of the City of New York Medical Department, 1889, aged 70, died, May 16, of chronic nephritis.

Benson T. Allen, Minneapolis, Eclectic Medical Institute, Cincinnati, 1885, aged 81, died, May 19, of arteriosclerosis and hypertension.

Charles P. Harwood, Havana, Cuba, University of Louisville (Ky.) Medical Department, 1894, aged 62, died, July 6, of tuberculosis.

James Ernest Bond, Toronto, Ont., Canada, University of Toronto Faculty of Medicine, 1914, aged 46, died, June 12, of pneumonia.

John Horace Burnett, Fostoria, Ohio, Eclectic Medical Institute, Cincinnati, 1881, aged 79, died, June 26, of arteriosclerosis.

John M. Sherman, Long Beach, Calif., College of Physicians and Surgeons, Keokuk, Iowa, 1880, aged 84, died, June 20.

James Burris Mahony, New York, Rush Medical College, Chicago, 1901, aged 58, died, June 24, of heart disease.

Andrew Goetz Ludwig, St. Catharines, Ont., Canada, Trinity Medical College, Toronto, 1897, aged 62, died, May 25.

J. L. Allison, Rochester, Ind. (licensed in Indiana in 1903), aged 75, died, June 17, in Brookston, of angina pectoris.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States
Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Manno—Scientific Mfg Co, Scranton Pa Composition Plant drug extracts including a laxative drug glycerin small amounts of baking soda and magnesium carbonate, and a trace of ipecac alkaloids with alcohol and water For indigestion ptomaine poisoning etc. Fraudulent therapeutic claims—[N J 22304 November 1934]

Paten—Composition Essentially a lead soap rosin and camphor For all kinds of sores (except cancers) Misbranded because statement Guaranteed under the Food and Drugs Act June 30 1906 gave the mistaken impression that the stuff had been examined and approved by the government whereas it had not fraudulent therapeutic claims—[N J 22306 November 1934]

H Heehles Velocite Earth—Mene L de Freese, La Mesa Calif Composition Finely powdered iron calcium and aluminum silicate For catarrh diphtheria whooping cough diarrhea headache insomnia skin disorders etc. Fraudulent therapeutic claims—[N J 22307 November 1934]

MI Cro Line Bladder and Kidney Remedy—Microline Medicine Co Dallas Texas Composition Essentially volatile oils including eucalyptus a fatty oil and benzoic acid Fraudulent therapeutic claims—[N J 22308 November 1934]

Eucalloe Tonic Compound—Eucaline Medicine Co Dallas Texas Composition Essentially cinchona alkaloids (quinidine and cinchonidine) acetanilid (27 grains per fluid ounce) with oil of peppermint alcohol sugar and water For la grippe stomach disorders etc. Fraudulent therapeutic claims—[N J 22308 November 1934]

Admirins—Microline Medicine Co Dallas Texas Composition Essentially Glauber's and epsom salts iron chloride potassium iodide (0.5 per cent), extracts of plant drugs and water flavored with cinnamon oil For impure blood debility malaria etc. Fraudulent therapeutic claims—[N J 22308 November 1934]

Thersol—Thersol Corporation Detroit Composition Essentially a watery solution of calcium sodium potassium and magnesium chlorides For various types of rheumatism nervous breakdown high blood pressure heart flutter etc. Fraudulent therapeutic claims—[N J 22309 November 1934]

St Joseph Merolline Petroleum Jelly—Plough Sales Corp Memphis Tenn. Composition Petroleum Misbranded because contents less than amount declared also because of fraudulent therapeutic claims as a remedy for wounds piles sore throat coughs etc—[N J 22310 November 1934]

Williams S L K Formula—Williams Laboratories Kansas City Mo Composition Essentially plant drug extracts including nuxvomica and a laxative methenamine pepsin glycerin alcohol (22 per cent) and water Misbranded because alcohol content falsely declared and because of fraudulent therapeutic claims as a remedy for liver kidney and stomach disorders rheumatism etc—[N J 22312 November 1934]

Blue Bell Liniment—Commercial Laboratories Inc Newark N J Composition Essentially a petrolatum oil such as kerosene with small amounts of camphor oleoresin of red pepper and the oils of thyme and eucalyptus For coughs sore throat rheumatism stomach ache, dyspepsia colic stiff joints etc. Fraudulent therapeutic claims—[N J 22313 November 1934]

Vio Liquid Antiseptic—Commercial Laboratories Inc Newark N J Composition Not stated except that bacteriological examination showed it to be not antiseptic Fraudulent therapeutic claims—[N J 22313 November 1934]

King Menthol (King Menthe Salve)—King Mfg Co Ltd Couder sport Pa Composition Essentially petrolatum with small amounts of menthol wintergreen and eucalyptol For coughs catarrh piles skin eruptions inflammations asthma bronchitis deafness eczema hay fever pneumonia rheumatism ulcers etc. Fraudulent therapeutic claims—[N J 22314 November 1934]

Davis Vegetable Nervine—Devore Mfg Co Columbus Ohio Composition Essentially ammonium sodium potassium and lithium bromides plant drug extracts including valerian sodium benzoate sugar and water flavored with lemon oil Misbranded because representation that it was entirely vegetable was false and misleading and also misbranded because fraudulently represented as an effective treatment for nervous disturbances hysteria drunkenness epilepsy sciatica etc—[N J 22318 November 1934]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed Every letter must contain the writer's name and address, but these will be omitted, on request

AGGLUTINATION TESTS BEFORE TRANSFUSION

To the Editor—After a patient has had a blood transfusion from a donor whose blood has matched is it safe to give the same donor's blood a second time later without rematching that is is the patient likely to develop any incompatibility against a blood that has matched after having received a dose of the blood? If blood has matched and the patient receives blood from other donors in the meantime is it safe to give blood from the previously matched donor at a later date? If any incompatibilities are likely to develop how much time elapses before their development and what are the nature and seriousness of the reaction?

RALPH MOSTELLER, M D Spartanburg S C

To the Editor—Some discussion has come up recently in this hospital concerning the typing and cross matching for transfusions Do you consider it necessary to recross-match a patient and donor if a repeated transfusion is necessary? Is it necessary to cross-match the patient and donor in a repeated transfusion if the cross matching was all right originally but if another donor has been used for that patient in the interval? Does the type of the recipient change after one or more transfusions? Do prolonged high temperature blood stream infections or jaundice affect the type and consequently the cross-matching of the patient's blood with a prospective donor? Can the same donor be used repeatedly for small transfusions provided not more than 1000 cc. has been used without any further cross matching of patient and donor? Give references if possible Please omit name

JAMES W WALTON M D Middletown, N Y

ANSWER—Whenever the same patient is given more than one transfusion, cross-matching must be repeated before each transfusion, no matter whether it is the same donor that is to be used again or not This is required because "agglutinins and hemolysins originally absent may have developed against a donor's blood when the donor is used more than once in the transfusion of the same patient" (Thalhimer, William Hemoglobinuria After a Second Transfusion with the Same Donor, THE JOURNAL OF BLOOD TRANSFUSION, Springfield, Ill, Charles C. Thomas, 1935, p 45) Other immune reactions are possible also The problems of the development of incompatibilities under the conditions in question have not been studied thoroughly Based on our knowledge of the production of antibodies under other conditions it may be assumed that, following transfusion under suitable conditions antibodies may begin to develop in a few days The disturbances that may be caused by transfusion when 'incompatibilities' have developed as a consequence of previous transfusion may be serious even fatal hemolysis and hemoglobinuria may occur and also perhaps reactions of anaphylactic nature.

It would not be advisable to use the same donor repeatedly even for small transfusions without cross-matching before each transfusion.

The group of the blood of the recipient does not change after one or more transfusions in prolonged high fever in blood infection or in jaundice In fact so far as known the blood group of a person does not change under any circumstances

GOLD SALTS IN ARTHRITIS

To the Editor—Please tell me what you know about the gold salts treatment for chronic arthritis as described by Dr Jacques Forestier at the meeting of the American Academy of Orthopedic Surgeons in the Waldorf Astoria Hotel in New York Is it any good? Where can I get in touch with Dr Forestier? Please omit name

M D New York

ANSWER—The address is Dr Jacques Forestier Villa Forestier Avenue d'Alibon, Aix Les Bains, Savoie France. The treatment that Dr Forestier employs is the gold salt treatment, which was originally proposed by Möllgaard of Copenhagen in the treatment of tuberculosis

There seem to be no American statistics that evaluate the benefit of this preparation Forestier uses it chiefly in atrophic or rheumatoid arthritis He uses, in addition, orthopedic treatment such as plaster splints, supports and physical therapy, including baths

The injections are given weekly for a period of two or three months which constitutes a series A series may be repeated. The injections are intramuscular

The paper read by Forestier in New York before the American Academy of Orthopedic Surgeons was on the early stages of ankylosing spondylitis (Strümpell-Marie's disease)

Forestier carried out trials in more than 500 cases of rheumatoid arthritis, in which he claims he has had more success with gold salts than with any remedy employed previously. He employs the intramuscular route and states that the gold salts should be given by a skilled nurse. He uses gold sodium thiomalate (containing 50 per cent of gold) in oil suspension. This may be given in weekly injections of from 0.1 to 0.2 Gm. The total amount for one series should be between 15 and 2 Gm. Several series should be given successively with intervals of from six to eight weeks.

He states that in more than 500 cases from 70 to 80 per cent responded well to gold therapy. Among these, 50 per cent of recent cases and from 20 to 30 per cent of more than two years' duration have been permanently cured by from two to five series of injections and remained cured with no further treatment for two or three years.

He favors the complementary use of endocrine preparations and physical therapy after the inflammatory process has subsided. Forestier's hypothesis is predicated on the theory that development of rheumatoid arthritis is accompanied by tuberculous infections but that it requires another infective element, such as infected tonsils or teeth, to precipitate it. Gold sodium thiomalate appears to Forestier to be a means of treatment for rheumatoid arthritis, and this condition is amenable to cure in a considerable proportion of early cases.

The reader may be interested in an article by Dr. Forestier entitled "Rheumatoid Arthritis and Its Treatment by Gold Salts" (*Lancet* 2 646 [Sept 22] 1934).

It is perhaps significant that Forestier's gold compound also contains sulphur, as the latter is in considerable repute of late in the treatment of arthritis. It would be better, probably, not to give too much consideration to Forestier's treatment until it has had some confirmation. Furthermore, the use of gold compounds has been recommended from time to time for this or that condition, but in general their therapeutic value is little. The Council on Pharmacy and Chemistry has not accepted any gold preparations for use in the treatment of rheumatism.

EVIDENCE OF GONORRHEAL INFECTION

To the Editor—I have been consulted by a young woman on whom I operated in March 1931 for acute suppurative appendicitis. I removed the appendix through a McBurney incision but I had a very clear view of the uterus, tubes and ovaries. The uterus was of normal size and in good position and the tubes and ovaries were normal in every way. There were no adhesions. The wound was closed without drainage and the patient was discharged from the hospital on the seventh day in excellent condition. She has never had any trouble since the operation and except for an attack of otitis media followed by a mastoid infection in 1934 she has never lost a day's work since the appendix operation. A few days ago some one told the young man to whom she is engaged that she had an attack of gonorrhea in December 1930. She came to me very much disturbed and insisted that I examine her. My examination gave no evidence that she has now or ever has had an infection of Skene's glands, urethra, Bartholin's glands or cervix. There is no erosion of the cervix. The uterus is in good position, freely movable, and there are no masses in the region of the tubes and ovaries. There is no tenderness anywhere in the pelvis. Smears from the urethra were negative. Smears from the cervix and vagina showed a few epithelial cells, no pus cells and no gonococci. There were a large number of lactic acid bacilli present. Is there any test that I can make or have made that will prove that this young woman was never infected with gonorrhea? I have treated hundreds of women for gonorrhea both in private practice and in a venereal disease clinic and I have never seen a patient so thoroughly well of gonorrhea that some evidence of past infection was not present. Does not gonorrhea in the female almost always cause change that may be recognized several years later? Please omit name.

M. D.

ANSWER.—If this patient really was infected by gonorrhea in December 1930 and if she was operated on in March 1931 and if at that time the uterus, tubes and ovaries were normal in every way, one may state that there was no evidence of gonorrheal involvement of the internal genital tract of this patient at that time.

In view of the fact that a recent examination shows no evidence of antecedent infection in Skene's glands, in the urethra, in Bartholin's glands or in the cervix and if at the present time there is no erosion of the cervix and the uterus is in good position and freely movable and there are no masses present, furthermore coupled with the fact that the smears from the urethra, cervix and vagina are negative at this time, the statement that there is no evidence of an antecedent gonorrheal infection is justified. One might discuss the advisability of making a gonococcus fixation test. Its value, however, under the circumstances, might be questioned.

From the evidence submitted, there appears to be no proof that this patient has or has had a gonorrheal infection.

ARTERIOSCLEROSIS OBLITERANS

To the Editor—I have under my care a woman aged 73 who complains of coldness in both feet, which is aggravated by walking and relieved by the local application of heat. There are absent pulsations in the dorsal pedis and posterior tibial arteries. Roentgen examination reveals calcification of the vessels in both legs. The Wassermann reaction is negative. She has an auricular fibrillation and partial heart block and at times complete heart block. The coldness is not constant and often passes off without any treatment. Occasionally there is blanching of the extremities in the elevated position and congestion in the dependent position. Vasodilators, positional exercises, contrast baths, baking and massage have been tried without any improvement. What other methods of treatment can you suggest? What is your opinion of local diathermy or intravenous saline solution as promising methods of relief? Please omit name.

M. D., New York.

ANSWER.—The advanced age of the patient and the calcification and occlusion of the arteries of the extremities indicate the presence of arteriosclerosis obliterans. The claudication in the legs with a given amount of exercise is caused by diminished volume flow of blood to an actively contracting muscle. The arteriosclerotic process probably is general and probably is the basis of the cardiac disease, fibrillation and partial incomplete heart block. In patients of this age it is not advisable to carry out any drastic treatment. Protection against excessive use of the feet, preservation of normal warmth with woolen hose and great care in the trimming of nails to prevent injury are important, as ulcers or gangrene frequently follow some minor abrasions or injury to the skin. The possibility of diabetes should be considered. It is present in about 30 per cent of the cases of arteriosclerotic disease of the extremities. Vasodilators usually do not give relief of the symptom of claudication. Postural exercises and contrast baths may be used in moderation, the latter not more than three times a week, to prevent excessive soaking of the skin. The effects of local diathermy are too transient to justify the trouble and expense. Intravenous injection of saline solution or fever induced by the administration of foreign protein is not advisable, for this may change the coagulation properties of the blood and favor further thrombosis when patients are of this age. Collateral circulation develops slowly in old, arteriosclerotic subjects. Their expectancy of life is definitely diminished. With organic cardiac disease, the disability in the legs may be useful in restricting the patient's sphere of activity, thus giving an additional safeguard to the heart. The newer tissue extracts, such as are obtained from the pancreas and from the skeletal and cardiac muscles, frequently give considerable relief from the pain of claudication and enhance the ability to walk.

NEO-MERPHENOL

To the Editor—Kindly mail me some information regarding Neo-Merphenol, by Lynch & Co. Kansas City, Mo. and Los Angeles.

S. A. VAN HOFFEN, St. Louis.

ANSWER.—The information on Neo-Merphenol that is in the files of the Council on Pharmacy and Chemistry is rather meager. An advertising circular received in November 1934 shows that the preparation is marketed with the claim that it is "A Blood Antiseptic that has been tried and not found wanting." The only hint as to the composition of the preparation occurs in the statement that it "is a pure chemical in which the mercury atoms have been combined to the carbon atoms of the benzene [sic] ring." This statement suggests relationship with the phenyl mercury compounds, which have recently come into use as bactericidal agents. However, cursory tests recently made in the A. M. A. Chemical Laboratory seemed to indicate that Neo-Merphenol contains a substance closely allied to it but not identical with the organic mercury compound known as metaphen (see New and Nonofficial Remedies, 1935, p. 314).

The A. M. A. Chemical Laboratory requested the distributors of Neo-Merphenol (Lynch & Co.) to supply a quantitative statement of the composition of the product in order that the information might be transmitted to inquiring physicians. The firm's attention was also called to the fact that a specimen of Neo-Merphenol in the Council's files contained particles of such large dimension as to render intravenous injection of the product extremely hazardous. No reply having been received to the Laboratory's request, a second request was sent the firm by registered mail. This, too, failed to elicit a response from Lynch & Co.

The claims advanced in the advertising circular are extravagant and on the whole unsupported by scientific evidence. Furthermore, it is dangerous to use, particularly by intravenous injection, a substance the composition of which is unknown. THE JOURNAL has repeatedly called attention to the added responsibility which a physician assumes when he injects such a preparation into his patient.

ROENTGEN IRRADIATION OF BRAIN IN
JACKSONIAN EPILEPSY

To the Editor—A friend of mind had Jacksonian epilepsy from 1899 to 1913. In the latter year a trephining was carried out and a small fibro-endothelioma of hazelnut size was removed from the center of the left hand and arm. Up to 1925 there was no trouble, but following a nervous breakdown which started under severe mental strain during a demonstration of experimental epilepsy coupled with overwork, there have been difficulties from time to time. During overwork or special stress and especially during heat waves when in addition sleep is poor the left hand and arm constantly enter into consciousness often with marked apprehension that an attack of the former malady may recur. Possibly gradual overweight of the patient, now 48 years old may be a factor in giving an extra difficulty during hot weather (210 pounds or 95 Kg net, 5 feet 10 inches or 178 cm tall). In my opinion the scar left on the brain surface by the operation is the physical factor behind the difficulties in discussing the matter one of the younger x-ray men suggested that about four short intensive x-ray treatments could do no harm but might do considerable good we were thinking of a possible softening of the scar tissue. However my friend knows what he has the temporary paralysis of the left arm following immediately after the operation has completely vanished, so that he now can operate a typewriter perfectly well by the touch system and he is somewhat reluctant to accept the suggestion of probable benefit. I shall therefore appreciate it if you will try to answer these two questions: 1 What is the evidence in favor of roentgen treatment of these conditions? 2 Has benefit been obtained by such treatment in similar cases? Please omit name.

M D Illinois

ANSWER—Whether or not exposure of the affected region of the brain to repeated, but moderate, doses of roentgen rays would lead to improvement in a case such as this is uncertain. It could be tried without danger provided the doses used do not exceed 500 roentgens per field. This might be repeated three or four times at intervals of one month. Larger doses, that is, doses approximating the limit of tolerance of the skin, might lead to increase rather than decrease in the amount of fibrous tissue present and hence should be carefully avoided. Reports of improvement in similar cases have not appeared in the literature, but the effect of such treatment in keloids and scars in general is well known.

DERMATALGIA

To the Editor—A farmer aged 60 has been troubled with a burning stinging sensation occurring over various parts of the body especially the face abdomen and thigh. These sensations occur chiefly at night, they can be relieved by pressure. There are no objective signs of any skin lesions. Diagnoses of paresthesia rosea and universal pruritus have been made. Up to the present time the patient has been very resistant to local therapy. I would appreciate suggestions as to treatment. Please omit name and address.

M.D., Iowa.

ANSWER—This is a case of the rare disorder called dermatalgia, a disease of the nerves of the skin causing no visible change in the skin. A Wassermann and Kahn test should be made on the blood serum and a cell count globulin tests, Wassermann and Kahn test and colloidal gold or mastic tests on the spinal fluid. Dermatalgia should always arouse suspicion of tabes dorsalis. If this is ruled out, the possibility of malaria, diabetes, rheumatism, leukemia or another form of lymphoblastoma or leprosy should be considered. If no etiologic factor can be discovered, quinine, arsenic or the salicylates may be used empirically. Alternating applications of a hot water bag and ice bag may be tried, faradism, or hot baths followed by a thick dry cotton dressing. Hyperesthesia of the skin often accompanies dermatalgia therefore the clothing should be nonirritating and talcum powder should be used freely.

SUBLUXATION OF SACRO ILIAC SYNCHONDROSIS

To the Editor—Your discussion under Queries and Minor Notes in the issue of Dec. 15 1934 of Subluxation of Sacro-Iliac Synchondrosis was very interesting to me. But a more fundamental question seems to be the pathology and diagnosis of the condition also etiology. I think a discussion of this would be profitable.

E. C. McCulloch M D Staten Island, N Y

ANSWER—The whole subject of sacro-iliac subluxation is in a controversial state. The opinions vary from that of Goldthwait, who believes there is such a lesion to those who deny categorically that there is such a lesion.

The pathologic changes occur chiefly in the internal and external ligaments. The diagnosis is based on the history of injury by pain, tenderness and asymmetry of the pelvis.

The pain is usually localized to the region of the joint affected and may follow the course of any of the nerves of the lumbosacral plexus especially the first, second and third sacral components. The most common areas of referred pain are down the back of the leg down the side of the leg, and to the region of the superior gluteal nerve in the buttock.

Roentgen observations are usually negative. Some believe that the roentgenogram will show a partial slipping. This is not generally accepted.

It is hoped that derangements of the sacro-iliac joint will in the near future be understood like internal derangements of the knee joint. But this will probably never be realized because of the relative inaccessibility of the sacro-iliac joint.

TREATMENT OF SYPHILIS

To the Editor—A man aged 40 had a chancre eight years ago. After secondary eruptions appeared he received four injections of arsphenamine and a few intramuscular injections presumably of mercuric salicylate, over a period of about four weeks. Treatment was then discontinued. Examination at this date shows a 4 plus Wassermann reaction. The entire physical examination is negative. There has been no history of any illness except an occasional neuritis of the right leg which he states antedated the chancre by two years. The spinal fluid has not been examined. Should this case be treated according to the scheme of treatment outlined for early syphilis by Stokes and others in *THE JOURNAL*, April 21 1934? If not will you kindly point out the necessary changes or outline the proper treatment? Kindly omit name.

M D, New York.

ANSWER—The early treatment in this case was entirely inadequate and of too short duration. The case should be reclassified as a late asymptomatic syphilis, although a more careful examination would probably reveal some evidence of structural change in the cardiovascular or nervous system. The treatment for late syphilis is a combined treatment beginning with iodides by mouth, followed by alternate courses of a heavy metal, either mercury or bismuth compounds, and one of the arsphenamines. Treatment should be continued, with short periods of rest between courses until the Wassermann reaction becomes negative. There is no definite scheme of treatment for late syphilis, as much depends on the condition of the affected organs and the natural resistance of the patient. Many authorities advocate prolonged intermittent treatment over a period of many years in preference to the continuous plan. A great deal depends on how well patients past middle age tolerate intensive therapy, and the treatment may have to be modified accordingly. In general, the greatest reliance should be placed on iodides and on preparations of mercury and bismuth.

FIBROIDS IN PREGNANCY WITH CESAREAN SECTION

To the Editor—Can you state the incidence of cases in which a uterine fibroid completely obstructing pregnancy has required cesarean section followed by hysterectomy? I have searched the various text books and quarterly index but am still far from satisfied. Would such a case be of sufficient interest to report? Any information as to incidence or with references will be appreciated.

FRANK J CLARKE, M D Brooklyn

ANSWER—There are no statistics giving specifically the number of cases in which uterine fibroids have completely obstructed labor, requiring cesarean section and hysterectomy. Such cases are, of course, not common but they occur in the practice of every busy obstetrician. Fibroids, during pregnancy, are found in percentages varying from 5 to 15, depending on the part of the country they come from and the accuracy of observation, but it is exceptional that they completely block the passage. Often nature lifts them out of the pelvis during the latter months of pregnancy or in labor itself, allowing the child to slip by them.

Nor is it always necessary to extirpate the fibroids at the time of cesarean section. Often the hysterectomy becomes so formidable that the wiser policy would be to remove the child, leaving the fibroid for subsequent extirpation when the intense vascularization of the pelvis accompanying pregnancy has subsided. Indeed, unless the operator is exceptionally skilful this should be the rule. Reporting of such a case would be interesting but would not add much to our general knowledge.

VASOSTOMY

To the Editor—What is the present status of vasostomy with injection of the seminal vesicles in chronic seminal vesiculitis of nonspecific origin? The patient in question has been treated by massage vaccines and foreign protein with no relief. More radical measures must be undertaken because of an associated arthritis of the same duration as the vesiculitis. What are the chances of sterility resulting?

M D., Ohio

ANSWER—Vasostomy with injection of the seminal vesicles in chronic seminal vesiculitis is rarely being used at the present time. This operation does not enjoy the popularity that it did ten years ago. Papers dealing with the end results of the operation are few and far between. H. L. Kretschmer published a paper in *THE JOURNAL*, March 19, 1927, entitled "The Persistence of Symptoms after Vasostomy."

In many instances, failure to obtain relief is due to the presence of strictures in the urethra. It may be well to explore for strictures and if they are present to pass large sounds before undertaking any radical measures. It is always well to locate possible foci of infection in other parts of the body, such as the teeth, sinuses and tonsils.

Among urologists at this time the consensus on this subject is to the effect that vasostomy does not cure seminal vesiculitis. This view no doubt is responsible for the rare intervals at which vasostomy is done.

The chances of sterility resulting from the operation are great, in other words, a large number of patients are rendered sterile by it.

ANALGESIC DRUGS

To the Editor—I would appreciate information as to what drug or drug combinations to be taken by mouth you would recommend as having the most powerful analgesic effect with little or no hypnotic effect.

HARRY G. ARMSTRONG, M.D., Dayton, Ohio

ANSWER—A combination of analgesics acting in different ways is assumed according to Bürgi's rule to be more efficient than any one of them alone. For instance, the following combination of one half of the average U S P dose of the following analgesics with a smaller relative dose of extract of hyoscyamus—to antagonize possible sweating and yet not produce troublesome dryness of the mouth—is likely to relieve pain with less undesirable by-effects than if a larger dose of any one were taken.

Extract of hyoscyamus	0.15 Gm
Phenobarbital	0.25 Gm
Acetanilid	1.50 Gm
Acetylsalicylic acid	2.50 Gm

Mix and divide into fifteen capsules.

Label: One every hour until relieved or until three are taken then every two to four hours as required.

For the relief of very severe pain such as that of gallbladder or renal colic, a dose of 0.03 Gm of codeine phosphate per capsule, or 0.45 Gm for the fifteen capsules, might be added with great advantage.

DEATH BEFORE ACCIDENT

To the Editor—I should like a medical opinion about a certain problem that has arisen in my practice. Two cars were wrecked by a head-on collision and the occupants of both cars injured severely; one occupant being rendered unconscious and riding alone and the occupants of the other car being severely bruised and cut for one of these and the other member of this car was found dead. The driver of the car who was riding alone has been indicted for manslaughter and he is contending that the person who was found dead in the other car involved was already dead at the time of the wreck on these grounds. The wreck occurred at night and the dead person had been drinking rather heavily that afternoon and night according to witnesses and in spite of the complete wreck of the car in which the dead person was found and the severe and extensive lacerations of the face, neck and crushed chest there was no blood on the dead person. The question is whether one could have such severe lacerations and have no bleeding unless dead for some time. I am coroner and was called to the wreck and found the dead person in the car and mangled badly but none of the cuts and lacerations were oozing blood. I saw her thirty or forty minutes after the wreck. What are the chances of the person being dead at the time of the wreck?

M.D., North Carolina

ANSWER—In the complete absence of bleeding from the cuts and lacerations there would seem to be no other explanation of the situation as described than that the person was dead when the collision occurred. A thorough postmortem examination would have been of great interest in a case like this.

SODIUM CITRATE IN BLOOD TRANSFUSION

To the Editor—1. Is U S P sodium citrate diluted with triple distilled water and subsequently autoclaved suitable and adequate for intravenous use in blood transfusions? 2. A 10 per cent solution of 2.5 per cent sodium citrate is usually recommended to prevent clotting. I have occasionally seen a few clots in blood so treated and well mixed. Is there any reason why a greater strength of citrate than this should not be used in doing a transfusion of say 500 cc? Kindly omit name.

M.D., Michigan

ANSWER—1. It is best to use the chemically pure sodium citrate of C P reagent quality, diluted with triple distilled water and subsequently autoclaved for blood transfusions. Any other type of citrate solution is apt to give reactions. Some practitioners have used for many years a 2 per cent sodium citrate solution, lukewarm, which if properly made and chemically pure should prevent clotting. If the solution is stronger than that it is apt to produce marked reactions, and if weaker than that it produces clotting.

2. Richard Lewisohn of the Mount Sinai Hospital of New York has laid down every detail of the citrate method and found that the best solution is a 2 per cent solution of chemically pure sodium citrate.

USE OF DIPHTHERIA TOXOID

To the Editor—Kindly advise me whether there would be danger of severe reaction from the injection of a single dose of diphtheria toxoid alum precipitated in a child aged 13 years who has had numerous asthmatic attacks. Kindly omit name.

M.D., Illinois

ANSWER—If there is little or no danger of exposure to infection with diphtheria, postponement of the injection of toxoid should be considered. If it seems necessary to give toxoid it would be better to determine beforehand whether the patient is susceptible to diphtheria. He may be insusceptible especially if he has been living in a community where diphtheria is prevalent. In case toxoid must be given, probably there would be less danger of any severe reaction if the "single dose" should be injected in several instalments at intervals of four or five days.

TRAUMA AND ANEMIA

To the Editor—A married woman aged 62 was in perfect health until she sustained a fractured tibia in an automobile accident one and a half years ago. About one month following the accident, typical pernicious anemia developed. To me this appears nothing more than a coincidence but as she is endeavoring to establish a causal relationship in court (the case is coming up shortly) I should appreciate your opinion in the matter. Please omit name.

M.D., New Jersey

ANSWER—There is no known relationship between trauma of the type described and the appearance of true pernicious anemia. Pernicious anemia appears in individuals of a definite constitutional type, and the blood changes are primarily related to the defective function of the stomach secretions. If the injury had produced these pathologic changes in the stomach (which is extremely improbable), it is unlikely that the anemia would have appeared in less than two years, if the patient had been perfectly well previous to the accident. In complete gastric resection the appearance of the anemia usually does not appear until this period of time has elapsed.

NEOARSPHENAMINE IN FURUNCULOSIS

To the Editor—In *Queries and Minor Notes* (THE JOURNAL, July 27, p. 304) is a statement on persistent furunculosis. Some seven or eight years ago as the result of my using neoarsphenamine intravenously in the treatment of certain types of infection in the urinary tract I suggested to the clinicians in the Jackson Clinic that they employ neoarsphenamine intravenously in some cases of recurrent furunculosis.

I cannot say without reviewing our records how many cases of recurring or recurrent furunculosis we have treated but there have been many and again without reviewing the records I cannot say but I cannot recall a case that was not decidedly benefited if not cured by the intravenous injection of neoarsphenamine 0.3 Gm at five day intervals. Many of these patients had had the customary vaccines, roentgen therapy and diets. Several patients have had recurrences but they would immediately report and request the treatments.

Our records show one case in which a young boy who was operated on for an appendiceal abscess misplaced his wound dressing and scratched the abdominal skin about the wound. Along these scratch marks there developed many papulovesiculopustular lesions. They were treated by the usual method of opening them and applying various antiseptic solutions. Numbers continued to appear about the wound and over the entire abdomen, chest and other portions of the body. They were opened and antiseptic solutions applied. The patient was in very poor general condition. In spite of the local treatment the lesions continued to appear and were extremely painful although superficial in nature. Following one or two injections of neoarsphenamine no new lesions appeared and within a few days all the old lesions had entirely regressed.

I do not wish to convey the meaning that the use of neoarsphenamine is specific for all cases of furunculosis. Yet every member of our staff has been markedly impressed and exceedingly pleased with the results of this form of treatment.

During the past few days while some case records of pernicious abscess were being reviewed one case was found in which there was a preceding history of carbuncle followed by recurring furuncles on the back of the neck. Following admission of the patient to the hospital, furuncles continued to develop over the hands, arms and various parts of the body. Several days following the incision and drainage of the abscess several furuncles developed at various sites. The patient was given an injection of neoarsphenamine and during an interval of five days two new lesions developed. Following the second injection of neoarsphenamine no new lesions developed and the old ones rapidly subsided. A discharge note made several weeks later stated that no furuncles had developed since the last injection.

GEORGE H. EWELL, M.D., Madison, Wis.

Council on Medical Education and Hospitals

ORGANIZED AND COURTESY STAFFS OF GENERAL HOSPITALS

A Study by the Council on Medical Education and Hospitals of the American Medical Association with the Cooperation of the Council of the American Hospital Association

What is the typical relation of hospitals to physicians in the average community? Do physicians generally share in the facilities of the hospitals and to what extent? In the hospital number for 1933 of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION it was stated that 126,261 physicians had hospital connections, 101,518 being on the staffs (organized and courtesy), 2,018 were resident physicians, 7,757 interns and 2,437 hospital executives. The total is 78 per cent of 161,359 physicians, the total number of physicians in the United States as given by the American Medical Association Directory for 1934.

The facts in the following paragraphs resulted from a questionnaire prepared jointly by the bodies mentioned above. This was sent to 2,936 general hospitals throughout the United States, excluding (a) those owned and operated by govern-

TABLE 1—Relation of Hospitals to Staffs

Geographic Divisions	Hospitals Reporting	Organized Staff		No of Staff Members
		Yes	No	
New England states	141	124	17	8,440
Middle Atlantic	216	197	19	6,630
East North Central	303	149	54	4,441
West North Central	216	132	84	2,716
South Atlantic	142	116	26	2,209
East South Central	69	50	19	673
West South Central	136	87	49	2,121
Mountain	90	58	43	791
Pacific	110	60	50	2,230
Total	1,332	971	361	23,437

TABLE 2—Courtesy Staffs

Geographic Divisions	Hospitals Reporting	Courtesy Staff			No of Physicians on Courtesy Staff
		Yes	No	No Answer	
New England states	141	108	26	7	2,944
Middle Atlantic	216	174	35	7	5,095
East North Central	303	132	40	31	3,269
West North Central	216	124	59	33	1,824
South Atlantic	142	107	26	9	1,718
East South Central	69	44	19	6	476
West South Central	136	85	30	16	1,006
Mountain	90	40	39	20	534
Pacific	110	62	24	24	1,253
Total	1,332	816	303	133	18,171

ments, national state or local (b) those organized for profit (c) those in cities and towns of more than 250,000. The reason for excluding the hospitals in the large cities was that the staff situation is generally different in metropolitan centers as compared with medium-sized and smaller places and most of the teaching institutions are located in these large cities.

Answers were received from 1,332 of the hospitals addressed, and statements in this report are representative only of those hospitals which returned the questionnaire.

Most of these hospitals have both organized and courtesy staffs. An organized staff is a group having a definite advisory relation to the governing body of the hospital such as the board of trustees and being responsible for the professional work of the hospital. The courtesy staff is made up of all or certain of the physicians in the locality not members of the organized staff who may hospitalize patients in the hospital sometimes under certain restrictions. The average organized

staff was found in this study to consist of twenty-six physicians, the average courtesy staff of twenty.

Table 1 gives information with regard to organized and courtesy staffs and the number of staff members in the 1,332 responding hospitals. Of these, 971 (or 73 per cent) have organized staffs and 876 (or 66 per cent) have courtesy staffs. In the Middle Atlantic states 92 per cent of the hospitals reported organized staffs, and in the Pacific states only 54 per cent reported organized staffs.

TABLE 3—Staff Meetings

More often than monthly	116
Monthly	792
Less often than monthly	40
Not at all	384
Number of hospitals reporting	1,332

TABLE 4—Attendance at Staff Meetings

More than half the organized staff	692
Between 25 and 50% of the organized staff	206
Less than 25% of the organized staff	23
Not given	28

As to courtesy staffs, 81 per cent of the reporting hospitals in the Middle Atlantic states claimed to have them, while only 40 per cent in the Mountain states had them. Table 2 gives the information.

It is reported that staff meetings are usually held monthly and are fairly well attended. More than four fifths of the staffs hold monthly meetings. One staff in ten holds meetings oftener and a very few hold them less often.

Better than 50 per cent attendance of staff members was reported by 71 per cent of the hospitals having staffs (table 4).

Apparently the practice in about half of the hospitals is to invite the courtesy staff members to attend the organized staff meetings. The questionnaires show that 46 per cent of the hospitals having courtesy staffs permit these physicians to participate in regular staff meetings (table 5).

The study endeavored to determine how important courtesy staff members were to the hospital's occupancy. It was found that an average of 15 per cent of the patients admitted during 1933 in hospitals having courtesy staffs were admitted by physicians on the courtesy staff. The number of patients so

TABLE 5—Participation of Courtesy Staffs in Staff Meetings

Courtesy staffs participating in staff meetings	407
Courtesy staffs not participating in staff meetings	345
Not given	124
Total number of courtesy staffs	876

TABLE 6—Patients Admitted by Members of Courtesy Staffs

Number of hospitals reporting	1,332
Number of hospitals reporting courtesy staffs	876
Number of hospitals reporting patients admitted by courtesy staffs	520
Patients admitted by courtesy staff in these 520 hospitals (1933)	146,478
Total patients admitted in these 520 hospitals (1933)	916,230
Percentage admitted by courtesy staff	16.0

admitted ranged from half of all those admitted in Washington hospitals having courtesy staffs to only 7 per cent admitted to Arkansas hospitals. The part played by courtesy staffs in keeping the hospital beds occupied was greatest in the New England states, where they admitted 25 per cent of all patients, and in the Pacific states, where they admitted 24 per cent of all patients. The proportions in the Middle Atlantic and Southern states range between 12 and 15 per cent, in most of the Central states between 18 and 20 per cent. The information on the number of patients admitted by courtesy staff members may be summarized as in table 6 for the whole country.

SUMMARY

It appears that the majority of voluntary hospitals in our smaller cities have both organized and courtesy staffs, have monthly staff meetings in which courtesy staff members often participate, and have better than 50 per cent attendance at these meetings. Where courtesy staffs exist, they admit on the average one sixth of the patients entering the hospital, but this figure shows wide variations.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY. Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada. Dec. 7. *Applications must be filed not later than Nov. 1.* Sec. Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY. The Cincinnati examination previously announced, will not be held. The next examination will be given in St. Louis Nov. 18. *Application must be filed before Sept. 15.* Sec. Dr. William H. Wilder, 122 S. Michigan Ave. Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. St. Louis Jan. Sec. Dr. Fremont A. Chandler, 180 N. Michigan Ave. Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY. Cincinnati Sept. 14. Sec. Dr. W. P. Wherry, 1500 Medical Arts Bldg. Omaha.

AMERICAN BOARD OF PEDIATRICS. Philadelphia Oct. 10 and St. Louis, Nov. 20. Sec. Dr. C. A. Aldrich, 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF RADIOLOGY. Detroit, Dec. 12. Sec. Dr. Byrl R. Kirklun, Mayo Clinic, Rochester, Minn.

ARIZONA Basic Science. Tucson Sept. 17. Sec. Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix Oct. 12. Sec. Dr. J. H. Patterson, 826 Security Bldg. Phoenix.

COLORADO. Denver Oct. 1. Sec. Dr. Harvey W. Snyder, 422 State Office Bldg. Denver.

GEORGIA. Atlanta Oct. 8-9. Joint Secretary State Examining Boards Mr. R. C. Coleman, 111 State Capitol. Atlanta.

IDAHO. Boise Oct. 1. Commissioner of Law Enforcement Hon. Emmitt Post, 205 State House. Boise.

MICHIGAN. Lansing Oct. 8. Sec. Board of Registration in Medicine Dr. J. Earl McIntyre, 202-34 Hollister Bldg. Lansing.

MINNESOTA Basic Science. Minneapolis Oct. 12. Sec. Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota. *Minneapolis Medical.* Minneapolis Oct. 15-17. Sec. Dr. Julian F. Du Bois, 350 St. Peter St. St. Paul.

MONTANA. Helena Oct. 1. Sec. Dr. S. A. Cooney, 7 W. 6th Ave. Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS. The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination. Sept. 16-18. Ex. Sec. Mr. Everett S. Elwood, 225 S. 15th St. Philadelphia.

NEW HAMPSHIRE. Concord Sept. 12-13. Sec. Board of Registration in Medicine Dr. Charles Duncan, State House. Concord.

NEW JERSEY. Trenton Oct. 15-16. Sec. Dr. Arthur W. Belting, 28 W. State St. Trenton.

NEW MEXICO. Santa Fe Oct. 14. Sec. Dr. Le Grand Ward, Sena Plaza. Santa Fe.

NEW YORK. Albany Buffalo New York and Syracuse, Sept. 16-19. Chief Professional Examinations Bureau Mr. Herbert J. Hamilton, 315 Education Bldg. Albany.

PUERTO RICO. San Juan, Sept. 3. Sec. Dr. O. Costa Mandry, Box 536. San Juan.

RHODE ISLAND. Providence Oct. 3-4. Dir. Department of Public Health Dr. Edward A. McLaughlin, 319 State Office Bldg. Providence.

WISCONSIN Basic Science. Madison Sept. 21. Sec. Professor Robert N. Bauer, 3414 W. Wisconsin Ave. Milwaukee.

WYOMING. Cheyenne Oct. 7. Sec. Dr. G. M. Anderson, Capitol Bldg. Cheyenne.

Nebraska June Examination

Mrs. Clark Perkins, director, Nebraska Bureau of Examining Boards, reports the written examination held in Omaha, June 11, 1935. The examination covered 10 subjects and included 92 questions. An average of 75 per cent was required to pass. Eighty-eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Number Passed
Creighton University School of Medicine (1934-6)	(1935-19)		25
University of Nebraska College of Medicine (1934-5)	(1932-2)		63
	(1935-56)		

Five physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 11 through July 24. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Howard University College of Medicine	(1933)		Kansas
Loyola University School of Medicine	(1933)		Iowa
University of Minnesota Medical School	(1933)		Minnesota
Washington University School of Medicine	(1929)		Iowa
University of Nebraska College of Medicine	(1933)		Maryland
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Loyola University School of Medicine	(1933)		N. B. M. Ex.

Book Notices

The Patient and the Weather. By William F. Petersen, M.D., with the Assistance of Margaret E. Milliken, S.M. Volume II. Autonomic Dysfunction. Cloth. Price \$6.50. Pp. 530 with 249 illustrations. Ann Arbor, Mich. Edwards Brothers Inc. 1934.

The Patient and the Weather. By William F. Petersen, M.D., with the Assistance of Margaret E. Milliken, S.M. Volume III. Mental and Nervous Diseases. Cloth. Price \$5. Pp. 375 with 192 illustrations. Ann Arbor, Mich. Edwards Brothers Inc. 1934.

This is an interesting study of an insistent problem. Every physician who has studied mental disorders or conditions bordering on the mental recognizes that the weather has a definite effect on the activity and the welfare of his patients. Many students of the problem have attempted to keep charts, but nothing consistent has been reported and the present study is really more suggestive than constructive. It is unfortunate that the volumes have not been released in consecutive order, for the publication of volumes II and III without volume I leaves one slightly beclouded. The series will probably extend to five or six volumes. The basic theory behind the author's studies is that the individual is a product of his environment, one of the most important features of which is the weather. There are two phases in the individual's metabolism, in one of which the organism must be at any given time. One phase is characterized by anabolism, reduction and vascular constriction and the other is characterized by oxidation and dilatation of the vascular bed, as well as catabolism. Certain parallels are drawn between sympathicotonia, but a complete parallel is not found. With a change in the weather comes dilatation or spasm, and the organism's ability to react is significant. When there is an inability to respond there is disease. The individual's body type and his biochemical makeup are significant in this respect. The body reacts by these means to the various meteorological "fronts" and changes in season.

Volume II deals with such topics as focal infection, headache, epilepsy, eclampsia, mucous colitis and gastric ulcer, the neuromes, asthma, urticaria, glaucoma, diseases of the ear and the teeth, and alopecia areata. The author in each of these disorders gives a general discussion of the vascular process involved, including an analysis of the meteorological genesis of the condition. The condition is described carefully, with particular reference to relevant literature and to the vascular changes in individual cases. The cases are written up in detail, and the results of chemical examinations are given. The chapter is accompanied with tables showing clinical observations compared to meteorological conditions. At the beginning of most of the topics there is a "spot map" showing the frequency of the disorder in given geographic areas in this country. These can be compared with meteorological maps to show the relationship to weather.

Volume III, which treats of mental disorders, seems a little more clear cut than the second volume. The first eight chapters, which deal with mental disorders in general, are accompanied by excellent maps showing national distribution of the various types of mental and allied cases as well as graphs to show the monthly admissions of the various disorders to mental hospitals. In the second part of this volume are eighteen thorough case histories of psychotic patients presented to show the influence of the weather. The last part of the book consists of chapters on multiple sclerosis, tabes, dementia paralytica, poliomyelitis and meningitis. While some relationships are shown, there is no general conclusion to be drawn, for the evidence is insufficient. The study has not reached a point at which it is past the research stage, but to Dr. Petersen must be given praise for having the temerity to attack such a difficult subject, for having done a thorough piece of work and for having shown a great deal of intelligence in putting together his material. Much of it is obscure, however. Most of the illustrations are complicated graphs comparing physiologic and meteorological phenomena in and about the patient. Some of these charts are vast undertakings with as many as fifteen variants recorded. The value of the book to the physician in practice is nil except from an educational standpoint. Some chapters in each volume should be helpful to individual specialists in analyzing obscure cases, but the real use of the work will be to students of biochemistry, physiology and psychology.

Diet and Like It A Guide to Pleasant and Healthful Dieting for Those Who Would Reduce and Those Who Would Not Gain By Mabel E. Baldwin Ph.D. With an introduction by Daniel C. Darrow M.D. Assistant Professor of Pediatrics Yale University School of Medicine Cloth Price \$2.50 Pp 230 New York & London D Appleton Century Company Inc. 1935

This book is sound. It will please physicians and could be read with profit by most of them. Part 1 gives menus for the correction of obesity, clearly detailed in household measures, with the necessary explanations. Part 2 contains an excellent discussion of the general principles of nutrition and a table of food values. This presentation is simple enough to be understood easily by the interested layman. It is the most useful part of the book and, if read and applied by every housekeeper, the general health of the community would be improved. There should be a big demand for correct information, made easily available as in this book, on a subject so important as nutrition. Physicians will do well to recommend "Diet and Like It" to patients and friends. As a practical treatise on the treatment of obesity, however, Dr. Baldwin is too optimistic in the title. Obese patients will not like it. Indeed, these menus alone will not even be effective with most patients. A few of them, the careless eaters who take a roll and ball of butter thoughtlessly while waiting for dinner to be served, will be rendered food conscious by reading the book, and that will be enough. With most obese patients overeating is a fixed sensual indulgence. Such patients on these menus will not be hungry if they distinguish between hunger and the memory of the fun of eating. But they will not do this. They need firm handling by a determined physician who tells them they must give up for a time the "fun of eating" instead of "diet and like it." Such patients do better when no effort is made to pander to sensuality in appetite. A small portion of cheese at the end of a meal lets down less painfully the confirmed dessert eater. The same applies to salad dressings with a base of liquid petrolatum. These suggestions are of value more in the prevention than the cure of obesity, but so is this book.

Scientific Organizations in Seventeenth Century France (1620-1680) By Harcourt Brown M.A. Ph.D. History of Science Society Publications new series V Cloth. Price \$3 Pp 306 Baltimore Williams & Wilkins Company 1934

This book attempts to supplement Ornstein's "The Role of the Scientific Societies of the Seventeenth Century" and Morgan's "Histoire du journal des savants," the former of which the author thinks is particularly lacking in references to the ultimate sources of our knowledge of that time, namely, the books, pamphlets and letters of that period—a source material more illuminating than the documentation of modern authors, which is sometimes not especially discriminating. "Academies" prior to the seventeenth century, the author points out, were not very effective, since they were opposed by the princes and churches alike as dangerous on political and religious grounds. Scholarly historical exploitation by the authors of the manuscripts and letters and books of the savants of the time are most important in elucidating how these men of science worked and thought and just how the learned bodies and academies came into being under the guidance of certain leaders. The author has made an important and interesting contribution to the scientific status of that period. It is surprising, however, to note that no reference at all was made to the first scientific academy ever organized, Die Deutsche Akademie der Naturforscher (1652), although the origin of the Royal Society of London (1662), ten years later, comes in for a share of discussion.

Las localizaciones extra intestinales de la amebiasis (Relato oficial al V° Congreso nacional de medicina) Por el Dr. David Stameri profesor titular de clínica médica Paper Pp 212 Rosario Editorial Médica Lagos 1934

The author has collected and arranged systematically a large amount of material collected from published papers on extra-intestinal amebiasis. As stated in the introduction, he has collected what seemed to him the more interesting material and neither the experimental data nor the bibliography is complete. This incompleteness is most apparent in the omission of most of the contributions of the last few years and especially of the work of investigators in the United States. The author presents an uncritical acceptance of much material that is unsub-

stantiated and unconfirmed. No criteria of diagnosis are given, nor is any other basis presented by which the reports and data can be evaluated. The lack of critical judgment and selection, the marked incompleteness of treatment in general, reduce the value of the book for scientific use and authoritative reference. The bibliography is of value, so far as it goes.

Surgical Pathology of the Peritoneum By Arthur E. Hertzler M.D. Surgeon to the Agnes Hertzler Memorial Hospital Halstead Kansas Hertzler's Monographs on Surgical Pathology Cloth Price \$5 Pp 304 with 201 illustrations Philadelphia & London J. B. Lippincott Company 1935

This volume is one of a series of monographs on surgical pathology by the same author. If the others equal this one in quality, the entire series is excellent. The book represents the author's forty years of interest, thought, study, experience and experiment in the peritoneum. All these are reflected in its every page. The work is divided into thirteen chapters and covers the subject completely though not exhaustively from the anatomy, embryology and physiology through healing of wounds, peritonitis, changes in circulation and tumors. The questions of adhesions and peritonitis are discussed particularly fully. The book is written in clear, simple style. Its chief attraction lies in the fact that it presents not only the author's intimate knowledge of the peritoneum and its diseases but also the wisdom of a rich surgical experience. The numerous beautiful and excellent drawings and reproductions of photographs enhance and clarify the text. This is a really valuable contribution to surgical literature and is recommended to all interested in surgery.

Landolt's Lehrbuch der Physiologie des Menschen mit besonderer Berücksichtigung der praktischen Medizin Bearbeitet von Dr. med. Dr. phil. h. c. R. Rosemann o. ö. Professor der Physiologie und Direktor des physiologischen Instituts der Westfälischen Wilhelms-Universität zu Münster Twenty first edition. Paper Price 18 marks Pp 858 with 172 illustrations Berlin and Vienna Urban & Schwarzenberg 1935

Written essentially for medical students and practitioners of medicine, the book presents chiefly the well established facts of physiology. Theoretical discussions are not emphasized. Readers interested in theory and detail will find an unusually extensive bibliography at the end of each section. Numerous references are made to pathologic physiology. Most sections furthermore, end with a short historical sketch on the rise of our knowledge of the subject matter just dealt with. Fundamental aspects of biochemistry are not omitted. This single volume textbook of physiology continues to be, in spite of several shortcomings (e. g., endocrines) the best treatise on the subject in either the German or the English language.

Kurzgefasstes Lehrbuch der Psychiatrie Von Dr. Johannes Lange o. Professor der Psychiatrie in Breslau. Paper Price 7.20 marks Pp 254 Leipzig Georg Thieme 1935

Professor Lange, who was long associated with Kraepelin and who is responsible for the last edition of Kraepelin's handbuch, has succumbed to the urge of writing a compendium of psychiatry. The views expressed are essentially those of Kraepelin and the book contains a fairly good description of most of the mental disorders. There is nothing new that is taken up and the dynamic psychologic point of view is inadequately represented. There seems hardly any justification for the appearance of this volume at the present time, as there are a number of other volumes of identical scope already available.

Experimental Physiology By Sir Edward Sharpey Schafer F.R.S. Fifth edition revised by the author with the co-operation of W. A. Bain Ph.D. Lecturer in Experimental Physiology in the University of Edinburgh Cloth Price \$2.20 Pp 168 with 84 illustrations New York London & Toronto Longmans Green & Company 1934

Judging by American standards, it was concluded, after first perusal, that this laboratory manual in experimental physiology was prepared by the late Sir Edward Sharpey Schafer for college students for in the preface occurs no statement for whom the book was prepared. On the paper cover, however, appears a statement that "the new matter is of special significance for medical students, for whom the work is primarily intended." The book is quite too elementary for the students of most grade A medical schools of this country, however, it contains a number of diagrams that instructors of high school or college-physiology might find useful in presenting experimental methods and the principles of physiologic apparatus to their pupils.

Miscellany

STATUS OF ALLERGY TEACHING AS INDICATED IN MEDICAL SCHOOL ANNOUNCEMENTS

I HARRISON TUMPEER, M.D.
CHICAGO

This review concerns itself solely with the allergy matter published in the current medical school announcements. The apparent nonchalant assignment of allergy in medical courses aroused interest in the subject. Catalogues were solicited from all the medical colleges named in the Educational Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of Aug. 25, 1934. Announcements were received from seventy-nine of eighty-six colleges. There was no opportunity to review the curriculums of seven schools (table 1). Allergy was not mentioned in sixty catalogues (table 2) and was listed in nineteen announcements, or 24 per cent of those which were received (table 3).

In only one school, namely, Yale University, is allergy entirely the province of pediatrics. At the University of Rochester there is a course in pediatric allergy conducted by my former associate, Dr. Jerome Glaser, as well as a course in the department of medicine. In addition to a required course

TABLE 1—Medical Schools from Which Catalogues
Were Not Received

Medical School	City and State
Howard University College of Medicine	Washington D. C.
Marquette University School of Medicine	Milwaukee Wis.
Mississippi University of	University Miss.
Oklahoma University of	Oklahoma City Okla.
Saskatchewan University of	Saskatoon Saskatchewan
Wake Forest College School of Medicine	Wake Forest N. C.
West Virginia University of	Morgantown W. Va.
Total, 7	

in the department of medicine at the University of Michigan, an elective sensitization clinic is conducted at the University Hospital by members of the pediatric department. Although classified under the department of medicine at the University of Oregon, its course is conducted at a children's hospital. Columbia University offers a clinical clerkship in allergy in the department of dermatology as well as a section in the department of medicine. The catalogue of the New York Homeopathic Medical College and Flower Hospital mentions an arthritis and allergy department at the hospital but does not describe courses in the medical school. At Stanford University the study of allergic reactions is included in an elective course in immunology, apparently in the second year. At Duke University allergy has the standing of a specialty, equivalent to syphilis, urology and orthopedics. Altogether, four allergy courses are in some way bound up with pediatrics, one is associated with dermatology, one is represented by a hospital department, one is mentioned in immunology, and one has the rating of a specialty. The remaining eleven are entirely sub-heads of medicine. The subject is offered naturally in the clinical period, mostly in the fourth year. The number of students who have access to these courses varies from a few to the entire class. About one third of the courses are required. In some instances the required or elective status was not emphasized. The amount of time varies as nearly as can be determined from about four to sixteen hours. The rank of the instructors varies from lecturers to professors.

Read before the Chicago Society of Allergy, May 20, 1935.
From the Children's Allergy Section, Mandel Clinic of Michael Reese Hospital, aided by the Jessie Werthamer Fund.

The data obtained are of necessity a statement of the minimum attention that is paid to allergy in the medical schools. It is acknowledged that many medical school catalogues are slow to change their contents in keeping with the courses. This is particularly true of a subject such as allergy. Many schools are groping experimentally in their efforts to place the subject in the curriculum. Division of the subject into lectures and clinics is changing too fast for the catalogues to indicate. It may be assumed that more medical schools than the nineteen mentioned must be devoting some time to the subject, whether in the departments of internal medicine, pediatrics, dermatology, otolaryngology, immunology or others, without

TABLE 2—Medical Schools Not Listing Allergy
in Their Catalogues

Alabama University of	1934-1935
Albany Medical College	1933-1934
Alberta University of	1934-1935
Arkansas University of	1934-1935
Boston University	1934
Buffalo University of	1933
California University of	1934-1935
Cincinnati University of	1934-1935
Colorado University of	1934
Cleveland University	1934-1935
Dalhousie University	1934-1935
Dartmouth College	1933-1934
Emory University	1934-1935
George Washington University	1934-1935
Georgia University of	1933-1934
Indiana University of	1934-1935
Iowa University of	1934-1935
Jefferson Medical College	1934-1935
Johns Hopkins University	1934-1935
Kansas University of	1934-1935
Laval University	1934-1935
Long Island College of Medicine	1934-1935
Louisville University of	1934-1935
Loyola University	1933-1934
Manitoba University of	1934-1935
Maryland University of	1934-1935
McGill University	1934-1935
Medical Evangelists College of	1934-1935
McHarr Medical College	1934-1935
Minnesota University of	1933-1934
Missouri University of	1934-1935
Montreal University of	1934-1935
Nebraska University of	1934-1935
North Carolina University of	1933-1934
North Dakota University of	1934-1935
Northwestern University	1934-1935
Pennsylvania University of	1934-1935
Pennsylvania Women's Medical College of	1934-1935
Pittsburgh University of	1934-1935
Queen's University	1934-1935
St. Louis University	1934-1935
South Carolina University of	1934-1935
South Dakota University of	1934-1935
Syracuse University	1933-1934
Temple University	1934-1935
Tennessee University of	1934-1935
Texas University of	1934-1935
Toronto University of	1934-1935
Tufts College	1934-1935
Tulane University of Louisiana	1934-1935
Utah University of	1934-1935
Vanderbilt University	1934-1935
Vermont University of	1934-1935
Virginia Medical College of	1934-1935
Virginia University of	1934-1935
Washington University St. Louis	1934-1935
Wayne University	1934-1935
Western Ontario University of	1934-1935
Western Reserve University	1934-1935
Wisconsin University of	1934-1935
Total 60	

actually listing the subject. In some announcements the descriptions of courses are brief and probably include allergy without so stating.

The relative recognition of this latest "specialty" was determined by contrasting the number of allergy courses with the number of such other medical subdivisions as cardiovascular disease, gastro-intestinal disorders, endocrinology and metabolism (table 4). A comparison of the number of schools mentioning these five subdivisions to the total number of announcements received gives the percentage of mention of these courses. These results are tabulated in the third column. The ratio of the mention of allergy to the mention of each of the other medical subdivisions is expressed in the last column and is termed the index of allergy recognition. A glance at these relationships shows that the four other subdivisions are

mentioned in 89 per cent or more of the catalogues, while allergy rates 24 per cent. It is readily understood that the index of allergy must approximate a constant. In this case the index of allergy is about 25 per cent. This means that the allergy discrepancy is real, since the other groups receive equal and almost unanimous recognition in the field of undergraduate medical teaching.

that the purpose of a course in allergy should be to acquaint the student with its manifestations, to give him some idea of how the specific etiology is determined, and to acquaint him with methods and treatment not only including specific inoculations but also the general care of the patient, his environment and his diet. The outpatient department should furnish patients to be used as texts and demonstrations before the class.

TABLE 3—*Analysis of Courses in Allergy in Schools with Announcement Listings*

Medical School	Year Course Given	In Department of	Size of Class	Elective or Required	Number of Hours	Name and Rank of Teacher
Baylor University 1934-1935	4th	Medicine	Entire	Required	8	James H. Black, professor of preventive medicine
Chicago University of 1934-1935		Medicine	Lecture	Elective	$\frac{1}{2}$ c 2 weekly	H. L. Huber, associate clinical professor of medicine
Columbia University 1934-1935	3d and 4th	Clinic at Presbyterian Hospital	Two students each morning 4 mornings weekly			F. A. Stevens, associate in medicine
	4th	Clinical clerkship in Allergy Clinic Dermatology		Elective	To be arranged	B. M. Kesten, associate in dermatology
Cornell University 1934-1935		Medicine	Special clinic $\frac{1}{4}$ of class	Elective		
Duke University 1934	4th	Allergy		Required	5 $\frac{1}{2}$ weeks	
Georgetown University 1934-1935	3d	Medicine	Lecture		4	G. T. Brown, instructor in clinical medicine
Hahnemann Medical College 1934-1935	3d	Supplement to a course in medicine	Entire	Required		Morris Fitterman, lecturer in medicine
Harvard University 1932-1933	4th	Medicine		Elective (course in bacterial allergy)	12 clock hours	O. L. Derick, assistant professor of medicine
Illinois University of 1934-1935	4th	Medicine	Lecture 12 students Clinic	Elective	8	Tell Nelson, associate in medicine
					8	B. Z. Rappaport, associate in medicine
Louisiana State University 1934-1935	3d	Medicine	Entire Clinic and Lecture	Required	16	N. F. Thiberge, assistant professor of clinical medicine
Michigan University of 1934-1935	3d	Medicine	Lecture (2 weekly) entire class	Required	9 weekly	William E. Sheldon, instructor in medicine
		University Hospital sensitization clinic		Elective	68 clock hours	D. M. Cowie, professor in pediatrics and infectious diseases and Buenaventura Jimenez, instructor in pediatrics
New York Homeopathic Medical College and Flower Hosp 1934-1935		Arthritis and allergy dept at Flower Hospital				C. R. Eaton, associate attending physician
New York University 1934-1935	4th	Medicine	Lecture clinic 2 students	Elective	2	Aaron Brown, instructor in medicine
Ohio State University 1934-1935	4th	Medicine	Lecture, 1 weekly for 1 quarter		1 credit hour	Johnathon Forman, lecturer on allergy
Oregon University of 1934-1935	4th	Medicine but held in Children's Hospital	Lecture	Elective	11	R. L. Benson, attending physician in allergic diseases at Doernbecher Memorial Hospital for Children
Rochester University of 1934-1935	4th	Pediatrics	Entire	Required	6	Jerome Glaser, instructor in pediatrics
	4th 1st and 2d semesters			Required	6	S. S. Bullen, assistant professor of medicine
Southern California University of 1934-1935	4th	Medicine	Entire, part of work in outpatient dept	Required		
Stanford University 1934-1935	2d	Bacteriology and experimental pathology	Laboratory	Elective		
Yale University 1934-1935	4th	Pediatrics	1 student in 3d quarter 2 students in 4th quarter	Elective	10	Jerome Trask, associate professor in pediatrics
Total 19						

COMMENT

The status of allergy as it manifests itself throughout the country appears to indicate that the emphasis on the teaching of this subject is largely the product of the personality of that faculty member pursuing allergy as a specialty or as an adjunct to his clinical armamentarium. In line with this phenomenon the courses vary in scope and in intensity. It is not my intent in this review to suggest how allergy should be taught. Nevertheless it must be stated that the teaching of allergy in a busy outpatient clinic is usually unsuccessful because the urgent press of work leaves little time to devote to students. It would seem

SUMMARY

1 This review concerns itself solely with the scope of the published statements concerning allergy courses in the current medical school announcements.

2 It is conceded that more attention is probably paid to allergy than is indicated in these publications.

3 This analysis may stimulate allergists engaged in medical teaching to add or revise the statements published in their medical school announcements. Revision will complete the facts and will give a more accurate status to undergraduate instruction in allergy.

4 The varied nomenclature and descriptions of courses that were typically observed in the study of the allergy group prompts the suggestion that the association of medical schools take under advisement the feasibility of standardizing the descriptions of all courses so that the following facts may become uniformly available the department under which the course operates, the year in which the course is offered, the amount of credit, elective or required, size of class, total hours

TABLE 4—The Index of Allergy Recognition

Subjects	Total Mentions	Percentage of Mention	Allergic Index per Cent
Allergy	19	24	
Cardiovascular	76	96	25
Metabolism	70	96	25
Gastro-Intestinal	72	91	28
Endocrinology	70	89	27
Number of catalogues	79		

devoted, and rank of instructor. Other data naturally will vary with the school, i. e., more complete description of the courses, hours and days of the week, and location of the classroom.

5 A supplemental study may well be undertaken by the questionnaire method to fill in the details omitted from the catalogues.

6 The present review fulfils its fundamental purpose in portraying the present status of undergraduate allergy teaching as indicated in the current medical school announcements.

Medicolegal

Malpractice Compensation Award as Bar to Malpractice Action—During the course of his employment, the worker sustained simple fractures of the radius and humerus of the right arm. Allegedly because of the negligence of his attending physician and of the hospital wherein he had been confined, the fractures did not heal and it was necessary to amputate the arm approximately six inches below the shoulder socket. The Oklahoma industrial commission awarded him compensation for the total loss of his right arm. Thereafter he brought suit against the physician and the hospital. He contended that he was entitled to maintain this action, not for the physical injury caused him through the negligence and unskilfulness of the defendants, which he admitted was barred by the award of the industrial commission, but for physical pain and mental suffering caused by the negligence of the defendants, since the workmen's compensation act makes no provision for an award for physical pain and mental suffering. There was a judgment for the defendants, and the plaintiff appealed to the Supreme Court of Oklahoma.

The question presented, said the Supreme Court of Oklahoma, has been definitely settled heretofore by this court. A worker is entitled to receive compensation through the industrial commission for an injury sustained in the course of his employment. The award includes compensation for the original injury and for the ultimate results of such injury, including the carelessness or negligence of the physician or hospital selected by the employer. Under the workmen's compensation act of Oklahoma, also, the award is based in part on suffering and mental anguish of the injured workman. There is but one exception to be noted among the Oklahoma decisions. In *Walker v Von Wedel*, 108 Okla. 292, 237 P. 86, the court allowed a recovery by an injured workman against the physician after an award had been made by the industrial commission and accepted by the workman, but in that case the workman charged that the acts of the physicians were "maliciously performed in an unskilful manner, which resulted in the unnecessary bodily suffering and mental anguish." In this case, however, there is no charge of maliciousness or wantonness, but the plaintiff predicated his case solely on negligence.

The court accordingly affirmed the judgment in favor of the defendants—*Alexander v Von Wedel* (Okla.), 37 P. (2d) 252.

Workmen's Compensation Acts "Malingering" Defined.—In the course of his employment, the worker was standing on a dump car loaded with beets. When the trap door at the bottom of the car was opened he fell to the bottom, landing astride an iron beam, with his right leg caught and doubled back in a jackknife position, and with about four feet of beets, weighing several tons, on top of him. His principal injury consisted of two broken vertebrae. He was hospitalized for several weeks and was fitted with a steel brace to hold his spine rigid, which he wore for about ten months. Thereafter he used crutches. According to his testimony, any twist or jar gave him intense pain, he could not stand on his feet and stoop forward, and he spent about half the time in bed. The compensation commissioner awarded him compensation for total and permanent disability and the award was affirmed by the district court, Scotts Bluff County. The employer then appealed to the Supreme Court of Nebraska.

The employer contended that the worker was a malingerer. Malingering, said the Supreme Court, as applied to compensation cases, may be defined as a deception by feigning, inducing, or prolonging either sickness or injury so as to secure undeserved compensation. In this case, roentgenograms clearly indicated that there was an injury to two vertebrae following the accident. Medical witnesses, called by the employer, testified that the worker was a malingerer and that at the time of the trial he was free from any pain. The worker flatly denied the charge. Since the accident, continued the court, the worker had done no work, had spent a great deal of time in bed, was hardly able to hobble about on crutches, and acted as if he were suffering pain. The trial court observed the workman move about the court room, observed his demeanor under examination, was enabled to detect his reaction, if any, to the charge that he was a malingerer, and could weigh the credibility of the neighbors and relatives as they testified to his everyday conduct in respect to his injury. The trial court rejected the opinion of the medical experts that he was a malingerer, and the Supreme Court found nothing in the record to justify interference with that finding. Judgment in favor of the worker was therefore affirmed—*Great Western Sugar Co v Hewitt* (Neb) 257 N. W. 61.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology Cincinnati Sept. 14-20. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Sky Top Pa., Sept. 16-18. Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., Acting Secretary.
American Clinical and Climatological Association, Princeton N. J., Oct. 21-23. Dr. Francis M. Rackemann, 263 Beacon Street, Boston, Secretary.
American Congress of Physical Therapy, Kansas City Mo., Sept. 9-12. Dr. Nathan H. Palmer, 921 Canal Street, New Orleans, Secretary.
American Hospital Association, St. Louis, Sept. 30-Oct. 4. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.
American Public Health Association, Milwaukee, Oct. 7-10. Dr. Reginald M. Atwater, 50 West 50th Street, New York, Executive Secretary.
American Roentgen Ray Society, Atlantic City N. J., Sept. 24-27. Dr. E. P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
Association of Military Surgeons of the United States, New York, Oct. 3-5. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
Colorado State Medical Society, Estes Park, September 5-7. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.
Delaware Medical Society of Wilmington, Oct. 8-9. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.
Indiana State Medical Association, Gary, Oct. 8-10. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 7-10. Dr. Ralph R. Coffey, 1103 Grand Avenue, Kansas City, Mo., Secretary.
Kentucky State Medical Association, Louisville, Sept. 30-Oct. 3. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Michigan State Medical Society, Sanit St. Marie, Sept. 23-25. Dr. Burton R. Corbus, 313 Metz Building, Grand Rapids, Acting Secretary.
Mississippi Valley Conference on Tuberculosis, Madison Wis., Sept. 12-14. Mr. A. W. Jones, 616 Locust Street, St. Louis, Secretary.
Nevada State Medical Association, Elko, Oct. 25-26. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
Ohio State Medical Association, Cincinnati, Oct. 2-4. Mr. C. S. Nelson, Hartman Theatre Building, Columbus, Executive Secretary.
Oregon State Medical Society, Garbhart, Sept. 19-21. Dr. Blair Holcomb, Stevens Building, Portland, Secretary.
Pennsylvania Medical Society of the State of Harrisburg, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
Utah State Medical Association, Logan, September 5-7. Dr. George N. Curtis, Judge Building, Salt Lake City, Secretary.
Virginia Medical Society of Norfolk, Oct. 15-17. Miss A. V. Edwards, 1200 East Clay Street, Richmond, Secretary.
Wisconsin State Medical Society of Milwaukee, Sept. 17-20. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Psychiatry, New York

91:1215-1486 (May) 1935

- Psychic Manifestations Associated with Hyperthyroidism. H F Dunlap and F P Moersch Rochester Minn.—p 1215
- Studies of Urinary Excretion of Gonadal Stimulating Substance in Mental Patients. M M Harris, E. Brand and L E Hissie New York.—p 1239
- Psychoses of Myxedema. L J Karnosh and R E Stout Cleveland.—p 1263
- *Therapeutic Effects of Estrogenic Hormone Preparations in Certain Cases of Idiopathic Epilepsy and in Migraine. R W Whitehead and E E. McNeil Denver.—p 1275
- Comparative Study of Some of the Changes Produced by Various Types of Drugs in Schizophrenic Patients. E F Gildea, H E. Himwich O E Hubbard and J F Fazikas New Haven Conn.—p 1289
- Psychiatry and the Juvenile Delinquent. W Healy Boston.—p 1311
- Symptoms of Loss of Feelings. Gestalt Interpretation. H K Johnson Kings Park N Y.—p 1327
- Alcohol Injected Intravenously. Some Psychologic and Psychopathologic Effects in Man. H W Newman San Francisco.—p 1343
- Psychotherapy in State Hospitals. A P Noyes Howard R I.—p 1353
- Food Service in Institutions of the New York State Department of Mental Hygiene. P Smith New York.—p 1367
- Medical Approach to the Study of Behavior Disorders of Children. Critical Analysis of One Thousand Cases Studied at the Child Guidance Home. L A Lurie Cincinnati.—p 1379
- *Blood Glutathione (GSH) Level in Mental Diseases. A T Brice Jr Palo Alto Calif.—p 1389
- Study of Value of Bancroft's Views on Mental Disease. P G Schube Boston.—p 1403
- Concerning Improvement of Psychiatric Prolonged Sleep Treatment. M Cloetta and H W Maier.—p 1409
- Juvenile Paretic Neurosyphilis. Studies. VII. Descriptive Mental Picture. W C Menninger Topeka Kan.—p 1411
- Reticulo-Endothel. Its Status in Certain Psychoses. G M Davidson Ward's Island N Y.—p 1433

Effects of Estrogenic Preparations in Idiopathic Epilepsy.—Whitehead and McNeil treated eighteen cases of epilepsy with different estrogenic substances. The usual dosage of one estrogenic substance given was fifteen drops three times a day, orally administered. Dosages as high as sixty drops were tried in some cases with no apparent difference in effect. Some of the patients were carried on a dosage of ten drops twice daily. Another estrogenic substance was given subcutaneously, usually from 1 to 2 cc. three times a week for the week preceding and the week following menstruation. One estrogenic substance was given orally one capsule twice daily for five days starting two days prior to the expected menstrual period. Some of the patients were allowed to take small doses of phenobarbital in addition to the hormone therapy. Marked relief occurred in eight female patients. Partial benefit was obtained in five other patients three of whom were males. Two female and one male patient failed to respond. The author also treated twelve patients who had migraine (eleven females and one male) with estrogenic substance. Six female patients had marked relief and three had partial relief. Of the eleven female patients all but two showed a definite relationship of the attacks to the menses. Several of the patients had polyuria, some noticed an increase in weight, and a number reported an increased feeling of well being. Two patients reported partial relief from symptoms usually associated with the climacteric. The possible rationale of the treatment is discussed. Alteration in the water balance produced by the autacoids used appears to be the most likely mechanism by which they were effective. The change that occurs normally at menstruation in the blood cholesterol might favor the development of seizures in the epileptic patient at menstruation especially if that individual also had a tendency to develop

an elevated blood lecithin. The fact that ovarian deficiency is accompanied by lowered blood calcium suggests a possible relationship between the latter and convulsive seizures. The authors feel that their results warrant further investigation in this field.

Blood Glutathione Level in Mental Diseases.—Brice states that there appears to be a statistically highly significant difference in the blood glutathione level between groups of mental patients and adequate individuals. This difference is greatest in catatonic dementia praecox. It is also marked in hebephrenic and paranoid forms of dementia praecox, and in dementia paralytica. It is less marked but still statistically significant in manic-depressive psychosis. In the small number of cases of epilepsy examined it was not statistically significant. Diurnal variation and exercise have been ruled out as influences affecting the validity of conclusions based on the data accumulated in this study.

Archives of Surgery, Chicago

31:1174 (July) 1935

- *Effect of Fundusctomy on Acidity of Gastric and Duodenal Content. Experimental Study. J R Watson Pittsburgh.—p 1
- Wound Healing After Anterior Gastro-Enterostomy. II. Fate of Mucosal Incisions and Their Prevention. Description of New Suture Technique. Experimental Study in Dogs. K H Martzloff and G R Suckow Portland Ore.—p 10
- Eventration of Diaphragm. Report of Two Cases. J A Reed and D L Borden Washington D C.—p 30
- Acute Appendicitis in Dogs. Experimental Study. E R Schmidt and A C Taylor Madison Wis.—p 65
- Experimental Burns. I. Rate of Fluid Shift and Its Relation to Onset of Shock in Severe Burns. H N Harkins Chicago.—p 71
- *Study of Disruptions of Abdominal Wounds. A H Milbert, New York.—p 86
- So Called Liver Death. Clinical and Experimental Study. F F Boyce and Elizabeth M McFetridge New Orleans.—p 105
- Sequels of Peptic Ulcer Following Medical and Surgical Treatment. J W Hinton New York.—p 137
- Fifty Seventh Report of Progress in Orthopedic Surgery. J G Kuhns, E F Cave, S M Roberts, J S Barr and R J Joplin Boston. J A Freiberg Cincinnati. J E. Milgram New York, and R I Strling Edinburgh Scotland.—p 151

Effect of Fundusctomy on Gastric Acidity.—Watson produced experimentally gastric and duodenal fistulas in five dogs. The duodenal fistula was placed on the anterior surface of the second portion of the duodenum at the level of the head of the pancreas, while the gastric fistula was placed on the anterior surface of the stomach in the region of the antrum or high on the cardia. Two series of control experiments were done. The dogs were made to fast eighteen hours. The maximal response in gastric acidity as well as changes in the hydrogen ion concentration of the duodenal content were noted in all five animals after the feeding of 100 Gm of raw meat and after subcutaneous injection of 1 mg of histamine. Aspirations of the gastric and duodenal content were made every hour in the experiments in which a meat meal was used and every fifteen minutes in the experiments in which histamine was used, and aspirations at these intervals were continued until the readings had returned to approximately the value during fasting. A sufficient amount of gastric content was aspirated each time to permit the determination of values for free acid and for total acidity. Titrations were run against tenth-normal sodium hydroxide, with Töpfer's reagent and phenolphthalein as indicators. Each experiment was repeated a sufficient number of times to determine the normal range of reaction. The emptying time of the stomach of each animal was determined with 250 cc of a 20 per cent mixture of barium sulphate in water and observations under the fluoroscope at intervals until the stomach was empty. After a reliable set of results had been obtained in the control experiments, a second operation was performed in which most of the greater curvature of the stomach and varying amounts of the fundus ranging from one half to four fifths of the total fundus were resected. The cardia, antrum and lesser curvature were left intact. The experiments with the meat and with histamine were repeated from two to seven weeks and from fifteen to eighteen weeks after the operation, and the results were compared with those obtained in the control experiments. Alterations in gastric acidity as determined by changes in the hydrogen ion concentration were very slight, while alterations in the hydrogen ion concentration of duodenal content were

rarely seen. Definite reductions in both concentration of free acid and total acidity were noted immediately after operation in those dogs in which extensive resection was performed, but in subsequent observations at the end of four months the changes were less marked.

Study of Disruptions of Abdominal Wounds—Milbert studied a series of 1,560 laparotomies in an effort to arrive at a clearer understanding of the mechanism of the production of disruption in abdominal wounds. He dwells on the broader aspects of the problem, elaborating on the phases of the healing of wounds, the usage and fate of catgut and a consideration of intra-abdominal variations in pressure. Too little consideration has been given to the study of intra-abdominal pressure. Most cases of disruption of abdominal wounds represent a failure of the suture line to hold, whether this is due to the suture material or to abuse, in the face of undue intra-abdominal pressure. Without the added factor of excessive abdominal pressure, many inherently weak wounds may escape disruption. The solution lies in the minimizing of the disruptive forces and in the more prevalent use of nonabsorbable, removable sutures, the effect of which is to tide a healing wound over its early period of weakness. The author does not attribute any etiologic importance to age, sex, seasonal incidence, primary illness or allergic phenomena. He believes that the newly awakened interest in the subject will lead to a reevaluation of the present accepted methods of the closure of wounds and to a closer scrutiny of the efficacy of absorbable suture material and of the surgeon's security in using it in the closure of a laparotomy wound.

Arkansas Medical Society Journal, Fort Smith

32: 33-46 (July) 1935

Further Observations in Transurethral Prostatic Resection H. F. H. Jones and T. D. Brown Little Rock—p. 33
Appendicitis in Childhood E. Rosamond Memphis Tenn.—p. 35

Johns Hopkins Hospital Bulletin, Baltimore

56: 305-372 (June) 1935

Jaundice Produced by Diverticulum of Duodenum W. M. Nicholson Baltimore—p. 305
*Plasma Cell Partition of Blood Lead in Clinical Lead Poisoning H. Blumberg Baltimore and T. F. M. Scott, New York—p. 311
Researches on Tetanus. III. Further Experiments to Prove That Tetanus Toxin Is Not Carried in Peripheral Nerves to Central Nervous System J. J. Abel, B. Hampil and A. F. Jonas Jr. Baltimore—p. 317
Studies on Virus Problems. II. Cultivation Methods. Development of Antibodies in Particular, Antiviral Body J. C. G. Ledingham London, England—p. 337
Relation of Cushing Syndrome to Pars Intermedia of Hypophysis W. G. MacCallum, T. B. Fletcher, G. L. Duff and R. Ellsworth Baltimore—p. 350

The Blood Lead in Clinical Lead Poisoning—Blumberg and Scott studied the plasma cell partition of blood lead in eighteen cases of clinical lead poisoning by spectrographic analyses of the separated fractions from oxalated, citrated and heparinized samples, as well as by analyses of serum and clot. The results showed that by far the greater part (usually about 90 per cent) of the lead appeared to be carried by the cells or clot. Analyses of control bloods, including a hemophilic sample, indicated that the cell fraction contained at least half, and usually much more, of the trace of nonpathologic blood lead. Washing the cells twice with an isotonic solution of sodium chloride failed to remove appreciable quantities of the lead, thus demonstrating that the lead and the red cells were in comparatively firm combination.

Journal of Industrial Hygiene, Baltimore

17: 121-184 (July) 1935

Electric Welding. I. Respiratory Hazard A. C. Titus, H. Warren and P. Drinker Boston—p. 121
Id. II. Acute Fatal Pneumonia Following Electric Welding of Galvanized Iron in Confined Space. F. L. Willman Washington D. C.—p. 129
Id. III. Prevention of Respiratory Hazard P. Drinker, H. Warren and R. Page Boston—p. 133
Industrial Dermatoses. Treatment and Legal Aspects. Review of Recent Literature. J. G. Downing Boston—p. 138
Photographic Dust Counter for Industrial Health Purposes J. B. Ficklen and L. H. Ott New Haven Conn.—p. 164
Silicon Dioxide Content of Lungs of Infants and of Placental Tissue W. D. McNally and W. L. Bergman Chicago—p. 171

Journal of Nervous and Mental Disease, New York

82: 1-124 (July) 1935

Experimental Analysis of Functions of Frontal Association Areas in Primates C. F. Jacobsen, J. B. Wolfe and T. A. Jackson New Haven, Conn.—p. 1
Ameliorative Effects of Therapeutic Castration in Habitual Sex Offenders A. W. Hackfield Seattle—p. 15
Chaucer's Nervous Depression R. L. Pitfield Germantown Pa.—p. 30
Facial Hemiatrophy Associated with Epilepsy Report of Case. Dorothy E. Donley Baltimore—p. 33
Hypophyseal Cachexia (Simmonds' Disease) with Atrophy of Anterior Lobe of Pituitary Gland Report of Case L. Gunther and C. B. Courville Los Angeles—p. 40

Kentucky Medical Journal, Bowling Green

33: 299-342 (July) 1935

*Thyroidectomy for Endemic Goiter B. B. Baughman, Frankfort—p. 300
Primary Tumors of Bones W. P. Sights Paducah—p. 304
Some Urinary Infections in Children J. T. Bate, Louisville—p. 311
Some Newer Aspects of Arthritis A. C. McCarty Louisville—p. 314
Survey of Obstetric Work in Louisville Hospitals During 1933 W. T. McConnell Louisville—p. 323
Pulsating Exophthalmos in Infancy A. O. Pfingst Louisville—p. 377
Relation of Trauma to Diseases of Nervous System J. J. Moren Louisville—p. 331
Pseudohypertrophic Muscular Paralysis or Muscular Dystrophy P. F. Harbour Louisville—p. 339
Arochinism or Spider Poisoning M. H. Thompson, Louisville—p. 340

Thyroidectomy for Endemic Goiter—Baughman believes that the symptoms, diagnosis and treatment of simple colloid goiter and exophthalmic goiter are generally known and agreed on. The surgical removal of the toxic adenoma is somewhat hazardous because patients usually wait until serious cardiovascular damage has taken place. Endemic goiter without an elevated basal metabolic rate or other signs of hyperthyroidism presents definite symptoms, namely, palpitation, dyspnea, nervousness, a sense of pressure, loss of weight, muscular weakness and irritability. All manner of cardiac abnormalities may be present with a normal basal metabolic rate. They are constantly present and to a more marked degree in the toxic adenoma. Myxedema is practically never associated with endemic goiter and rarely occurs after thyroidectomy for this type of goiter. This is shown by a comparison of metabolic rates taken before and after operation. The nontoxic adenoma should not be removed before the age of 21 unless there are definite signs of malignancy because of the possibility of recurrence. The nontoxic adenoma should be removed because of the certain development of cardiovascular damage later in life and because of the possibility of malignant degeneration, which occurs in about 6 per cent of goiters irrespective of the age of the patient. It should also be removed for the relief of pressure symptoms. A small single adenoma may be resected, but in multiple adenomas or uniform enlargement of both lobes a bilateral subtotal resection should be done.

Laryngoscope, St. Louis

45: 489-572 (July) 1935

Upper Respiratory Tract and Some of Their Complications. Relationship Between Infections of Upper Respiratory Tract and Ear J. G. Dwyer New York—p. 489
Id. Upper Respiratory Infections from Pediatric Standpoint L. C. Schroeder New York—p. 493
Id. Endoscopy in Treatment of Diseases of Upper Respiratory Tract. J. D. Kernan New York—p. 499
Cough Considered from Otolaryngologic Point of View L. H. Clerf Philadelphia—p. 505
Injection of Iodized Oil into Bronchial Tree. Passive Method Through Nose. H. M. Goodyear Cincinnati—p. 511
Injection of Sphenopalatine Ganglion S. L. Rnskin New York—p. 515
Use of Ultra Short Waves in Sinus Therapy C. K. Gale New York—p. 520
Atrophic Rhinitis/Ozena with Especial Reference as to Treatment. P. S. Stout Philadelphia—p. 526
Vocal Nodules and Crossed Arytenoids W. A. C. Zerffi New York—p. 532
Present Status of Mastoidectomy W. C. Bowers New York—p. 535
Hemolytic Streptococcus Meningitis of Otic Origin. Operation Recovery A. J. Cracovaner New York—p. 541
Relation Between Short Auditory Memory Span Disability and Disorders of Speech S. D. Robbins Boston—p. 545
Use of Undenatured Bacterial Antigen (Krueger) D. R. Womack, New Orleans—p. 554

Missouri State Medical Assn. Journal, St Louis

32: 261-312 (July) 1935

- Value of Ionization in Treatment of Certain Forms of Allergy A M Alden, St Louis—p 261
Bronchoscopy Some Observations with Case Presentations J S Knight Kansas City—p 264
Gas Gangrene Clinical Study of the Welch Bacillus (Clostridium Welchii) S A Grantham Jr Joplin—p 273
Lead Amblyopia with Cataract from Same Source Report of Case J W Sherer Kansas City—p 275
Heterophile Antibodies in Acute Infectious Mononucleosis H Agness St Louis—p 277
Trauma of Urinary Tract Three Illustrative Cases H M Young Columbia—p 279
New Growth of Descending Colon and Upper Part of Sigmoid Flexure Etiologic Factor in Cause of Acute Intestinal Obstruction F J Smith St Louis—p 283

Nebraska State Medical Journal, Lincoln

20: 241-280 (July) 1935

- Congenital Diaphragmatic Hernia in Infant with Successful Operation J Weinberg and H Hamilton Omaha—p 241
Everyday Pediatrics E S Wegner Lincoln—p 244
Primary Carcinoma of Lung Pathologic and Clinical Study Based on Eighty Cases J M Neely Lincoln—p 247
Aberrant Pancreatic Tissue of Stomach with Surgical Removal R R Best Omaha—p 252
Case Studies in Gout No VIII Fixed Fibrillation Accompanying Hyperthyroidism A Brown Omaha—p 253

Primary Carcinoma of Lung—Neely studied eighty case histories in which primary carcinoma of the lung occurred over a period of twenty-one years. He attempted to correlate the pathologic observations with the clinical data and to ascertain whether or not any conclusions could be drawn concerning prognosis. He found that the increased incidence of primary carcinoma of the lung is more apparent than real. The only proved source of origin of primary carcinoma of the lung is the bronchial mucous membrane. Primary carcinoma of the lung affects males only slightly more than females, and the age incidence corresponds with that of carcinoma in general. No more is known about the etiology of primary carcinoma of the lung than is known about carcinoma in general. Pulmonary carcinoma is found in the two lungs with about equal frequency. Distant metastases occurred in twenty-seven of the eighty cases reported and bore no relation to a gross or microscopic type of tumor. The basal cells of the bronchial mucosa are probably the cells from which all carcinomas of the lung arise. Metaplasia of the bronchial mucous membrane is found in all types of carcinoma and is not necessarily a forerunner of squamous cell carcinoma. Primary sarcoma of the lung probably does not exist. If it does exist, it must be extremely rare. Small cell or anaplastic carcinoma of the lung shows a marked tendency to involvement of the mediastinum. Primary mediastinal tumors other than lymphosarcoma, malignant thymoma and the lymphoblastoma group are secondary small cell carcinomas originating in the lung or some other distant focus. The round cell sarcomas or the oat cell tumors are included in this group. Massive mediastinal involvement and other secondary lesions may arise from a small and obscure primary focus in the lung. Of thirty-nine cases showing mediastinal involvement, nineteen were small cell carcinomas. Metastatic lesions in primary carcinoma of the lung may be the cause for the presenting symptom without pulmonary symptoms in many cases. Most endotheliomas of the pleura are in reality primary carcinomas of the lung with pleural involvement.

New England Journal of Medicine, Boston

213: 1-142 (July 4) 1935

- The Massachusetts Board of Registration in Medicine W P Bowers Boston—p 1
Value of Medical Library in Medical Education L Davis Boston—p 5
Community Hospital as a Center of Postgraduate Education J H Pratt Boston—p 7
Notes on Small Hospital as Center of Postgraduate Education W E Storey Columbus Ga—p 11
Internships in Massachusetts Hospitals C H Lawrence Boston—p 11
Raffling Case of Pulmonary Carcinoma J C Edwards Springfield Mass—p 15
Effect of Administration of Vitamin C on Reticulocytes in Certain Infectious Diseases Preliminary Report J M Faulkner Boston—p 19
Progress in Pediatrics R C Flew Boston—p 20

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

58 141-322 (June) 1935

- Lesions of Central and Peripheral Nervous Systems Produced in Young Rabbits by Vitamin A Deficiency and High Cereal Intake E Melanby—p 141
Effects of Lesions of Dorsal Spinocerebellar Tract and Corpus Restiforme in the Macacus Rhesus Monkey A Ferraro and S E Barrera—p 174
*Mechanism of Internal Hydrocephalus in Spina Bifida Dorothy S Russell and C Donald—p 203
Pain Peripheral Pathway G K Stürup and E A Carmichael—p 216
Shivering Clinical Study with Especial References to Afferent and Efferent Pathways V Uprus, G B Gaylor and E A Carmichael—p 220
Nature of Motor Discharge in Shivering Note D Denny Brown, J B Gaylor and V Uprus—p 233
Dissociation of Cortical Excitation from Cortical Inhibition by Pyramid Section and Syndrome of That Lesion in the Cat Sarah S Tower—p 238
Investigation of Nervous Control of Defecation D Denny Brown and E G Robertson—p 256

Mechanism of Internal Hydrocephalus in Spina Bifida—Russell and Donald examined ten cases of lumbosacral or dorsolumbosacral meningocele. In all a remarkable malformation of the hindbrain was observed. In this a tongue of variable length, consisting of cerebellar tissue and the greatly elongated medulla oblongata protrudes downward into the spinal canal. It overlaps and compresses the upper segments of the cervical cord, distending the dural theca in this neighborhood and filling the foramen magnum. The cavity of the fourth ventricle extends caudad into this tongue, lying between the cerebellar and medullary components. The maximal diameter of the ventricle is usually within the vertebral canal at and below the level of the foramen magnum, and here too or at a still lower level are found the choroid plexuses and the foramina with which they are associated. The plexuses are sometimes united into one mass, which lies in the middle line in the ventricular cavity. The floor of the ventricle presents the characteristic markings of the rhomboid fossa, and in the middle line toward its caudal extremity is a minute pore, which provides a horizontal communication between the ventricle and the central canal of the ventrally placed spinal cord. Cross sections of the brain axis show a somewhat complicated pattern according to the number of structures involved. Other structural abnormalities are commonly found in association with this malformation. The spinal cord appears abnormally small and the cervical roots always run in a cephalic direction to reach their exits through the dura mater. Their cephalic direction decreases as successive segments are examined until, in the upper thoracic region they are either horizontally or caudally inclined. Hydromyelia is present in a number of consecutive segments in the cervical and thoracic cord. There is a conspicuous hypoplasia of the cerebellum, which is usually composed of a small compact mass lacking differentiation into vermis and lateral lobes. The pons as well as the medulla oblongata is elongated and lacks the characteristic ventral protuberance. The cranial nerve roots arising from the pons and medulla are greatly elongated. This curious malformation was noticed first by Arnold (1894) in a case of spina bifida and was more fully described in the following year by Chiari in a series of seven cases of spina bifida, only one of which was an example of meningocele. A good description in five cases of meningocele was published by Solovtsoff (1901) but perhaps the best and fullest account is that of Gredig and Schwalbe in four cases of meningocele (1907). This lesion is called the Arnold-Chiari malformation. The authors believe that occlusion of the foramen magnum in cases of spina bifida will lead to a damming back of cerebrospinal fluid in the ventricular system and to internal hydrocephalus. It has for long been known that operative removal of the sac in spina bifida is frequently followed by hydrocephalus when this was not present before the operation. The development of hydrocephalus after operative removal of the sac can be simply explained as a decompensatory effect.

The extra absorbing apparatus provided by the sac may be just sufficient to balance the degree of obstruction at the foramen magnum in instances in which such obstruction is not severe. If this is true, operative removal of the sac will disturb this balance and will be followed by the development of internal hydrocephalus. The authors describe a comparable but far less pronounced malformation of the medulla oblongata in a case of lumbosacral meningocele without hydrocephalus. In conclusion, they suggest that a more typical Arnold-Chiari malformation may be the cause of the hydrocephalus that complicates some examples of meningocele.

British Journal of Ophthalmology, London

19 369 432 (July) 1935

- Observations on Human Retina D J Wood—p 369
Ocular Disorders Associated with the Wisdom Tooth C B Henry—p 378
The Trachoma Problem A F MacCallan—p 383
Concretions in Lacrimal Canaliculus Caused by Actinomyces A Charlotte Ruys—p 385
Water Binding of the Retina J A van Heuven and F P Fischer—p 390
Three Simple Aids in Refraction Work F W G Smith—p 407

British Medical Journal, London

1: 1303 1350 (June 29) 1935

- The General Practitioner and Mental Conditions J R Rees—p 1303
Etiology of Cancer of Skin with Especial Reference to Occupation A R Somerford—p 1305
Cancer of Lung Its Modes of Behavior F G Chandler—p 1310
Hemolytic Streptococci Leukocidin Preliminary Report C G Paine—p 1311
Confusional State Associated with Infective Endocarditis D Shaw—p 1313
Aids for the Deaf Phyllis M Tookey Kerridge—p 1314

Edinburgh Medical Journal

42 337 392 (July) 1935

- Carcinosarcoma Study of Microscopic Anatomy and Meaning of Peculiar Cancer W F Harvey and T D Hamilton—p 337

Carcinosarcoma—Harvey and Hamilton refer to their six cases of carcinosarcoma, which they define as a double tumor that is a mixture of carcinoma and sarcoma. Their most important example of carcinosarcoma was a tumor of the hypopharynx probably of esophageal origin. It consisted of a squamous cell carcinoma placed low down and arising from the esophagus or the larynx. Above this and continuous with the stroma of the epithelial tumor was a sarcomatous connective tissue containing one or two islands of solid alveolar, malignant squamous epithelium. At the summit the tumor was without epithelial elements and wholly sarcomatous. The authors believe that the sarcomatous element is a subsequent development to the carcinoma. The sarcomatous development is probably an exaggeration of stroma reaction to invasion by carcinoma. There are tumors both of epidermic and of glandular carcinoma type which may show aggregations of spindle shaped epithelial cells with much of the appearance of sarcoma and which may be called spurious carcinosarcoma or carcinoma sarcomatoides. A fibroblastic reaction is not uncommon in primary and secondary carcinoma, which may be very active without being malignant, it may pass over to malignancy and so constitute a carcinosarcoma. It is this transformation of stroma which the authors contend may occur in the case of some carcinomas and is to be separated from granulation tissue and spindle cell carcinoma. The possibility of a predisposition to overgrowth of stroma is one to be considered.

Practitioner, London

135: 1 128 (July) 1935

- Radiology and Practical Medicine L Horder—p 1
X Rays in General Practice C Bull—p 7
Value of X Rays in Diagnosis of Diseases and Injuries of Skull W H Coldwell—p 17
Radiology of Chest Disease F G Wood—p 29
The X Ray Diagnosis of Abdominal Disease P Kerley—p 38
Deep X Ray Therapy in Malignant Disease W M Levitt—p 48
X Rays in Skin Diseases A M H Gray—p 59
Fulguration and Electrodesiccation E P Cumberbatch note by W D Harmer—p 71
Use of Permanent Jejunal Tube in Treatment of Gastric Ulcer W Gilges remarks by F P Weber—p 83
Circumcision in Children T A Ward—p 88
Toxic Drugs Their Use and Misuse W Willcox—p 97

Presse Médicale, Paris

43: 1001 1016 (June 22) 1935

- Short Wave Diathermy in Gynecology R Proust with Collaboration of R Moricard and J Pilsford—p 1001
Larval Leprosy and Granular Forms of Hansen's Bacillus M Faure-Beaulieu and Mlle C Brun—p 1003
Venous Thromboses Arterial Obliterations and Gangrene of Extremities P Wertheimer and P Frich—p 1004
Treatment of Pulmonary Abscess N N Stoichitzka—p 1008

Treatment of Pulmonary Abscess—Stoichitzka discusses the medical and surgical methods employed in handling pulmonary abscess. The medical ones are divided into two groups, the true employment of medicaments and the so-called mechanical methods. He has used emetine in twenty-two cases with sixteen failures, three slight improvements and three recoveries. He is therefore far from enthusiastic over this method of treatment. Alcohol intravenously was employed in ten cases with six failures, two slight improvements and two recoveries. Autovaccines have produced only failures and was abandoned in favor of autopyovaccines, which gave two failures, two slight improvements and one recovery. The treatment by medical means, called mechanical, consists of postural drainage, bronchoscopic drainage or drainage by simple expression, the latter being obtained by artificial pneumothorax. By none of those methods were the results materially better than in a group of ten cases treated purely symptomatically. The most important surgical treatment of lung abscess is by phrenicectomy. This was performed on ten of their patients with three failures, four slight improvements and three recoveries. Pneumotomy was done in five cases, with four deaths and one recovery. Although the surgical results were mediocre, it must be emphasized that they were dealing with chronic abscesses which are almost universally considered less favorable for surgery. There is not yet any treatment definitely superior to the symptomatic.

Schweizerische medizinische Wochenschrift, Basel

65 633 652 (July 13) 1935

- Dangerous Catchwords in Sphere of Heredity J Bauer—p 633
New Transport Extension Splint for Fractures of Lower Extremities Particularly Fractures of Femur J Dubs—p 635
Spinal Anesthesia with Tulocain and Nupercaine Musée for Diverting Attention of the Patient Away from Operation Rusca—p 637
Treatment of Nasal Fractures J Pouli—p 638
Chronic Boldine Poisoning in Human Subjects F Mainzer—p 639

Treatment of Nasal Fractures—According to Poult, the reposition of the fractures of the nasal cartilage can be accomplished readily by pressure with the fingers from both sides and if necessary, with simultaneous hook traction that has its point of attack in the concavities of the anterior portion of the nose. The traction is accomplished best with a blunt double hook that has an inner span of from 5 to 10 mm. The tips of the hook should be padded with cotton. If a fracture of the bony portions of the nose has to be reduced, a wide arterial forceps that is kept closed can be introduced along the nasal floor until the fracture has been reached. The eventually overlapping fragments are then loosened by traction with the double hook. If the vomer also is fractured, it can usually be replaced by traction. Finally, the depression can be lifted from the inside either by opening the forceps or by pressing the closed forceps flat against the depression. In order to retain the fragments in the proper position, the author employs an intranasal support that is made of glass and has the form of a triangle (musical instrument). To guard against asymmetry of the nose, he inserted the support into both nasal cavities, regardless of whether both were injured or not. The nasal support consists of a thick walled glass tube with an external diameter of 5 mm. Each side of the triangle is about 3 cm in length and the middle piece measures about 1.33 cm. The inner distance between the two ends is about 3 mm. It is advisable to have a hole in one of the arms of the triangle and to lead a string through this and the tubal opening and knot it above the upper lip, so as to prevent the triangle from slipping backward. The author states that this supporting apparatus was well tolerated by the patients. It was worn for from eight to fourteen days. It permits the discharge of the secretions and in some instances even limited nasal breathing. The author thinks that unless irrigation seems absolutely necessary it may be omitted, for, with the glass support, danger of stasis of the secretion is not great.

Brasil-Medico, Rio de Janeiro

40: 575 596 (June 29) 1935

Brucella Melitensis Study of Case of Undulant Fever J. Guilherme Lacorte—p. 575

*Bargehr Skin Reaction for Leprosy Active Immunity and Allergy in Leprosy P. Cerqueira R. Pereira—p. 576
Bismuth Treatment in Acute Angina Silva Guimarães—p. 587

Bargehr Skin Reaction in Leprosy—Cerqueira Pereira points out that, while children ranging in age from 6 months to 3 years do not give a skin reaction to lepromin, they are susceptible to the infection. Repeated inoculations, however, in small children and adults will give positive results. The intensity of the skin reaction runs parallel to the number of inoculations. Bacilliferous lepers, during the evolution of the disease, may give positive results to the Bargehr skin reaction. The negative results of the test are probably due to the presence of antibodies that develop from a contact of the individual on whom the test is made with lepers. The presence of antibodies in the blood of persons who give positive results with the Bargehr reaction is proved by the positive results obtained in the same persons by the tests of Gomes and Rubino for leprosy. The positive result of the test in persons who have contact with lepers but who do not show any symptoms of leprosy is the manifestation of the presence of allergy and probably of an index of immunity. Therefore, until positive results are obtained with lepromin repeated inoculations are advisable.

Deutsche medizinische Wochenschrift, Leipzig

61: 1105 1144 (July 12) 1935 Partial Index

Lymphogranuloma Inguinale Etiology and Therapy S. Hellerström—p. 1105

Postoperative Development of Omental Tumors K. Strauss—p. 1108
*Prophylaxis of Postoperative Disturbances in Circulation S. Rusznayk, S. Karády and D. Szabó—p. 1111

Postoperative Development of Omental Tumors—Strauss describes a tumor of the omentum that developed after several abdominal operations. The tumor had grown to fist size within a year. Clinical peculiarities and the rather rapid growth made malignancy seem likely. The tumor was removed and the subsequent histologic examination disclosed a benign, inflammatory tumor of the omentum the pathogenesis of which could be explained by the preceding operation. The author reviews the literature on postoperative omental tumors giving especial attention to the type of operation after which they are most frequent, to the length of time that elapses after the operation before they develop, to the rapidity of the development to the histologic structure and to the erroneous diagnoses to which they may give rise. He gives a detailed report of the patient's history, describes the surgical specimen and discusses the various possibilities of development. He thinks that in this case several factors were involved. He mentions hemorrhagic foci, foreign bodies (suture material) and inflammatory exudates. He thinks that inflammation is the essential causal factor in the development of these tumors. Their radical removal and the severing of all adhesions is necessary in order to counteract the severe clinical manifestations that may be caused by them.

Postoperative Disturbances of Circulation.—Rusznayk and his associates call attention to former reports (see also abstract in THE JOURNAL, June 30, 1934 p. 2241), in which they demonstrated that persons with various disturbances can be classified into distinct groups according to the manner in which their blood pressure reacts to an injection of histamine. They point particularly to the so-called second type, in which an injection of histamine produces a temporary decrease in the blood pressure followed by a considerable increase. Persons in whom this form of histamine reaction results have a predisposition for postoperative collapse. It was the authors' aim to overcome this predisposition. They found that two daily injections of from 0.5 to 1 mg. of histamine given several days in succession changes the histamine reaction and the collapse tendency at least for several days. Accordingly they commence, from eight to ten days before the operation with subcutaneous injections of from 0.5 to 1 mg. of histamine. These injections are given twice daily and are continued until the day of the operation. The authors state that they obtained favorable

results with this treatment, for even major surgical interventions were tolerated quite well after the patients who had a tendency to postoperative collapse had been given the prophylactic histamine injections.

Klinische Wochenschrift, Berlin

14: 985 1016 (July 13) 1935 Partial Index

Morphologic Reactions of Blood in Infections L. Aschoff—p. 985
Clinical Hematologic Studies on Differential Diagnosis and Estimation of Occupational Silicosis G. Schlomka and F. A. Nolte—p. 987
Clinical Value of Electrocardiogram with Leads from Thoracic Wall C. Korth and H. Hecht—p. 992
*Water Content of Total Blood, of Plasma and of Erythrocytes C. Jimenez Diaz, F. Bielschowsky and J. R. Minon—p. 995
Demonstration and Significance of Hemoglobin in Occult Hemorrhages of Gastro-Intestinal Tract I. Boas—p. 998
Physiologic and Pathologic Aspects of Water Tolerance Test J. Bauer, C. V. Medvei and M. Taubenhaus—p. 1001
*Changes in First Heart Sound in Transmission Disturbances A. de Chatel—p. 1004

Water Content of Plasma and of Erythrocytes—Jimenez Diaz and his collaborators studied the water content of the total blood, of the plasma and of the erythrocytes in fifteen healthy persons and sixty two patients. They found that the fluctuations in the water content of the entire blood are caused primarily by variations in the ratio of the plasma to the erythrocytes. They stress that the value obtained by determining the dry residue of the blood is inadequate and often misleading. They concede that the water content of the blood may be increased under certain pathologic conditions but that it cannot be decreased. They did not succeed in finding cases of true anhydremia, that is, inspissation of the blood. The water content of the erythrocytes seems to be dependent on three factors: their size, hemoglobin content and age. In healthy persons the water content of the total blood was found to be between 78 and 81 per cent, of the plasma between 90 and 92 per cent and of the erythrocytes between 65 and 68 per cent.

Changes in Heart Sounds—According to de Chatel, the physical factors that play a part in the production of the cardiac sounds are not fully understood as yet. The author describes a case in which it was possible to explain the abnormality of the systolic sound on the basis of the simultaneous recording of the cardiac sounds and the electrocardiogram. He says that the intensity of the first heart sound is influenced by the respiratory movements and by changes in the rhythm. However, changes in the systolic sound are observable also in transmission disturbances in which the electrocardiogram records changes in the length of the PQ interval. A review of the literature reveals that the intensity of the first heart sound decreases as the transmission time, that is, the PQ interval lengthens. The author says that this rule applies only to cases in which the mitral valves are free from pathologic changes. The patient whose history is reported came to the clinic with the symptoms of acute decompensation. The first electrocardiogram showed sinus rhythm and a myocardial lesion. On the seventh day following the onset of the digitalis therapy the pulse became arrhythmic and the electrocardiogram indicated an atrioventricular block of the ratio of 1:2. Auscultation disclosed at this time that the first heart sound was almost inaudible in every eighth or ninth pulse beat. It was now decided to register the cardiac sounds together with the electrocardiogram. This record revealed that there was not a regular 1:2 block and that a part of the regularly blocked auricular contractions were transmitted with a considerably prolonged transmission time. In this manner there developed in the otherwise regular rhythm an arrhythmia of short duration. The sound record shows plainly that the first sounds that have the essentially smaller deflection correspond to the ventricular beats with the longer transmission time. This tallies with the auscultatory observations. The author explains that the patient had 'frustrated contractions' in which, paradoxically, not the pulse beat was lacking but rather the systolic heart sound. This case proves that the contraction of the auricles plays an important part in the development of the first heart sound in that the systolic sound becomes weaker as the transmission time lengthens, that is, the later ventricular systole follows after the auricular systole. The author shows further that in case of valvular lesions the changes in the cardiac sounds are not uniform.

Zentralblatt für Gynäkologie, Leipzig

59 1633 1680 (July 13) 1935

- *Decisive Importance of Determination of Pressure in Cutaneous Vessels in Therapy of Preeclampsia D. von Raisz—p. 1634
- *Adrenal Cortex Extract in Treatment of Gestoses J. Torre Blanco and G. Riesgo del Campo—p. 1639
- Results of Roentgen Therapy in Puerperal Mastitis in One Hundred and Thirty-Five Cases H. Theiss—p. 1644
- Importance of Exploratory Curettage in Preeclamptic and Climacteric Metrorrhagia A. Schwarz—p. 1648
- Large Teratoma of Sacrum as Obstruction in Delivery M. Brenner—p. 1650
- Congenital Skin Defects of Neck B. Smekó—p. 1653

Pressure in Cutaneous Vessels in Preeclampsia—Von Raisz endeavored to determine whether in women with preeclampsia there exists a symptom that indicates a threatening eclamptic attack with greater probability than the manifestations that were formerly considered in this connection, namely, the height of the blood pressure, the protein content of the urine, the severity of the edema and the patient's general condition. The author studied the pressure of the cutaneous vessels by means of Herzog's apparatus. In tests in 156 cases he made the following observations: 1. The pressure of the cutaneous vessels in healthy pregnant women is like that in nonpregnant women, 40 mm of mercury being the average and 50 mm the maximum. 2. The pressure of the cutaneous vessels of the women who have only pregnancy edema is less than normal, the greater the edema, the lower the pressure. 3. Even in apparently severe preeclamptic conditions, the pregnant or parturient woman remains free from eclamptic attacks if the pressure of the cutaneous vessels does not exceed 50 mm of mercury. 4. High pressure in the cutaneous vessels indicates that an eclamptic attack is threatening. Whenever the pressure exceeds 60 mm of mercury, eclampsia is practically certain but all measures designed to prevent an eclamptic attack should be taken even in cases in which the pressure exceeds 50 mm. The author reports thirteen cases. In a table he shows that edema, protein content and the height of the blood pressure would not have been sufficient to indicate threatening eclampsia but that the pressure of the cutaneous vessels gave a correct indication of the severity of the condition. The author points out that a quick termination of the delivery alone is not sufficient to prevent an eclamptic attack if the pressure in the cutaneous vessels is high. He stresses the value of venesection as a preventive measure. He thinks that it should be tried first and that the other medicinal and operative measures should be taken only if it does not reduce the abnormally high pressure in the cutaneous vessels.

Adrenal Cortex Extract in Treatment of Gestoses—A recent report by Stemmer about the use of adrenal cortex extract in the treatment of gestoses induced Torre Blanco and Riesgo del Campo to report an interesting case. The woman, aged 24, had had two normal deliveries, but in both pregnancies she had vomited during the first three months and during the second pregnancy the vomiting recurred three months before the delivery and persisted until two months after the delivery. When the patient came under the authors' observation, she was in her third pregnancy. She had attacks of vomiting, but she was more annoyed by pyrosis and acidity. She also had occasional attacks of vertigo. These symptoms disappeared and after that the pregnancy took a normal course until one month before expected delivery. At this time severe vomiting, pyrosis and hypersalivation set in and the general condition was poor. The breath smelled of acetone, and examination of the urine disclosed severe acetoneuria and the presence of albumin and of biliary pigments. The authors think that the disorders which developed at the end of pregnancy are due to a metabolic disorder, namely, acidosis, the chief cause of which is a deficient liver function and an irregular muscular metabolism, which in turn produces a disturbance in the production of the acetone bodies and a considerable increase in the lactic acid content of the blood. In this connection the authors call attention to the fact that a number of investigators detected a tendency to acidosis not only in the course of gestoses but also during pregnancy. Various factors are involved in the genesis of acidosis, but the increase in the lactic acid content of the blood, which is caused by an abnormal glycogen metabolism in the muscles and by a deficient lactic acid synthesis in

the liver, is the most important factor. Since it is known that the adrenal cortex influences the increased lactic acid content of the blood and since water retention, which may be increased by the cortex hormone, was absent, the authors resorted to treatment with adrenal cortex extract and administered three injections, which were well tolerated. The lactic acid content of the blood and the alkali reserve were examined during this time. The vomiting ceased on the first day the treatment was instituted, but the acetoneuria persisted. The treatment with adrenal cortex was discontinued and 30 units of insulin and 150 cc of dextrose were given. This treatment was continued for four days, being given twice on the first two days and once on the other two days. The acetoneuria disappeared as soon as insulin was given. Thus the authors succeeded in effecting a separation of the two chief factors of the acidosis, the excessive lactic acid formation in the blood and the formation of acetone bodies. The first of the two factors was counteracted by the adrenal cortex extract and the second by the insulin-dextrose treatment.

Svenska Läkaresällskapet's Handlingar, Stockholm

61: 63 180 1935

- *Studies on Undulant Fever in Sweden G. Olin—p. 63
- Suicide by Blows of Ax on Head Contribution to Discussion G. Hultqvist—p. 169

Undulant Fever in Sweden—Olin states that from 1929 to 1933 about 120 cases of undulant fever have occurred annually in Sweden. Of 565 patients, 65.2 per cent were men. Persons in the fourth decade of life were most often affected. A close relation between undulant fever and infectious abortion in cattle was noted. Serologic studies supported the assumption that latent abortive infection with *Bang's bacillus* occurs in man. Test of 288 persons without history of undulant fever and with little likelihood of exposure to infection gave positive cutaneous reactions in twenty-one, or 7.3 per cent, the reaction being more often positive in adults than in children and in women than in men. The cutaneous reaction was positive in six persons with a history of undulant fever from six months to six years previously and in nine bacteriologists who had been working with *Brucella* cultures for a longer time without having undulant fever. A marked phagocytosis was found in four of the six and in seven of the bacteriologists. Of 251 attempts at blood culture in undulant fever, 46.2 per cent were positive. Bacteria were more often demonstrable in a highly febrile stage but could occasionally be cultivated from the blood during afebrile periods. In seventy-five cases verified by blood cultures, the results show that agglutination in serum dilution is 1:320 and from 0 to 10 per cent hemolysin in complement fixation tests with 0.1 cc. of serum could be regarded as positive. The agglutination test seemed somewhat more reliable. In 171 cases of undulant fever there was a single fever period in one fifth, there were two or three fever periods in more than one half, and there were four or more fever periods in one fourth. The fever was usually high. The general condition was little affected. The pulse frequency was low in comparison to the temperature. Enlargement of the spleen was found in more than one third of the cases. The diazo reaction of the urine was positive in about one fourth of sixty-four cases. Leukemia appeared in most cases, the percentage of mononuclear elements was generally increased, and slight or moderately increased blood sedimentation was usual, the values generally being lower during the first stage than during the later course and higher during febrile than during afebrile periods. In the six fatal cases the cause of death was mainly pulmonary or circulatory complications. The duration of the disease till disappearance of the fever varied from eight to 532 days, the average duration being 91.5 days. The average convalescence lasted three months. Chemotherapy and vaccine treatment with subcutaneous injection of killed bacteria were both without effect.

CORRECTION

Acid Medication in Treatment of Bacilluria—In THE JOURNAL August 3 page 393 in the abstract of the article by Crance and Maloney, the composition of the nitrohydrochloric acid solution should read $4\frac{1}{2}$ drachms of the acid and enough water to make 4 ounces.

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INFANT FEEDING

HISTORICAL BACKGROUND AND MODERN PRACTICE

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The subject of infant feeding seems somewhat hackneyed in these sophisticated days and perhaps for that reason more than any other needs occasional appraisal and reorientation. Toward this accomplishment the following discussion is offered.

HISTORICAL SUMMARY

Appreciation of the present status of the practice of infant feeding requires a view, even if fleeting, of the historical background of the subject. Prior to relatively recent times the successful practice of infant feeding consisted almost entirely in the use of human milk either from the mother or from a wetnurse. Animal milks, broths, pap, honey and wine were the principal food substances used in hand feeding and rarely led to the development of a healthy child if they were the exclusive sources of nutriment, i.e. unless also some human milk was given the infant.

When was the scientific basis of the present structure established? Various students would probably give different dates, but it would seem sound to select the latter half of the eighteenth century, the period when inaccurate but thought-provoking chemical analyses of milk were first being made. Prior to this period, for example, breast milk was tested by the finger-nail technique—a test that was still advocated in 1752, more than 1,600 years after it was described by Soranus of Ephesus, who flourished from 98 to 117 A.D.¹ Michael Underwood, who lived from 1736 to 1820, wrote a splendid treatise on the diseases of children, which was first published in 1784 and passed through sixteen editions, but not until the fourth edition, that of 1799, was any mention made of the chemistry of milk, this marked a real beginning for the scientific approach to the subject of infant feeding by the clinician. Still² says that with Underwood "paediatrics in England had crossed the Rubicon: the modern study of disease in childhood had begun."

The span of time in which a scientific basis for infant feeding has been emerging is thus probably less than 150 years. During these years developments in various

fields of scientific and clinical inquiry have impinged on the subject, sometimes setting it off in one direction and sometimes in another but, taken together, establishing a sound body of knowledge and experience to guide the modern clinician.

It may be well to have at hand in outline form some of these scientific and clinical studies and stress their effect on infant feeding and on concepts of nutritional disorders.³

Chemical Studies—The beginnings of milk analyses have been referred to, but the far-reaching effects of research in physiologic chemistry, notably the chemical analyses of foodstuffs under Justus von Liebig (1803-1873) and others, were manifested in the analyses of milk by J. Franz Simon, a chemist (1807-1843), in 1838 and later, and by Philip Biedert, a pediatrician (1847-1916), in 1869 and later. On these and other chemical studies was based the conception of the harmfulness of various constituents of cow's milk and the many attempts to imitate human milk as exemplified in numerous milk mixtures, now practically obsolete, and in the various cream and top milk mixtures. The so-called percentage method of feeding had its genesis in the work of Biedert but was brought to fruition by Thomas Morgan Rotch (1849-1914) in this country in the eighteen nineties. As Rotch has pointed out, percentage feeding is rather a method of calculation than a method of feeding, no one can satisfactorily prescribe food for an infant who does not have knowledge of the composition of that food. The use of "simple dilutions" of milk with added carbohydrate does not ignore composition but simply does not stress the importance of slight variations in the concentration of the individual constituents. It is probable that the mathematical intricacies of the "percentage method" may have driven some lazy physicians to the use of patent baby foods, but such foods were widely used before the percentage system of calculation was born.

Pathologic Studies—The development of pathologic anatomy had its influence in the sphere of infant nutrition. One of the earlier workers in this field was the gifted French physician Charles-Michel Billard (1800-1832), who performed many autopsies on infants and attempted to classify disease according to the pathologic lesions. Other early attempts at classification of nutritional disorders "were made by the French pediatricians De Lord (1837) and Velhies (1838), who thought that the symptoms of vomiting and diarrhea were the result of an inflammatory condition of the digestive tract."⁴

Read before the Section on Pediatrics at the annual meeting of the Medical Society of the State of New York, May 14, 1935.

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1. That mylke is goode that is whyte and sweete and when ye droppe it on your nayle and do not move your finger neyther steth abroad at every stirring nor will hang faste upon your nayle when ye turne it downward but that whyche is betwene bothe is beste. (Still after Thomas Phaer)

2. Still, G. F. The History of Paediatrics. London, Oxford University Press, 1931.

3. Brennemann, Joseph. Artificial Feeding of Infants in Abt's Pediatrics, vol. III. Philadelphia, W. B. Saunders Company, 1923. Garrison, F. H. History of Pediatrics, in Abt's Pediatrics, vol. I. An Introduction to the History of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1929. Levinson, A. Pioneers of Pediatrics reprinted from Medical Life, July 1928. Still, G. F.

4. Abt, I. A. Nutritional Disturbances of Infancy in Abt's Pediatrics, vol. III. Philadelphia, W. B. Saunders Company, 1923.

In Germany, Herman Widerhofer (1832-1901) was a leader in studies of this type, which sought to find at the autopsy table some basis for disturbances in nutrition. By and large, this method of approach, except in a negative way, has not greatly clarified the problems of feeding and nutrition, although, as will be shown later, a correlation of postmortem observations with bacteriologic studies finally solved the etiology of bloody diarrheas in infants. So long as "the fundamental concept of disease remained fast-rooted in the anatomical lesion, the theory of treatment conscientiously limited itself to a number of drugs designed to combat that lesion" (Heubner).

Bacteriologic Studies—The association of infant feeding with research in bacteriology has been close, and the contributions have been outstanding. Pioneer work in this field was done by Theodor Escherich (1857-1911) on the relationship of the colon bacillus to disease (1886). The most dramatic contribution was doubtless the demonstration by Duval and Bassett in 1902 at the Thomas Wilson Sanitarium in Baltimore that ileocolitis or bloody diarrhea in infants is really dysentery caused by an organism of the groups of bacilli described in part by Shiga in 1898 and by Flexner in 1900.

But infant feeding is perhaps under its heaviest debt to bacteriology for its gifts of pasteurization (begun first on a commercial scale in Denmark in 1890) and sterilization of milk and milk mixtures. By these means typhoid, dysentery, tuberculosis and streptococcal infections are specifically eliminated or reduced in incidence, and other infantile disorders of a nonspecific type have been controlled by the use of "clean" milk. For out of these early bacteriologic studies there emerged the campaign for "clean, pure milk," the establishment of Walker-Gordon Milk Laboratories (Boston, 1891), the introduction of certified milk by Coit of New Jersey in 1892, and the establishment of "consultations for nurslings" by Budin in Paris in 1892 and of "milk depots" by Variot in 1893 and Dufour in 1894.⁵ The young pediatrician of today little realizes how much modern pediatrics owes to these early movements, the baby milk station with its complicated "feeding formulae" has gone, but pasteurization, sterilization, tuberculin testing and the infant welfare conference remain.

Metabolism Studies—The fundamental work of Rubner set the stage for the great contributions of himself and Otto Heubner (1893-1926), who in 1894 built the first respiration calorimeter for infants. Heubner's contribution on the energy requirement of infants is basic to this day, along with similar studies by Benedict, Talbot, Fleming and Murlin. Without knowledge of the energy requirement of the infant, no scientific program for his feeding can be laid down, but there is no "caloric system of feeding" and, as Aldrich⁶ points out, the calory is "a unit of combustion not of nutrition." Practical use of calculations of the energy value of milk mixtures did not get under way until well after the turn of the century.

A pioneer in the study of the metabolism of the child was Wilhelm Camerer (1842-1910), who in 1894 published important observations on the subject based on extensive personal observations. Studies in the field of infant metabolism continue to have a most important place in pediatric research.

Clinical Studies—With a background now somewhat extensive, valuable clinical correlations were attempted. Most noteworthy were those of Czerny and Keller in 1906 and Finkelstein in 1910. The classification of nutritional disorders by Czerny was attempted on an etiologic basis and consisted in a correlation of certain nutritional disorders with "too much" of certain food substances such as starch, fat or protein. Finkelstein's classification was purely clinical, he also had the conception of the harmfulness of "too much" of certain food substances, but he believed in the relative benignity of casein and fat and was inclined to blame the sugar and whey proteins and salts. This concern with the harmfulness of "too much" of some food ingredient gave way during the development of knowledge of vitamins to a phobia of the results of "too little" of some of the same or other substances or elements of the diet.

Czerny and others developed the conception of the effect on the gastro-intestinal tract of infections not in that organ. Enteral infections, so prevalent in the pre-"clean milk" days, have become less and less common, but infections elsewhere than in the intestinal tract (parenteral infections) as causes of nutritional disorders have received ever increasing emphasis.

Vitamin Studies and the Concept of Food Deficiencies—Lunin in 1880 showed that a synthetic milk was not adequate for normal nutrition, and Eijkman in 1897 first produced experimentally a disease due to a vitamin deficiency—beriberi in pigeons. Since these studies, and particularly in the last twenty years, the contributions on the subject of vitamins have poured forth, important alike in number and content. But in addition, stimulated by the concept of disease resulting from absence of or "too little" of the vitamins, substances at that time unidentified, investigators became interested in ascertaining the effect of "too little" of many substances of known composition. Hence present day concepts of "too little" water and salts leading to shock and dehydration, "too little" protein to nutritional edema, "too little" iron to certain forms of anemia, "too little" of certain amino acids to stunting and death, "too little" calcium and phosphorus to skeletal defects, the illustrations might be extensively amplified. McCollum in 1932 stated that "there are at least thirty-seven individual substances essential for a complete diet. These consist of amino acids, linoleic acid, dextrose, minerals and vitamins." The figure would doubtless be raised today.

THE FORMULATION OF THE INFANT'S DIET IN MODERN PRACTICE

As the result of the knowledge of nutrition, which originated in diverse domains of science and in clinical observations and has been focused on the problems of infant feeding, the concept of the "balanced dietary" dominates the present era. It is largely to this aspect of modern infant feeding that I now invite attention—to the concept of the beneficence of "enough" of food constituents in contrast to that of the past of the harmfulness of "too much" or "too little." For the sake of completeness, most of the important items in the construction of the infant dietary will be mentioned, but only a few will be emphasized.

Energy Requirement—The normal infant tends to satisfy his total energy requirement whether the milk mixture is concentrated or dilute. This requirement for the individual baby seems relatively rigid, whereas the total water requirement is somewhat labile, as is

⁵ Holt, L. E. Infant Mortality Ancient and Modern. An Historical Sketch, Am. Assn. for Study and Prevention of Infant Mortality 4th annual meeting Washington D. C. 1913.
⁶ Aldrich, C. A. Science and Art in Child Nourishment. J. Pediat. 1:413 (Oct.) 1932.

evidenced, for example, by the fact that the water content of woman's milk is the same whether it nourishes children in the arctic or in the tropics. It would seem, then, that the physician in prescribing the infant's food should think first in terms of caloric requirement, it is one of the essential checks and balances in the determination of the dietary. Although the scientific measurement of the energy requirement of a relatively few infants has established the range to be between 90 and 125 calories per kilogram of body weight, in practice the reaction of the child to the calories given determines what additions or subtractions are to be made in a diet. In undernourished infants the estimation of caloric requirement is made on the basis of the weight to be expected if nutrition has been adequate. Earlier in the first year the infant requires more than later, the thin child and the active child require more than the fat, phlegmatic infant.

The Calory in the Assessment of Milk Mixtures—The calory is not only a measure of the total energy requirement of the infant but a unit by which mixtures may be satisfactorily assessed and compared.⁷ That is to say, a diet can be evaluated in terms of its total energy value and in the percentage of the total calories individually furnished by protein, carbohydrate and fat, the salt content can be expressed in terms of milligrams per calory, and so on with respect to the other ingredients of the food, whether they are amino or fatty acids, lactose, iron or iodine. Water content is thus related when caloric value per ounce or cubic centimeter is stated. Food appraisal on a gravimetric basis depends on the content of water and of various solid constituents of dissimilar qualities, the gram and the ounce have no meaning as units of nutritional currency. By contrast, the calory is a common measure of the energy yield of the total food and of the protein, carbohydrate and fat constituents separately as well. Furthermore, the calory is an independent unit of evaluation and has physiologic implications. The amount of food ingested when the supply is not limited is not determined fundamentally by the gastric capacity (as was so dogmatically taught for years) or by the bulk of protein, carbohydrate, fat, roughage and water but rather, in large measure, by the energy yield of the food to the body.

Since the appraisal of a diet seems most significantly done in terms of the calory, it seems logical to express the known facts of nutritional requirements of individual food components in the same terminology. Thus, for example, it is usually stated that the breast fed infant receives an adequate amount of protein at the level of from 1.5 to 2 Gm per kilogram of body weight, but this is possible only if the baby takes about 175 cc of milk (about 120 calories) per kilogram of body weight. If the infant should take less, it might seem to follow that the food was at fault, since the child will receive less than from 1.5 to 2 Gm of protein per kilogram. If, however, it is stated that the breast fed infant receives 8 per cent of his total calories, whatever their number, in protein, the important fact of the relationship of protein to other food constituents in the body is brought forward, the baby may

take little or take much, but the fact that is thereby emphasized is the character of his appetite, not a seeming deficiency in his food. As will be pointed out later in this paper, the number of calories ingested, except in the case of the sick, feeble or premature infant, can be safely left to the baby when the supply of milk is adequate.

Protein—The protein needs of the breast fed infant are apparently met when he receives in this food substance 8 per cent of his total calories. Since human milk protein is largely the complete protein, lactalbumin, and cow's milk contains a large amount of casein, which is not lacking but relatively low in an essential amino acid, cystine, it has been deemed advisable to give between 10 and 20 per cent of the total calories in protein when the source is cow's milk. This is from 3 to 6 Gm per kilogram of body weight and is usually met by giving the infant about 100 cc of milk per kilogram of body weight. But the minimum requirement of protein for the infant has not been determined. It has been taught in respect to the protein of cow's milk that a mixture in which 10 per cent of the total calories was in protein, 65 per cent in carbohydrates and 25 per cent in fat, i.e., ordinary sweetened condensed milk (developed by Borden in 1856), led to various nutritional disturbances, it was supposed that there was too little protein, too little fat and too much sugar. Dr. Harold Harrison of the department of pediatrics at Yale has just completed balance studies on five infants so fed and receiving cod liver oil and orange juice. It was demonstrated in these studies that the infants on this milk mixture showed as great a retention of nitrogen as they did when given an equal number of calories per kilogram of evaporated milk diluted so as to be equivalent to whole milk with 6 per cent of the mixture in added sugar, 15 per cent of the total calories yielded by this mixture was in protein. The retention of calcium and phosphorus was slightly lower in the babies on condensed milk than in those on the evaporated milk mixture but entirely adequate according to standards established by metabolic studies with breast milk. It is probable that the harmful effects of such milk mixtures in the past were due to excessive dilution and the lack of supplementary vitamins.

In a recent experimental study Smuts⁸ has shown that in adult animals of different species, widely variant in size, the endogenous catabolism regardless of species is closely related to the basal metabolism, so "that 2 mg of nitrogen are lost to the body daily for every calory of basal heat. This estimate of the endogenous loss of nitrogen is the basic information necessary to compute the maintenance requirement of protein." This important investigation is basic for certain calculations by which experimental data are brought to bear on the matter of protein minimum. These calculations, while they must be based ultimately on data obtained from growing animals and babies, suggest that the protein of human milk is very nearly minimal in amount for the normal infant. Experimental proof may be obtained in this way of the clinical judgment of certain pediatricians that premature infants do better on human milk when that diet is supplemented with cow's milk protein.

In respect to the protein of cow's milk, it is not sufficient that it be adequate in amount and quality, it

⁷ For example by determining the percentage of total calories in protein, carbohydrate and fat it can be shown that seemingly dissimilar mixtures such as condensed milk, one-third milk with 5 per cent added sugar and Schick's dubo (whole milk to which 17 per cent sugar has been added) have the same relative composition except for water content. Likewise the similarity in the pattern of caloric percentage distribution of protein, carbohydrate and fat in butter flour mixtures and S. M. A. to cream and top-milk mixtures and to human milk may be demonstrated —Powers (footnotes 17 and 18).

⁸ Smuts, D. B. The Relation Between the Basal Metabolism and the Endogenous Nitrogen Metabolism with Particular Reference to the Estimation of the Maintenance Requirement of Protein. *J. Nutrition* 9: 403 (April) 1935.

must be changed from its natural state. This process has been accomplished in a variety of ways. Budin⁹ showed that the cooking of cow's milk greatly enhanced the value of the milk in the feeding of infants.¹⁰ Similarly, investigators have fed milk which has been diluted, concentrated or dried, alkalinized, acidified, peptonized, treated with colloids by the addition of starch solution, acacia or gelatin,¹¹ with a growing realization that, however dissimilar some of these processes and however diverse the changes produced by them in the milk, one effect common to all is brought about such that when the milk is acted on by rennin the protein is precipitated in finer curds than is the case with raw milk. The degree of fineness varies with the particular method of denaturation used. It is believed that this change in the protein largely accounts for the favor which milk so modified has found in the feeding of infants.

Fat—From the standpoint of facility of caloric supply, it is desirable to have fat in the food. Why are fats otherwise desirable? The answer to this question is incomplete. The fats are associated with certain vitamins and previtamins, but these are now available in fat-free concentrates or other forms. During the great war, Pirquet observed many children who received little fat in their food. As the result of von Groer's experiments in Pirquet's clinic, it was believed that fat could be entirely eliminated from the diet. However, the infants von Groer studied can hardly be said to have done well. Burrs' work suggests that certain unsaturated fatty acids—linoleic and linolenic—are essential but interchangeable in the body economy. The fats are intimately associated with water, mineral, phospholipid and sterol metabolism. There is, therefore, suggestive evidence that, ordinarily, cow's milk should not be so modified for infants that fat is completely removed. On the other hand, clinical experience supports the belief that a large amount of butter fat is not handled well by most infants artificially fed and that about 20 to 30 per cent of the total calories (from 2 to 3.5 Gm per kilogram of body weight) in fat is an optimum amount.

Recent studies on fat metabolism in infants are of great importance. Holt, Tidwell, Kirk, Cross and Neale¹² have shown that the "size of the fat particles is without influence on fat absorption" and that "volatile fatty acids in amounts considerably larger than those present in butter appear to be harmless." Both of these observations are contrary to much previous teaching. Two further conclusions of Holt and his associates are of practical import. The first of these is that "a comparative study of various fats and fat mixtures indicates that those mixtures specially designed

for infant feeding are no better absorbed than butter. Certain animal and vegetable fats are, however, distinctly better absorbed." The other conclusion referred to is that "fat-poor diets tend to produce loose, fermentative stools", at times such diets "appear to bring out allergic manifestations" (eczema and spasmodic bronchitis).

Hansen¹³ has brought forward evidence that certain cases of eczema are favorably influenced by the addition of oils containing large amounts of unsaturated fatty acids (corn oil and linseed oil). Since these patients showed low values for the iodine number of the fatty acids of the blood serum and the low iodine numbers could be raised by administration of the oils referred to, Hansen ascribes the favorable effect to a greater need of these patients for certain unsaturated fatty acids.

Carbohydrates—In regard to carbohydrates, clinical experience has demonstrated that additional amounts should be added to the carbohydrate in the milk. Indeed, one observation seems very clear, namely, that if the protein, mineral and vitamin contents of the food are satisfactory the carbohydrate content may with safety reach proportions commonly practiced only by the use of sweetened condensed milk. The harmful effects of that food are now recognized to be due not to the high carbohydrate content per se but to lack of vitamins and, as often used, to excessive dilution.

Lactose, sucrose from cane, beet or banana, levulose in fruit juices and in honey, dextrose, maltose, dextrans and starches all have a greater or less place in infant feeding. Differences in cost, taste, digestibility, rates of absorption, osmotic pressure, and nutrient influence on bacteria are some of the points on which one should like exact data so that the optimal carbohydrate or combination of carbohydrates might be selected for the infant. Unfortunately, as Marriott points out, "there are few, if any, carefully controlled clinical observations on the intestinal tolerance to the various sugars and most of the statements made appear to be based only on general impressions."

Too much emphasis has been placed on the fact that the milk sugar of all animals is lactose. Since the sugar ultimately utilized by the body cells is dextrose, there could be no accumulation of that sugar in a secretion such as that of the mammary gland. But why lactose is excreted in milk rather than some other carbohydrate is not known. The question presents itself: Is there a minimal requirement for lactose? Pertinent data such as these may be given that lactose, because of prolonged acid fermentation, favors calcium absorption, and that a lactose derivative—galactose—enters into the structure of the glycolipins of nerve tissue. If milk is the basis of the infant's food, the lactose so given almost certainly meets the minimum requirements for that substance. The matter then becomes of importance only in the construction of milk-free foods for infants, a problem of growing interest to pediatricians.

The advantages of a mixture of added carbohydrates, when any but small amounts are used, probably rests on solid ground. Since a variety of enzymes are required for the digestion of a variety of carbohydrates, the absence or reduction in amount of any specific enzyme will likely be associated with less digestive disturbance if this food element is fed as a mixture of

9 Budin Pierre. The Nursing translated by William J. Maloney. London: Caxton Publishing Company 1907.

10 Soxhlet introduced the practice of cooking of milk in Germany in 1886 and Budin and Chavane in Paris in the eighteen nineties. When the practice actually began is not known. Bartholomaeus Metlinger (late fifteenth century) advocated the boiling of milk. He like many other writers, probably advocated the procedure because it was observed that raw milk was more laxative than boiled milk. After the development of bacteriology boiling was practiced to inhibit the growth of bacteria. It was not until the work of Brennemann (A Contribution to Our Knowledge of the Etiology and Nature of Hard Curds in Infants' Stools. *Am. J. Dis. Child.* 1: 341 [May] 1911. Boiled vs. Raw Milk. *An Experimental Study of Milk Coagulation in the Stomach.* *J. A. M. A.* 60: 575 [Feb. 22] 1913) and Ibrahim about 1911 that it was clearly recognized that boiling accomplished two distinct purposes: it made the milk more digestible and it freed it from living bacteria. I believe that all cow's milk used in feeding infants should be boiled or otherwise cooked to an equivalent degree.

11 An old procedure advocated by Underwood and the elder Meigs and by many others in recent years.

12 Holt L. E. Jr., Tidwell H. C., Kirk C. K., Cross Dorothea M. and Neale, Sarah. Studies in Fat Metabolism. I. Fat Absorption in Normal Infants. *J. Pediatr.* 6: 427 (April) 1935.

13 Hansen, A. E. Study of Iodine Number of Serum Fatty Acids in Infantile Eczema. *Proc. Soc. Exper. Biol. & Med.* 30: 1198 (June) 1933. Serum Lipid Changes and Therapeutic Effects of Various Oils in Infantile Eczema. *ibid.* 31: 160 (Nov.) 1933.

small amounts of several carbohydrates rather than as a large amount of a single sugar or starch. Moreover, under such circumstances the availability of the products for absorption is spaced, the varied influences on bacteria and yeast of different nutrients are achieved, and the hydragogic effect of the milieu is lessened. It is demonstrated by clinical experience that small amounts of starches, even in calorically valueless amounts, before the infant is 6 months of age, are desirable in the modification of milk, a finer curd and a more demulcent mixture, as well as other less tangible qualities, are achieved thereby.

Laxative effects are probably promoted by increasing the relative proportion of malt sugar over others, but it is important to recall in this connection that many of the commercial products containing maltose are mixtures not only of sugar and starch derivatives but of salts and other substances largely unidentified, which may well cause the laxative action.

It must be emphasized that dextrose is an essential requirement of the animal organism, the minimal amount "necessary for the maintenance of life and the prevention of ketosis is approximately 3 Gm per kilogram of body weight per day in the case of young infants"¹⁴. This amount is about 12 per cent of the total calories for infants. However, if sufficient calories are ingested, the proportion that can be given in fat is too small to bring about ketosis, the use of carbohydrate in large amounts in the infant's diet really rests on successful clinical experience.

Vitamins—In the various procedures concerned in the modification of milk it has been appreciated that the end product is comparatively poor in vitamins C and D and that the diet must be supplemented as a routine with respect to them. Most pediatricians believe that the A and the B complex are present in adequate amounts in milk. However, in respect to vitamin B, special consideration seems required in certain cases. Vitamin B is a fundamental necessity for metabolism. Cowgill has demonstrated that the requirement for this vitamin is directly proportional to the total metabolic rate, while a certain amount of the vitamin may be stored, starvation depletes the supply. Cowgill has also shown that the vitamin B requirement of dogs is generally increased when the animals are given large amounts of water. These facts may be pertinent in the case of infants who are convalescent from a severe diarrhea with dehydration and who have been starved and given large quantities of fluid. Vitamin B in some concentrated form may thus be a desirable addition to the diet of convalescent infants.

Of great concern to the pediatrician is the use of vitamin and salt fortified foods and the various vitamin and salt mixtures. Adequate data on the potency and effectiveness of most of these substances are lacking. Furthermore, physicians may well be concerned with the possible harmfulness of many of these well advertised preparations of vitamins, iron, copper, iodine and the like and the nullifying effect of one on the other. The public health aspect of this whole matter and its relation to food advertising is one that challenges the best thought of every physician and especially of those to whom authority and decision in such matters have been delegated.

Water—In infant feeding, water should be regarded in its true light, namely, as one of the essential struc-

tural elements of the body. Water is necessary also in the regulation of temperature and in the assimilation and elimination of metabolic products. Water has a value in promoting greater ease in the digestion of cow's milk, but it is misleading to think of this as the primary function of water, as is so often done in speaking of the dilution of milk mixtures.

The water requirement of the infant is greater than that of the adult, since the requirement is roughly proportional to the total energy metabolism, many other important factors are involved, such as external heat and humidity, muscular activity, and the salt and nitrogen content of the food. The breast fed infant receives from 125 to 150 cc of water per kilogram of body weight irrespective of many of these factors, this is the pediatrician's guide, but there must be a wide margin of safety in this quantity. Schoenthal¹⁵ found that in the artificially fed infant receiving from 35 to 60 cc of water per kilogram symptoms of acute dehydration developed, this suggests a minimum requirement of water for the artificially fed infant. Whether most of the water should be given with the milk mixture is to be determined in the individual case, but some water as a matter of habit training should be given alone between some feedings.

Salts—In practice the necessary inorganic material is adequately cared for if the amount of protein in the milk mixture is adequate. The exception is iron, which in the case of the premature infant may perhaps be augmented.

RULES FOR DEVISING FORMULAS

In developing the formulas by which satisfactory milk mixtures may be prepared, various conceptions and rules have obtained, the mixtures evolved will be shown (chart 1) to have many similarities regardless of the method by which their composition was determined.

Some of the bases of the formulations may be described.

1 The approach of Meigs, Biedert and Rotch. By various means, a milk mixture is devised that has approximately the same percentage of protein, carbohydrate and fat as has human milk. In this group are the cream and top milk mixtures and the butter-flour mixtures, also certain prepared foods such as Synthetic Milk Adapted (S M A), Lactogen and Similac. To this group belonged many laboratory prepared milks now obsolete (item 1, chart 1).

2 Budin's rule. The French obstetrician Budin,⁹ who made splendid contributions to pediatrics, advocated the use of whole cow's milk in the feeding of infants but insisted that the milk be sterilized. Budin estimated the amount of milk to be given as one tenth of the body weight. There is no doubt that sterilized whole milk can be successfully used in infant feeding, but many children do not thrive on it, Czerny observed such children and believed that many suffered from milk injury (milchnahr-schadung). The modern conception of the "injury" is that it is due to too little sugar rather than to too much milk. Budin sometimes added carbohydrate to the diet (item 2, chart 1).

3 Another European rule, devised by Pfandl, is as follows: "Take the tenth part of the infant's body weight in cow's milk and add to it one one hundredth of its body weight in carbohydrate, not exceeding, how-

¹⁴ Marriott W. M. *Infant Nutrition*. St. Louis, C. V. Mosby Company, 1930.

¹⁵ Holt L. E. and Howland John. *Holt's Diseases of Infancy and Childhood* revised by L. Emmett Holt Jr. and Rustin McIntosh, ed. 10. New York and London D. Appleton & Co., 1933.

feeding Parrot in the eighteen eighties not only used ass's milk but practiced direct nursing from the animals, which were quartered close to the nursery of the hospital. Attention is here called to the subject because of the fact that the ass is the only animal whose milk shows the caloric percentage pattern just described as that which seems to meet the nutritional needs of most infants satisfactorily.¹⁸ The caloric value of this milk is low, however 0.45 calory per cubic centimeter

INFANT MORTALITY

Every one is aware of the fact that there has been a tremendous reduction in mortality and morbidity from nutritional disorders of infancy. There has also been a downward trend in the total death rate from all causes, but the lowered death rate for children is so great that it accounts for a substantial portion of the total reduction. Attention is called to chart 2, showing the curve of the infant mortality rate in New Haven since 1875, correlated in time with various devel-

Mortality Statistics from Data of Grulee, Sanford and Herron

Group	Number of Infants	Mortality per 1 000 Infants			
		General	Respiratory Infections	Gastro-Intestinal Disturbances	Miscellaneous Infections
1. Breast fed..	2,749	1.54	0.41	0.20	0.72
2. Partially breast fed..	8,605	6.86	6.11	0.70	2.91
3. Artificially fed	1,707	84.38	48.04	8.20	19.33
Total	20,061	11.00	6.50	1.10	3.20
Ratio of mortality in group 1 to that of group 3..		1.50	1.115	1.40	1.27

opments in public health. The infant mortality trend for New Haven is typical of that of most other cities in this country and Europe. It would seem that the sharply downward trend of the curve began about 1895. Prior to this time the outstanding developments in public health had to do with the establishment of water supply and the disposal of sewage. It was in the eighteen nineties, however, that the various chemical, bacteriologic, vitamin and clinical studies which have been described were in full swing and were beginning to bear fruit through their application by various public health measures to large numbers of infants. Adequate training in pediatrics has been given only in the last two or three decades. No striking correlation of the curve of infant mortality with any individual scientific or educational development seems possible, but there is probably a summation effect of many factors forcing the curve downward.

The question may fairly be posed: Are all the problems of infant feeding solved? The answer without much doubt is "No."

The recent contribution of Grulee, Sanford and Herron¹⁹ is of great significance. (The accompanying table is prepared from the data of Grulee, Sanford and Herron.) Their study shows a striking disparity in mortality in a group of 9,749 infants wholly breast fed for nine months compared with that in a group of 8,605 infants only partially breast fed and in still another group of 1,707 infants wholly artificially fed. The

mortality in the first group was 1.5 per thousand, in the second 6.8, and in the third 84. The mortality from various causes is shown in the table to be relatively greater, especially in the artificially fed group from respiratory infections than from "gastro-intestinal disturbances." This probably means that the latter, in the sense of severe diarrhea and vomiting and marasmus, cause fewer deaths than more subtle nutritional disorders, which lead to greater susceptibility to infectious rickets, at least in former times, was such a nutritional disease.

It is probably true that unintentional selection was operative and threw into the class of artificially fed infants those who were in poorest health and whose mothers were least cooperative and attentive. However, it should be noted that all the infants received good medical and nursing supervision through infant welfare conferences, as is probably indicated by the fact that the total mortality in the group of 20,061 infants was 11 per thousand, whereas the total mortality for infants of this age period in Chicago was about four times that figure. Making allowance for selection and for errors inherent in statistical analyses of this kind, this study demonstrates that the practice of breast feeding is more successful than the practice of artificial feeding.

Specific limitations in artificial feeding present themselves for further study. What is the best method of feeding the premature infant and of controlling rickets and anemia? Should the diet be enriched in any respect after acute illness and how? What further studies can be made of the relation of food ingredients to gastro-intestinal rhythm? What further can be discovered about the relation of the hyperirritable gastro-intestinal tract to the autonomic nervous system? What is the relation of diet to the production of celiac symptoms, to disorders of the pancreas and to infections?

PSYCHOLOGIC ERA²⁰

It would appear, however, that in this field the most serious problem facing the physician at the present time has to do with the emotional life of the infant and mother, physicians are practicing and will continue to practice for some time at least in what might be termed the psychologic era in infant feeding. The available data concerning nutrition are doubtless fundamentally sound, but in applying the facts in the feeding of the infant his emotional life and that of his mother must be taken into consideration or else psychologic factors may become so disturbing that good nutrition is not attained. It is certain, in respect to the future of infant feeding, that the pediatrician must think not less in terms of principles of nutrition but definitely and decidedly also in terms of the personality of the child and of those in his immediate environment, especially, of course, of the mother.

Behavior problems seem at first glance to present themselves acutely, persistently and in great numbers in children at an older age period than that connoted by the subject of "infant feeding." But these problems of the preschool and school child express in a more

18 Powers G F. The Alleged Correlation Between the Rate of Growth of the Suckling and the Composition of the Milk of the Species. *J. Pediatr.* 3: 260 (July) 1932.

19 Grulee C G, Sanford H N and Herron P H. Breast and Artificial Feeding: Influence on Morbidity and Mortality of Twenty Thousand Infants. *J. A. M. A.* 103: 735 (Sept. 8) 1934.

20 The author has been greatly aided in this discussion by the articles on this theme by Drs. Brennemann and Aldrich² and by many stimulating discussions with Dr. Marian Putnam, assistant professor of psychiatry and Miss Ruth Washburn, Ph.D., assistant professor of child development, Yale University School of Medicine. Brennemann Joseph. *The Menace of Psychiatry*. Am. J. Dis. Child. 42: 376 (Aug.) 1931. *Vita Medica et Naturae in Pediatrics*. Tr. Am. Pediat. Soc. 42d annual meeting Montreal July 1930. *Psychologic Aspects of Nutrition in Childhood*. *J. Pediatr.* 1: 145 (Aug.) 1932. *Pediatric Psychology and the Child Guidance Movement*, 2d ed. 1 (Jan. 7) 1933. Aldrich C A. *Cultivating the Child's Appetite*. New York: Macmillan Company, 1928. footnote 6.

mature pattern emotional reactions the basis for which was established in infancy, the expression will be different at various intellectual and motor levels, but the underlying psychologic disturbance may be much the same.

Even in breast feeding there arise emotional problems. There are some infants who seem to be "breast shy," even when the mother has plenty of milk, such infants will not suckle although they will take the bottle willingly. There are other infants who never nurse or eat well, constitutionally they seem uninterested in food, although the possibility of a conditioned antagonism and negativism cannot be excluded. Another source of difficulty is the transition from the maternity ward to the home. The mother at home has more cares, more distractions and worries, her milk lessens, the baby cries, the mother gets more anxious and tense and a vicious circle is established. The mother and baby are now the center of a severe emotional storm which, in a majority of cases, could have been prevented had the physician had sufficient insight, understanding and patience to prepare the mother for what might happen.

The psychologic factors play a more important role, however, in artificial feeding. In the past emotional difficulties were not recognized as of major importance since they seemed to be present only in isolated cases, but now these problems are widespread, constituting a major portion of the practice of many pediatricians. The reasons for this increase are many, the problems are sequelae, in part—possibly in large measure—of a strict, dogmatic attitude in the application of the advances in the science of nutrition to the practice of infant feeding. Pediatrician and mother alike have the "itch" for regulation growing out of aspirations for perfection in dietary regimen and habit training and as a direct result of the propaganda for weighing and measuring—in short for standardization. In commenting on the percentage method of feeding, Jacoby once remarked caustically that "feeding cannot be regulated by mathematics so well as by brains, and by the wants of the individual child." Today he would probably say that "you cannot by laboratory methods feed babies on 'thirty-seven individual substances essential for a complete diet', the baby and the attitude of his mother have something to do with what is ingested even if they are ignored as to what is prescribed."

The successful experiment of Dr. Clara Davis²¹ in Cleveland and Chicago of allowing infants of weaning age²² to exercise choice in the amount and kind of food that they might eat constitutes a most challenging piece of work. It should remind the pediatrician that the normal breast fed infant, while he has no choice as to the kind of food he receives, is not regulated as to the amount nor strictly, in the unsophisticated home, as to meal time, his hunger cries are usually rewarded and the clock is often ignored. The artificially fed infant, on the contrary, is much more strictly limited as to quantity and meal time, his appetite is almost totally disregarded. When in the usual course of events such a carefully regulated infant is offered solid food at about 5 or 6 months of age he may rebel, the mother,

owing to the uncompromising attitude which the preceding six months' strict regimen has engendered, becomes disturbed and anxious. Instead of taking a purely passive attitude the mother becomes tense and aggressive and attempts forced feeding, and there follow the inevitable consequences—refusal of food, vomiting, sleeplessness, querulousness. Over and over again one can date the beginning of behavior problems of later infancy and of the preschool period to the time when solid food was introduced into the dietary regimen. The mother who has been narrowly trained in the precision of regular hours and measured amounts of carefully prepared milk mixtures is totally unprepared to handle the first act of rebellion.

Similar situations arise when weaning occurs precipitately in later infancy, when cup or spoon supplant bottle and when too aggressive attempts are made in the giving of orange juice or cod liver oil, and in establishing strict regularity in habits of sleep and elimination. Less emphasis on regularity and quantity, more elasticity in the care of the child, casual, early acquaintance (i.e., before 3 months for most of the objects and substances listed) with the rubber nipple, spoon and cup, water, orange juice, cod liver oil, solid food—all of this for the sake of training as well as for intrinsic merit, and, above all, education of the mother to utter passivity in the presence of evidences of nonconformity will usually prevent difficulties of an emotional nature. It is obvious that emphasis is being made here less on infant feeding per se and more on the attitude and training of the mother.

Of course, there are many other factors in the background of these emotional disturbances—the fundamental make-up of the child, racial stock, the small family with excessive concentration of attention on one or two children, the tension and complexities of modern life, thwarted social and economic ambitions, the desire to "keep up with the Joneses" in respect to the handling of infants as in everything else. Undoubtedly most parents expect too much of their children, especially of the first born.

This approach to the problem in which the education of the mother concerning the emotional as well as the physiologic reactions of the infant to the nutritional elements in his diet may bring forward the criticism that the child will be undisciplined, "spoiled." The criticism is perhaps largely academic, if the conception under discussion has been adequately presented. There are a sufficient number of required conformities even in an infant's life to insure the development of reasonable discipline. Some things in infant feeding are clear cut definite, certain, there are others which permit wide latitude for wise and sympathetic interpretation. For example, there is no basis in physiology for giving every 10 pound (4.5 Kg.) infant exactly 500 calories of a milk mixture which is to be given in exactly 6 ounce (170 cc.) doses every four hours by the clock with one feeding omitted. However, it is reasonable to consider that the average 10 pound infant would require about 500 calories and should not be urged to take that number if not hungry nor forbidden to take more if hungry. Perhaps at some feedings he will want more than 6 ounces and sometimes less, he may want some feedings at six hour intervals and some at three. No plea is being made for irregularity for irregularity's sake, but a protest is being made against inflexible standardization for its own sake. It would be wise for the physician to worship the baby more and the measuring stick, the scales, the graduate and

²¹ Davis Clara M. Self Selection of Diet by Newly Weaned Infants. *Am. J. Dis. Child.* 36: 651 (Oct.) 1928. Self Selection of Diets by Infants. *Ibid.* 40: 905 (Oct.) 1930.

²² Dr. Davis in a personal communication to the author has recently described a similar study (to be published) with three breast fed infants taken from lying in hospitals at the ages of 10, 8 and 7 days respectively and kept continuously on the experiment for periods of seven and one half to eight months. The results of the study are strikingly in accord with those obtained with the older children.

the clock less, there was a time not so long ago when the infants' stools would have been included in this interdicted list

If a battle impends in the handling of the child, the conflict must be won by strategy and not by force—a weapon that has so small a place in the armamentarium of the pediatrician as to be always invisible and rarely used, the ingestion of food never can be actually forced. As with the horse, you can lead a baby to water but you cannot make him drink. Food swallowed unwillingly by means of such tricks as bribing or diversion is often vomited.

CONCLUSION

It should be clearly understood that while I believe that the importance of an understanding of the emotional aspect of the feeding of infants is too little appreciated and that the chief problem at present arises in this domain, no real achievement in the newer knowledge of nutrition is thereby ignored. The most important aspect of the emotional problem in infant feeding is recognition that the problem exists and to a large degree may be prevented if the physician has insight and understanding of the personality of the mother and takes pains to prepare her to meet situations that are bound to occur in every case. The physician may need the assistance of a psychologist or a psychiatrist or both in therapy, but the burden of prevention is wholly that of the physician who guides the feeding. Here, if anywhere, "an ounce of prevention is worth a pound of cure." But prevention means understanding, insight, tact and patience. The physician must have all these qualities, and he must devote a great deal of time to the handling of these cases. Our psychiatrist, Dr. Marian Putnam, tells me that her most serious cases are those in which a tactless, brusque physician has scolded or otherwise occasioned resentment or feelings of guilt and inadequacy on the part of the mother. "Never show irritation at an unreasonable mother" is always a safe rule for the physician to follow.

The attitude of mind that I believe the physician should have himself and should inculcate in the mothers of his little patients is very effectively expressed by Ralph Waldo Emerson in the following passage from his *Essay on Education*:

I believe that our own experience instructs us that the secret of education lies in respecting the pupil. It is not for you to choose what he shall know what he shall do. It is chosen and foreordained, and he only holds the key to his own secret. By our tampering and thwarting and too much governing he may be hindered from his end and kept out of his own. Respect the child. Be not too much his parent. Trespass not on his solitude.

But I hear the outcry which replies to this suggestion: Would you verily throw up the reins of public and private discipline, would you leave the young child to the mad career of his own passions and whimsies, and call this anarchy a respect for the child's nature? I answer, Respect the child, respect him to the end but also respect yourself. Be the companion of his thought the friend of his friendship, the lover of his virtue and the imperturbable sligher of his trifling.

Heart Disease and Pregnancy—No woman who has once had heart failure should risk pregnancy. No woman with auricular fibrillation or heart block or history of rheumatism or considerable cardiac enlargement with or without valvular disease should be allowed to become pregnant.—Dr. K. D. Wilkinson, Birmingham, quoted by Fisher, *Alexander Aphorisms in Clinical Medicine* *Canad J Med & Surg* 77:166 (June) 1935.

INFECTIOUS MONONUCLEOSIS

PART I CLINICAL ASPECTS

C. A. McKINLAY, M.D.
MINNEAPOLIS

The fact that infectious mononucleosis is reported chiefly from institutional groups suggests that its recognition in private practice is not common. This is to be expected because of the benignity of the disease and its similarity to relatively brief systemic infections which may not suggest the necessity of making supplementary leukocyte and differential blood counts. This disease entity will be commonly recognized only when its symptomatology becomes of interest to the clinician and when its characteristic lymphocytic blood reaction can be demonstrated with a fair degree of regularity.

The statements (which will be challenged) of such competent hematologists as Kracke and Garver¹ that morphologically the disease cannot be distinguished with certainty from acute lymphatic leukemia emphasize the need for a survey of recent reports.

The present paper is based on data acquired over a period of twelve years. Although it may be presumptu-

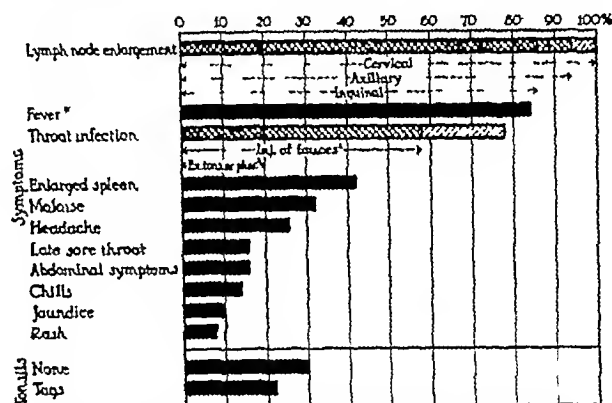


Chart 1—Outstanding symptoms and physical signs in order of frequency in fifty cases (thirty-eight male, twelve female) of infectious mononucleosis.

ous to speak of a disease entity before the etiology is established, the clinical characteristics of the patients in this group have been well defined and have been adequate to make possible the recognition of most of the sporadic cases reported from a rather large service for infectious disease. Even before the notation of Paul and Bunnell² that the serum of each patient with this disease rather specifically showed sheep cell agglutinins, which observation strengthened the probability of its entity and became an added diagnostic test, the constancy of the clinical aspects and the blood picture in the sporadic cases reported herein had been impressive, that is, the clinical diagnosis was repeatedly confirmed by a detailed study of the morphology of the blood.

The present study supplements our publication of 1923,³ which appeared under the descriptive title of "Acute Lymphadenitis Compared with Acute Lymphadenitis."

From the Students Health Service, University of Minnesota. Read before the Section on Practice of Medicine at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

¹ Kracke, R. R. and Garver, Hortense. The Differential Diagnosis of the Leukemic States. *J. A. M. A.* 104:697-702 (March 2) 1935.
² Paul, J. R. and Bunnell, W. W. Presence of Heterophile Antibodies in Infectious Mononucleosis. *Am. J. M. Sc.* 133:90-104 (Jan) 1932.

³ Downey, Hal and McKinlay, C. A. Acute Lymphadenitis Compared with Acute Lymphatic Leukemia. *Arch. Int. Med.* 32:82-112 (July) 1923.

tic Leukemia," which, in turn, followed the report of similar cases by Sprunt and Evans,⁴ Bloedorn and Houghton,⁵ and Longcope⁶ in 1920, 1921 and 1922, respectively. Sprunt and Evans' term "infectious mononucleosis" has been commonly used in this country. We have used their term in order to avoid the rather loose use of the term "glandular fever," which is sometimes found in the literature and which embraces such conditions as cervical adenitis.

Lehndorff and Schwarz⁷ in their complete survey of the literature on glandular fever describe two main groups: (1) the Pfeiffer⁸ or glandular type and (2) the anginose type. The enlargement of the lymph nodes in the former and the involvement of the throat in the latter were the predominating features. These observers

21 years. The age and sex incidence reflects that of the student body in which the cases occurred, and the age incidence is in keeping with the general tendency toward frequency in children and young adults and toward rarity in those over 40. The onset is associated with the following conditions, those without early angina sometimes having its late appearance (chart 1):

- 1 Angina or infection of the upper respiratory tract, 54 per cent
- 2 Systemic febrile reaction, 20 per cent.
- 3 Abdominal symptoms, 16 per cent
- 4 Adenopathy, 10 per cent

Generalized enlargement of the lymphatic glands was the outstanding and constant clinical feature. Occa-

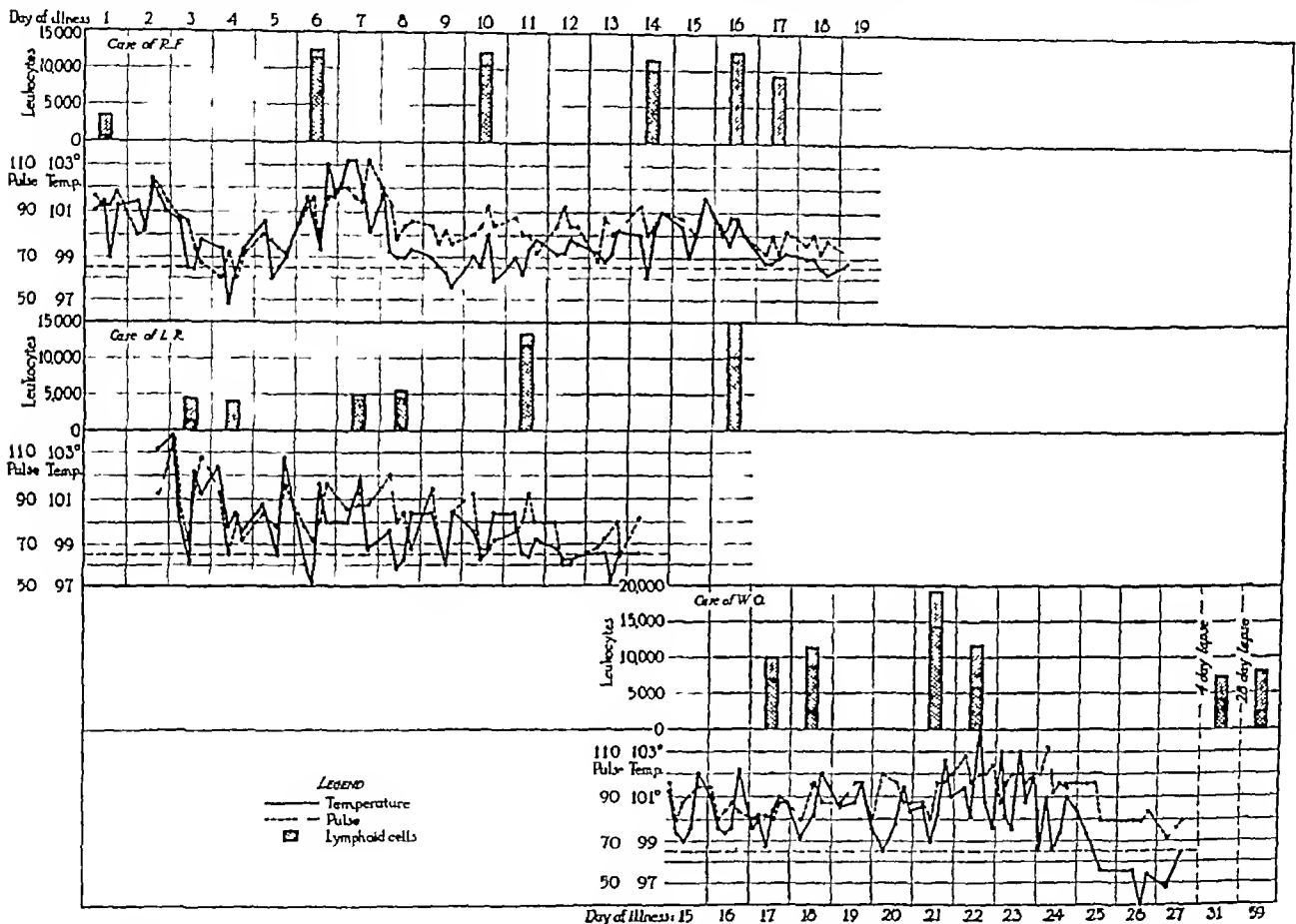


Chart 2—Temperature and pulse rate in three cases—two of the patients had leukopenia at the onset and later lymphocytosis

considered that cases described as monocytic angina are of the anginose type. They were unacquainted with a prolonged febrile type with the maculopapular rash described by Tidy.⁹

CLINICAL DATA

The present study is based on observations made in fifty cases in university students, thirty-eight males and twelve females, aged 19 to 27, with an average age of

4 Sprunt, T. P. and Evans, F. A. Mononuclear Leukocytosis in Reaction to Acute Infections (Infectious Mononucleosis). *Bull. Johns Hopkins Hosp.* 31: 410 (Nov.) 1920.

5 Bloedorn, W. A. and Houghton, J. E. Occurrence of Abnormal Leukocytes in the Blood in Acute Infections. *Arch. Int. Med.* 27: 315 (March) 1921.

6 Longcope, W. T. Infectious Mononucleosis (Glandular Fever) with Report of Ten Cases. *Am. J. M. Sc.* 164: 781-808 (Dec.) 1922.

7 Lehndorff, H., and Schwarz, E. Das Drusenfieber. *Ergebn. d. inn. Med. u. Kinderh.* 42: 775-888 1932.

8 Pfeiffer, E. Das Drusenfieber. *Jahrb. f. Kinderh.* 29: 257-264 1889.

9 Tidy, H. L. Glandular Fever and Infectious Mononucleosis. *Lancet* 2: 180-186 (July 28) 1934.

sionally it was striking enough subjectively to be the presenting symptom. The adenopathy apparently began and reached its maximum in the cervical triangles, often asymmetrically, with involvement of the left nodes more frequently predominating. The posterior cervical lymphatic chains were constantly enlarged, those in the anterior triangle of the neck being less prominent. The extent of the adenopathy was out of proportion to the intensity of the lesion in the throat and was especially striking in the absence of angina or pharyngitis. The deep cervical nodes were massed in some cases under the sternomastoid muscle about its middle and somewhat below the angle of the jaw. Otherwise, the individual nodes were discrete, somewhat soft and elastic and rarely exquisitely tender, indeed, usually there was no appreciable pain. They reached a maximum of 3 cm. in length. They lacked the periglandular redness, swelling and edema sometimes noted in cases of cervical

adenitis subsequent to oral infection and scarlet fever. Suppuration did not occur and has rarely been reported. The posterior auricular nodes were not usually enlarged—in contrast to the adenopathy noted in cases of rubeola. The axillary and inguinal nodes were rather constantly enlarged and were distinguishable from the smaller firmer nodes of the occasional axillary and frequent inguinal adenopathy which occurs in healthy persons. The epitrochlear nodes were frequently palpable. Enlargement of the hilum and abdominal nodes was not demonstrated in our series.

Signs of throat infection were present in 78 per cent of cases. 1 Most frequently there was marked injection of the fauces with swelling of the lymphoid tissue, the so-called granular pharyngitis. 2 Less commonly, a membranous angina indistinguishable in appearance from that of diphtheria developed. 3 Occasionally, follicular tonsillitis or pharyngitis existed. The faucial changes appeared late in about one third of the cases with an onset characterized by the other predominating systemic abdominal or glandular symptoms. The spleen was palpable in 42 per cent of cases, its margin soft and its size never great. One instance of maculo-

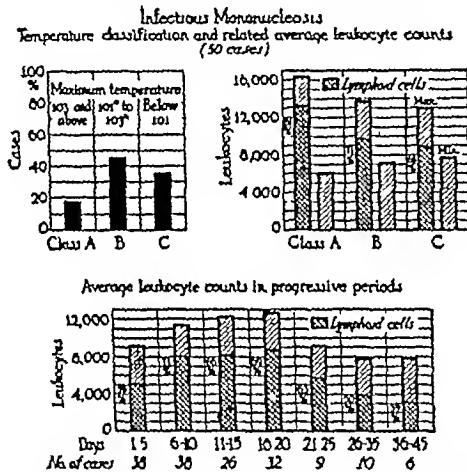


Chart 3—Classification of the temperature for groups with related leukocyte and differential counts also average counts grouped according to days after the onset.

popular rash was noted. Three other cases were classified as toxic rashes simulating dermatitis due to some drug. No complications occurred and complete recovery resulted in all cases as far as known, although enlargement of the lymphatic glands sometimes persisted for twelve months after the onset of the infection. Recrudescence of symptoms was noted occasionally (chart 2).

The infectious features varied but fever was almost always present with malaise, headache, sweating and chills, listed in the order of frequency. Prostration was not so marked as in cases of acute tonsillitis. The temperature reached a maximum of 103.8 F, usually not reaching 103. It was irregular and showed wave-like recrudescences in the more prolonged cases and lasted up to three weeks in the patients with higher temperatures and for four months in one subacute case in which there were minimal temperatures. The pulse rate, which was relatively slow, varied directly with the temperature. Defervescence was by lysis, contrasting with the fall by crisis not uncommonly encountered in cases of tonsillitis. Jaundice occurred in five cases, in three, combined with gastro-intestinal symptoms, it subsided with defervescence. An infectious origin of jaundice is suggested although Mackey and

Wakefield¹⁰ reported a case of obstructive jaundice which they thought was due to obstruction of the common duct by lymph nodes (charts 3 and 4).

The total leukocyte and differential blood counts were striking and emphasized the fact that differential counts must be made. Lymphocytosis, relative and absolute, was 50 per cent or greater in all cases at some time during the course of the disease. The initial

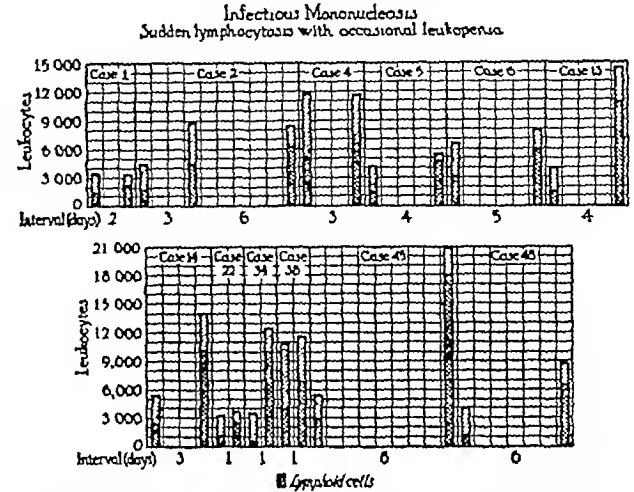


Chart 4—Repeated counts in individual cases with occasional leukopenia or neutrophilic leukocytosis followed by sudden lymphocytosis.

leukocyte count was 5,000 or less in eleven of fifty cases and reached a minimum of 3,300 in one case, and in four of the eleven never reached a level of 10,000 or over. The maximum count was 32,550. Leukocytosis of 10,000 or over occurred at some time in forty of the fifty cases. The percentage of granulocytes noted in initial counts was known to drop as much as 63 per cent as the leukopenia gave way to moderate leukocy-

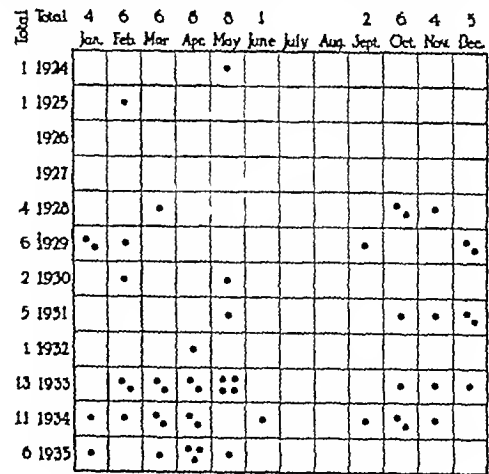


Chart 5—Date of onset in fifty cases.

tosis. Lymphocytosis appeared to be greater in the patients with higher temperatures. There were numerous records of patients who had had other infections before and after glandular fever with the usual polymorphonuclear response. These records indicate that the lymphatic reaction to glandular fever is not on a constitutional basis but is a response to a definite type of infection.

10 Mackey R. D. and Wakefield E. G. Occurrence of Abnormal Leukocytes in Blood of Patient with Jaundice (Infectious Mononucleosis—Glandular Fever). *Ann. Clin. Med.* 4: 727-730 (March) 1926.

The urinalyses were not remarkable, hematuria, which has been noted by some authors, did not occur. A critical study of the hemoglobin and the red blood counts was not made, although the impression of the absence of appreciable anemia was obtained.

The study of the etiology included the making of direct smears and occasional cultures from the throat, but no characteristic observations were made. The occasional finding of Vincent's organism was not more significant or frequent than in cases of other types of infections of the throat. Blood cultures were repeatedly negative. Emulsions of fresh glandular substance made during the acute stages were injected into monkeys and guinea-pigs without demonstrable effect. The Forssman reaction was present in dilutions of 1 to 32 or greater in the serum in five of ten cases. No confirmed studies as to etiology have been reported although Murray, Webb and Swann¹¹ in 1926 found that *Bacterium monocytogenes* was the etiologic basis for a disease in rabbits characterized by pronounced monocytosis and Nyfeldt¹² in 1929 reported the isolation from the blood of an organism which he called *Bacterium monocytogenes-hominis* and with which he produced the cellular blood picture in rabbits. Gorham, Smith and Hunt¹³ reported blood changes in the guinea-pig following inoculation of pharyngeal exudate from a patient with a severe case of Vincent's angina, while in persons who have been in contact with experimental animals infectious mononucleosis has developed. However, this work has not been confirmed. The sheep cell agglutination reaction recently has been studied critically by Bailey and Raffel¹⁴. They confirmed its apparent constancy in the disease and emphasized its importance, but stated that a heterophil or Forssman antibody is not responsible for the reaction, that the antibodies are not found in normal serum but are rather a specific response associated only with infectious mononucleosis. The symptomatology suggests that the gastro-intestinal tract, in addition to the upper respiratory tract, must be considered as a possible portal of entry of the etiologic agent (chart 5).

While glandular fever characteristically occurs in epidemics, our series consisted of sporadic cases of fairly even monthly distribution. The incubation period was given by Lehdorff and Schwarz as seven or eight days, with usually short prodromal periods. The degree of infectivity must be low as we have not seen proved contact cases, although four cases occurred in laboratory workers in bacteriology, two coincidentally. Two brothers living together had the disease four years apart. Four of eight patients in whom the disease occurred within two months had similar gastro-intestinal symptoms.

DIFFERENTIAL DIAGNOSIS

If the possibility of infectious mononucleosis is kept in mind by the clinician, the errors of omission will be less frequent, and there will be fewer cases left in that residuum of acute systemic infections sometimes unclassified or covered with a general term such as influenza. The most common confusion arises from tonsillitis and pharyngitis of other origin with secondary cervical

adenitis. In our first encounter with infectious mononucleosis in 1921, a case was clinically confused with acute lymphatic leukemia because of the additional feature of hemorrhagic areas in the buccal mucosa, only five other similar cases have been reported according to Tidy.⁹ The persistent, often localized adenopathy of Hodgkin's disease and tuberculous adenitis were not suggested in any instance, syphilis has not existed clinically or serologically in this group. The cases in which there were abdominal symptoms might well be confused with acute gastro-enteritis or appendicitis, but the absence of signs of peritoneal irritation with its concomitant adenopathy and blood picture has been adequate to differentiate this condition. We have not noted cases of involvement of the central nervous system as reported by Johansen¹⁵ and by Epstein and Dameshek.¹⁶

SUMMARY

The characteristic generalized adenopathy, frequent splenomegaly and lymphatic reaction of the blood make possible the recognition of sporadic cases of infectious mononucleosis occurring among a large group of patients with various acute infections. Angina may be late in appearance or entirely absent. The occasional appearance of abdominal symptoms should be kept in mind in order to avoid confusion with acute infections of the gastro-intestinal tract. Serial blood counts are not infrequently necessary in order to discover the lymphocytic reaction. The constancy of the adenopathy suggests that the essential lesion and habitat of the etiologic agent is in the lymph nodes.

78 South Ninth Street.

INFECTIOUS MONONUCLEOSIS

PART II. HEMATOLOGIC STUDIES

HAL DOWNEY, PH.D.

AND

JOSEPH STASNEY, M.D.

MINNEAPOLIS

The blood picture found in cases of infectious mononucleosis was described in detail by Downey and McKinlay¹ in 1923. Their paper was accompanied by a colored plate illustrating the different types of lymphocytes seen in the blood smears of the patients studied up to that time. The reproduction of the original drawings was unusually good, and a photograph of this plate is reproduced in figure 1.

The lymphocytosis which follows the initial neutrophilic leukocytosis is usually characterized by the presence of very atypical leukocytoid lymphocytes, like those shown in cells 1 to 11 in figure 1. The lines in this illustration separate the cells found in the blood of three different patients with infectious mononucleosis and one patient with acute lymphatic leukemia (cells 12 to 14) that was added for comparison. There is considerable variation in the character of the atypical lymphocytes in different patients and for that reason it was stated that the patients can be divided roughly into three groups depending on the type of lymphocyte

11 Murray E. G. D., Webb R. A. A. and Swann M. B. R. Disease of Rabbits Characterized by Large Mononuclear Leukocytosis Caused by Hitherto Undescribed Bacillus *Bacterium Monocytogenes* (N. Sp.) *J. Path. & Bact.* 29: 407-439 (Oct.) 1926.
12 Nyfeldt A. Etologie de la mononucleose infectieuse Compt. rend. Soc. de biol. 101: 590-592 (June 21) 1929.
13 Gorham, L. W., Smith D. T. and Hunt H. D. The Experimental Reproduction of the Blood Picture of Infectious Mononucleosis in the Guinea Pig. *J. Clin. Investigation* 7: 504-505 (Aug.) 1929.
14 Bailey G. H. and Raffel S. Hemolytic Antibodies for Sheep and Ox Erythrocytes in Infectious Mononucleosis *J. Clin. Investigation* 14: 228-244 (March) 1935.

15 Johansen A. H. Serous Meningitis and Infectious Mononucleosis *Acta med. Scandinav.* 76: 269-272 1931.

16 Epstein S. H. and Dameshek, William. Involvement of Central Nervous System in Case of Glandular Fever. *New England J. Med.* 205: 1238-1241 (Dec. 24) 1931.

From the Department of Anatomy University of Minnesota Medical School.

Read before the Section on Practice of Medicine at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1 Downey Hal. and McKinlay, C. A. Acute Lymphadenosis Compared with Acute Lymphatic Leukemia *Arch. Int. Med.* 32: 82 (July) 1923.

which dominates the blood picture. These cells were described in the previous paper.

A continued study of the blood in this disease has shown that little can be added to the original description of the blood picture.¹ We have encountered an occasional patient in whom the lymphocytes were of fairly normal structure, usually they are the large atypical basophilic lymphocytes which show a tendency

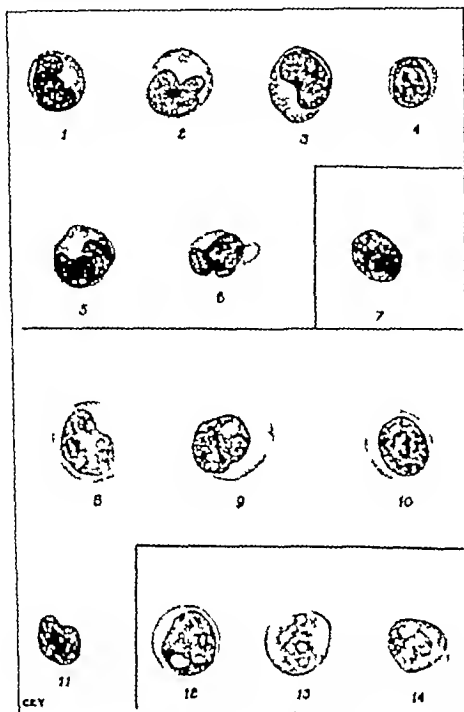


Fig. 1—Cells 1 to 11 are lymphocytes from blood smears made in three cases of infectious mononucleosis. Cells 8 and 9 have immature nuclei. Cell 11 contains an Auer body. Cells 12 to 14 are immature lymphocytes from a patient with acute lymphatic leukemia.

to develop toward plasma cells. A few plasma cells are often found and in Angelini's² patient they were numerous but generally the cells fail to complete their development into plasma cells.

The abnormal morphology of the lymphocytes shows that the condition is not an ordinary lymphocytosis like that seen in cases of pertussis which is characterized by a great increase in the number of lymphocytes of normal structure, except in very young children, in whom many of them may be immature. The term 'lymphatic reaction' as used by Türk,³ Schwarz,⁴ and others is a better designation of the lymphocytic picture seen in cases of infectious mononucleosis.

Confusion has resulted from the fact that many investigators of this disease have believed that the large basophilic lymphocytes are immature lymphoblasts similar to those seen in cases of acute lymphatic leukemia. Further study in many cases, however, has shown that the cells are usually not immature and that the blood picture does not suggest that seen in cases of acute leukemia. The confusion is due to the fact that the criteria for judging the degree of immaturity of lymphocytes have not always been understood. This explains the recent conclusion of Stuart Burgess

Lawson and Wellman⁵ who followed Wiseman⁶ in expressing the belief that the basophilic lymphocytes are immature. Hematologists (Pappenheim, Ferrita Naegeli) have agreed that basophilia of cytoplasm is extremely variable in lymphocytes, the young cells may or may not be very basophilic, while plasma cells which are mature cells, are very basophilic. Genuine lymphoblasts, as seen in cases of acute lymphatic leukemia, have an extremely delicate leptochromatic nuclear pattern which is very different from that of the mature lymphocytes of normal blood. Three immature lymphocytes are shown in cells 12 to 14 of figure 1. In cases of infectious mononucleosis the nuclear pattern is often even coarser than it is in normal lymphocytes owing to the tendency of these cells to develop into plasma cells. Lymphoblasts approach the structure of myeloblasts and the nuclear structures may be identical if the cells are sufficiently immature. Lymphoblasts of this type are not often seen in cases of infectious mononucleosis.

In our first series of nine cases there was one case in which a few of the lymphocytes were both immature and 'leukocytoid'. These are shown in figure 1, cells 8 and 9. The cytoplasm of these cells is not as basophilic as that of cells 1 to 6 but the nuclear pattern shows the delicate, leptochromatic structure that characterizes immature nuclei. An occasional cell of this type contained an Auer body, and some had nucleoli.

Therefore, a few immature lymphocytes are found in some cases of infectious mononucleosis. The two



Fig. 2—Section of a lymph node removed for biopsy from a patient with infectious mononucleosis. This low power view shows the nodular hyperplasia of the reticulum and the obliteration of the architecture of the node.

cells illustrated (cells 8 and 9) are the youngest found in our earlier and later series. They are not sufficiently immature to be called stem cells or lymphoblasts. That

² Angelini G. Osservazione di febbre ghiandolare. *Haematologica* 17: 81, 1934.

³ Türk W. Septische Erkrankungen bei Verkümmern des Granulocytesystems. *Wien klin. Wchnschr.* 20: 15, 1907. Vorlesungen über klin. che. Haematologie. Vienna: Wilhelm Braumüller, 1912.

⁴ Schwarz E. Haematologie des Deutschen. *Ergebn. d. inn. Med. u. Kinder.* 43: 1, 1922.

⁵ Stuart C. A., Burgess A. M., Lawson H. A. and Wellman H. E. Some Cytologic and Serologic Aspects of Infectious Mononucleosis. *Arch. Int. Med.* 54: 199 (Aug.) 1934.

⁶ Wiseman B. A. Criteria of the Age of Lymphocytes in the Peripheral Blood. *J. Exper. Med.* 54: 271 (Aug.) 1931. The Identity of the Lymphocyte. *Folia haemat.* 46: 346, 1932.

the latter may occur in this disease is proved by the beautiful and accurate colored figures published by Schwarz,⁴ and the descriptions of Glanzmann⁷ and Nyfeldt⁸ among others. These authors have stated that the immature cells are of infrequent occurrence and that they are never numerous. Mitosis and anitosis of lymphocytes has been described by several authors but was never seen in our series.

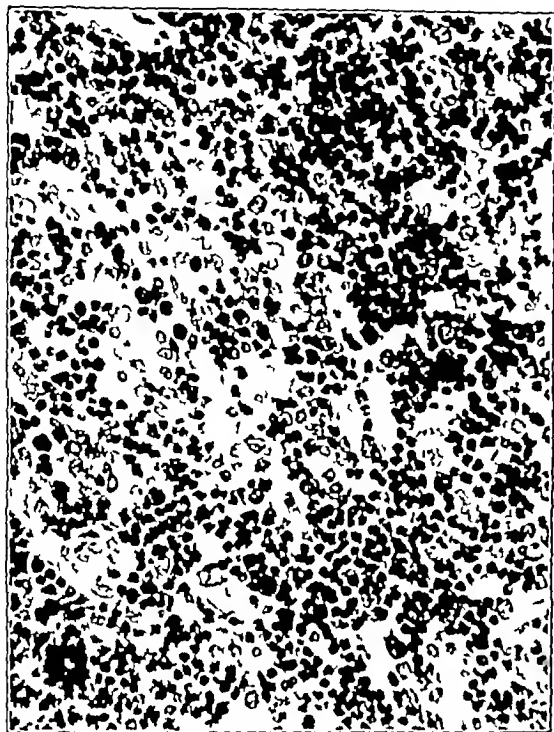


Fig. 3.—Same as figure 2 but with higher power.

We have frequently found lymphocytes that were slightly immature but never sufficiently so to cause difficulties in differentiating the case from one of early acute lymphatic leukemia. Schwarz⁴ expressed the belief that some cases in which there are a few very immature lymphocytes in the blood might be mistaken for cases of early leukemia. We believe, however, that the 'leukocytoid' character of the lymphocytes is sufficiently specific to enable one to distinguish between the benign and leukemic forms. The presence of toxic neutrophils and the shift to the left in the Schilling sense are other features which enable one to decide in favor of the benign condition.

This blood picture is not absolutely specific for infectious mononucleosis. We have seen one case in which the blood picture of infectious mononucleosis and total leukocyte count of about 15,000 changed to fatal agranulocytosis with a total count of 800. In another case of agranulocytosis, all the granulocytes were lost from the blood for a period of three days. The total count of leukocytes composed of leukocytoid lymphocytes and a few monocytes did not fall below 1,400 and the patient recovered. A similar lymphatic reaction has been seen also in a case of septicemia. Such confusing cases are fortunately very infrequent. Hematologically (without the history), they may be mistaken for cases of infectious mononucleosis but never for cases of acute leukemia.

Examination of biopsy material from the lymph nodes in eight cases suggested an explanation for the occurrence of immature lymphocytes in the blood smears in some cases (fig. 1, cells 8 and 9). These immature cells may be as atypical as the mature ones, the immaturity being indicated by the delicate leptochromatic nuclear structure and the presence of nucleoli.

The patients from whom the nodes were removed showed different degrees of severity of the disease and the biopsies were performed at varying periods after the onset of the disease. This undoubtedly explains the variations in the degree of pathologic alteration noted. The material was studied in sections and also by the dry imprint method, the May-Grünwald-Giemsa stain being used. The cytologic detail of the imprints is about as good as that of the blood smears which makes this a very useful method for tracing the origin of the atypical lymphocytes of the blood.

The architecture of the nodes showing the greatest alteration is completely obliterated and there is marked hyperplasia of both lymphocytes and reticulum. This hyperplasia is not uniform. Dense areas of lymphocytes alternate with areas in which the lymphocytes are scattered and the hyperplasia of the reticulum is more pronounced. In the denser areas the lymphocytes are fairly uniform in size, and a section through such a region gives a picture much like that seen in cases of chronic lymphatic leukemia. The lymphocytes show great variation in size and structure in the regions where they are scattered and where hyperplasia of the

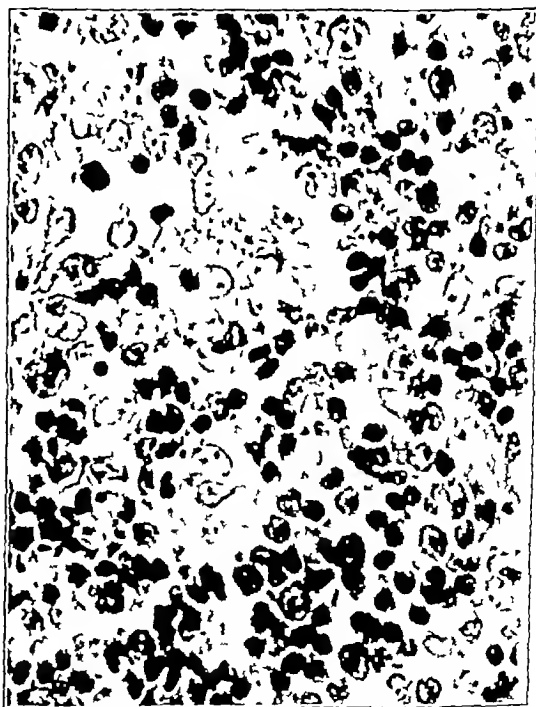


Fig. 4.—Same as figures 2 and 3, high power. The rounding up of the reticular cells is shown in the central portion of the section.

reticulum is more pronounced. This hyperplasia involves groups of reticular cells which swell and become rounded and probably proliferate. This gives the sections the nodular or spotty appearance described by Pratt⁹ for this disease and by Nishii¹⁰ for the

⁷ Glanzmann, E. Das lymphämoide Drüsenfieber. Abhandlungen a. d. Kinderh. u. ihren Grenzgebieten. No. 25. Beihefte z. Jahrb. f. Kinderh. 1930.
⁸ Nyfeldt, A. Klinische und experimentelle Untersuchungen über die Mononucleosis infectiosa. Folia haemat. 47: 1, 1932.

⁹ Pratt, C. L. G. The Pathology of Clandular Fever. Lancet 2: 794 (Oct. 10) 1931.

¹⁰ Nishii, R. Ueber die Reaktion der regionalen Lymphknoten bei lokaler Infektion und Reinfektion. Krankheitsforschung 7: 335 (Oct.) 1929.

regional lymph nodes of guinea-pigs after subcutaneous reinfections with *Staphylococcus pyogenes-aureus* of weak virulence. This is illustrated in figures 2, 3 and 4, which are different magnifications of the same specimen of lymph node. In figure 4 these nodules of reticular cells often crowd out the lymphocytes.

One other node of the series showed about the same structure as that just described, and the others showed varying degrees of the same process. In one the sinuses were well preserved but filled with reticulo-endothelial cells, there were also remnants of follicles and germ centers. Nodules of reticular cells were seen in the looser tissue between the follicles and in the medulla. This node was removed two weeks after the onset of the illness. The leukocyte count did not rise above 13,200, with 79 per cent lymphocytes. A node from another patient in the series was normal for the most part and hyperplastic in one region. The other nodes were decidedly hyperplastic but to a varying degree. They all showed the nodular hyperplasia of the reticulum.

Even in the sections it is obvious that some cells isolate themselves from the nodules of hyperplastic reticulum and transform into lymphocytes. This is seen in the central portion of figure 4, where several cells have acquired narrow rims of basophilic cytoplasm and are isolating themselves from the main mass of reticulum.

The details of the differentiation of these cells into lymphocytes are seen best in the imprints, and several stages of the process are illustrated in figure 5. Cell 1 is a cell of the reticulum with a nucleus showing the specific structure that is characteristic for these cells. The delicate strands and fine granules of chromatin are very distinct and there is sharp separation between chromatin and parachromatin. In cell 3 the strands of chromatin have become much heavier and the nuclear pattern has approached that of the lymphocyte. The cytoplasm is just beginning to condense and acquire the basophilia of lymphocytic cytoplasm. In cell 2 the nucleus is still that of the reticular cell but the cytoplasm has become rounded and condensed and is distinctly basophilic. Cell 5 is a normal mature large lymphocyte, and cells 6 and 7 are undergoing metamorphosis into plasma cells, of which there are many in this material.

Intermediate stages similar to those illustrated are very numerous in material taken at the height of the disease so one must conclude with Schwarz¹¹ that there has been a marked shift to the left in lymphocyte regeneration to the extent that the reticulum becomes extensively involved in the process. There is some development of lymphocytes from reticulum in normal nodes (Downey and Weidenreich¹²; Mollier,¹³ Jolly,¹⁴ Maximow¹⁵) but the process is not as active as in cases of infectious mononucleosis.

Many of the large basophilic and leukocytoid lymphocytes seen in the blood smears are also found in the imprint preparations of material from the nodes and there is good correlation between the character of the lymphocytes of the imprints and the lymphocytes of the blood smears from the same patient. From this it seems obvious that many of the atypical lymphocytes

of the blood have assumed their abnormal features while still in the nodes. The correlation between the degree of hyperplasia of the nodes and the total leukocyte count is not so good.

There seems to be no relation between the basophilia of the cytoplasm and the degree of maturity of the lymphocytes. Any lymphocyte, large or small, mature or immature (as judged by nuclear structure), may become very basophilic, indicating that basophilia is not a good criterion for estimating the immaturity of a lymphocyte, as claimed by Wiseman.⁶

Some of the maturing and metamorphosing (Schwarz⁴) lymphocytes may escape into the blood before they have completed their development. This was evident when we compared blood smears with imprints made in the same cases. Lymphoblasts as seen in cases of acute lymphatic leukemia (fig 1 cells 12 and 13) are rarely seen in the blood smears. Only one lymphoblast of this type was found in our imprint material and is illustrated in cell 4 of figure 5. The few immature blood lymphocytes of infectious mononucleosis are more likely to be cells that show some

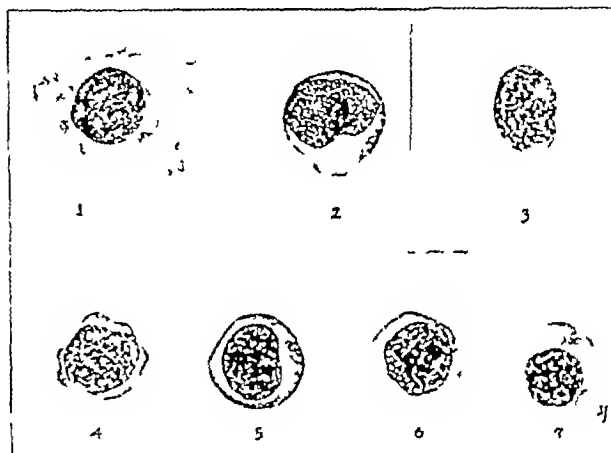


Fig 5.—Drawings of cells from dry imprint preparations made from lymph nodes removed from infectious mononucleosis. Cell 1 is an undifferentiated reticular cell showing details of the nuclear structure. Cell 2 is an immature lymphocyte which has been derived from the reticulum. Its nuclear structure is still much like that of a reticular cell. Cell 3 is a reticular cell in which the nucleus has differentiated and acquired some lymphocytic characters. Cell 4 is an immature lymphocyte (lymphoblast) with two nucleoli. This type of lymphocyte is common in cases of lymphatic leukemia but is rare in cases of infectious mononucleosis. Cell 5 is a basophilic mature large lymphocyte. Cells 6 and 7 are lymphocytes that are developing into plasma cells.

reticulo-endothelial characters in their nuclei. Most of them would have a nuclear pattern that is intermediate between cells 2 and 5 of figure 5. There is, therefore, a difference between even the very immature lymphocytes of the disease under consideration and the lymphoblasts in cases of acute lymphatic leukemia. Downey¹⁵ has shown that in the latter disease the regeneration of lymphocytes differs from the normal process. In infectious mononucleosis it proceeds according to the normal scheme except that the development from the reticulum is accentuated and many of the cells become atypical.

CONCLUSIONS

Examination of the biopsy material from the lymph nodes of patients with infectious mononucleosis shows that the hyperplasia of lymphocytes is not as extensive or as uniform as in cases of lymphatic leukemia. The

¹¹ Downey, Hal and Weidenreich, F. Ueber die Bildung der Lymphozyten in Lymphdrüsen und Milz. *Arch f mikr Anat* 80: 106, 1912.

¹² Mollier, S. Die lymphoepithelialen Organe. *Sitzungsber d Ges f Morphol u Physiol München* 20: 14, 1913.

¹³ Jolly, J. Traite technique d'hematologie. Paris: A. Maloine et

¹⁴ Maximow, Alexander. Rindergewebe und blutbildende Gewebe in von Mollendorff, Wilhelm. *Handbuch der mikroskopischen Anatomie des Menschen*. Berlin: Julius Springer, 1927, vol 2, pt 1, p. 359. Lymphocytes and Plasma Cells in Cowdry, E. A. *Special Cytology*. New York: Paul B. Hoeber, 1932, vol 2, p. 603.

¹⁵ Downey, Hal. The Occurrence and Significance of the Myeloblast Under Normal and Pathologic Conditions. *Arch Int Med* 33: 301 (March) 1924. The Myeloblast—Its Occurrence Under Normal and Pathological Conditions and Its Relations to Lymphocytes and Other Blood Cells. *Folia haemat.* 3: 4, 65 (June) 145 (Aug.) 1927.

hyperplasia of the reticulum is due to swelling and proliferation of groups of reticular cells giving sections a spotty and nodular appearance identical with that described by Nishii after staphylococcal reinfections.

The changes in the nodes, together with the atypical structure of the lymphocytes and the increase in their number, indicate that the disease is due to infection with some organism or virus which has a very specific stimulating effect on the lymphocytes and reticulum and a depressing effect on the granulocytic system.

The blood picture is very characteristic but not absolutely specific, as there are some other types of infection which occasionally show the same blood picture.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. MCKINLAY AND DRS.
DOWNEY AND STASNEY

DR. A. H. GORDON, Montreal. There are a few thoughts that occur to one. The first is the natural fear of leukemia when this symptom complex comes to the fore, and to an experienced hematologist this fear probably becomes less and less. But I doubt whether there is any one who, on seeing a case of this sort, has not had a day or more of qualms lest the greater thing might be present when only the lesser appeared. The next thing that strikes one is the presence of this disease in people of early adult life and in my own experience it has been almost altogether among people connected with medical schools or with nursing schools. This fact would suggest that this may probably be a carrier disease and that it is probably much more common among the general public than has been thought. People in hospitals, medical schools and universities are much more likely to have routine blood examinations than is the general public. The final matter is the possibility of infectious mononucleosis occurring with little or no glandular enlargement but with predominant enlargement of the spleen. A student nurse of 21 left the hospital to undertake training in the maternity pavilion on the 14th of April and on the 17th complained of an infection of the upper respiratory tract. On the 21st she returned to the hospital with a temperature of 102, quite acutely ill, with an infection of the upper respiratory tract and a predominantly sore throat. She had no glandular enlargement but she had a very definite enlargement of the spleen. May 9 the temperature was normal no glandular enlargement had been noted except a week after onset, and following daily examinations of her glands two small spleen-sized glands had been found in the epitrochlear areas. At the end of her illness three weeks later, this girl had shown all the typical features of infectious mononucleosis with leukocyte counts running about 10,000 with an average lymphocyte count of 80 per cent, and polymorphonuclears of 20 per cent, the platelets ranging between 175,000 and 200,000. Otherwise there was a normal blood count and at the end of the time she still had an enlarged spleen and the almost imperceptible lymphatic glands. The following January her blood count still showed 58 per cent of polymorphonuclears and the remainder of lymphocytes. The points that would occur to me as of importance are the great possibility of error as between this and lymphatic leukemia, its presence in young adults (especially in institutions), and the possibility that the disease may show itself as a splenic hypertrophy and not as a predominantly lymphatic glandular hypertrophy.

DR. ISRAEL DAVIDSOHN, Chicago. I will limit my remarks to a discussion of the serologic nature of the so-called heterophilic antibodies in infectious mononucleosis. I found a markedly elevated titer of these antibodies in horse serum disease and my results were published in 1929. Paul and Bunnell observed, while checking my work in serum disease, that cases of infectious mononucleosis showed a similar rise of the antibodies. Since their publication in 1932 a large number of reports have confirmed their observations. The name heterophilic antibodies indicates that the blood of the sheep has no part in their production. Such antibodies are present in the serum of most normal persons and by means of proper absorptions it was shown that they belong to a special group of heterophilic anti-

bodies, the so-called Forssman group. To belong to that group the antibodies must react with the tissues of the guinea pig. I have shown that the heterophilic antibodies in horse serum disease belong to the Forssman group. In many recent reports the antibodies in infectious mononucleosis were referred to without justification as Forssman antibodies. When the serum of normal persons is treated with suspensions of the kidney of the guinea-pig, the agglutinins for sheep red cells are readily and thoroughly removed. When the serum from a patient with serum disease is similarly treated, the results are about the same. However, when the serum of patients with infectious mononucleosis is subjected to such treatment, the kidney of the guinea-pig fails to remove completely the agglutinins against sheep cells, but its effect is that of a nonspecific absorption. The absorption permits a serologic differentiation of infectious mononucleosis from serum disease. There are not infrequently patients with clinical and hematologic signs suggesting infectious mononucleosis in whom the titers of heterophilic antibodies are in the so-called borderline group according to my technique. By means of the absorption test it is easy to separate such cases from true serologic infectious mononucleosis. It may become necessary to divide infectious mononucleosis into two groups—a seropositive and a seronegative.

DR. C. A. MCKINLAY, Minneapolis. Dr. Gordon's experience in which splenomegaly was a predominating feature is new to us. With regard to the agglutination tests our experience is limited to eleven cases in six of which it was positive in significant titers. An occasional diffuse erythematous rash similar to a toxic drug rash has been observed. Tidy described a rash similar to typhoid in epidemics in England. We feel that if the clinical picture of this disease is emphasized and if the hematologic changes as described by Dr. Downey are recognized general interest will be enhanced and the study of the etiology advanced for who could deny the importance of the study of the etiology of this disease, which is so close in certain rare features to acute lymphatic leukemia?

XANTHIC LESIONS

REPORT OF FOUR CASES, INCLUDING TWO OF
"XANTHOMATOSIS" OF THE KIDNEY

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The finding of an orange-yellow nodule in a tissue or organ is usually of arresting interest. Orange plaques on eyelids are a common and striking occurrence, and similar skin tuberosities are occasionally seen on the knees, elbows and hands, golden-brown nodules sometimes develop about tendon sheaths and joints rarely a sinus tract discharges an amazing orange pus and leads to a similarly colored granuloma, the dull yellow of a hypernephroma sometimes displays a distinctive reddish-brown nodule, and a carcinoma of the prostate is discolored very infrequently by a similar process. Finally there very rarely occur generalized golden-yellow infiltrations as the most striking effect of an unusual constitutional deficiency. To this miscellaneous group of clinical and anatomic conditions the term 'xanthoma' introduced by Lebert in 1845 and again by W. F. Smith in 1869 to denote a yellow fibrous tumor, has been rather indiscriminately applied. The common denominator in all has been the color. Considerable confusion has resulted, because both the accumulations and the discolorations are often secondary or accidental to more significant pathologic processes, which may be inflammatory, traumatic, degenerative deficiency or neoplastic. Furthermore, a number of different intracellular or extracellular substances can induce a similar color effect. The term

has been applied in the absence of the characteristic yellow because of the presence of the typical foam cells. Thus at the outset it is obvious that xanthoma as a general term is inadequate and that the prefix "xanthic," preceding that term which accurately characterizes the underlying condition is more logical in most instances.

THE PIGMENT

The egg-yolk color of a xanthic mass has been variously attributed to intracellular lipochrome pigments, hemoglobinogenic pigments, or both. Extracellular hemosiderin, old blood clot, or even melanin may simulate it. Bloodgood,¹ Reid and Garrett² state that in xanthoma the discoloration is obtained from destroyed blood. They refer to the connective tissue tumors associated with tendons and joints. Geschickter and Copeland,³ in discussing these tumors, which they believe arise from sesamoid bones, state that the color is due to either lipid or blood pigment. Siemens has shown that the yellow coloration of xanthomas associated with a disturbed lipid metabolism is derived from the lipochrome pigments carotene and xanthophyll. Miller⁴ points out that it is through the combination of these pigments with the otherwise colorless cholesterol esters that the color characteristic of xanthomas result.

D. T. Smith⁵ distinguishes two groups of xanthic entities: (1) those in which the color is due to lipid pigments contained in the lipid substances of their foam cells and in which blood pigments are absent, and (2) those in which the color is due largely to the intracellular blood pigments in which foam cells are inconspicuous. Pick,⁶ however, contends that with lipid storage of every sort there is a tendency to simultaneous storage of hemoglobinogenic pigments and, furthermore, that with every added stimulation of the reticulo-endothelial system there occurs an increased hemosiderosis, that is, an increased blood destruction. I have noted the presence of fresh and old blood in xanthic masses that are associated with degenerations within neoplasms. Smith admits also that in the second group additional coloring is derived in some cases from the lipid substances within the rare foam cells. Thus it would seem that the distinction between the two groups is one of degree, in one the pigment is mainly lipochromogenic and in the other it is largely hemochromogenic.

The xanthic masses of Smith's first group result, in some instances, from lipophagic activity following inflammatory or degenerative processes, and in others they constitute infiltration structures due to a disturbed lipid metabolism. The orange-yellow spottings seen about old pus pockets, along sinus tracts and in broken down neoplasms and the 'pseudoxanthomas' of some authors are examples of xanthic granulomas. Xanthoma palpebrarum and xanthoma multiplex are probably

degenerative phenomena, for which the terms xanthic granuloma palpebrarum and xanthic granuloma multiplex would seem more suited. The deposition of cholesterol-containing xanthic masses about elbows, hands and knees, associated with a hypercholesteremia as in some cases of diabetes (xanthoma diabeticorum), chronic liver disease and so on are like tophi in gout.⁶ Here the added factor of local irritation induces an apparently selective reaction and infiltration. The constitutional xanthomatoses, described by Pick and others, are expressions of a general dyslipoidism with marked, often diffuse, xanthic infiltrations. Occasionally Smith notes, the cells of a neoplasm become infiltrated with cholesterol as a consequence of a local disturbance without there being any degeneration. The mother cells of these neoplastic cells physiologically contain cholesterol fat. The xanthocarcinoma of the prostate, xanthic tumors of the adrenal and 'xanthome en tumeur' of the skin and mucous membranes are instances of this development.

In the second group, the blood pigment containing group, Smith identifies true neoplasms. They occur as encapsulated and lobulated benign connective tissue tumors, associated with tendon sheaths or about joints. They are composed mainly of spindle or round cells, some giant cells and foam cells and a brown pigment, hemosiderin. The term xanthoma is reserved by many authors for this type of deep orange mass (some call it solitary xanthomatous giant cell tumor). However, it is a question whether they are true tumors of connective tissue origin with incidental admixture of xanthoma cells and secondary hemochromophagyn (xanthic fibroma or xanthic endothelioma or xanthic histioma), or whether they are granulomas following trauma of the tissues (xanthic granulomas).

The atheromatous plaques of arteries are identical in color with xanthoma.⁷ Here the yellow is seen through a layer of pearly white endarteritis. When the intimal covering is incised, a grumous slimy, yellowish material may be squeezed out, and there is a tendency to calcification with advancing years. However, microscopically, the lesion is similar to xanthoma through the presence of typical foam cells containing cholesterol esters, fatty acids and neutral fat. They represent the reticulo-endothelial response to a local excess of lipoids, and the latter may arise from the trauma resulting from the constant pounding associated with the concomitant hypertension and cardiac hypertrophy. Atheroma may also be experimentally produced by feeding animals with a diet high in cholesterol.

There are a number of lesions which resemble in color the so-called xanthomas but which are in no way related. Thus, Bloodgood calls attention to a certain type of hemangioma (fibrohemangioma⁸), which because of hemorrhage and secondary accumulation of blood pigment has been erroneously diagnosed xanthoma. Similar difficulties arise in hemorrhagic buritis, hemorrhage in a lipoma, myxoma or fibromyxoma.

The cream colored subepidermal nodules, which when coalesced appear as yellowish striae in the loose skin in a case of pseudoxanthoma elasticum is not to be confused with xanthoma. Instead of fatty degeneration there is an extensive degeneration of the deep elastic fibers of the skin. There are no foam cells though giant cells are sometimes seen. Sugg and

⁷ Pickens, I. W. Nature and Origin of the Xanthoma Cell. Arch. Path. 17: 177-186 (Feb.) 1934.

¹ Bloodgood, J. C. Xanthoma. Arch. Surg. 8: 882-917 (May) 1924. Tumors, Benign and Malignant. Progr. med. December 1903, pp. 154-158. Malignant and Benign Tumors of the Extremities. Ibid. December 1905, pp. 264-269.

² Garrett, C. A. Tumors of Xanthoma Type. Arch. Surg. 8: 890 (May) 1924.

³ Geschickter, C. F. and Copeland, M. M. Tumors of Bone. New York, American Journal of Cancer 1931.

⁴ Miller, cited by Rowland, R. S. Ann. Int. Med. 2: 1277 (June) 1930.

⁵ Smith, D. T. Giant Centrospheres in Xanthomatous Tumors. Bull. Johns Hopkins Hosp. 33: 342 (Sept.) 1922. Method for Making a Differential Diagnosis Between Xanthomatous and Melanin Tumors from Frozen Sections. Arch. Surg. 8: 908-917 (May) 1924.

⁶ Pick, Ludwig. Niemann-Pick's Disease and Other Forms of So-called Xanthoma. Am. J. M. Sc. 185: 601-618 (May) 1933. Pick, I. and Pinkus, F. Weitere Untersuchungen zur Xanthomfrage. Dermat. Ztschr. 16: 1909 number 12.

Stetson⁸ reported two cases of pseudoxanthoma elasticum associated with angioid streaks of the retina and diabetes

In fat necrosis, such as is seen in traumatic fat necrosis of the breast, the neutral fat is broken up into droplets which are attached eccentrically to the wall of the fat cell envelop. The necrotic and liquefied areas are surrounded by abundant newly formed connective tissue. The gross appearance may resemble "xanthoma," but the microscopic changes are quite different.

In brief, the color range of a xanthic nodule is the resultant of the sum total of its preponderant fat (orange) or blood pigments (brown). In the latter instance the pigment is contained in the cytoplasm of the cells that collect these foreign bodies into clumps of irregular size and shape. It gives the prussian blue reaction for iron. In the former instance, by far the



Fig. 1 (case 1)—Cross section of kidney showing diffuse xanthomatosis

more common and predominant feature of xanthic masses, the sudan III or scarlet red stain produces a striking picture because the accompanying lipid globules take on a deep red. Melanin granules are usually smaller and more uniformly distributed in the cytoplasm. Melanin does not give the iron reaction but stains with silver, while iron and fat do not.

THE 'FOAM CELLS'

The cytoplasm of a stained lipid-laden cell from a xanthic mass is filled with tiny vacuoles and therefore appears meshy or "foamy" (fig 2), because its fatty globules have been dissolved in the process of preparation. The "foam cell" therefore is considered by many as the building block of xanthoma and peculiar to it.

The cells that are adapted to the inclusion of lipids, lipochromes, and as already noted blood pigments are derived from the reticulo-endothelial system. The cell

elements of this system, with their remarkable affinity for dyes and particulate matter as well as lipoids, are found in the liver (Kupffer cells), the spleen and lymphoid tissues (reticulum cells), the bone marrow, the connective tissue of the body generally (the histiocytes), and the blood (monocytes). All these cells though in different locations, are identical in nature and function and may be looked on as of a single type cell. They are scavengers, capable of locomotion and of changes in size and activity. The lipophagic response of these "resting-wandering" cells can be local or general, depending on the extent and nature of the disturbance, and results in the characteristic formations seen in a xanthic mass.

There are other cells, nonhistiocytes, that normally contain lipoids (cholesterin esters) and may appear foamy, as, for example, groups of cells in the corpus luteum, thymus, hypophysis, puerperal uterus, gallbladder mucosa, testis, thyroid, sebaceous glands, and the cortex of the adrenal. The rare occurrence of foam cells in neoplasms, the mother cells of which physiologically contain fat, has already been noted. Thus cell "foaminess" alone is not pathognomonic of a xanthic mass, and neither is the orange color, but the combination is characteristic when it represents a reticulo-endothelial lipophagic response.

THE LIPIDS

The character of the intracellular lipoids in xanthic entities is not constant. In the localized forms one usually finds cholesterol. Chemical, physical or bacteriologic agents may liberate this ester, the presence of which incites the phagocytic properties of the histiocytes. In some of the generalized forms the infiltrations with cholesterol represent selective storage from a hypercholesteremia. In the constitutional forms the xanthomatoses kerales, phosphatids and cholesterol have been identified. Here there is an intense dyslipoidism, probably the result of a chromosomal or constitutional defect. A number of clinical forms have been identified. They vary in acuteness or chronicity of the process and in the extent of the xanthic infiltrations. Niemann-Pick's disease, Grucher's disease, Hand-Schuller-Christrén's disease and possibly Tay-Sachs's amaurotic family idiocy are examples. The notion as to the genotypical origin of the syndromes is further strengthened by the congenital tendency and the accompanying degenerative stigmas. It may be that xanthic granuloma palpebrarum, multiple xanthic dermatosis and xanthic granuloma diabeticorum are of a similar constitutional disturbance, though milder in degree. A hereditary tendency, obesity, diabetes and hepatic disease are frequent concomitants.

XANTHIC ENTITIES

Definition—The usual xanthic mass has an orange color and is composed of large cells containing lipoids, commonly cholesterol. The lipid-laden cells appear as "foam cells" when stained by ordinary methods and the lipid droplets are a brilliant red when sudan III or scarlet red is used. They represent the response of the reticulo-endothelial system to an excess of lipoids, either local or general. Included under xanthoma are other orange colored masses, which, however, differ in basic construction. Thus, there is the "xanthoma" of tendon sheaths, which is regarded by some as a foam cell neoplasm (or histioma or reticulo-endothelioma) and by others as a fibroma with a secondary xanthic

⁸ Sugg, E. S. and Stetson, D. D. Pseudoxanthoma Elasticum
I. A. M. A. 102: 1369-1371 (April 28) 1934

response "Foamy" formations are seen also in neoplasms the parent cells of which physiologically contain fat. They probably represent a local dyslipoidism but cannot be regarded as representative of a reticulo-endothelial response. Then there are other lesions which, because of an accumulation of hemosiderin, melanin, the products of fat necrosis, or elastic tissue degeneration, resemble xanthic entities and may be mistaken for them if judged by color alone.

Therefore, any classification of xanthomatous conditions will include a motley group of unrelated lesions. In the following outline an attempt has been made to place these visually similar masses under separate categories.

I *The Pseudoxanthomas* or, Preferably the *Xanthic Granulomas*—These lesions are manifestations of the reticulo-endothelial response to destructive processes resulting in the accumulation of lipoids and blood and are found in:

A Chronic inflammatory foci such as the xanthic granulomas of sinus tracts, chronic cholecystitis or cholangitis, appendix abscess, pyelonephritis or typhlitis.

B Neoplasms that have undergone focal hemorrhage and fat necrosis, such as xanthic granulomas in hypernephromas, sarcomas, adrenal tumor, tumor of the testis or carcinoma of the breast.

C Possible selective response to an unknown irritant and when a metabolic disturbance is not demonstrable such as xanthic granuloma palpebrarum (xanthelasma) or multiple xanthic granulomas.

D Possible response to the repeated pounding such as occurs in the large arteries when cardiac hypertrophy and hypertension are present,⁷ for example, atheroma of the aorta and its tributaries.

II *The Xanthomatoses* or, Preferably the *Xanthic Lipidoses*—These occur as evidence of a reticulo-endothelial response to disturbances in lipid metabolism usually hypercholesteremia. Not infrequently there is an associated blood destruction with hemochromatosis.

A Primary Diffuse xanthic infiltrations resulting from a lipoidosis and based on a constitutional deficiency e. g. 1 Gaucher's disease. Foam cells store kersasin, usually in females acute and chronic forms enlarged spleen. 2 Niemann-Pick's disease—essential lipid histiocytosis, foam cells store phosphatids, neutral fat is absent usually in females splenohepatomegaly. 3 Hand-Schüller-Christian's disease. Foam cells store cholesterol usually in males a chronic disease of the skeleton with the skull predominantly affected by the foam cell infiltrations. 4 Tay-Sachs's amaurotic family idiocy, usually in males, foam cells store phosphatids, are in the ganglions and glia of the leptomeninges in the tela choroidea and in the connective tissue about blood vessels.

B Secondary Xanthic nodules are sometimes seen in some cases of chronic diabetes, hepatic or renal disease associated with a hypercholesteremia. The localization in certain areas (hands, elbows, knees) may represent selective infiltration possibly resulting from local irritation. Examples are xanthoma multiplex, diabeticorum and multiple xanthomatosis.

III *Xanthic Neoplasms*—It is a question whether true foam cell neoplasms (xanthic histiomas or reticulo-endothelioma) occur.

A "Xanthoma" or xanthic fibroma—a benign connective tissue tumor associated with tendon sheaths or about joints. It is made up mainly of giant cells and some foam cells. The former contain blood pigment and as a result the tumor gives a positive iron reaction. It is regarded by some as a fibroma with a secondary xanthic response (xanthic fibroma). The giant cell tumors of the bone marrow and gums may also contain foam cells.

B Lipoid storage rarely occurring in neoplastic cells whose mother cells physiologically contain fat (possibly a local dyslipoidism). Xanthocarcinoma of the prostate and adrenal, xanthome en tumeur of skin and mucous membranes.

IV *Lesions Simulating Xanthic Entities Because of Similarity in Color*—A Pseudoxanthoma elasticum (subcutaneous degeneration of elastic tissue).

B Traumatic fat necrosis of breast and the like.

C Fibrohemangioma.

D Hemorrhagic bursitis.

E Hemorrhage in a lipoma, myxoma or fibromyxoma.

F Melanotic tumors.

The four cases that follow are examples of xanthic lesions.

The first case is that of a markedly infected kidney which, because of the yellow masses that it contained, was diagnosed at operation as a hypernephroma. Microscopic investigation, however, revealed that the golden-yellow nodulations about the pelvis and in the parenchyma (figs 1 and 2) were composed entirely of foam cells. The kidney was diffusely inflamed and the peripelvic fat was infiltrated and necrotic. This case is an example of a generalized xanthic granulomatosis of the kidney secondary to infection. A similar condition

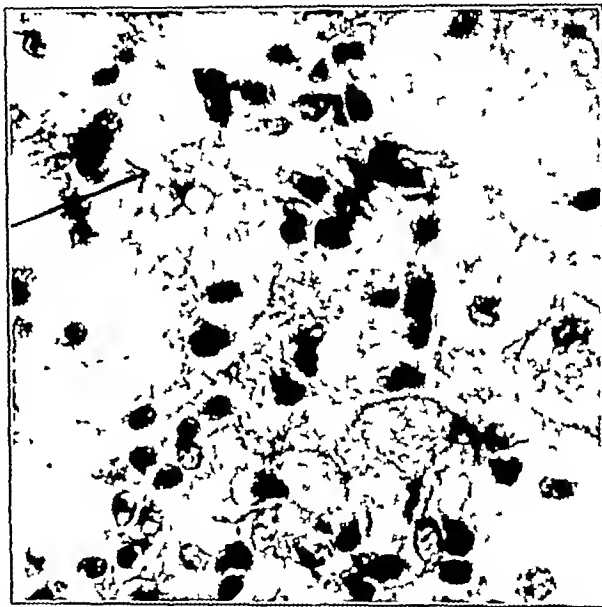


Fig. 2 (case 1)—High power magnification through cross section of a xanthic nodule from kidney showing foam cells.

developed in a patient with pyelonephritis, which was superimposed on a "spinal bladder" following fracture of the first and second lumbar vertebrae (fig 3).

The third case is that of a partially resected thickened ascending colon containing orange-yellow nodules. The mass was looked on as neoplastic. It communicated with a yellow sinus tract, which led to the lower pole of the right kidney and from which an "orange-colored pus" exuded. A review of the microscopic sections of the yellowish nodules showed that they were made up of "foam cells." This is an example of a xanthic granuloma associated with a typhlitis and a sinus tract, which probably arose in an infected kidney.

The last case is that of a prostate removed as an obstructing benign hypertrophy but which on section was found to contain a golden-yellow infiltration. The microscopic sections (fig 4) revealed a carcinoma with foam cells lining the pseudo-alveoli and containing lipid granules when stained with sudan III. This is an example of xanthocarcinoma.

REPORT OF CASES

CASE 1—History—V G, a man aged 31, a Negro, admitted to the Squier Urological Clinic, Dec 30, 1932, had had, nine years before an attack of severe pain in the right lumbar region, which radiated anteriorly and was accompanied by hematuria. Palliative therapy by his local physician gave relief. Three years later the pain recurred without hematuria. Nine months before admission the lumbar pain returned and became steadily worse. For four months he had chills and fever, the urine became cloudy and a feeling of soreness developed over the right kidney region anteriorly. He lost 17 pounds (7.7 Kg) in five months. Nine months before admission he had an attack of pneumonia.

Examination—There was evidence of an unresolved pneumonia at the left base posteriorly. The patient had marked tenderness in the right lumbar and right kidney region anteriorly. There were no palpable masses. The prostate was small, firm, irregular and tender. The blood pressure was 102 systolic, 70 diastolic.

The Wassermann reaction was negative. The urine was cloudy and acid, with a specific gravity of 1.020 and a heavy trace of albumin. It was negative for sugar and diacetic acid.

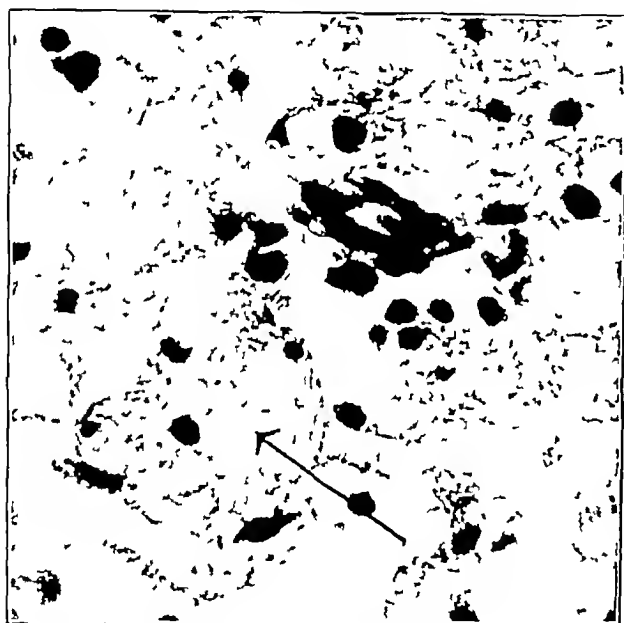


Fig. 3 (case 2)—Cross section through xanthic area of kidney.

The sediment contained pus and an occasional red blood cell. Hemoglobin was 60 per cent (Dare), red blood cells numbered 3,580,000, white blood cells 15,350, polymorphonuclear leukocytes 94 per cent, eosinophils 1 per cent, mononuclears, 5 per cent. The blood urea was 147 mg and the blood sugar 100 mg per hundred cubic centimeters.

Roentgen studies showed resolving pneumonia of the right lower lung and a small amount of fluid in the pleural cavity. There was a calcified shadow in the right lower ureter, also shadows suggesting prostatic calculi.

A cystoscopy, December 31, revealed that the bladder was diffusely inflamed. The right ureteral orifice exuded pus and blocked the ureteral catheter 1 cm from the opening. The flow of urine from the left side was clear, intermittent and negative for tubercle bacilli, white blood cells or red blood cells. It contained 0.5 mg of urea per hundred cubic centimeters. Indigo carmine appeared in three minutes from the left kidney, and the concentration was excellent. None appeared from the right side. The roentgenograms revealed that there was no catheter up the right ureter. The calcified shadow occupied the same relative position in the lower right ureter as in the previous report. The right kidney was enlarged. The left pyelogram was negative.

The provisional diagnosis was calculus of the right lower ureter, right pyonephrosis.

Operation and Result—Jan 4, 1933, a right ureterolithotomy was performed by Dr. George Cahill. The ureter was found to be thickened, firm and dilated. A small hard nodule was felt just above the intramural portion. A linear incision was made over it, and a small triangular calculus was removed. Removal was followed by a profuse extravasation of thick, yellow, foul-smelling, purulent material. Two cigaret drains were inserted, and a standard closure was made. The calculus was a yellow-gray and measured 1 by 0.75 by 0.5 cm.

The patient had an uneventful recovery but the wound would not heal and continued to drain a large amount of pus. A cystoscopy was performed, January 25, and a catheter was passed to the right renal pelvis without obstruction. Pure pus came from that side. From 20 to 30 cc of this purulent fluid was aspirated. A right pyelogram was made. The roentgenogram revealed that the pelvis was well filled and appreciably dilated. There was an irregularity in density and mottling of the dye in the calyx, which suggested the presence of inspissated purulent material. The diagnosis was right pyonephrosis.

January 20 an intravenous urography was performed with diodrast and revealed in the immediate film that the left kidney pelvis was quite well filled and not dilated, but there was no evidence of dye in the right kidney pelvis. The fifteen minute film was the same as the preceding. In the seventy-five minute film a partial emptying of the left kidney pelvis was seen. There was no evidence of any dye in the right kidney pelvis.

January 27 a complete nephrectomy was performed by Dr. J. B. Squier on what was considered a pyonephrotic non-functioning kidney. At the operation the kidney was found to be adherent to the surrounding fatty tissue and was with difficulty separated from it. The surface was normal except for small pale yellow thick firm areas in the cortex and in the pelvic fat. The yellow was striking and stood out from the surrounding tissue remarkably. The general impression was that one was dealing here with a hypernephroma of the kidney.

Pathologic Examination—The specimen consisted of a right kidney (fig. 1), pinkish-gray measuring 12 by 6 by 4 cm and showing a thin adherent capsule and a fairly regular contour. The posterior surface had attached to it a somewhat irregular, smooth, dull yellow firm tissue measuring 4 by 2.5 cm. It had somewhat the appearance of adrenal tissue. However, a similar type of tissue but only 1 cm in length was noted on the anterior surface. Lateral to the mass of yellow tissue was a small rounded, smooth opening entering one of the calices of the kidney. On cross-section the pelvis and calices were dilated. The small areas of yellow tissue described on the outer surface were scattered throughout the calices and cortex. The cortex and medulla were in the proportion of 1:1 and 1:2 respectively. The tissue was interesting from both a macroscopic and a microscopic point of view (fig. 2). The renal tissue in the sections was so filled with chronic inflammatory cells, hyalinized and fibrous tissue that it was barely recognizable. Of particular interest were sections through the yellow areas in the cortex. These were filled with foam cells (xanthomatous areas) and fatty degeneration. Intermingled with the foam cells were fibrous strands and chronic inflammatory cells and many red blood cells. The surrounding tissue was fibrous and in places hyalinized. There was practically no functioning renal tissue in the vicinity of the fatty degeneration. Many large endothelial cells infiltrated the infected tissue. Calcium salts were deposited in a few areas. There was no evidence of a malignant condition. There were degenerative as well as regenerative phases of fat necrosis and even though there was no evidence of giant cells this tissue may be classed under the degenerative phase of fat necrosis.

The diagnosis was xanthomatosis of the kidney, pyelonephritis.

CASE 2—History—T G, a man aged 27, admitted to the Squier Urological Clinic April 9, 1934, had sustained a compression fracture of the first and second lumbar vertebrae with displacement of the fourth lumbar vertebra following a fall twenty months before. The temporary muscle paralysis gradually cleared. He was unable to void urine from the start.

Six weeks after the fall a suprapubic drain was inserted and the suprapubic sinus remained patent to date. He was observed in the ward for a time, and evidence of a right pyelonephritis developed.

Examination—The Wassermann test with the alcoholic and cholesterin antigens was negative. Lumbar puncture was negative except for an increase in globulin and albumin. Hemoglobin was 95 per cent, the red blood cells numbered 5 090 000 and the white blood cells 12,450, polymorphonuclear leukocytes, 75 per cent lymphocytes, 15 per cent, eosinophils, 3 per cent, myelocytes 1 per cent and mononuclear leukocytes, 6 per cent. The urine contained albumin and was alkaline and full of calcium oxalate and triple phosphate crystals. Microscopic examination showed mucus and pus. Smears for tuberculosis were negative.

Roentgenograms of the dorsal and lumbar spine showed narrowing of the body of the first lumbar and fusion between the twelfth dorsal and first lumbar vertebrae. There was a slight scoliosis of the upper dorsal with a concavity to the left and a slight scoliosis of the lower lumbar with a concavity to the right. Roentgenograms of the heart and lungs were negative. A ureterogram showed the left ureteral catheter at the level of the kidney pelvis and the right at the level of the transverse process of the third lumbar vertebra. The right kidney shadow was normal in size, shape and position. There was a distortion of the right kidney pelvis, which may be due to tuberculosis, and in addition there was a sinus extending along the course of the psoas muscle and connecting with the kidney pelvis. The diagnosis was rupture of the left kidney (?).

Blood sugar was 0.92 per hundred cubic centimeters and blood cholesterol, 177 mg per hundred cubic centimeters.

Operation and Result—June 20 Drs. Fish and Squier performed an intracapsular nephrectomy. Gas, oxygen and ether were used. A right lumbar incision was made and the kidney exposed, it was freed with difficulty because of a marked inflammatory reaction around it. A rubber catheter was inserted round the pedicle and tied to control its position and thus lessen the danger of hemorrhage. Sutures were then applied around the pedicle, and the kidney was removed. Two cigaret drains were inserted and the standard closure was made.

Pathologic Examination—The kidney was small, measuring 7.5 by 3.5 by 2.5 cm. The surface was coarsely lobulated and covered with punctate hemorrhages. The capsule was absent. A cross section through the pelvis lengthwise revealed a moderately dilated pelvis and blunted calices. The greater portion of the pelvic mucosa had been torn away during the operation, and what remained was diffusely red and granular. In the minor calices were plugs of blood clot. The kidney proper showed a diminished cortex. The medulla was thickened. The entire surface, by its pale glistening color suggested a marked increase in fibrous tissue. The striking feature was the presence about the calices and in the stroma of orange-yellow nodules. These varied from 0.5 by 0.5 cm to 1.3 by 1.0 cm. There were about eight in this particular level and all presented a remarkable picture. Microscopically (fig 3) the kidney was the seat of a massive diffuse lymphocytic infiltration. Tubules and glomeruli were equally engulfed by this process. In places liquefaction necrosis had occurred and tiny abscesses were present. Fibrosis and hyalinization of glomeruli, converting them into huge pink staining amorphous islands in a sea of lymphocytes produced a striking effect. The tubules were disrupted, some contained fibrinous casts. Cross sections near the pelvis showed in addition to the lymphocytic invasion a marked hemorrhagic tendency and areas filled with foam cells. These cells were large and finely vacuolated spaces in the cytoplasm suggested that they were filled with phagocytized lipids which had been dissolved in the process of preparation.

The final diagnosis was xanthomatosis of the kidney, pyelonephrosis, chronic suppurative pyelonephritis, abscesses in the kidney, hemorrhage in the kidney and fibrosis in the kidney.

CASE 3—History—L. O., an American housewife aged 44, admitted to the Presbyterian Hospital complained of pain in the right side of the abdomen, distention and vomiting which had lasted for three weeks. Two days before admission retention of urine developed. Her physician gave her an injection

of morphine, following which the abdominal pain subsided, she passed a large quantity of urine and the abdomen became smaller.

On admission she presented a nontender mass to the right of the umbilicus. It became more definite by pressing forward in the flank and moved slightly with respiration. After several days of observation the mass decreased and became barely palpable.

Roentgenographic studies of the abdomen showed a shadow superimposed on the right kidney and of almost the same density as the kidney. A barium colon enema indicated a slight filling defect of the ascending colon just below the hepatic flexure. Cystoscopy and pyelographic studies were negative.

The temperature ranged from 98.6 F and the pulse was 78 and the respiration rate 20 per minute. The blood Wassermann reaction was negative. The blood urea was 1.36 mg per hundred cubic centimeters. The stool examination was negative for blood. The urine was clear, acid and amber with a specific gravity of 1.026, there was no albumin or dextrose. The microscope revealed a few white blood cells and epithelial cells.



Fig 4 (case 4)—High power magnification through xanthocarcinoma of prostate showing malignant pseudo-alveoli whose cells contain lipid droplets which were stained with scarlet red.

Operation and Result—The patient was operated on by Dr. A. O. Whipple. The diagnosis before operation was carcinoma of the ascending colon. The ascending colon was attached to the lateral abdominal wall for a distance of 3 cm but was easily separated from it. Corresponding with this area and partially encircling the wall of the colon was a hard mass in which yellowish nodules were seen. An ileocolostomy was done and the ascending colon and ileum were removed. When the resected mass was lifted out a peculiar orange-colored thick pus was seen to exude from a tubular structure, which opened in its bed. A probe passed easily for a distance of from 12 to 15 cm to the pole of the right kidney where a grating and calcareous click was noted. Since it was not wished to prolong the operation a nephrectomy was not done. The kidney region was drained by means of counterdrainage in the flank. The gallbladder was normal. The postoperative diagnosis was chronic pericolicitis and chronic ureteritis.

Pathologic Examination—The specimen consisted of a cecum, an appendix and a short portion of ileum and ascending colon.

There was a firm, irregular nodular mass on the lateral aspect of the ascending colon, 13 cm from the fundus of the cecum. The appendix was small and embedded in an exceedingly fat mesentery. On section the appendix lumen was obliterated, and the cecum contained formed feces. The ileocolic valve was surrounded by two thick, rounded ridges, presenting a slitlike opening. The wall of the ascending colon was moderately thickened at the site of the dense mass described. A dark brown nodule, 1 by 0.3 cm, projected into the lumen of the intestine. Section through the larger mass showed a relatively dense tissue having a mottled appearance, some areas appearing white and fibrous while others were a bright yellow brown. Section through the ascending colon showed a distorted hemorrhagic mucosa, and connective tissue and smooth muscle the structure of which was massed by a dense infiltration of mononuclear leukocytes. There was no evidence of tuberculosis or neoplasm. Scattered throughout were accumulations of foam cells with the appearance characteristic of a xanthomatous infiltration.

The final diagnosis was xanthomatous infiltrations, chronic pericolitis and chronic ureteritis.

CASE 4—History—J. G., a man, admitted to the Squier Urological Clinic Oct. 27, 1933, had had repeated attacks of swelling of the left testicle over a period of six months, and frequency, urgency, and nocturia (six times) with incontinence over a period of two years. He had catheterized himself twice a day for six months. He lost 28 pounds (12.7 Kg.) in eight months. The past history was negative except for gonorrhea which he had contracted fifty years before.

Examination—The patient was well nourished. The blood pressure was 122 systolic, 90 diastolic. The abdomen was tender in the left lumbar region anteriorly. The liver edge was palpable. The left testis was enlarged and the epididymis indurated and tender. The residual urine was 75 cc., it was cloudy and contained many pus cells. The prostate was enlarged, firm, smooth and movable. Cystoscopy revealed a trabeculated bladder, cystitis and a bilobed prostatic intrusion.

The blood urea was 22.4 mg. and the blood sugar 105 mg. per hundred cubic centimeters. The red blood cells numbered 4,670,000 with hemoglobin 80 per cent (Dare), the white blood cells numbered 9,000, polymorphonuclear leukocytes 67 per cent, lymphocytes 28 per cent, eosinophils, 2 per cent, mononuclears 3 per cent. The blood Wassermann and Kahn tests were negative.

Roentgenograms of the chest showed increased pulmonary markings throughout both lung fields, a calcified shadow in the lateral portion of the first interspace, which did not have the typical appearance of either a healed acid-fast or a metastatic lesion. Smooth diaphragms, a moderately enlarged aorta and a heart within normal limits. Of the upper genito-urinary tract both kidney shadows were normal in size, shape and position. There was an oval shadow between the tips of the second and the third transverse lumbar process, which lay perpendicular to the axis of the ureter. It did not have the typical appearance of a calculus. It would, however, have to be ruled out. There was no evidence of calculi in either kidney or upper ureter. There was a progressive arthritis of the upper dorsal and lumbar spine. The lower genito-urinary tract showed no evidence of calculi or metastatic lesions or bony pathologic changes.

The preoperative diagnosis was hypertrophy of the prostate.

Operation and Result—October 30 a suprapubic prostatectomy was performed by Dr. George Fish with nitrous oxide-oxygen and ether anesthesia. The bladder retractor revealed a three-lobed prostatic hypertrophy, which was enucleated by blunt dissection. The average amount of hemorrhage followed. Drainage was instituted by a Freyer tube sewn into the bladder, and a cigarette drain placed in the space of Retzius.

The postoperative diagnosis was tumor of the prostate, type unknown.

The patient went into shock and anuria developed. He died fourteen hours after operation in spite of transfusion and an infusion of dextrose.

Pathologic Examination—The specimen consisted of a large bilobed prostate measuring 5.5 by 2.5 by 4 cm. The surface presented a pinkish gray as well as a dull, diffuse yellowish

appearance. This tissue was firm. On cut surface it presented a smooth, firm, dull and dirty yellowish appearance. This tissue was in places infiltrating the fibro-adenomatous tissue. Sections that had come from the lateral lobes showed a glandular increase characteristic of the so-called benign hypertrophy of the prostate. The numerous acini were dilated in spots and closely crowded in others. They were then lined by a simple columnar epithelium. Numerous prostatic concretions were seen as well as granular debris and desquamated cells. The fibromuscular elements were abundant and in one area they predominated, giving the impression of a fibromyxomatous nodule. The sections that corresponded with the yellow areas ("capsules") showed the presence of a carcinoma. This carcinoma was unusual because of (1) the presence of lipid granules in the epithelium lining many of the pseudo-alveoli, and (2) the relative infrequency of mitotic figures for a neoplasm of such marked activity as the intense proliferation of the cells indicated. Most of the constituent cells were small and ovoid, with round nuclei and eccentric nucleoli. Enormous grapelike clusters of these cells filled the region of the "capsule" (probably really the false capsule or old gland of the prostate or possibly the posterior lobe), and in one area the mass had broken through and engulfed the neighboring benign looking acini. Interspersed were acini, some or all of whose lining epithelial cells were enlarged and resembled "foam cells." A scarlet red stain showed the presence of red granules—lipoid, probably cholesterol (fig. 4).

The final diagnosis was fibro-adenoma of the prostate, lateral lobes, carcinoma of the prostate, with xanthomatous changes.

SUMMARY AND CONCLUSIONS

1 The reticulo-endothelial system is important as an entity and as a mechanism responding to accumulations or excess of lipoids and particulate matter.

2 Accumulations of lipoids may result from inflammatory, traumatic or deficiency causes.

3 The lipophagic response by cells of the reticulo-endothelial system results in the formation of a xanthic mass.

4 The cell unit of the xanthic mass is the foam cell. The foaminess results from the solution of cell lipoids during the routine process of preparation. Should scarlet red be used, the lipoids then appear as red, intracellular droplets.

5 The orange color of a xanthic mass is due mainly to a combination of its lipoids and lipid pigment content and to a lesser degree to its blood pigment.

6 An outline of xanthic entities, which has been included, embraces the xanthic granulomas, the xanthic lipoidoses and the so-called xanthoma and calls attention to lesions that resemble them in color but are basically different.

7 In two cases, unusually extensive "xanthomatosis" of the kidney was present, and in one case a seemingly similar condition was found in a carcinoma of the prostate.

911 Park Avenue.

Language and the Human Mind—Language as heard and spoken long preceded civilization, and has been recorded as cuneiform and hieroglyphic writing by the early civilizations of Mesopotamia and Egypt, and much earlier as crude pictorial representations. In one form or another language has exerted such a powerful influence on the evolution of mind in man and is so intimately associated with this that it causes no surprise that the one is so commonly regarded as the equivalent of the other. This, however, is by no means the case, language being merely the symbolical instrument of mind and not its compeer, although in some form or equivalent it is indispensable for the full evolution of the complex cerebral changes whose final end is individually acquired skilled psychomotor activity.—Bolton J. S. *The Evolution of Mind* *Lancet* 1:728 (March 30) 1935

GLOMUS TUMORS

(ARTERIAL ANGIONEUROMYOMA OF MASSON)

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In the Laboratory of Surgical Pathology of Johns Hopkins Hospital is a tumor that was removed from the end of the little finger of the right hand in November 1924. This tumor, it is stated in the history, had no definite capsule. It was regarded as a neurofibroma but the epithelioid cells and the vascular spaces in it could not be satisfactorily interpreted.

CASE 1—The patient from whom this tumor was removed was a white woman, aged 38. Eight years before the tumor was removed the patient experienced severe, sharp pain in the tip of the little finger of the right hand. Five years later, that is three years before removal, an incision was made and a curettage performed as a diagnosis of periostitis ("a bone bruise") had been made. After this operation a distinct tumor was discovered. The tumor was very painful when pressed on and definite painful sensations were experienced with alterations in temperature from heat to cold and vice versa. A small mass could be palpated beneath the skin on the palmar surface of the terminal phalanx of the little finger. To the ulnar side of the tumor could be seen the scar of the former operation.

As stated in the history, a histologic diagnosis of the tumor was not made. The vascular space and the groups of epithelioid cells raised some doubt as to the diagnosis and at that time no interpretation of their character was attempted.

The following three cases presented tumors histologically like the one just referred to.

CASE 2—A white man aged 67 recently admitted to the surgical clinic, complained of severe, often excruciating pain about the left knee which radiated into the thigh and leg. The pain was thought to be a sequela of a fracture sustained many years before. An operation had been performed to correct the displacement.

On examination a small tumor approximately the size of a lima bean was found just in front of the middle of the patella on the left side. The patient experienced excruciating pain when pressure was made on the tumor, even when it was struck by the end of his overcoat or rubbed by his trousers. Shortly before entering the hospital the patient's wife accidentally dropped a newspaper on the tumor. Even this insult caused excruciating pain. This small tumor was freely movable, somewhat irregular in shape and as stated extremely painful. The skin covering the tumor seemed normal. The tumor was excised under local anesthesia.

Microscopic examination revealed many blood spaces between which were epithelioid cells. Histologically this tumor was much like the one in case 1 removed in 1924; the histologic diagnosis of which was not definitely made.

CASE 3—A white woman aged 67 had noted a small mass just below the right elbow a little to the outer side for fifteen years. During the past five years the mass had not increased in size. The mass had been extremely painful for the past nine months and pressure on the mass would cause paroxysms of pain. The tumor was removed under local anesthesia in September 1930. It was located just beneath the skin and embedded in the fat. It was composed of soft, spongy red tissue like that of an angioma and was surrounded by fibromyxomatous tissue. At operation it was thought to be an angioma; the preoperative diagnosis had been neurinoma. There has been no recurrence of this tumor.

Histologically there were areas which resembled those of cavernous hemangioma and between these were epithelial-like

cells which resembled those seen in a melanoma. Nerve fibers were found in the tumor, which was surrounded by a fibrous capsule.

CASE 4—A white woman, aged 38 for three years prior to 1929 had had pain in the end of the right thumb. A diagnosis of a felon was made, and the thumb was lanced several times in the spring of 1929. In the fall of that year a roentgenogram revealed a dark shadow over the bone. The terminal phalanx was exposed and curetted and drains were kept in place for the next two weeks. In November 1930 the patient entered a hospital where the diagnosis of Ewing's tumor was made from the tissue removed at that time. The thumb and the axilla were irradiated. The patient then returned home, where she received a second course of roentgen treatments in 1931, the thumb and axilla being irradiated. In 1932 she returned to the hospital and the thumb and axilla were again irradiated. Following this a slight swelling of the thumb and axilla, accompanied by pain developed. She returned home and received a fourth course of irradiation in November 1932. The family had been notified that the case was hopeless.

When seen by us nothing could be palpated in the axilla except what seemed to be fat, probably altered by the roentgen exposure. The hand and chest were normal.



Fig. 1—Glomus tumor in a woman aged 67. This tumor had been noted for fifteen years. There was no increase in size over a period of five years. Nine months before removal the tumor had become extremely painful. Pressure on the tumor caused excruciating paroxysms of pain.

The sections that had previously been made were examined and a diagnosis of a benign glomus tumor was made. The patient returned home and when last seen in 1934 she was well. Recent word indicates that she has continued to be well.

These four histories have been given in some detail, for in them are related the symptoms associated with tumors described by Masson in 1924 as glomus tumors or arterial angioneuromyomas. The name glomus was applied by Masson because of the histologic likeness of these tumors to the glomus coccygeum of Luschka. He described three such growths, one in the forearm, two in the thigh which had a definite and characteristic structure. Masson thought that the like clinical symptoms warranted him in concluding that he was dealing with a new type of tumor—a morbid entity. In 1925 Martin and Dechaume reported two cases that were identical histologically with those described by Masson. It was thought that these tumors developed from the arterial glomus which is considered a normal organ. The development from the glomus accounts for the

frequent subungual location. As will be seen from the histories, such tumors may occur in other locations.

The majority of the cells forming the glomus resemble epithelial cells. The nuclei are large and round and contain a nucleolus. The chromatin stains with only average intensity. The protoplasm is acidophilic. These cells are found in the neighborhood of blood vessels, and in places they seem to have a circular arrangement



Fig. 2—Cross section of a glomus tumor removed from in front of the left patella. The capsule, angiomalike spaces and epithelioid cells distributed between the blood spaces may be seen.

and are distinguished with difficulty from the smooth muscle fibers. These cells, resembling epithelium, are polygonal and clear. The cells surround the vessels in areas almost like endothelium and are separated by just a thin layer of collagen fibers.

Popoff¹ has recently described a peripheral arteriovenous anastomosis. We shall refer to this frequently in discussing the origin and microscopic changes of the tumors under discussion. Sucquet was apparently the first to describe peculiar vessels in several regions of the palm and sole, especially in the midzone on the ventral surface of the fingers and toes, which were larger than the ordinary capillaries and emptied directly into veins without an intervening capillary network. According to Popoff, these arteriovenous anastomoses are found almost exclusively over the ventral surface of the hand and foot. They are constantly present in the region of the nail bed and in the tips of the digits, the palmar surface of the first, second and third phalanges, and the thenar and hypothenar eminences of the hand. A like distribution is found in the foot, but they are also found about the heel. The anastomosis is usually S shape, twisting and coiling, seldom straight.

The histologic picture of the anastomosis is repeated in the tumor. The lumens are usually narrow and irregular. The endothelial cells are large and cuboidal and arranged in two or three rows. The muscular coat of the vessels is composed of an inner longitudinal and

an outer circular layer, but these are indistinct. Among the muscle cells are large, clear, epithelioid cells with oval or globular nuclei that have little chromatin. Ramifying among these cells are anastomosing cells with elongated nuclei and transparent cytoplasm without myofibrils. The outer zone of the arteriovenous anastomosis is made up of loose, delicate, collagenic reticulum, in which may be found many nonmedullated nerve fibers. The anastomosis is surrounded by coarse lamellated, collagenic tissue, in which are found the collecting veins.

It is suggested by Masson, Popoff and others that the glomus controls the arteriovenous circulation in the digits and aids in regulating both the local and the general body temperature.

The histologic appearance of glomus tumors is indicated by the accompanying photomicrographs. Figure 2 shows under low power a cross section of such a tumor. In this are shown the capsule made up of rather heavy connective tissue fibers, the blood spaces resembling those of a cavernous angioma, and the epithelioid cells, which are distributed throughout the tumor. Scattered throughout are nerve fibers. Figures 2 and 3 indicate the cellular characteristics and appearances better than any written description.

The glomus tumor, as has already been implied, occurs most frequently in the nail bed and about the fingers and toes—in those places in which the glomus occurs with greatest frequency and abundance. They are by no means limited to these areas, however, for



Fig. 3—Section showing characteristics of the cells found in glomus tumors. These cells form a mantle for some of the vascular spaces.

thirteen of the seventeen cases that we have observed have developed in other locations, such as the elbow, the knee, the leg and the palm of the hand.

Clinically the most striking characteristic of the glomus tumor is pain, spontaneous and provoked. The pain is excruciating at times. Pain of such severity is not found in a neurinoma. These tumors usually are smaller than the neurinoma and are not situated on a

large peripheral nerve. When these occur in the nail bed they usually have a cyanotic appearance, which is almost pathognomonic. In some instances vasomotor disturbances are quite marked. A glomus tumor should always be looked for when the patient experiences severe pain in the hand over a long period. The nature of the lesion should be suspected when a tumor that is excruciatingly painful occurs in other regions and



Fig. 4—Cross section of a glomus tumor under a higher magnification than shown in figure 2

reacts by pain to pressure or touching much like the trigger zone in tic douloureux. In the hands a marked atrophy may develop. This is the atrophy of disuse because any motion may bring on a paroxysm of pain.

A mistaken diagnosis is not infrequently made in such cases. The diagnoses probably most frequently made are endothelioma and angiosarcoma. At times these tumors, which are encapsulated and benign, are regarded as malignant.

A short summary follows of the remaining thirteen cases that we have studied.

CASE 5—A white man aged 65, had a tumor situated on the forearm. The tumor was removed elsewhere and sent to the hospital for diagnosis. A microscopic diagnosis of peripheral angiosarcoma had been made. The patient was well five years after local removal. The histologic diagnosis made in the laboratory of the Johns Hopkins Hospital was glomus tumor.

CASE 6—A white man aged 47 had noticed a small mass about the size of a pea on the right thigh just above and internal to the great trochanter. This small tumor had caused pain and was tender. Nine years before the tumor was removed it had been lanced. The tumor had gradually increased in size and was painful. It was removed in November 1909.

CASE 7—A white woman aged 30 had noticed a small mass under the skin of the thigh three months before she was seen. This tumor was painful (spontaneous and provoked) but not excruciating. In May 1933 the tumor was removed. It proved on section to be a typical glomus tumor.

CASE 8—A physician stated that he had noticed for many years a small tumor on the anterior aspect of his right leg. Thus he believed followed trauma. During the past year he noticed a slight increase in the size of the tumor. The tumor was removed in May 1926, a wide margin being given the tumor. The tumor seemed to be of the angiomatous type. The large epithelioid cells found in the tumor were thought to indicate malignancy. The patient was reported well in 1928 two years later.

CASE 9—A white man, aged 57, had a small tumor removed from the subcutaneous tissue about the knee. The growth was definitely encapsulated and thought to be a hemangioma. Histologically the tumor was typical of the glomus group. It was sent to the laboratory for diagnosis because the cells surrounding and between the vascular spaces had caused some confusion.

CASE 10—A graduate nurse had a tumor in the palm of the hand. The small tumor was exceedingly painful. When examined histologically after removal it proved to be a typical glomus tumor.

CASE 11—A Negro aged 48 had a small growth on the flexor surface of the left arm near the elbow. When first noted it was the size of a pinhead, but it gradually and very slowly increased in size. Dull pain was felt in the arm all the time. This was aggravated by motion or by striking the tumor. The tumor when it was removed measured 2 cm in diameter.

CASE 12—A white woman aged 60, complained of pain in the finger, almost constant of fifteen years duration. There were practically no physical changes except slight edema. There was marked pulsation on the inner border of the index finger. A definite tumor was palpated here. There was a

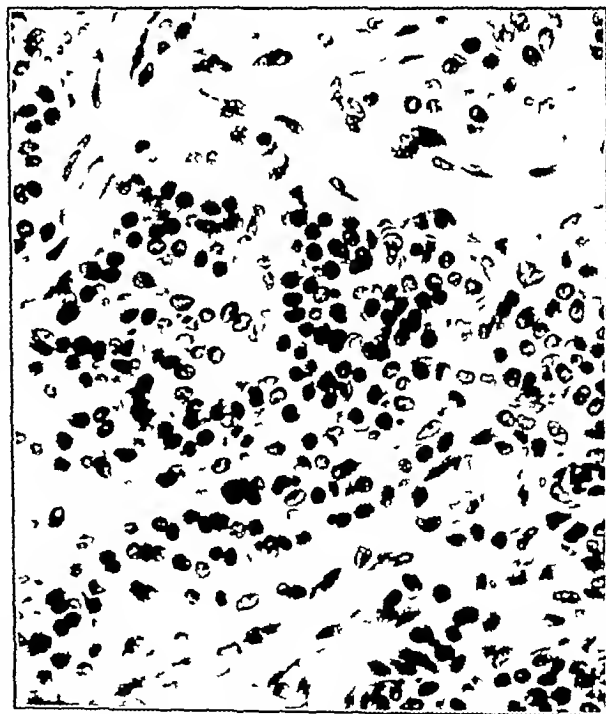


Fig. 5—Epithelioid cells of a glomus tumor

lipoma on the dorsum of the right foot. The tumor on the finger was excised and on microscopic examination showed typical angiomatous spaces surrounded by epithelioid cells.

CASE 13—A white man aged 29, a draftsman, had fallen six years before and injured his left elbow. A small bluish sensitive tumor appeared on the left forearm about 2 inches from the tip of the olecranon. This was removed after about three years of slow growth but recurred and gradually increased until it was the size of a large pea. It was painful when he rested his arm on the drawing boards. Examination

revealed a tumor about 8 mm in diameter, apparently a hemangioma mass near the left elbow. The tumor was excised under local anesthesia and proved to be definitely encapsulated.

CASE 14—A white man had had a mass on his left wrist for the past eight years. He had no pain except when attempting to lift heavy things. The mass was freely movable, round, well circumscribed cystic, and the size of a walnut. The mass was excised. The specimen consisted of an oval skin flap 3 cm long and 1.5 cm in maximum diameter, excised with the underlying tissue for a distance of 2 mm. Lying directly beneath the skin a rounded, soft, circumscribed mass was found, which measured 1.5 cm in diameter and 8 mm in thickness. The mass lay directly beneath the epidermis. It was encapsulated and the capsule has been shelled out from the underlying tissues.

CASE 15—A white man aged 80 had a tumor removed from the dorsal surface of the hand, between the index and middle fingers. The tumor was excised and the material sent to the laboratory for microscopic examination. No further clinical data are available.

CASE 16—A white man aged 51 seen in the dispensary, April 12, 1935, was diagnosed as having syphilis with involvement of the central nervous system, cardiac insufficiency and first degree heart block. During the examination a small bluish mass the size of a large lima bean was discovered on the extensor surface of the right elbow. The mass was freely movable and extremely painful when touched or pressed on.

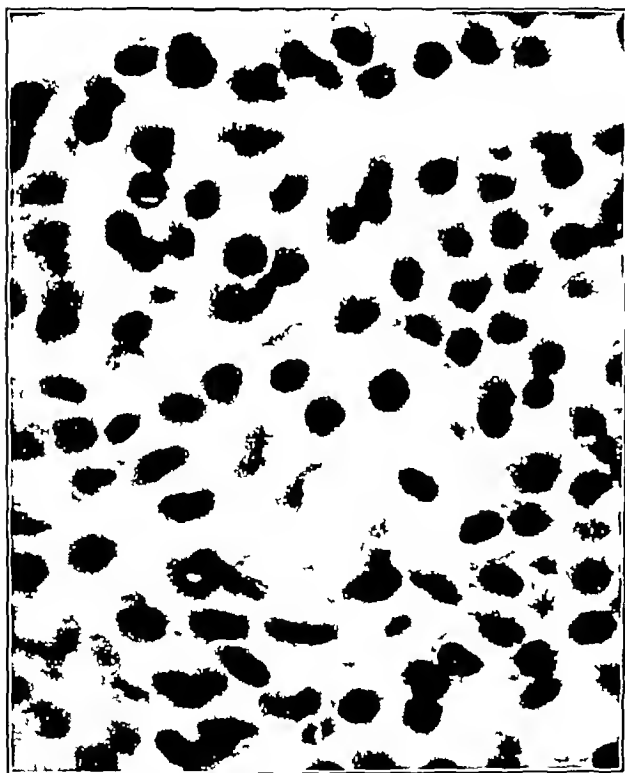


Fig. 6—Relation of the epithelioid cells to the blood spaces in the tumor.

The mass appeared about twelve years before and grew to the present size in two years. It had gradually become more tender. The patient was frequently awakened at night because of pain that was caused when the mass was rubbed by the bed or night clothing. A diagnosis of a glomus tumor was made. The patient was referred to the division of surgery and the mass was removed. Extreme pain was complained of when an attempt was made to inject procaine hydrochloride. On histologic examination the tumor was found to have the typical structure of a glomus.

CASE 17—A white woman aged 24 was examined because of a painful, bluish tumor beneath the right thumb nail about 1 mm in diameter. The pain had been present for one month

and had been more severe for the past two weeks, extending up the arm to the shoulder. The overlying nail was slightly irregular. A roentgenogram made of the distal phalanx of the thumb showed a minute area of rarefaction beneath the tumor site. The tumor was excised together with the entire nail and the surrounding soft parts. It was in contact with the nail above and the bone beneath. On gross examination it was found to be circumscribed and was about 2 mm in diameter. From frozen sections made at the time of operation it was thought to be a round cell sarcoma of the Ewing type, and post-operative irradiation was given. Examination of a permanent section showed a typical glomus tumor, with numerous capillary spaces surrounded by epithelioid cells. The patient has remained well now more than five years.

THERAPEUTIC RESULTS WITH THE KETOGENIC DIET IN URINARY INFECTIONS

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The successful use of the ketogenic diet in the treatment of urinary infections is dependent on the bactericidal action of beta-oxylbutyric acid at a certain degree of acidity. The limit at which this action occurs has been shown to be 0.5 per cent beta-oxylbutyric acid and a pH of below 5.5. An increase in the concentration of the acid and a decrease in the pH increase the bactericidal power of the urine. In like manner, it has been shown that bactericidal action occurred below the minimal concentration when the pH of the urine was lowered and that bactericidal action was present at a pH above 5.5 when the concentration of the beta-oxylbutyric acid was increased considerably. At a pH of 5.7 a concentration of 1.8 per cent beta-oxylbutyric acid showed a bactericidal action, and at a pH of 5.0 a concentration of 0.4 per cent acted similarly.¹ It has been demonstrated by Osterberg and Helmholtz² that the necessary concentration of beta-oxylbutyric acid can be determined by a relatively simple method. By means of chlorophenol red paper a pH below 5.5 can be estimated.

It has been said that the ketogenic diet kills the colon bacillus more readily than it does other members of this group.³ Clinically, in my experience, it has proved true that the colon bacillus usually was the first organism to disappear from the urine when more than one organism was present. In a series of cases in which the urinary tract was infected with *Escherichia coli*, *Aerobacter aerogenes*, *Proteus vulgaris*, *Staphylococcus*, *Streptococcus* and *Pseudomonas*, the diet has acted very satisfactorily. Similar results have been obtained in experiments in vitro with these organisms. That with one organism the infection is more deeply seated than with another, so that the former organism cannot be acted on as successfully as the latter is quite possible.

Knowing what conditions must be achieved before bactericidal action is possible, it becomes a question if, and how readily, these conditions can be achieved in cases of urinary infection.

From the Section on Pediatrics, the Mayo Clinic.
Read before the Section on Pediatrics at the Fifty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Helmholtz, H. F. and Osterberg, A. E. The Bactericidal Effect of Levorotatory and Racemic Beta-Oxylbutyric Acid (unpublished data).
2. Osterberg, A. E. and Helmholtz, H. F. Determination Whether Ketourine Has Bactericidal Action. A Simple Technique for Clinical Use. *J. A. M. A.* 102:1831-1832 (June 2) 1934.
3. Crance, A. M. The Necessity for the Standardization of the Treatment of Bacilluria. *J. A. M. A.* 104:285-288 (Jan. 26) 1935.
Clark, A. L. and Keltz, B. F. A Simplified Treatment of Bacilluria. *ibid.* 104:289-292 (Jan. 26) 1935.

The formation of the ketone bodies is dependent on the inability of the body to oxidize large amounts of fat in the absence of available carbohydrate. It becomes necessary, therefore, to feed patients large amounts of fat and very small amounts of carbohydrate. Some few children do not tolerate these large amounts of fat. They suffer from digestive disturbances and are not able to continue with the diet. Others, again, seem



Fig. 1—Bilateral hydronephrosis with megalo-ureter on left side

to have no difficulty in retaining the diet but do not seem to absorb the necessary amounts of fat to produce a good ketosis. The urine of two infants who received a diet in which the ketogenic-antiketogenic ratio was respectively 4:1 and 5:1 showed at no time a p_H below 5.7 or more than 0.1 per cent beta-oxybutyric acid. Large amounts of fat were found in the stools.

The greatest difficulties were encountered in the cases in which renal function was decreased. The diseased kidneys were unable to excrete a urine that had a low p_H and a high

concentration of beta-oxybutyric acid. In cases in which urine has been obtained separately from the two kidneys the urine that was obtained from the kidney which was more severely damaged was more alkaline and contained less beta-oxybutyric acid than did the urine that was obtained from the other kidney. In cases in which the value for the urea was more than 50 mg per hundred cubic centimeters of blood, the patients seem to have difficulty in excreting a urine that has a high concentration of beta-oxybutyric acid.

Stones that remain in place also seem to be an absolute obstacle to successful treatment of a urinary infection. In one case in which bilateral renal calculi had been removed two small stones again developed on one side. In spite of the adequate ketosis and a low p_H the urine from the kidney with the pelvic stones always remained loaded with bacteria.

The ketogenic diet in childhood is to be reserved for infections that do not respond to simple therapeutic procedures. To treat every child who has an acute urinary infection with the ketogenic diet would be entirely unnecessary. The majority get well and the urine becomes sterile with the usual alkalization and forcing of fluids. In some cases it later may be necessary to give ammonium chloride and methenamine for a short time. A small group remains in which there is no obstruction of the urinary tract but in which the infection becomes chronic in spite of the usual types of treatment. The infection will usually clear up promptly as a result of administration of the ketogenic diet.

URINARY INFECTION WITHOUT OBSTRUCTION

I have tried out the ketogenic diet in a series of twenty-four cases of infection of the urinary tract without obstruction. In some of these cases the infection probably would have been cleared up just as readily

by other means as it was with the diet but in order to test out the efficacy of this new mode of treatment the dietary treatment was used. In all cases in which the necessary concentration of beta-oxybutyric acid and the proper p_H could be obtained, the urinary infection cleared up very promptly. There were several instances in which the urine was sterile after forty-eight hours. In a number of these cases ammonium chloride and methenamine had been tried without success.

The twenty-four cases have been divided into three groups: (1) those in which the infection cleared up promptly as a result of the diet and in which the patient remained free from infection, (2) those in which the infection cleared up promptly but recurred, and (3) those in which the infection did not respond to the treatment, because the proper p_H and the necessary concentration of beta-oxybutyric acid could not be obtained in the urine. Twenty-one of the patients in this series were girls and only three were boys.

In the fifteen cases (table 1) in which there was no return of the infection, the cure was often extremely rapid. The number of days that the diet was administered does not indicate the length of time it took to render the urine sterile but the length of time it took to obtain a proper ketosis and the period that I felt it was necessary to keep the urine sterile in order to assure that all the organisms in the lining of the urinary passages would be killed. It is noted that, in most instances in which the necessary bactericidal conditions are achieved, the urine becomes sterile within twenty-four hours. As a rule, the ketogenic-antiketogenic ratio at which a proper ketosis is obtained lies between 3:1 and 4:1. In one instance in which sterilization of the urine of a 3 year old girl was complete after seven meals the ratio was only 2:1.



Fig. 2—Duplication of left ureter with megalo-ureter. a before operation b after operation

In the six cases in the second group (table 2), there was a marked tendency for the infection to relapse. Three of these patients lived near the clinic and the various recurrences of the urinary infection could be followed for a period of years. The urine of two other patients was sterile when they left the clinic but the infection recurred soon after they arrived home. Another patient returned in six weeks for a second dietary treatment and has not had a recurrence of the infection for about a year.

The third group was composed of three cases in which I was unable to obtain a proper ketosis or a low p_H in spite of the fact that the children took the diet without difficulty (table 3). In one of these cases the ketogenic-antiketogenic ratio was 5:1. In two cases the lowest p_H of the urine was 5.7 and 5.9, respectively.

TABLE 1—Treatment of Urinary Infection Without Obstruction Sterilization of Urine*

Case	Age Years	Sex	Diet Con- tinued Days	Urine		Comment
				p_H	B Oxybu- tyric Acid per Cent	
1	10	♀	11	5.0		
2	12	♀	0	5.1		
3	8	♀	4			
4	3	♀	4			Urine sterile after seven meals
5	0	♀	0	5.1		Aerobacter aerogenes
6	0	♀	0	5.0		Urine sterile after six meals
7	5	♀	7	4.8		
8	7	♀	8	5.1		Urine sterile after three days
9	0	♀	0	5.3		Slight ureterectasis on right side
10	11	♀	5	5.0	1.0	Streptococcus faecalis urine sterile after six meals
11	9	♀	30			No results with ammonium chloride and methenamine patient went home to continue diet urine sterile when patient returned one month later
12	4	♀	7	5.2	Greater than 0.1	
13	13	♂	22	5.0		Staphylococcus aureus osteomyelitis and abscess of brain
14	8	♀	8	5.1	Greater than 0.1	Anaerobic streptococcus and Escherichia coli chronic urethritis
15	8	♀	9		Greater than 0.1	Urine sterile one year later

* All organisms Escherichia coli except when indicated differently

and at no time did the concentration of the beta-oxybutyric acid approach 0.5 per cent. These two patients were in the hospital and I was unable to account for the lack of adequate ketosis. A second trial of the diet unfortunately was not possible. In case 24 (table 3) the p_H ranged from 5.1 to 6.1. On

TABLE 2—Treatment of Urinary Infection Without Obstruction Recurrence of Infection and Repeated Sterilization of the Urine*

Case	Age Years	Sex	Diet Con- tinued Days	Urine		Comment
				p_H	B Oxybu- tyric Acid per Cent	
16	10	♀	0	5.0	Greater than 0.1	Recurrence after six weeks second cure no recurrence since 0/0/33
17	5	♀	10	5.1	0.50	Aerobacter aerogenes relapse
18	1	♀	15	5.0		Relapse with Streptococcus faecalis
19	9	♀	10	5.3	Greater than 0.5	Repeated cures and recurrences no relapse for more than a year
20	10	♀	7 0 4	5.3	Greater than 0.1	Repeated cures and recurrences no recurrence since 0/27/34
21	10	♀	4	5.3	Greater than 0.1	No result with ammonium chloride and methenamine repeated cures and recurrences

* All organisms Escherichia coli except when indicated differently

the fifth day there were only 100 organisms in 0.5 cc of urine. The p_H of the urine on this day was 5.6, it rose on the following days and reached 6.1 on the eighth day at which time there were innumerable bacteria in 0.5 cc of urine.

It is thus evident that the ketogenic diet should be reserved for those cases in which urinary infection is refractory to the ordinary modes of treatment. No

one should hope for beneficial results unless a weighed diet can be arranged for and the proper degree of ketosis and acidity can be achieved.

URINARY INFECTION WITH OBSTRUCTION

In cases in which urinary infection has been associated with anomalies of the urinary tract, it has been unusually difficult in the past to eliminate the infection. In the past fifteen years I have treated a large number of children with anomalies, by various means, and in only two cases have I been successful in rendering the urine sterile and having it remain so after the treatment has been discontinued. In the one case there was a relapse within a month, and in the other case there was a relapse within a year. The lack of therapeutic results in these cases has been so striking that, together with others, I have felt that, if a cure was not achieved after active treatment had been employed for from three to four weeks, the patient probably had an anomaly of the urinary tract, with urinary stasis.

It was a great surprise, therefore, that the ketogenic diet would successfully clear up urinary infections in the presence of even severe degrees of stasis. My first

TABLE 3—Treatment of Urinary Infection Without Obstruction Failure of Diet*

Case	Age Years	Sex	Diet Con- tinued Days	Urine		Comment
				p_H	B Oxybu- tyric Acid per Cent	
22	1	♀	10	5.9	Less than 0.5	No results ketogenic-antiketogenic ratio 4 to 1
23	3	♂	14	5.7 to 6.1	Less than 0.1	No results ketogenic-antiketogenic ratio 5 to 1
24	8	♂	13	5.1 to 6.1		Bacillus proteus hypospadix one culture revealed 100 organisms per 0.5 cc of urine p_H was down to 5.6 on this day

* All organisms Escherichia coli except when indicated differently

report on the subject emphasized the excellent results in cases in which there was stasis in the urinary tract, because it was this group, in particular in which my treatment had been almost always unsuccessful.

In a series of twenty-one cases of urinary infection there were a great variety of severe obstructive lesions of the urinary tract. A bactericidal urine cannot do more than kill the bacteria with which it comes in contact, so that the vesical ureteral or pelvic wall when seriously infected or an interstitial lesion of the kidney can be influenced only indirectly by the diet. The urinary tract finally may be rendered sterile if, by rendering the urine sterile further infection of the tissues is prevented and normal healing of the lesions is allowed to take place. As the urine can be rendered bactericidal by means of the diet, there is no reason why it should not sterilize a urinary tract that is the seat of stasis as well as one that is not.

I have divided the twenty-one cases into (1) a group of six cases in which the urinary tract has remained free from infection for a period of time after discontinuing the diet, (2) a group of five in which there has been a recurrence after a period of freedom from infection after discontinuing the diet and (3) a group of ten cases in which it was impossible to influence the infection at any time.

GROUP 1—As will be seen from table 4, the patients who are included in this group had normal renal function. In no case was the value for the urea more than

38 mg per hundred cubic centimeters of blood, and all these patients excreted a urine that had a low p_H and a high concentration of beta-oxybutyric acid. The obstruction in these cases was of such a nature that, even after the operative procedure, there still remained sufficient dilatation of the urinary tract to render it abnormal.

Two recent cases seem worthy of detailed description, because they show the severity of lesions that can be cleared up in cases in which operative procedures at the present time offer no solution, and the rapidity with which infection may clear up after relief of the main obstruction.

CASE 2 (table 4)—A girl, aged 8 years, had a bilateral hydronephrosis and megaloureters, without any obstruction in the ureter bladder or urethra. The condition probably was of neurogenic origin. (The excretory urogram is illustrated in figure 1.) The patient had nephrostomy tubes in both kidneys. There was an acute infection and mucopus was draining from the tubes. Two previous attempts with the diet ended in fail-

TABLE 4—Treatment of Urinary Infection with Obstruction
Sterilization of Urine Without Relapse

Case	Age years and Sex	Anomalies	Urea Mg per 100 Cc of Blood	Diet Con- tinued Days	Urine		Comment
					p_H	B-Oxybu- tyric Acid per Cent	
1	8 ♂	Hydro- nephrosis	24	5	5.0		Cutting of aberrant vessels one year later
2	8 ♀	Bilateral hydro- nephrosis megalou- reters	24	6	5.3	0.87	Bilateral nephros- tomy
3	8 ♀	Duplication of ureters left uretero- cele	38	9	5.2	1.0	Uretero- meatotomy
4	9 ♀	Megalou- reters atony of bladder	30	8	5.1		
5	7 ♀	Right pye- lonephrosis	25	10	5.0	Greater than 0.5	Nephropexy
6	8 ♀	Neuromus- cular dys- function of bladder	20	10	5.1	Greater than 0.5	Urine sterile one week after discon- tinuance of diet

ure. These were followed by a protracted period of unsuccessful treatment with urinary antiseptics. A third attempt with the diet, after both nephrostomy tubes had been removed, was successful. This probably was as severe an infection as I have seen and one in which a final attempt was made with what appeared to be a hopeless case, with a surprising result (table 5). The urine has remained sterile for eighteen months.

CASE 3 (table 4)—A girl aged 9 years had a duplication of the ureter and pelvis of the left kidney and a marked dilatation of the lower third of each ureter. (The excretory urogram is shown in figure 2.) The ureter from the upper segment entered the bladder through a pin point meatus, that from the lower segment entered the bladder through a gaping meatus. Meatotomy was performed on the ureter, which was 3 cm. in diameter. One month after operation the diameter of this ureter was 1.7 cm. The ketogenic diet was started eight days after operation and the urine was sterile after twelve days (table 6).

GROUP 2—This group consists of five cases with equally severe obstructive lesions in which there was a complete sterilization of the urinary tract, but, after a varying interval of from a few days to as long as seven months there was a relapse (table 7). In one case there was a marked tendency for the infection to relapse until local treatment of the bladder and dilated ureteral stump was used. The urine has been sterile for seven months.

GROUP 3—This group includes the ten cases in which the ketogenic diet failed to sterilize the urine (table 8). This group of ten cases can be subdivided into a group of five cases in which stones were present and a group of five cases in which no stones were present. In the only case in which the amount of urea in the blood was

TABLE 5—Clinical Data in Case 2 Table 4

Date	Diet Gm			Urine				Gram Negative Bacilli
	Car- bohydrate	Pro- tein	Fat	p_H *	B-Oxybu- tyric Acid	Albu- min Grade	Pus Grade	
12/19/33	3	8	78					Innumerable
12/20/33	4	10	50	5.3	0.46	2	8	
12/21/33	5	15	75					
12/22/33	7	23	142			1	1	
12/23/33	10	30	150	5.38*	0.79	1	1	8 green streptococci
12/24/33	10	30	150	5.50*	0.86			
12/25/33	10	30	150	5.99*	0.87	0	1	0
12/26/33	Discontinued			6.1		0	1	0
1/3/34					0	0	1	0

* p_H taken of twenty four hour specimens

increased when the patient was admitted to the hospital, it dropped rapidly to normal after removal of putty-like material from the pelvis of a solitary kidney. In only one of the five cases in which stones were present was it possible to get the p_H of the urine below 5.5. It was possible in this case to lower the p_H to 5.2 and to increase the concentration of beta-oxybutyric acid to 1.4 per cent. This patient had a double urinary infection with *Streptococcus faecalis* and gram-negative bacilli when she was first seen at the clinic. Ureteral catheterization, while the diet was being employed, revealed that the urine from the kidney without stones was sterile and that a culture of the urine which was obtained from the calculous kidney was positive for *Streptococcus* but negative for *Escherichia coli*. Stones had been removed from both kidneys, but two small stones had formed later in the left kidney. In two of the other cases in which there were stones the p_H of the urine could not be brought below 6.1 and 8.3, respectively. Although in the latter case the concentration of beta-oxybutyric acid at one determination was 1.4 per cent, it was never more than 0.22 per cent in the former case.

TABLE 6—Clinical Data in Case 3 Table 4

Date	Diet Gm			Urine				Escherichia Coli per 0.5 Cc
	Car- bohydrate	Pro- tein	Fat	Diacetic Acid	B-Oxybu- tyric Acid	p_H	Pus Grade	
3/20/34	60	30	110				4	Innumerable
3/21/34	45	30	115				3	Innumerable
3/22/34	30	30	120				3	Innumerable
3/23/34	20	30	125	+	0.1	5.2	3	Innumerable
3/24/34	15	30	130	+	0.2	5.3	3	Innumerable
3/25/34	10	30	135	++	0.3	5.3	2	Innumerable
3/26/34	10	30	135	++	0.3	5.3	1	Innumerable
4/2/34	10	30	135	+++	1.0	5.2	1	0
4/3/34	Discontinued						0	0
4/5/34							0	0

In the group of five cases in which there were no stones, the concentration of beta-oxybutyric acid in the urine was always less than 0.5 per cent. In only two of these cases was the p_H of the urine 5.5 or less. This is the group in which one would not expect to obtain satisfactory results. It also is the group in which one must attempt to increase the output of beta-oxybutyric acid and attempt to lower the p_H of the urine. Whether this can be accomplished in cases in which renal func-

tion is impaired and the amount of urea in the blood is increased is a question. One patient who had a neuromuscular dysfunction of the bladder had been subjected to a presacral neurectomy. The residual urine had been reduced from 600 to 60 cc. This patient was fed beta-oxybutyric acid in capsules. The bacteria in 0.5 cc of urine were reduced to 100. Cook⁴ has shown that, in certain cases in which the p_H of the urine of an adult can be lowered, the feeding of beta-oxybutyric acid in capsules will increase its concentration in the urine to more than 0.5 per cent and will clear up an infection. In another case, a boy had a severe urinary infection with *Pseudomonas*, a recurring of abscesses of the liver, and cirrhosis. In this case neither the p_H of the urine nor the concentration of beta-oxybutyric acid could be brought within the bactericidal range. The administration of ammonium chloride failed to reduce the p_H of the urine, and the administration of beta-oxybutyric acid by mouth did not effect the output of this acid in the urine.

This group of cases represents rather well what can be expected of this form of dietary treatment of urinary infections. In cases in which it is possible to produce bactericidal conditions in the urine by feeding a patient the ketogenic diet either alone or with the addition of ammonium chloride and beta-oxybutyric acid, to decrease the p_H and to increase the concentration of beta-oxybutyric acid in the urine, it is possible

TABLE 7—Treatment of Urinary Infection with Obstruction
Sterilization of Urine with Relapse

Case	Age Years and Sex	Anomalies	Urea Mg per 100 Cc of Blood	Diet Con- tinued Days	Urine		Comment
					p_H	B-Oxybu- tyric Acid per Cent	
7	12 ♀	Hydro- nephrosis right megalo- ureter	26	9	5.5	Greater than 0.5	<i>Salmonella</i> infection repeated relapses after dis- continuing diet local treatment urine sterile since 10/11/34 ne- phrectomy
8	5 ♂	Right hydro- nephrosis megalo ureter	50	22			Relapse after operation
9	9 ♀	Right hydro- nephrosis double ureter on left side	22	6	5.0		<i>Streptococ- cus haemo- lyticus</i> infection recurrence <i>Escherichia</i> coli infec- tion after four months
10	1 ♀	Megalo ureters	14	12	5.5		Relapse after operation
11	9 ♀	Nephro- lithiasis (removal of stones) residual urine	20	0			Relapse after seven months

to clear up a considerable number of infections which are associated with urinary stasis. Stones and reduced renal function are almost absolute obstacles to successful therapy.

SUMMARY

The ketogenic diet is a useful method for treating urinary infections resistant to alkalinization, diuresis and urinary antiseptics. In cases in which urinary

anomalies are associated with stasis, a temporary and often a permanent cure of the infection can be achieved in those cases in which a p_H of less than 5.5 and a concentration of 0.5 per cent beta-oxybutyric acid can

TABLE 8—Treatment of Urinary Infection with Obstruction
Failures with Diet

Case	Age Years and Sex	Anomalies	Urea, Mg per 100 Cc of Blood	Diet Con- tinued Days	Urine		Comment
					p_H	B-Oxybu- tyric Acid per Cent	
12	3 ♂	Single kid- ney hydro- nephrosis stones	120 20	10	6.1	0.2	
13	2 ♀	Left nephro- lithiasis	26	20	5.5		Proteus ammoniae
14	7 ♀	Bilateral nephro- lithiasis	32	10 10	5.2	1.4	
15	13 ♀	Right nephro- lithiasis bilateral pyelitis	22	10	5.3	Greater than 0.5	<i>Aerobacter</i> <i>aerogenes</i>
16	6 ♀	Stones in bladder ulcerative cystitis	18	8	8.3	1.4	Constant alkaline urine
17	0 ♂	Posterior urethral valves	70	11	5.5+	0.1	Treatment after resection of posterior urethral valves
18	5 ♂	Bilateral hydro- nephrosis megalo ureters	72	7 5	5.5+	Less than 0.5	Left external ureteros- tomy
19	2 ♂	Obstruction of vesical neck	52	0	5.5	Less than 0.5	Excision of scar tissue
20	14 ♂	Coard bladder	33	10 7	5.2	Greater than 0.5	B oxybutyric acid 0.5 Gm. by mouth 4 times a day urinary cul- ture revealed 100 colonies per 0.5 cc of urine presacral neurectomy
21	11 ♂	Bilateral hydro- nephrosis	18	14 14	5.7	Less than 0.5	Abscess of liver and cirrhosis

be maintained in the urine for a period of time. Nephrolithiasis and impaired renal function are two serious handicaps to the success of this form of treatment.

ABSTRACT OF DISCUSSION

DR. EDWARD L. BAUER, Philadelphia. Dr. Helmholtz's presentation not only is a positive declaration of another therapeutic approach to a condition that is often most obstinate but also brings out most clearly the limitations of the treatment. He states that it is only the obstinate case in which the treatment should be tried and that the ketosis is of no value when there is obstruction to natural drainage in the urinary tract. This is particularly true when stones are present. It is important to appreciate these facts and the reasons that he has cited for recurrences and, may I add, the possibility of new infections, otherwise, resulting failure may invite an unjust adverse criticism. Emphasis should be placed on the importance of weighing out the diets and the necessity for closely watching the patient so that there will be no cheating and a consequent failure to obtain ketosis. Those of us who have tried these diets have found that it is sometimes impossible to make the child eat. Some will try and at the first sign of nausea will resist all further efforts to be fed. In a few others it just seems impossible to approach ketosis no matter how accurate the ratios may be. These handicaps should not stand in the way of utilizing this procedure in nonobstructive chronic infections of the urinary tract.

⁴ Cook, E. N. and Braasch, W. F. Further Studies on the Ketogenic Diet on Bacilluria to be published

CONVALESCENT SCARLET FEVER SERUM

ITS PROPHYLACTIC AND THERAPEUTIC VALUE
A REVIEW OF 2875 CASES

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Convalescent scarlet fever serum for both prophylactic and therapeutic purposes is an agent whose value has been well established for some years. However, its extensive use has been limited by the difficulties involved in obtaining and preparing an adequate supply. The Samuel Deutsch Serum Center has concentrated its efforts to make available a liberal quantity of pooled convalescent scarlet fever serum for the contagious disease hospitals and for private physicians in Chicago who may desire it.

Results obtained with this serum have been studied, followed and recorded. Information cards were sent to every physician who used serum in his private practice. In most instances these forms were fully answered and returned. At times the physician neglected to record all the data, but if the essential facts were set forth the card was filed for future analysis. Otherwise a letter was sent requesting the additional information. If this could not be obtained, the report was discarded. The data in respect to serum treated patients in the Municipal Contagious Disease Hospital of Chicago were secured from the hospital charts, which gave uniform and precise histories.

The present paper is an analysis of the information derived from these two sources during two and one-half years' experience. Not only were the general effects analyzed but a particular effort was made to determine whether any influence was exerted by convalescent serum therapy on complications and on mortality. These aspects of our investigation were given special attention because of the dissenting reports in the literature.

PROPHYLAXIS

Convalescent scarlet fever serum has been employed for many years in the protection of individuals exposed to scarlet fever. Its efficiency has been uniformly favorable.

Degkwitz's¹ report on passively immunizing 509 scarlet fever contacts with doses of from 5 to 6 cc of convalescent serum for children under 8 years of age, and 10 cc for those from 9 to 14 years, is really amazing. All but three escaped scarlet fever. Meader² injected 7.5 cc of convalescent scarlet fever serum in each of 450 contacts, of whom 29 per cent contracted the disease, as contrasted with 321 control contacts, unprotected, of whom 128 per cent developed the disease. Apparently 85 per cent were protected. These two reports would be of more value if the susceptibility of the contacts had been known. The Dicks³ in their report not only considered this factor but also determined the presence of infection. In their series of con-

tacts they made both skin tests and throat cultures. Those who were Dick positive but had cultures negative for hemolytic streptococci were actively immunized. On the other hand, the ones who had both positive skin tests and positive throat cultures for hemolytic streptococci were passively immunized with convalescent scarlet fever serum. Fifty per cent of the latter group already had sore throat and fever at the time convalescent serum was injected. In none, however, did scarlet fever develop. This was a most rigorous and critical test of the value of convalescent serum for passive immunization.

Gordon⁴ at the Herman Kiefer Hospital passively immunized student nurses who, when reporting for training, were found to be Dick positive. In a group of 112 such nurses who received 15 cc of human scarlet fever convalescent serum, 92 per cent were protected, eight who contracted scarlet fever had very mild attacks.

Because of these reports, 7.5 cc of serum was employed for prophylaxis at the beginning of this study, but within a year the dose was increased, so that 10 cc was used for children under 10 years of age and 20 cc for those over this age. The serum was given chiefly to intimate home contacts who had no history of having had scarlet fever.

TABLE 1—Scarlet Fever Prophylaxis in 862 Home Contacts Giving No History of Scarlet Fever

Age Years	Num- ber of Cases	No Scarlet Fever	Mild or Modified Scarlet Fever Incubation Period	Unmodified Scarlet Fever Incubation Period	Per Cent No Scarlet Fever
½ to 5	303	304	{2 not known 4 1 5 days 1 11 days	0	98.7
5 to 10	229	219	{6 not known 7 1 4 days 1 8 days	{1 not known 3 1 4 days 1 11 days	90.6
10+	276	269	{1 5 days 3 1 6 days 1 11 days	{2 not known 4 1 10 days 1 15 days	97.5
?	49	46	1 not known	3 {1 not known 1 10 days	93.9
Total	862	838	{8 not known 15 4 immediate 3 delayed	{4 not known 9 1 immediate 4 delayed	97.2

Nine patients developed scarlet fever from three to five weeks later.
Sixteen patients developed acute pharyngitis or tonsillitis.
Five patients developed cervical adenitis or otitis media.

Reports susceptible of analysis were received on 862 such prophylactic inoculations. Eighty per cent of the contacts were immunized within the first three days after exposure, about 10 per cent after three days, and in 10 per cent the duration of exposure was not recorded. The exact figures are shown in table 1. Scarlet fever developed in twenty-four contacts. In twelve the incubation period was not recorded, in seven it was markedly delayed, and in five the usual incubation period preceded the illness. Additional reports were made on nine other patients who escaped the disease following serum administration but contracted scarlet fever from three to five weeks later following a reexposure, without serum protection being repeated.

It is interesting to note that in sixteen patients acute pharyngitis or tonsillitis developed after exposure to scarlet fever following serum injection, and five had cervical adenitis or otitis media. However, there was no rash and the cases were not considered scarlet fever.

Serum was administered to children in general hospital wards when exposed to active cases of scarlet

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¹ Degkwitz R. Causative Agent in Scarlet Fever. *Munchen med. Wehnschr.* 69: 955-957 (June 30) 1922.

² Meader F. M. Scarlet Fever Prophylaxis. *J. A. M. A.* 94: 622-625 (March 1) 1930.

³ Dick, G. H. and Dick, Gladys F. Prevention of Scarlet Fever. *J. A. M. A.* 83: 84-86 (July 12) 1924.

⁴ Gordon J. E. Monthly Hospital Reports. Herman Kiefer Hos-
pital, Detroit, June 1934.

fever developing in the wards. These contacts were Dick tested, and only Dick-positive patients received convalescent serum. Of eighty-three patients immunized, scarlet fever developed in four after a prolonged incubation period (table 2). In all four cases the disease was mild and atypical. The throat cultures were positive for hemolytic streptococci.

Among those in whom mild scarlet fever appeared, the majority had a definitely modified type of the disease. This form of scarlet fever was characterized by

TABLE 2 — *Scarlet Fever Prophylaxis in Eighty-Three Dick Positive Cases in Hospital Exposed to Scarlet Fever*

Day of Exposure Before Injection	Number of Cases	No Scarlet Fever	Mild or Modified Scarlet Fever Incubation Period	Per Cent No Scarlet Fever
1	48	47	1 7 days	98
2	16	1	1 7 days	94
3	5	0	0	100
4	14	12	2 11 7 days 1 10 days	86
Total	83	79	4	95

a transient evanescent rash, by a rise of temperature of only one or two degrees, and by the absence of angina and toxemia. Without a history of susceptibility and exposure they might very easily have been overlooked. They were analogous to the sero-attenuated measles so frequently seen following exposure to measles and delayed administration of convalescent measles serum.

So-called mild or atypical scarlet fever is not of infrequent occurrence. Such types of the disease may be seen in other members of a family or group in which a case of severe scarlet fever exists. The atypical form is presumed to occur in those individuals who possess a partial natural immunity to the disease. Similarly, modified sero-attenuated scarlet fever is sometimes seen in individuals who have been artificially but incompletely immunized with convalescent serum or when the individual has been exposed to scarlet fever late in the period of passive immunization, i. e., after the tenth to the fourteenth day. The modified disease is of the same character as the "atypical" mild disease that develops in the presence of a partial natural immunity.

When immediate protection is secured by serum injection, passive immunity has been induced and this can be relied on to endure for only ten to fourteen days. Therefore, with prolonged exposure of susceptible individuals, repeated injections at ten-day intervals are advisable until the source of possible infection has been removed. Since there is no sensitization produced by human serum, repeated inoculations may be given without fear of serious reactions or development of unpleasant consequences.

THERAPY

The consensus⁵ in the literature is that the pooled convalescent scarlet fever serum has a beneficial influence on the early toxemia, angina, temperature and rash of scarlet fever, although different views are held as to the degree of such beneficial action. However, there is a pronounced divergence of opinion on the

value of convalescent serum in preventing or alleviating the complications associated with this disease, and necessarily on the mortality. Thus, Toomey⁶ believes that the effect of serum is antitoxic only and that one cannot expect any therapeutic effect in the complicated cases. Birkhaug,⁷ admitting a rapid diminution in the toxic manifestations, finds no influence on the septic complications. Ciuca, Craciunescu and Bahov,⁸ although considering convalescent serum an indispensable measure in toxic forms of scarlet fever, believe that it has no direct action on the angina or on the complications. Bode⁹ likewise could not ascertain any effect on complications. Opposing these conclusions, however, are others that a favorable influence is observed on complications by administration of convalescent serum. Kling and Widfeldt,¹⁰ although acknowledging a less noticeable effect on complications than on the mortality or severity of the illness, state nevertheless that improvement in complications was observed. Gordon, Bernbaum and Sheffield,⁵ in their analysis of 120 severely sick scarlet fever patients treated with convalescent serum, believed that complications were less frequent.

Bahov¹¹ in a study of 1,000 scarlet fever cases, stated that pooled convalescent serum is the ideal form of therapy and that, when given, it prevents streptococcal complications. Prinzing,¹² in a comparison of ninety-seven serum treated and 257 untreated cases found the results given in table 3. His conclusions were that the injection of serum reduced markedly the incidence of complications in those cases which he had analyzed.

Information for our study was obtained from 983 reports sent in by private physicians and from observations of 947 patients in the Municipal Contagious Disease Hospital.

Before the data are discussed, it is necessary to consider certain essential conditions. During the period (1932-1934) in which serum was employed, the clinical type of scarlet fever in the city of Chicago was at least of the same average severity as it had been for several years previously. Because the supply of convalescent

TABLE 3 — *Prinzing's Comparison in Treated and Untreated Cases*

	No Serum per Cent	With Serum per Cent
Lymphadenitis	38.5	15.5
Otitis media	16.8	9.3
Glomerulonephritis	19.1	8.2

serum was limited, its use was restricted, as far as possible, to severely sick patients. Although early and prompt treatment was urged, this frequently was not done so that many patients did not receive serum for a week or more after the onset of their illness. Serum was never withheld from a patient even though he was moribund when first seen. Too often septic complica-

5 Gordon J. E., Bernbaum B. B. and Sheffield L. C. Convalescent and Antitoxic Serums in Scarlet Fever. *J. A. M. A.* 90:1604-1607 (May 19) 1928. Moog O. Zur Theorie der Proteinkörperwirkung nach Beobachtungen bei der Serumbehandlung des Scharlachs. *Berlin klin. Wchnschr.* 58:388-1921. Bie, V., Larsen A. and Anderson S. Etiology and Serotherapy of Scarlatina. *Ugeskr. f. læger* 89:1981 (Oct. 27) 1901 (Nov. 3) 1927. Kheneberger. Kritisches Sammelreferat über Behandlung des Scharlachfiebers. *Deutsche med. Wchnschr.* 48:1680 (Dec. 15) 1922. Weaver G. H. Scarlet Fever Treated with Immune Human Serum. *J. Infect. Dis.* 22:211-219 (March) 1918.

6 Toomey J. A. Treatment and Prevention of Scarlet Fever by Specific Antitoxin and Serums. *J. A. M. A.* 91:1599-1602 (Nov. 24) 1928.

7 Birkhaug K. E. Studies in Scarlet Fever. *Bull. Johns Hopkins Hosp.* 36:134 (Feb.) 1925.

8 Ciuca M., Craciunescu V. and Bahov I. Contribution au traitement de la scarlatine par le serum de convalescent. *Compt. rend. Soc. de biol.* 98:395-397 (Feb. 10) 1928.

9 Bode P. Die Behandlung des Scharlachs mit Rekonvaleszenten serum. *Jahrb. f. Kinderh.* 119:29-69 (Feb.) 1928.

10 Kling C. and Widfeldt G. Serotherapy of Scarlet Fever. *Hygiea* 80:2 (Jan. 16) 1918.

11 Bahov J. Contribution à l'étude de la scarlatine. *Arch. de méd. d. enf.* 33:327-346 (June) 1930.

12 Prinzing F. Bemerkungen über Komplikationen und Nachkrankheiten des Scharlachs bei Serotherapie. *Therap. Monatsch.* 32:16-18 1918.

tions of a hopeless nature were present, but even in the face of a fatal termination serum was used

The hospital group and private group showed two important differences. Owing to delay in hospitalization of patients, only 42 per cent received treatment in the first three days of their illness whereas in the home group 79 per cent were treated during this period. Secondly, it was possible to maintain more rigid control of serum administration in the hospital, and consequently serum was employed only for critically sick patients. Such restriction could not be enforced for those patients treated in the home, therefore this group was made up of 33 per cent severe, 47 per cent moderately severe and 20 per cent mild cases. It must be kept in mind that any difference in the results obtained with scarlet fever therapy should definitely favor the home-treated patients.

Other factors that must be considered in analyzing these two groups are the dosage of serum and the route of administration. In the group treated at the contagious disease hospital the dose varied from 20 to 100 cc, the average dose being approximately 30 cc. In those treated at home the dose administered also varied from 20 to 100 cc, but more serum was used in the individual cases, so that the average dose was 40 cc. On the other hand, the route of administration in the home-treated group was almost invariably intramuscular, whereas in the hospital-treated cases a great many received the serum intravenously. This was particularly true during the last year (1934), when the favorable outcome obtained by this method of administration was much more impressive.

Efficiency of treatment can be analyzed from two different angles: first from the clinical impression of the effect of serum therapy on the general condition, toxemia, angina and rash; second from the statistical evidence of the effect of serum on temperature, complications and fatality.

The therapeutic effects of the serum as observed by various physicians in the treatment of private patients were good in 81 per cent, fair in 8 per cent, and questionable or of no benefit in the others (11 per cent). In the hospital, good results were recorded in 75 per cent of the cases, fair results in 11 per cent, and questionable or no effect in the remaining 14 per cent. The most notable and immediate influence of the serum was on toxemia which in most cases was markedly diminished. In the majority of cases there was also a prompt improvement in the anginal symptoms. The effect on the eruption was less evident but, as has been previously reported, it was most apparent when the serum was given within the first twenty-four hours of the disease. Serum administered at this time very often produced a rapid and complete disappearance of the rash. The desquamation in the latter cases was usually of a very fine branny nature or absent entirely. When serum was given later in the course of the illness after the rash had been present for two or more days, the general blanching effect was less pronounced.

No statistical analysis could be made regarding the effects of serum on temperature in the home-treated cases but reports from physicians were uniform in stating a marked temperature drop in from twelve to forty-eight hours following injection of the serum. The occasional exception was observed only in those patients who were suffering from severe complications at the time serum was administered. The hospital records provide more precise information concerning temperature. A study of the charts of 947 hospital

patients disclosed an average drop in temperature at the end of twelve hours of 1.7 degrees, at the end of twenty-four hours of 2 degrees, and at the end of forty-eight hours of 2.6 degrees. In many instances there were dramatic reductions of 4 and 5 degrees within a few hours, but patients suffering from septic complications seldom responded in such an amazing manner.

The accompanying chart summarizes the reduction in temperature according to the day of illness on which serum was administered and brings out the interesting fact that those patients treated in the first three days of their illness had the greatest average reduction in temperature. The later the serum was administered the less pronounced was its effect. On and after the fifth day of illness the average drop in temperature at the end of forty-eight hours was not as great as at the end of twelve hours when the serum was given within the first three days.

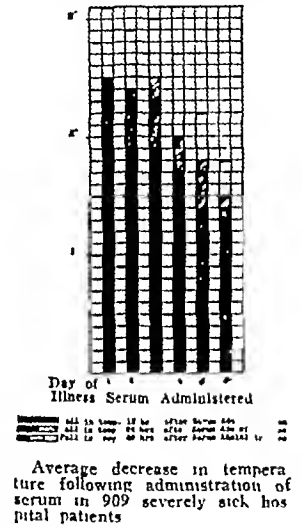
Because the serum was prescribed as a therapeutic agent and not in an experimental fashion not only was it given to every critically sick patient admitted to the hospital or reported to the Serum Center but it was not denied to patients late in the course of the disease who were suffering from some apparently fatal complication. Owing to this policy, a similar control group was not secured.

In order to arrive at some decision as to the value of convalescent serum therapy in preventing or alleviating complications, the results recorded in the serum-treated groups are compared with the other admissions to the Municipal Contagious Disease Hospital during the same period. The latter group was made up of 6,282 patients who were but mildly or moderately ill when hospitalized.

Thus there are three different groups for consideration. The first and most severe group is made up of the hospital-treated patients, the second group in order of severity is the home-treated group, and the third, or least severe group, comprises those patients only mildly or moderately sick on admission to the hospital and not treated with serum (table 4).

Owing to the fact that about 53 per cent of the first group had complications on admission these complications were recorded under the caption *Before Serum*, since they were present before serum was administered. Because of this, the chances for the development of further complications were considered to be materially increased.

This has been the general experience with other types of therapy, but it was found that such progression did not usually take place after administration of convalescent scarlet fever serum. On comparing the incidence of complications in group 1 with those of group 3 it is seen that with two exceptions complications in the milder group (3) not given convalescent serum were more numerous than in the group (1) severely ill but treated with convalescent serum. Only



mastoiditis, with 0.7 per cent, and "other complications," which includes the less frequent and more serious conditions such as pneumonia and streptococcal meningitis, with 0.9 per cent, were more common in group 1. Particular attention must be called to the infrequent occurrence of hemorrhagic nephritis in group 1, 0.6 per cent as compared with 3.6 per cent in group 3.

It is extremely difficult to draw any comparison between groups 1 and 3 on account of the frequency of complications in group 1 at the time of admission to the hospital. More accurate evaluation of the effect of convalescent serum might be made if the two groups were more nearly alike. Because the preexistence of complications provides such a disturbing factor, the patients in group 1 free from complications at the time of serum administration were placed in a separate subgroup, designated After Serum in the table. Of the

fewer than in the other two groups. The number and percentage of the complication hemorrhagic nephritis occurs in group 2 in only 0.2 per cent of the patients as compared with 0.6 per cent in the severely ill patients in group 1, and as against 3.6 per cent in group 3, consisting of the moderately and mildly ill patients who did not receive convalescent serum.

Analysis of the mortality in the serum-treated hospital patients presents a complex problem. The difficulty of analysis is caused by the policy of treating all critically ill patients. As a result, it was to be expected that the mortality would be very high. Many patients succumbing to scarlet fever or its complications were rushed to the hospital at the last moment in a moribund state and yet were given serum. Thus, most of the patients dying in the hospital received serum. Seventy per cent of these deaths occurred in patients who were not treated until after the fifth day of illness, and there

TABLE 4—Complications in Patients Treated with Convalescent Serum

Complications in 947 Severe or Critical Hospital Patients Treated with Convalescent Serum										Complications in 983 Home Patients Treated with Convalescent Serum 33% Severe 47% Moderately Severe 20% Mild										Percentage of Complications in 983 Hospital Patients Not Treated with Serum with Mild or Moderately Severe Scarlet Fever
Condition*	AS	1st Day 33 Cases	2d Day 130 Cases	3d Day 230 Cases	4th Day 200 Cases	5th Day 130 Cases	5-7 Days 210 Cases	Total 947 Cases	Per Cent	AS	1st Day 313 Cases	2d Day 315 Cases	3d Day 145 Cases	4th Day 40 Cases	5th Day 22 Cases	5-7 Days 83 Cases	? Days 81 Cases	Total 983 Cases	Per Cent	
Cervical adenitis	AS DS	3 3	14 29	24 60	10 47	10 54	8 104	69 237	10.0 31.4	25 4	28 2	10 4	4 3	4 4	7 9	7 1	7 27	0.5 2.7	27	
Purulent rhinitis	AS DS	1 2	3 14	8 38	5 34	5 30	1 70	21 200	2.8 21.1	1 0	3 0	0 0	0 0	0 0	0 0	1 0	5 0	0.5 0.0	8.7	
Suppurative otitis media	AS DS	2 0	12 4	20 0	27 11	17 7	34 37	112 65	12.7 6.9	29 4	25 3	10 6	4 4	4 3	5 8	7 1	84 29	8.8 3.0	13.6	
Simple otitis media	AS DS	0 1	0 3	0 11	0 5	0 1	0 4	0 25	0.0 2.0	2 4	5 0	2 0	0 1	0 0	0 0	0 0	0 5	0.0 0.1		
Suppurative sinusitis	AS DS	0 0	0 3	1 2	4 11	0 12	0 22	5 60	0.0 5.3	3 1	0 0	1 0	1 1	0 1	2 0	0 0	7 3	0.7 0.3	1.5	
Mastoiditis	AS DS	0 0	1 1	0 2	7 1	6 2	14 7	34 13	3.5 1.4	2 2	2 1	1 1	0 0	1 0	1 0	1 0	8 4	0.8 0.4	2.9	
Arthritis	AS DS	3 0	3 0	4 0	3 0	5 0	2 1	20 1	2.1 0.0	3 0	0 0	1 0	0 0	0 0	0 1	1 0	5 1	0.5 0.1	2.0	
Hemorrhagic nephritis	AS DS	0 0	0 0	2 1	1 1	1 0	2 1	0 3	0.0 0.3	1 0	0 0	1 0	0 1	0 0	0 2	0 1	0 4	0.0 0.4	3.6	
Mild nephritis	AS DS	2 1	0 0	2 2	2 1	3 1	0 1	6 0	0.6 0.0	1 1	2 0	1 0	0 0	0 0	0 1	0 0	4 2	0.4 0.2		
Other com- plications	AS DS	0 3	2 3	0 11	4 7	0 13	14 56	32 93	3.7 9.8	4 3	3 3	6 1	1 2	0 3	1 9	1 2	16 23	1.7 2.3	2.8	
Deaths		1	5	10	11	11	71	109	11.5	2	1	2	3	2	7	0	17	1.7		
Deaths, per cent		3	3.6	4.4	5.5	8.1	34	11.5		0.0	0.3	1.4	0.1	0.1	12.1	0	1.7		0.8	

* AS indicates complications developing after serum administration. BS complications present before serum administration. The percentage of complications in the AS group was calculated after the number of patients in the BS group was deducted from the total number of patients.

947 serum patients treated in the hospital, 446 had no complications at the time they were admitted. Of these 446 patients, no complications developed in 79 per cent. The complications that did appear in this group were decidedly fewer than in group 3, in which serum therapy was not given (table 5). The greatest significance must be attached to the figures shown in table 5, for the patients in group 1 were clinically classed as severely or critically sick, a group in which a much higher incidence of complications may be expected than in the milder types of scarlet fever.

Group 2, the home-treated patients, contains severe, moderate and mild cases and occupies a midway position between groups 1 and 3. In the reports submitted by physicians, there were many instances in which it was not clear whether the complications recorded were present at the time serum was given or developed after serum administration. In all instances in which there was doubt, such complications were recorded for this report as having developed after the administration of serum, making a more severe test of the value of serum. In this group, all complications are much

was a steady increase in the fatality rate with the prolonged duration of illness before serum was given. To appreciate better the type of patient that was treated, the clinical condition at the time of serum administration and the course subsequent to serum injection, the deaths of hospital patients treated in the first five days of their illness are recorded in table 6. The remaining fatalities occurred in patients who received serum later than the fifth day of their illness. This group was made up entirely of individuals even more critically ill and with one or more severe complications.

On the other hand, it is interesting to examine the mortality figures in the home-treated group, a group that was treated mostly in the first few days of the disease. Here it is seen that the total mortality was only 1.7 per cent, although the majority of patients who died received serum after the third day of illness. Table 7 summarizes all the deaths in the home-treated patients. A study of these tables will show that in nearly all instances the patients who died were either moribund or were suffering from some complication that made the prognosis very grave before serum

administration The figure on mortality that is highly significant is the fatality rate of the private patients treated in the first three days This rate in 773 patients is but 0.5 per cent, approximately one-third the fatality rate of this disease throughout the city at the same time

In our experience, no sensitization to convalescent serum is developed nor are any unfavorable reactions produced An occasional urticaria-like eruption has been witnessed, but no definite picture of a true serum sickness has occurred Despite extensive administration of large doses of serum by the intravenous route, no shock or unpleasant reaction was produced among the cases reviewed in this paper No blood typing or matching is required in the administration of human convalescent serum

The following regulations should be adhered to in this form of therapy

1 The serum should be given early in the course of the disease, preferably within the first three days of illness

2 Adequate dosage is of the utmost importance. Although a minimum dose of 20 cc. may be sufficient, from 40 to 100 cc. may be required Age of the patient, severity of the illness, duration of the disease and experience with this form of treatment will determine the proper dosage Usually a single injection of the proper amount of serum is sufficient in the uncomplicated case At times, when severe complications are present, repeated injections of serum at intervals of twelve or twenty-four hours may be necessary

3 Although intramuscular therapy is satisfactory, the intravenous route is preferable, because of the immediate distribution of serum For intravenous use the following precautions should be observed (a) The serum should be warmed to body temperature in a warm water bath and injected slowly, (b) the syringes used for injection must be chemically clean, having been sterilized in distilled water

COMMENT

On the basis of the evidence that human convalescent scarlet fever serum is valuable for passive immunization, the following measures may be applied in the hospital or in the home

In a contagious disease hospital, where patients with a variety of infectious diseases are admitted, occasionally and unavoidably a patient who is not suffering from scarlet fever may be exposed to this infection Under such circumstances an intramuscular injection of 10 cc of convalescent scarlet fever serum is usually sufficient for immediate protection The immunity, however, lasts only from ten days to two weeks This must be kept in mind, and subsequent injections of convalescent serum should be given at ten-day intervals if exposure to scarlet fever continues

In the home the protection by passive immunization with convalescent scarlet fever serum is equally valuable This is particularly true when there are a number of children in the family and the ill child remains at home If all contacts could be immediately immunized, the number of multiple cases in a family would be materially reduced For example, among scarlet fever patients admitted to the Municipal Contagious Disease Hospital of Chicago in 1932, there were in the families of these patients 488 multiple cases In 1933 there were 761 multiple cases, and in the first six months of 1934 there were 522 multiple cases These cases occurred in 210, 311 and 209 families respectively for the periods stated These totals mean that there were 730 families in which scarlet fever was transmitted from the primary cases to contacts in the home on an average of 1.4 times, or a total

of 1041 cases that might have been prevented by prompt use of convalescent serum when the first case in the family developed

In the presence of a severe epidemic, exposed susceptible children should be passively immunized at intervals of every ten days, provided an adequate supply of serum is available Thus the use of convalescent serum might be applied to check an unusual outbreak of scarlet fever

In 1916 one of us (Hoyne) recommended the adoption of convalescent scarlet fever serum for the treatment of scarlet fever at the Municipal Contagious Disease Hospital of Chicago Although used in small quantities in isolated cases during the ensuing years it was only when the facilities of the Serum Center made available a substantial supply of serum that its extensive use became possible

Our results confirm the numerous reports of the beneficial therapeutic action of convalescent serum Particularly when administered in the first three days, it effects a marked diminution of temperature, allevia-

TABLE 5—Incidence of Complications in Hospital Patients Critically Ill but Free from Complications at the Time of Serum Administration

Day of Illness	Number of Cases	No Complications	Cervical Adenitis	Suppurative Otitis Media	Rhinitis	Arthritis	Mastoiditis	Nephritis
1	24	18	3	1	0	0	0	0
2	90	77	13	6	4	3	0	0
3	129	99	15	6	6	3	1	1
4	111	91	8	6	3	3	1	1
5	57	43	9	3	2	1	1	0
6	19	17	2	0	1	0	0	0
7	6	5	1	0	0	0	0	0
8	5	4	0	1	0	0	0	0
Total	446	354	51	24	19	13	2	2
Percent	100	79	11	5	4	3	0.5	0.5
Percentage of complications in untreated mild and moderately ill patients	6,252		27	13.0	8.7	2.6	2.9	3.6

tion of throat symptoms, toxicity and prostration, and may cause a fading of the eruption The evidence we have compiled points strongly to a marked reduction in the incidence of complications as well as lowering of the mortality rate.

There is no statistical method of evaluating the effect of serum on existing complications Close observation of several hundred complicated cases, in which the patients were desperately ill on admission and were treated with serum, has convinced us that the majority of these patients have been definitely benefited by such treatment Our experience with this disease enables us to judge these cases fairly accurately Many patients with a septic process that we felt would advance have shown such definite improvement, with cessation of the progress of the disease, that we are forced to conclude that the serum played an active part in overcoming infection When the complicated cases are admitted in the late stages of the illness, we have supplemented convalescent serum with intramuscular injections of whole blood or with transfusions from individuals recently recovered from scarlet fever, with increasingly better results

With the limited knowledge of this disease, the mode of action of the serum in reducing complications and mortality is, at the present time, problematic It is possible that the beneficial effect is produced in an indirect manner by overcoming the toxemia and thereby

TABLE 6—Analysis of Those Deaths (Thirty-Eight) in the Hospital Group (737) Treated Within Five Days of Illness with Convalescent Serum

Age	Sex	Day of Illness Serum Administered	Number Cc	Condition on Serum Administration	Course	Time of Death After Serum Was Administered
5	♂	4	20	Moribund	No change	4 days
1	♀	4	10	Right bronchopneumonia	Progression and spread of pneumonia	64 hours
3	♂	4	20	Severe cervical adenitis with cervical cellulitis	Slight temporary improvement, then relapse	8 days
37	♂	3	40	Acute hemorrhagic nephritis septicaemia with septic arthritis	No change	20 hours
4	♂	4	20	Streptococcal peritonitis	No change	7 hours
4	♂	5	40	Severe cervical adenitis with cervical cellulitis	Slight temporary improvement then progression to face and scalp	4 days
3	♂	7	40	Septic	Progressed	3 days
23	♂	3	40	Streptococcal pneumonia	Progressed	3 days
5	♂	1	20	Bronchopneumonia	Progressed	4 days
60	♂	5	40	Pneumonia plus purulent pericarditis moribund	No change	2 hours
4	♂	2	20	Septic	Purulent otitis media on tenth day terminal pneumonia	11 days
3	♂	5	40	Purulent sinusitis purulent otitis media, cervical adenitis bronchopneumonia	No change	18 hours
3	♀	3	40	Streptococcal laryngitis necessitating intubation	Progression	1 day
1	♀	3	20	Cervical adenitis	Developed rhinitis purulent otitis media bronchopneumonia terminally	18 days
11	♀	1	10	Moribund	Condition terminal, died before more serum could be administered	No hours
2	♂	4	80	Septic	Temporary improvement then progression	3 days
27	♀	5	20	Surgical scarlet fever following abortion septicaemia with peritonitis	No change	4 days
7	♀	5	40	Cervical adenitis with septicaemia	No change	20 hours
0	♀	2	40	Purulent rhinitis cervical adenitis septicaemia	Temporary improvement then progression	60 hours
33	♂	5	100	Acute cardiac failure acute pulmonary congestion	Progression	12 hours
7	♀	4	40	Purulent rhinitis septic	Temporary improvement then developed cervical adenitis on seventh day purulent otitis media on eleventh day cervical abscesses final cardiac failure	21 days
2	♀	4	20	Purulent rhinitis purulent otitis media	Pneumonia 2 days later which progressed	7 days
4	♂	5	40	Purulent rhinitis cervical adenitis	No change	26 hours
1	♂	4	40	Moribund	No change	2 hours
5	♂	3	20	Purulent rhinitis cervical cellulitis purulent otitis media moribund	No change	4 hours
1	♀	2	40	Purulent rhinitis purulent conjunctivitis bronchopneumonia	No change	1 day
5	♂	3	40	Purulent rhinitis cervical adenitis	Slight temporary improvement developed purulent otitis media and bronchopneumonia terminally	9 days
10	♂	4	100	Lobar pneumonia	Transient improvement	64 hours
5	♀	4	40	Cervical adenitis purulent otitis media	Terminal	6 hours
10	♀	4	40	Severe cervical cellulitis 7 months pregnant	Dead fetus delivered 5 days later placenta adherent died 8 hours after delivery	5 days
12	♀	2	60	Moribund	No change	5 hours
4	♂	4	10	Moribund	No change	3 hours
5	♀	5	20	Septic	Temporary improvement developed purulent otitis media mastoiditis streptococcal meningitis	30 days
3	♀	2	20	Cervical adenitis purulent otitis media	Definite improvement to convalescence developed bilateral bronchopneumonia 2 weeks later	17 days
1	♂	1	20	Cervical cellulitis	No change cardiac failure	2 days
4	♂	5	40	Cervical cellulitis with suppurative sinusitis	Progressed	48 hours
10	♂	5	40	Cervical adenitis rhinitis left purulent otitis media and left mastoiditis	Progressed	1 day
6	♀	5	60	Cervical adenitis cardiac failure	No change	1 day

TABLE 7—Analysis of All Deaths (Seventeen) in the Home Treated Group (983)

Age	Sex	Day of Illness Serum Administered	Number Cc	Condition on Serum Administration	Course	Time of Death After Serum Was Administered
0	10	40	Streptococcal meningitis	Rapid progression	?	?
3	7	40	Cervical adenitis bronchopneumonia	Slight temporary improvement	?	4 days
5	2	40	Streptococcal meningitis	Rapid progression	?	?
2	4	20	Cervical adenitis cervical cellulitis purulent otitis media hemorrhagic nephritis	Progression	?	4 days
7	21	60	Moribund	No change	?	2 days
6	5	60	Cervical adenitis cervical cellulitis, septic	Progression	?	2 days
9	7	60	Purulent otitis media plus streptococcal meningitis	Progression	?	?
3	1	20	?	?	?	7 days
4	3	60	Streptococcal pneumonia	Progression	?	7 days
2	4	40	Moribund	No change	?	24 hours
6	12	60	Anuria ematose	Progression	?	24 hours
5	3	20	Cervical adenitis	Developed purulent otitis media and cervical cellulitis	?	18 days
0	1	40	Surgical scarlet fever with peritonitis following appendectomy	Progression	?	?
10	4	20	Cervical adenitis purulent otitis media, purulent sinusitis	Temporary improvement developed cavernous sinus thrombosis	?	13 days
7	9	80	Purulent otitis media endocarditis	Progression	?	4 days
15	13	20	Septicaemia	Progression	?	?
9	5	40	Cervical adenitis cervical cellulitis with necrosis moribund	No change	?	8 hours

permitting the depressed general body defenses to act against those factors of the disease which are associated with the complications. On the other hand, convalescent serum may contain other substances indeterminate by present laboratory procedure, which act directly in preventing or alleviating complications.

Not only are scarlet fever complications a matter of importance as a factor in mortality or in late disability in the life of the patient but they also have a direct bearing on the cost of caring for the patient. In many instances, too, when scarlet fever patients remain in hospitals for prolonged periods, they reduce the number of available beds for acute cases that are in urgent need of hospital care. Therefore, any remedy that reduces the time of hospitalization promotes economy on a per capita basis and increases capacity through allowing hospital treatment of a greater number of patients within a given time.

It is generally acknowledged that scarlet fever morbidity and mortality fluctuate from time to time, and changes in virulence may be noted. One of us has been in a position to observe carefully the trend of this disease over many years. As has been stated, we feel that during the last three years (1932 to 1934 inclusive) the clinical disease has been at least as severe as during the preceding three-year period (1929 to 1931 inclusive). A comparison of the fatality rates of these two three-year periods may therefore be of interest, for in the last three years convalescent serum was used extensively both in the hospital and throughout Chicago.

The city records for 1929-1931 reveal 25,743 cases with 547 deaths, a case fatality rate of 2.13 per cent. The records for 1932-1934 show 26,611 cases with 419 deaths, a case fatality rate of 1.5 per cent. Similarly, the records of the Municipal Contagious Disease Hospital show for the years 1929-1931 without convalescent serum treatment 6,353 cases with 156 deaths, a case fatality rate of 2.46 per cent, as contrasted with the convalescent serum treatment years of 1932-1934 when there were 8,457 cases with 157 deaths, or a case fatality rate of 1.86 per cent. It is seen that the mortality throughout the city was lessened by 0.63 per cent and in the hospital by 0.60 per cent, an actual decrease of 29.6 and 24.4 per cent respectively. The explanation of the considerable reduction in the mortality rate may be attributed to the fact that, although convalescent serum was administered to only from 7 to 8 per cent of the total number of patients in the city, the group thus treated was made up chiefly of the severely sick or critically ill individuals. It is essentially this type of the disease that causes the greatest number of fatalities. Since the home-treated group showed a mortality rate of only 0.5 per cent in those patients treated in the first seventy-two hours of illness, a further reduction in fatality may be expected with more widespread, proper and early use of convalescent serum.

SUMMARY

1 Of 862 home contacts who gave no history of scarlet fever and were passively immunized with convalescent scarlet fever serum, scarlet fever did not develop in 97.2 per cent.

2 Of eighty-three Dick-positive hospital contacts immunized with convalescent scarlet fever serum, scarlet fever did not develop in 95 per cent.

3 In immunized contacts in whom scarlet fever developed, it was usually in a modified form, believed to have been produced by partial immunization and resultant sero-attenuation.

4 Convalescent scarlet fever serum in adequate therapeutic doses administered early may abort the disease and usually causes recession of fever, diminution of toxemia and angina, and fading of the rash and appreciably shortens the period of illness.

5 Convalescent scarlet fever serum, directly or indirectly, either prevented the development of complications or reduced the frequency of their occurrence.

6 The influence of serum on late and complicated cases was less marked but frequently seemed beneficial.

7 By reducing the severity of the disease and the incidence of complications, the mortality rate was definitely diminished.

8 No unfavorable reactions, serum sickness, sensitization or anaphylactic shock were encountered with the use of human convalescent scarlet fever serum.

BUFFERED LACTIC ACID EVAPORATED MILK IN INFANT FEEDING

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Since the introduction of chemically acidified milk by Marriott,¹ numerous suggestions and modifications have been made regarding its use, but evaporated milk acidified with lactic acid has stood the test of repeated trials. There is still some skepticism, however, regarding the role of the acid. Marriott considered acid milk valuable because of further alteration of the milk curd and improved gastric digestion when the buffer salts of the milk are neutralized by acidification. Brennemann² reported his gradual adoption of Marriott's formula for acid milk after a clinical trial in the Children's Memorial Hospital in Chicago and his conclusion was "The result was all that has been claimed and all that could be hoped for, and again such as I had never seen before with any other food." As to the theoretical role of the acid, he believed that the effectiveness of the formula was due to the finer curd and not to the buffer, which might be increased or reduced without changing the value of the formula if the finer curd was obtained.

Schloss³ concurred with Brennemann's statement though he stressed the benefit of the altered curd from an allergic point of view. It has also been shown⁴ that acidified milk increases gastric motility, which in turn improves all gastric functions, including gastric secretion. There is also an increased absorption of fats, proteins and mineral matter with this type of feeding.⁵

At the St. Louis Children's Hospital Clinic it was recently shown⁶ that, when gastric acidity is lowered the acid formula will also prevent the growth of organisms in the upper portion of the intestinal tract. The relationship of infection of the middle ear to *B. coli* was demonstrated by obtaining cultures of this

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¹ Marriott W. M. Preparation of Lactic Acid Milk Mixtures for Infant Feeding. *J. A. M. A.* 89: 862 (Sept. 10) 1927.

² Brennemann Joseph. The Curd and the Buffer in Infant Feeding. *J. A. M. A.* 92: 364 (Feb. 2) 1929.

³ Schloss O. M. Personal communication to the authors.

⁴ Faber H. K. and Hadden F. The Influence of Hydrogen Ion Concentration and Buffer Value of Foods on Digestion with Special Reference to Infancy. *N. Clin. North America* 6: 245 (Sept.) 1922.

⁵ Marriott W. M. and Davidson L. T. Acidified Whole Milk as a Routine Infant Food. *J. A. M. A.* 81: 2007 (Dec. 15) 1923.

⁶ Marriott W. M., Hartmann A. F. and Senn M. J. E. Observations on the Nature and Treatment of Diarrhea and the Associated Systemic Disturbances. *J. Pediat.* 3: 181 (July) 1933.

organism from the gastric contents. The seeding of this organism in the upper portion of the respiratory tract is due to vomiting. A buffered acid mixture was devised to counteract the growth of *B. coli*, and it aided in maintaining a more normal gastric p_H and prevented the colon bacillus from entering the gastric zone.

Arnold's⁷ experimental work at the University of Illinois College of Medicine substantiated the clinical observations of the St. Louis group of investigators. He showed a definite mechanism by which the upper portion of the intestinal tract is kept free from the flora of the lower portion, which is largely a matter of acidity in the upper portion. It was found that this protection failed when counteracted by alkalis, and the colon bacillus could then grow in the stomach. There was sufficient permeability to allow these organisms to migrate through the intestinal wall, and cultures were obtained from the thoracic duct. It would seem that in conditions associated with a reduction of the gastric p_H benefit would be derived from acid feedings buffered to maintain a better acidity than is contained in the usual lactic acid formula. An interesting corollary was provided in the study of autonomic balance in various body functions by Petersen⁸ and his co-workers and by

and gavage was necessary. The stools became loose and watery and the infant appeared to be toxic. Gastric analysis showed a lowered acidity and a massive growth of *B. coli* on culture. Buffered acid milk was substituted for breast milk and buffered acid water was given between feedings. The stools decreased from nine to four daily on the third day and did not again increase in number. Regurgitation ceased four days after the buffered acid feedings were started. The subsequent course was satisfactory and the infant was discharged forty-three days after birth, weighing 3,500 Gm.

Encouraged by individual results, we initiated a routine procedure that would enable us to study any untoward symptoms resulting from the use of buffered milk for normal new-born, delicate and premature infants. As an analysis of the results of such a program would be difficult without control groups, we made a number of studies with different formulas and used them for purposes of comparison.

The growing tendency to prevent an initial loss of weight by giving weak alkali solutions was a further reason for this report. We are now making a comparative study, which will be reported later, of the effects of buffered acid sugar water and the alkaline sugar mixture that has been recommended by Eder and Bake-

TABLE 1—Comparative Values for Full Term Infants

Type of Feeding	Number of Infants	Male	Female	First Born	Later Born	Cesarean Section	Abnormal Deliveries Including Forceps	Average Number of Stools Daily	Average Number of Regurgitations Daily	Birth Weight Gm	Average Time of Loss of Weight, Days	Loss of Weight Gm	Infants Who Lost Birth Weight Percentage	Number of Infants Who Regained Birth Weight by 7th Day	Number of Infants Who Regained Birth Weight by 10th Day	Average Gain in First Ten Days Gm	Infants Who Were Below Birth Weight at Discharge Percentage	Infants with Marked Icterus Neonatorum Percentage	Morbidity Percentage
Buffered lactic acid evaporated milk	117	65	52	61	36	11	17	2.9	0.57	3,334	2.2	151.4	4.5	74	84	+100.5	6.7	11.9	0.4
Artificial feeding*	42	18	24	31	11	0	3	2.9	0.35	3,365	2.7	160.0	4.8	21	24	+16.0	17.1	21.2	13.3
Breast milk	159	77	82	76	63	2	8	2.6	0.18	3,673	3.3	185.6	5.2	44	61	-4.0	34.6	18.3	5.3
Breast milk and buffered lactic acid milk	141	71	70	70	62	16	14	2.9	0.33	3,275	2.5	131.4	4.0	66	80	+57.3	18.5	10.0	11.3
Breast milk and a complement†	76	48	28	47	29	2	11	2.8	0.25	3,408	2.7	163.5	4.9	24	43	+24.7	10.7	14.4	6.6

* Artificial feeding other than acid milk e. g. soft curd milk and whole milk dilution

† Complement other than buffered lactic acid milk

Müller⁹ with his theory of splanchnoperipheral equilibrium. They showed that an increased functional activity of the skin is accompanied by peripheral leukocytosis, an inhibition of function and leukopenia of the splanchnic organs.

Clinically, a high external temperature or fever in the case of an extremely weak or premature infant is accompanied by a lowered gastric acidity and, hence, an acid formula is indicated in such cases.

We have used the buffered acid milk since January 1931, though at first only in selected cases. A protocol of one case follows.

REPORT OF CASE

Baby R., a first-born child, with right occipitoposterior presentation, weighed 2,000 Gm at birth. External heat, which was applied because of the subnormal temperature, caused a cutaneous burn. The infant's temperature rose to 40°C (104°F). Breast milk, reinforced with Dryco was used and fluids were administered parenterally. The feedings were poorly taken

well¹⁰ and others. Whether the use of weak alkali solutions promotes unexpected phenomena of a serious nature remains to be seen. It may be that early alkali feedings stimulate the production of gastric acidity in the average normal infant, but before that occurs the earlier danger of hypo-acidity may eventuate.

METHOD

The buffered lactic acid formula used in this study was prepared as follows:

A buffer solution consisting of lactic acid 15 cc., 10 per cent solution of sodium hydroxide 20 cc., and water to total 500 cc. was made up as a stock solution. Equal parts of this mixture and of evaporated milk were used and 10 per cent added Karo was supplied.

This formula has a caloric value of 110 calories per hundred cubic centimeters. The p_H value is 4.2, which corresponds approximately to the hydrogen ion concentration of gastric juice at the time of optimum digestion in an infant who is being fed cow's milk.¹¹ In the clinic this special formula was used for infants when nursing was considered impossible because of prematurity or complications such as sepsis or cesarean section, when the mother did not wish to nurse her

7 Arnold Lloyd and Brody Louis. Passage of Living Bacteria Through the Intact Intestinal Mucosa. *Proc. Soc. Exper. & Med.* 25: 247 (Jan.) 1928.

8 Petersen W. F., and Muller E. F. The Splanchnoperipheral Balance During Chill and Fever. *Arch. Int. Med.* 40: 575 (Nov.) 1927.

9 Muller E. F. and Petersen W. F. Die Bedeutung der physiologischen Schwankungen der peripheren Leukocytenzahlen II Ihre Beziehungen zur Mageninnervation. *Klin. Wchnschr.* 6: 840 (April) 1903.

10 Eder H. L. and Bakewell B. Effect of Sodium Citrate on the Loss of Weight in the New Born Infant. *Am. J. Dis. Child.* 42: 1079 (Nov.) 1931.

11 Marriott W. M. and Davidson L. T. The Acidity of the Gastric Contents of Infants. *Am. J. Dis. Child.* 26: 542 (Dec.) 1923.

infant, and also to complement the breast feeding of infants who weighed less than 3,000 Gm. Most of these infants were from families in the lower social stratum, some being illegitimate.

The formula was started eight hours after birth except in the case of premature infants, for whom about six hours elapsed between the time of delivery and the first feeding.

RESULTS

There was no difficulty in initiating the buffered lactic acid formula, and it was the general impression that this formula was easier to start and increase than the straight lactic acid mixture. The infants fed on buffered lactic acid milk appeared to be satisfied and

TABLE 2—*Premature Infants Fed on a Formula Other Than That of Buffered Lactic Acid Milk*

Infant	Sex	Birth Weight Gm	Weight on 10th Day Gm	Number of Days in Hospital	Weight at Time of Discharge Gm	Average Number of Stools Daily	Average Number of Regurgitations Daily	Clinical Abnormalities	Pregnancy	Average Period of Loss of Weight Days	Loss of Weight Gm	Per centage of Birth Weight Lost	Birth Weight Regained Days	Total Gain, Gm	Average Daily Gain Gm
W ¹	♀	1,620	1,640	45	3,290	6	0.6	0	1	4	180	7.9	0	1,770	39.3
Z	♀	1,450	1,600	40	2,500	4	0.5	Cesarean section lacerations	3	0	0	0	0	1,020	25.5
P ¹	♂	2,350	2,555	13	2,770	5	0.4	Forceps delivery	1	2	50	2.1	4	420	32.3
O	♂	2,280	2,320	20	2,700	4	1.3	0	1	3	190	8.3	8	420	21.0
McG	♀	2,200	2,180	23	2,700	8	0.0	0	1	3	200	9.1	11	500	21.8
S ¹	♀	1,255	1,140	09	2,710	7	1.3	Icterus	2	5	165	12.4	14	1,455	21.1
W ²	♀	1,900	2,130	35	3,150	4	0.2	0	1	8	50	2.6	6	1,190	34.0
B	♀	1,430	1,500	65	2,760	3	0	Icterus	3	4	85	5.9	6	1,330	20.5
L ¹	♀	2,250	2,350	23	2,750	4	0.8	0	1	3	80	3.6	5	500	21.8
M ¹	♂	2,380	2,335	25	2,680	3	0.3	Mastitis	1	2	175	7.4	8	300	12.0
E	♀	1,760	1,665	24	2,730	4	0.3	0	1	2	40	2.3	3	970	25.5
S	♀	2,940	2,410	23	3,140	3	0.2	Rhinitis	1	1	65	2.0	2	900	32.1
R ¹	♀	2,000	2,100	26	2,720	3	0.1	0	3	1	70	3.5	6	720	27.7
P ²	♀	1,150	1,050	68	2,635	5	0.5	Icterus	3	7	200	17.4	17	1,785	20.3
R ²	♀	1,560	1,610	44	2,690	4	0.4	0	2	2	40	2.0	3	1,300	29.6
G ¹	♀	1,450	1,440	59	2,770	5	0.1	Marked anemia	1	4	125	8.0	13	1,320	22.4
G ²	♀	1,400	1,440	62	2,770	4	0.1	0	1	6	115	7.9	11	1,310	25.2
L ²	♀	2,440	2,500	21	3,000	4	0	0	3	2	20	0.9	4	620	29.5
T	♀	2,190	2,310	16	2,400	4	1.3	0	1	3	140	6.4	5	210	13.1
S ²	♀	2,900	2,880	28	3,100	3	0	0	1	0	0	0	0	900	32.1
C ¹	♀	2,160	2,270	20	2,890	5	0.2	Otitis media	1	1	50	2.2	3	710	33.5
C ²	♀	1,370	1,290	68	2,700	4	0.4	Thrush	7	4	120	8.8	15	1,330	23.9
H ¹	♂	2,180	2,120	32	2,750	8	0.2	0	1	4	35	1.0	5	585	18.3
P ³	♀	1,510	1,800	55	3,090	6	0.2	Bronchitis staphylococcal	1	2	40	2.6	4	1,580	28.7
C ³	♀	2,400	2,540	14	2,710	4	0.1	0	1	0	0	0	0	310	22.1
D	♀	2,250	2,380	28	2,770	3	0	Abscess of scalp	1	2	80	3.5	3	490	18.8
P ⁴	♀	1,510	1,520	49	2,720	3	0.2	Icterus	1	6	180	9.9	10	910	18.0
K	♀	2,000	2,070	30	2,750	5	0	Nevus on buttocks	2	3	50	2.5	4	750	25.0
H ²	♀	2,450	2,335	21	2,710	4	0	Nonspecific conjunctivitis	1	2	110	4.5	16	290	12.4
Total or average	20	1,922	1,957	30.5	2,814	4.1	0.4			2.8	89.1	5.1	0.7		24.6

TABLE 3—*Premature Infants Fed on Buffered Lactic Acid Milk*

Infant	Sex	Birth Weight Gm	Weight on 10th Day Gm	Number of Days in Hospital	Weight at Time of Discharge Gm	Average Number of Stools Daily	Average Number of Regurgitations Daily	Clinical Abnormalities	Pregnancy	Average Period of Loss of Weight Days	Loss of Weight Gm	Per centage of Birth Weight Lost	Birth Weight Regained Days	Total Gain, Gm	Average Daily Gain Gm
S	♂	2,450	2,600	10	2,690	5	2.0	Nonspecific conjunctivitis	2	1	150	6.0	4	210	21.0
R ¹	♀	2,380	2,660	18	2,600	5	0.7	0	1	1	110	4.6	3	420	32.3
P	♀	1,960	2,310	27	2,820	6	0.7	Breath presentation	1	3	10	0.5	4	860	31.0
L	♀	2,100	2,280	19	2,530	4	1.2	0	1	2	50	2.4	4	480	25.1
M	♀	2,340	2,300	24	2,840	6	0.3	Cesarean section	1	6	200	8.6	12	500	20.8
A ¹	♀	2,300	2,720	17	3,000	6	0.8	0	2	0	0	0	0	700	41.2
F	♀	2,360	2,690	26	3,000	4	0	0	1	1	20	0.9	2	700	36.9
D	♀	1,630	1,840	29	2,810	7	1.3	Icterus	3	0	0	0	0	1,180	40.7
C	♀	2,360	2,480	15	2,700	4	0.1	0	2	2	130	5.5	5	840	29.7
A ²	♀	2,410	2,420	17	2,750	0	0.2	0	1	0	0	0	0	380	22.3
A ³	♀	2,310	2,480	16	2,720	3	0.0	Nonspecific conjunctivitis	1	2	30	1.3	3	410	25.0
B ¹	♀	2,120	2,480	26	2,800	0	0.8	0	3	1	60	2.8	2	740	28.5
T	♀	2,430	2,290	33	3,060	2	0	0	5	5	200	8.2	12	630	10.1
B ²	♀	2,450	2,470	20	3,020	3	0.1	Cesarean section lacerations	8	2	90	3.7	5	570	22.8
G	♀	2,000	2,330	18	2,700	4	0.4	0	2	4	45	2.3	5	700	38.0
V	♀	1,600	1,410	29	2,180	5	1.3	Died of atelectasis	1	8	370	23.1	17	580	20.0
McV	♀	2,410	2,340	17	2,620	3	0.5	0	2	5	190	7.9	7	210	12.4
B ³	♀	2,310	2,720	11	2,700	3	0.6	0	1	5	70	2.9	6	330	30.0
H	♀	2,390	2,600	20	2,700	3	0.2	0	1	0	0	0	0	310	15.5
R ²	♀	2,310	2,640	17	2,740	6	0.3	0	2	1	110	4.7	5	390	22.9
G	♀	1,760	2,030	34	2,785	5	0	Abscess of arm	3	3	50	2.8	4	1,000	20.6
L	♀	2,060	2,160	25	2,720	6	0.5	0	2	4	120	5.8	7	660	20.4
Total or average	22	2,200	2,470	21.3	2,765	4.8	0.9			2.3	91.1	4.2	4.9		20.1

The four hour schedule was used except for premature infants, who were usually fed every two or three hours by gavage or with a Breck feeder or medicine dropper. All full term infants fed on this formula were offered 110 calories per kilogram of body weight daily. Breast fed infants were offered 10 per cent Karo water after nursing so that the caloric intake was normal but never in excess of 2 ounces (60 cc.) at a feeding. Water was given freely to all infants between feedings.

showed excellent tissue turgor. The stools were somewhat lighter in color than those of breast fed babies, but the average number was about the same in the two groups. Although regurgitations appeared to be more frequent in this group, this is not a true representation of conditions. Early in the study a more concentrated formula was employed, but when the strength was

reduced, as previously outlined, excessive regurgitation was adequately controlled. There was no gastro-intestinal disturbance severe enough to require discontinuance of the use of the buffered mixture and in some cases of diarrhea improvement was noted when the original formula was changed to buffered lactic acid evaporated milk.

Table 1 shows the results obtained with various formulas employed for full term infants during the period of this study, beginning Jan. 1, 1931. It is obvious that the initial loss of weight was less prolonged in the group who were fed the buffered milk (2.2 days) and averaged only 4.5 per cent of the birth weight. Both these figures surpassed similar ones for infants who were fed other types of artificial food. The results were better when buffered lactic acid evaporated milk was used to complement breast feeding both as regards the initial loss of weight and its duration. We believe that these figures are truly comparative since the average birth weight, which was slightly less in the buffered lactic acid group, was balanced by the greater incidence of first born infants in that group. The results in all our various series of studies are better than those reported previously by older authors. Fleischmann¹² reviewed the results of a number of studies on feedings and found that the total loss of body weight averaged 6.6 per cent of the birth weight (assuming the latter to be 3,300 Gm). In a series of 300 breast fed infants studied by Ramsey and Alley¹³ the average initial loss of weight was 240 Gm and the average duration of loss was three days. Bergmann¹⁴ reported an average loss of 7.8 per cent of the initial weight in a group of 1,000 infants. It may be assumed from these statistics that buffered lactic acid milk has a definite influence in reducing the initial loss of weight and its duration.

Approximately 72 per cent of the infants fed the buffered lactic acid formula had regained their birth weight by the tenth day, as compared to 57 per cent of those fed on other artificial foods and 51 per cent of those who were breast fed. Schulz,¹⁵ in a study of 600 infants, showed that 48 per cent had regained their original weight in ten days. Twenty-five per cent of the infants in Ramsey and Alley's series had regained their birth weight before being taken from the hospital on the tenth day. In a series of reports of 1,000 breast fed infants, Bergmann found that only 11.4 per cent had reached birth weight by the tenth day and 21.17 per cent by the end of the second week. The smaller number of infants discharged while below birth weight (6.7 per cent) is as striking as the higher percentage of recoveries of birth weight in the first ten days for the infants fed on buffered lactic acid milk. The period of hospitalization was approximately identical for all groups tabulated. The buffered lactic acid evaporated milk formula promoted a more rapid recovery of birth weight than any of the other types of infant feeding.

The average gain in weight of the children fed on the buffered lactic acid evaporated milk for the first ten days of life was 110.5 Gm, which surpassed that of any

other group. In this period the infants fed on buffered lactic acid milk showed approximately seven times as great an increase in weight as the other artificially fed infants. This increase in weight was reflected in the excellent tissue turgor and muscle tone of these infants. Furthermore, the morbidity in the group was almost as low as that recorded for breast fed infants. Our figures support Grulee's¹⁶ contention that the morbidity incidence in breast fed infants is less than in those who are artificially fed. However, if artificial feeding must be used, buffered lactic acid milk seems to be ideally suited for the purpose.

The buffered lactic acid formula is well borne by premature infants as is shown in tables 2 and 3. This group was composed of twenty-two infants, 45 per cent of whom were boys, approximately the same number being first born. In the other group (table 2) of twenty-nine infants, 24 per cent were boys and 69 per cent were first born. The average birth weight in the latter group was 1,922 Gm, slightly lower than that of the group on the buffered formula (2,209 Gm). The initial loss of weight in those fed on buffered lactic acid milk was 4.2 per cent and continued over a period of two and three-tenths days. In the miscellaneous group the average initial loss was 5.1 per cent of the birth weight and the average duration of the loss was two and eight-tenths days. The average daily gain for those on the buffered formula was 26.1 Gm, for the miscellaneous group, 24.6 Gm. These figures compare favorably with any we have seen reported in the literature for this age period. They are slightly higher than those of Hill,¹⁷ who in a series of eighty-two premature infants on a formula of three parts of breast milk and one part of evaporated milk showed an average gain in weight of 0.766 ± 0.11 ounce (22 ± 3 Gm) daily. Gleich¹⁸ found an average weekly gain of 148.5 Gm (daily average 21.2 Gm) in a series of twenty premature infants fed on lactic acid milk. He reported that there were no gastro-intestinal disturbances, which is in accord with our results with the buffered lactic acid formula. The morbidity is considerably less in the group fed on buffered lactic acid than in the comparable miscellaneous one (18.2 and 24.2 per cent, respectively) also, in spite of a greater number of boys in the buffered group, there was no increased incidence of icterus neonatorum.

CONCLUSION

It has been stated¹⁹ that acidified milks should not be given to infants less than 6 weeks of age, as they are not well tolerated. This contention has been challenged, however, by many and our study leads us to conclude that not only is buffered lactic acid milk exceedingly well tolerated but also, from a clinical standpoint, infants fed on this formula show (1) less initial loss of weight and more rapid recovery of birth weight, (2) less icterus neonatorum and (3) a more substantial gain over the birth weight at the end of the hospital period. Premature and congenitally debilitated infants are particularly benefited by such a buffered lactic acid evaporated milk formula.

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Clinical Notes, Suggestions and New Instruments

DINITROPHENOL CATARACT

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We present two cases of acutely developing cataracts in relatively young people, which came on following the administration of dinitrophenol and which we consider to be referable to the same etiology. One of these cases we have had the opportunity of studying at the Massachusetts Eye and Ear Infirmary, and the other has been brought to our attention through the courtesy of the Johns Hopkins Hospital staff.

CASE 1—M. L., a 38 year old Scotsman, entered the Massachusetts Eye and Ear Infirmary in May 1935, complaining of a haze before his eyes. The family history was irrelevant. Both parents had lived to old age and neither had had significant ocular trouble to the time of their deaths. Several siblings were living and well and without ocular complaints.

The patient had been a proofreader for some years and was not exposed to industrial hazards. He had always been well but was somewhat overweight.

In February 1934 he began taking dinitrophenol for weight reduction, at first in a dosage of 3 grains (0.2 Gm.) daily but rapidly increased to 8 grains (0.5 Gm.) daily. While taking the drug the patient experienced periods of excessive weakness lasting from one to two hours which would come on at the time of maximum perspiration. In addition there was a throat infection which seemed to accompany the use of the drug. No blood study was made at this time. After taking the drug for approximately four months and losing from 2 to 3 pounds weekly the patient began to notice paresthesias of his extremities of momentary duration. Later the paresthesias became more lasting and extensive, resulting in a continuous numbness of his ankles and toes. Eventually he experienced intense shooting pains in the tips of the toes and the joints, later he had similar pains in his hands without at any time swelling or other evidence of inflammation. His extremities felt so hot that he could not tolerate bed covers, even at freezing temperatures. Following the attacks of pain his extremities were decidedly hyperesthetic and weak so that he was forced to use crutches. The patient discontinued use of the drug but the symptoms lasted approximately six weeks. On thorough medical examination at this time no significant changes were noted other than the neuritis with loss of light touch of the lower extremities for which the drug was considered responsible. About this time or shortly before, the patient began to have some visual difficulty. Unfortunately no adequate examination of the eyes was made at this time. In January he had his glasses changed but still could not focus. His vision became progressively blurred during the next few weeks, hence he came to the Massachusetts Eye and Ear Infirmary.

Physical examination revealed nothing of note other than moderate obesity. There was no evidence of glandular dysfunction or of premature senility.

The ocular examination gave practically identical results in the two eyes and may be described therefore as one. The vision was 20/20 seen through a haze.

Refraction OD—0.75 — 0.25 × 180, OS—1.00 — 0.25 × 180. Accommodation 2 diopters.

The corneas were clear. There were no keratic precipitates but there was a faint outstanding beam in each aqueous without any formed particles. The irises were normal. There were many fine stippled and polychromatic opacities in the anterior lens subepithelial cortex forming a superficial shell. There were no definite crystals. Many vacuoles under the epithelium protruded onto the surface thereby roughening it. There was a striking accentuation of these opacities in a central region about 5 mm. in diameter, i.e., in a semidilated pupillary area. The rest of the anterior cortex was clear except for a few round punctate opacities probably coronary in character. The nucleus was clear. The posterior cortex where changes were the most marked showed a shell-shaped opacity in the central region corresponding to the opacity of the anterior

cortex. This formed a golden yellow, striped opacity of the posterior cortex outlining the sutures. It was poorly demarcated from the rest of the superjacent cortex, but fairly sharply demarcated from the periphery of the posterior cortex. The vitreous, which could be seen through the periphery of the lens, appeared normal. The fundi were normal. The disks were of good color. The vessels were normal. There was no exudate, hemorrhage or other lesion.

The patient was seen again two weeks after the previous visit. At this time vision was reduced to the counting of fingers at 2 feet, with proportionate clouding of the lenses. The subepithelial fine opacities, with many vacuoles were present as before but seemed insignificant compared with the gross flocculent precipitates throughout the entire anterior cortex. These resembled the opacities of a rapidly developing senile cortical cataract. The opaque posterior cortex could be appreciated only by the contrawise movement of the light reflex. These opacities now extended to the periphery of the lens. No red reflex could be obtained from the fundus. Subsequently the patient had simple cataract extraction in each eye with uneventful convalescence. The fundi, which are again visible, still show no lesion.

Serologic examinations gave negative results. Chemical examination of the calcium, sugar, nonprotein nitrogen and cholesterol content of the blood gave negative results. Red blood corpuscles numbered 5,360,000; white blood corpuscles, 8,850, with a differential count of polymorphonuclears 59 per cent, lymphocytes 31 per cent, mononuclears 8 per cent, eosinophils 15 per cent and basophils 0.5 per cent.

CASE 2—R. A., a white woman aged 25 married, was admitted to the Johns Hopkins Hospital, April 28, 1935, with the complaint of obesity, nervousness, and rapidly failing vision.

The past history and the family history were essentially negative.

Two and one-half years before entry, the patient had a rapid gain in weight following pregnancy. One year before entry, she became extremely nervous. Four months before entry because of another rapid gain in weight, she was given thyroid and dinitrophenol, the latter in 1½ grain (0.1 Gm.) capsules three times a day. She continued this medication for approximately one month. (There was some question of her having taken dinitrophenol for a short period one year previously.) Three or four weeks before entry she noticed a beginning loss of vision in her left eye.

The patient was obese and did not appear to be ill. Nothing of any significance was found except for her eyes and the obesity. There was no evidence of any glandular dyscrasia. The report of the eye consultation was as follows: "External examination lids negative; conjunctivae and corneas clear. Tension external ocular muscles and pupils normal. Ophthalmoscopic: Right eye, some clouding along the lens sutures. Fundus distinctly seen and apparently normal. Left eye, complete clouding of lens. Fundus cannot be seen. Vision R E 20/30, L E light perception. Fields normal. Impression incipient cataract of right eye, mature cataract of left eye."

The Wassermann and flocculation tests were negative. Blood calcium was 9.69 mg. per hundred cubic centimeters, sugar, 82; nonprotein nitrogen, 25; van den Bergh test, negative; red blood corpuscles, 4,900,000; white blood corpuscles, 8,160; differential, normal. The urine was normal. The basal metabolic rate was plus 48 (fairly satisfactory), plus 8 (satisfactory), plus 22 (satisfactory).

COMMENT

These two instances of rapidly developing cataract of a characteristic morphology occurred in relatively young persons in whom thorough study failed to reveal any etiologic factor other than dinitrophenol. The type of cataract which the first patient showed was per se suggestive of some systemic intoxication. The initial opacities occupied predominantly the posterior cortex but were not clearly demarcated from the surrounding areas. They progressed with extreme rapidity and formed a characteristic polychromatic luster in the zone of specular reflection. This is the type of cataract which Vogt¹ calls *cataracta complicata* and which is characteristic

¹ Vogt A. *Spaltlampe*. Microscopie 2: 536.

of exogenous injury.² We did not have the opportunity to make slit lamp studies in the second case, but the described accentuation of suture lines, together with the apparent rapidity of development, points to the same type of cataract. In view of the morphology of the lens changes in our case and the known effects of dinitrophenol on tissue metabolism, it seems likely that the cataracts are the result of damage to the lens epithelium rather than to primary precipitation of the lens constituents. This is why the toxic effects, as in our cases, occur not as immediate reactions but after prolonged use of the drug and may occur after the drug has been discontinued. It is significant that we have immersed immature cataractous lenses (removed intracapsularly) in a 2 per cent solution of dinitrophenol without the development of further opacities, as we might expect were it a precipitation of the lens substance.

In the two cases reported here only therapeutic doses had been taken, and cataracts developed subsequently. Toxic neuritis also developed in case 1, but no other evidence of intoxication appeared in case 2.

Massachusetts Eye and Ear Infirmary

CATARACT FOLLOWING THE USE OF DINITROPHENOL

N. K. LAZAR, M.D., CHICAGO

Horner, Jones and Boardman¹ reported several cases of cataract following the use of sodium dinitrophenol as an adjunct in the treatment of obesity. Their description of the lens changes are somewhat similar to those found in tetany and myasthenia gravis. Recently a case was observed at the eye dispensary of the Cook County Hospital which is herein reported. It will be observed that not only the lens but also the refractive error has undergone changes, which are not unlike those reported by Horner, Jones and Boardman. Also, apparently when other lens changes have occurred prior to the taking of the drug, there is a possibility that this may hasten the further development of cataractous changes in the lens. Work on lower animals with this drug so far as the eye is concerned is indicated, not only for its scientific value but because of the widespread use of the drug.

REPORT OF CASE

Mrs. K., aged 44, white, was seen July 12, 1935, complaining of loss of vision in both eyes over a period of about six months. The initial loss of vision occurred quite rapidly in November 1934. She consulted an optometrist, who gave her glasses, which did not improve her vision. She was seen by an ophthalmologist (Dr. C. P. Sullivan) in March 1935, who noted at this time that she had cataracts which were not ready for operation. She was given a plus 0.50 sphere in each eye and plus 1.00 sphere added for near vision. Her vision then was 0.5 in each eye. She continued to get worse. She had been taking three capsules of dinitrophenol daily for a period of about a year. She lost 60 pounds (27 Kg.). She stopped taking the drug about two weeks prior to examination.

Examination later revealed the vision 0.2 in each eye.

External ocular examination was negative. Homatropine refraction revealed on retinoscopy R plus 3.00 w plus 0.50 c 60, L plus 2.50 w plus 0.50 c 90. The trial case showed no improvement with the proper lenses. Ophthalmoscopic examination showed many lenticular opacities. The fundi were not seen clearly but were apparently normal.

Slit lamp examination revealed normal corneas and anterior chambers. The lenses showed many subcapsular striate opacities anteriorly, with numerous small white round opacities deep in the central cortex. The posterior cortex resembled a posterior cortical saucer-shaped cataract. It had an intense copper appearance with a zone of iridescence that was quite pronounced. The left lens showed more marked changes than the right.

² Die Cataracta complicata, welche nicht auf Grund jenes Gesetzes der senilen sondern die Folge bestimmter exogener Schäden sind (Cataracta complicata unlike senile cataracts, are the result of definite exogenous injuries).

From the Ophthalmologic Service, Cook County Hospital and the Department of Ophthalmology, Northwestern University Medical School.
¹ Horner, W. D., Jones, R. B. and Boardman, W. W. Cataracts Following the Use of Dinitrophenol. J. A. M. A. 105: 108 (July 13) 1935.

A second case seen by Dr. Sanford Gifford is reported with his permission. Mrs. F., an otherwise healthy woman of 42, had taken dinitrophenol for slight obesity during 1934. The exact dosage could not be ascertained, she had lost 2 pounds a week for several months. Physical examination and blood chemistry were essentially negative. The blood calcium was 9.9 mg and blood sugar was not increased. The drug was stopped in August 1934. Three months later vision was reduced, but was improved by glasses. Two more changes of glasses were made, but in April 1935 she was unable to read with any glasses. When she was first seen by Dr. Gifford, in July 1935, vision in both eyes was reduced to light perception with good projection. Both eyes showed intersegmental cortical cataract, the cortex being white and flaky and the anterior chambers shallow. The right eye was operated on, July 15, operation being uneventful and vision 20/25 at the first test after a needling. Although the patient was of an age when senile cataract might possibly have developed, the rapid course of the bilateral opacities suggests a probable relation to the drug taken. By analogy with other forms of nonsenile cataract, such as that seen in parathyroid tetany, it is not unreasonable to suppose that the lens changes, once begun during administration of the drug, might go on to complete opacity after its discontinuance. In the late stage at which this case was seen, there was nothing characteristic about the clinical picture, a situation that exists also in the late stages of other toxic forms of cataract. In the first case, however, the picture resembled that described by Horner and his associates.

COMMENT

A case is reported of bilateral anterior and posterior cortical cataract in a comparatively young person, coming on suddenly after prolonged treatment with dinitrophenol, with a great loss of vision over a period of less than four months, and showing a marked increase in the hyperopia. The well known fact that the drug causes a tremendous dehydration of tissue may hasten the maturity of lens opacities already present. An important fact is that, as shown by these and other reported cases, cataract may develop on average dosage of the drug, and without any general symptoms suggesting harmful effects. In the second case the opacities were first noted some time after the drug had been discontinued.

303 East Chicago Avenue.

CATARACTS FOLLOWING DINITROPHENOL

PAUL W. KNISKERN, M.D., GRAND RAPIDS, MICH.

Mrs. M. O., aged 37, came, Sept. 18, 1933, for the treatment of obesity. Her past history was unimportant except for a gonorrheal infection earlier in the same year. She had three children, one of whom had congenital cataracts. She had been obese since childhood. Her weight was over 300 pounds and she had not reduced to any extent on diet and thyroid in small doses. She was put on a 1,200 calory diet and given alpha-dinitrophenol, 5 grains (0.3 Gm.) daily, for two weeks. She then took 10 grains (0.6 Gm.) daily for two weeks, followed by two weeks of alternating the larger with the smaller dose. Feb. 21, 1934, she weighed 283 pounds (128 Kg.) and felt well. The dosage was reduced to 6 grains (0.4 Gm.) daily and two months later to 2 grains (0.13 Gm.) daily. From June 6 to July 25 she took 4 grains (0.26 Gm.) and on the latter date was found to be about six weeks pregnant.

During pregnancy the drug was discontinued except for a period of two weeks during which she took 2 grains (0.13 Gm.) daily, beginning Oct. 24, 1934. She had seven antepartum examinations between July 25, 1934 and March 6, 1935. No albumin, sugar or casts were ever found. Her blood pressure was 120 systolic, 78 diastolic on the first visit and 150 systolic 96 diastolic, on the last, with no higher readings between these dates.

She first noted failing vision early in November. Nov. 26, 1934, the ophthalmologist's report was "incipient cataracts, both eyes." Jan. 26, 1935, she was unable to count fingers at 2 feet with either eye. She was delivered of a normal baby, March 8. March 27 her cataracts were pronounced mature and removal

was advised April 18, the right lens was removed by Dr L. O. Grant, who reported it a mature cataract. Vision was brought up to 20/20 with refraction.

COMMENT

Two factors other than the use of dinitrophenol are to be considered in this case: the cataracts formed late in pregnancy and they occurred in a woman who had given birth to a child with congenital cataracts.

SUMMARY

A woman, aged 37, took 1,900 grains (126 Gm.) of alpha dinitrophenol over a period of a little less than a year and at the end of that time developed bilateral mature cataracts in a period of four months.

LATE DEVELOPMENT OF CATARACT FOLLOWING
USE OF DINITROPHENOL ABOUT
A YEAR BEFORE

T. D. ALLEN, M.D. AND V. M. BENSON, M.D. CHICAGO

April 4, 1922, the vision of Miss V. M. B., aged 25, a student at Rush Medical College, was 20/20 + in each eye, with and without a very slight correction for compound hypermetropic astigmatism, fitted after careful refraction with homatropine. The appearance of the eyes was perfectly normal externally and internally. Muscle balance was normal.

In May 1927 a slight change of the glasses was necessary. With these her vision was 20/15 and her near point from 18 to 20 cm. Again no changes were found in the interior of the eyes.

March 22, 1935, at the age of 38 years she complained of clouding of the vision, which had seemed to come on rather suddenly about three weeks before. Accommodation was slightly reduced but there was no essential change in the refraction or in the central fields of vision. When the pupils were widely dilated there was found with the slit lamp to be an irregular, granular sheen on the posterior surface of each lens and a few very fine deposits, like a sprinkling of dust, on the back of each cornea. Also there was a slight atrophy of the pigment border of each iris.

The general medical examination was made by Dr. Fred M. Drennan, who reported one small tonsil stump questionably infected, a basal metabolic rate of -12, blood calcium 10.3 mg. per hundred cubic centimeters of serum and adiposity (weight 196 pounds [89 Kg.]). Dr. Drennan suggested that she take thyroid and anterior pituitary extract. The latter upset her but the thyroid in one-half grain (0.03 Gm.) doses three times a day caused an increase in the basal metabolic rate of about 18 points.

She was seen at frequent intervals, always complaining of increasingly hazy vision. June 4 the vision of the right eye was 20/30 and of the left eye 20/40. July 1 the vision of the right eye was 20/70 and of the left eye 4/200. July 9 the vision of the right eye was 20/70 + and of the left eye the counting of fingers at 2 feet. July 17 the vision of the right eye was 20/30 (see comment) and of the left eye counting of fingers at 1 foot.

June 4 she suggested dinitrophenol as the possible cause. She had been taking this drug in an average daily dose of 0.4 Gm. from Dec. 30, 1933, to early in June 1934, a total of approximately 73 Gm. or 1,460 capsules of 0.05 Gm. each. The drug was taken on a basis of from 3 to 5 mg. per kilogram. It resulted in a loss of weight of 32 pounds (14.5 Kg.). She stopped the drug in June on account of the warm weather but started again in September because she had regained about half the weight she had lost. However, it upset her gastro-intestinal tract so she stopped taking it after a few days and did not start again. She had a little difficulty in seeing (accommodation?) during October 1934.

An interesting comment of hers on July 1, 1935, was that two weeks before the vision of the left eye suddenly improved and for about five days she could see quite well. Then suddenly the vision diminished. July 1, after thorough dilation of the pupils we examined with the slit lamp and made the following comment: Right eye fine granular changes immediately beneath the anterior capsule of the lens. With a very fine beam these changes were seen to begin at an irregular depth immediately

beneath the capsule. There was only a very faint haze in the cortex proper. No distinct nucleus of the lens was seen, and the posterior capsule had the appearance of a granular or hammered copper surface. Left eye, anterior chamber shallow, mother of pearl appearance of the cortex, with a distinct interval between the opaque cortex and the capsule. In each eye, very few fine dustlike opacities on the back of the cornea but no evidence of iritis, and the tension was 17 mm. (Schiotz) in each eye both before and after dilation. (The tension has never been found above 20 mm.)

July 13 the vision of the right eye seemed suddenly to improve and on the 17th it was 20/30. She felt that this improvement was similar to that of the left eye immediately before the vision in that eye became very dim.

Left linear extraction was performed August 6 and right linear extraction August 9 with extremely little reaction and practically no cortex left. On August 12 right vision with sphere +11 cylinder +1 axis 180 = 20/40, left vision with sphere +12 cylinder +1 axis 165 = 20/50. The subnormal vision is easily accounted for by wrinkling of Descemet's membrane.

This patient has taken regularly for the last several years one glass of orange juice or tomato juice beginning therefore before she ever took dinitrophenol and continuing up to the present time.

SUMMARY

There was a history of the ingestion of approximately 73 Gm. of dinitrophenol over a period of about five and a half months with the first evidence of cataract seen nine months after the drug was discontinued. The cataracts developed simultaneously, but one more rapidly than the other, one becoming complete within five months.

122 South Michigan Avenue

PNEUMOCOCCUS (TYPE III) MENINGITIS RECOVERY

REUBEN STEINHOLZ, M.D. AND MORRIS GLEICH, M.D. NEW YORK

Pneumococcus meningitis is a highly fatal disease. Cases of recovery are so rare that the successful outcome of one, particularly a type III, warrants reporting.

A girl aged 7 years, with a normal developmental history and the usual childhood diseases, stuck a rubber eraser from the end of a pencil into her right ear. A roentgenogram revealed this foreign body in the right internal auditory meatus. Under general anesthesia this object was removed five days later. The postoperative course was uneventful. The child was discharged two weeks later with a right purulent otitis media. A right facial palsy was reported six weeks later, lasting for two weeks.

Her present illness began nine weeks after the original trauma, with headache, vomiting and refusal of food. The next day on admission to the hospital she had a convulsion. The temperature was 102 F., respiration rate 40 and pulse 128. She was pale, irritable and drowsy but easily aroused. She lay in bed with her knees and hips flexed and showed marked nuchal rigidity. The pupils were moderately dilated, were equal and reacted to light. No nystagmus or strabismus or facial palsy was noted. The tongue did not deviate from the midline. The left drum was normal but the right drum was absent. There was a small mass protruding from the middle ear. A moderate sanguinopurulent discharge was present. The right mastoid was not tender but hearing from the right ear was completely absent.

The tonsils were moderately enlarged and injected. The heart and lungs were normal. Examination of the abdomen was negative. The Kernig and Babinski signs were absent as well as the knee jerks.

Urine, blood culture and the Pirquet test were negative. The blood count showed 14,600 white blood cells, 79 per cent being polymorphonuclears. Roentgenograms of the lungs and both mastoids were negative. Roentgen examination of the sinuses revealed clouding of the right and left antrums with thickening of the mucosa. Cultures of the right ear were unsatisfactory.

From the Pediatric Department, Harlem Hospital, Dr. Thomas A. Martin, medical director.

Through the lumbar route 25 cc. of cloudy fluid under moderately increased pressure was removed and replaced with 20 cc of antimeningococcus serum. The fluid showed 150 cells, with 80 per cent polymorphonuclears. Globulin and albumin were increased and dextrose was present. No organisms were seen in the smear but culture revealed a type III pneumococcus. This was confirmed by the pneumonia laboratory as well.

Since this report did not arrive for a few days, we continued to use antimeningococcus serum. The next day 10 cc of cloudy fluid was removed with difficulty by the lumbar route, so a cistern puncture was done. Twenty cubic centimeters of cloudy fluid was obtained showing 200 cells, 90 per cent of them being polymorphonuclears. Twenty cubic centimeters of antimeningococcus serum was administered through the cistern puncture and 10 cc intramuscularly.

On this day she had a convulsion lasting ten minutes and involving the left side of the body. The next day she was much brighter and answered questions but still complained of headache. The right knee jerk was now present, the neck still rigid and the temperature 100 F. Another cistern puncture was performed and 20 cc of cloudy fluid was obtained. This was replaced by 20 cc of antimeningococcus serum. Another 20 cc of antimeningococcus serum was given intramuscularly.

On the third day after her admission the blood showed specific pneumococcus type III antibodies. Twenty-four hours later the temperature was normal, nuchal rigidity was diminished and the child sat up and played. Improvement continued rapidly and in a few days nuchal rigidity had completely disappeared.

The use of type III antipneumococcus serum was discouraged on the third day when the laboratory reported pneumococcus type III in the spinal fluid. At this time the child was clinically much improved and showed pneumococcus type III antibodies in the blood.

A lumbar puncture done two weeks after admission was perfectly clear with a cell count of 4 lymphocytes. The neurologic examination was negative.

This case of pneumococcus meningitis is probably of otitic origin. The facial palsy and the left-sided convulsion point to a chronic otitis media as the exciting cause. The brain and meningeal involvements were evidently localized rather than widespread. Enough of the infection spread to the subarachnoid space to produce a cloudy spinal fluid.

The child did not succumb to the infection because it was localized and the type of pneumococcus was attenuated. Two laboratories reported that the mice infected with the specimens of spinal fluid from the patient did not die. This verified the low virulence of the organism.

Most authorities, as Osler, Holt, Neff and Kolmer report that pneumococcus meningitis is invariably fatal. The few isolated cures reported were instances in which antipneumococcus serum or ethylhydrocupreine had been tried.

Ratnoff¹ reported a cure of type III pneumococcus meningitis treated with ethylhydrocupreine. Kolmer² used ethylhydrocupreine in the proportion of 5 cc. of a 1,000 solution in physiologic solution of sodium chloride per kilogram of body weight, giving two injections a day for four days. Weinberg³ reported the cure of a case of type III pneumococcus meningitis, using the Nott treatment, i. e. retention enemas of potassium permanganate, 4 ounces (120 cc.) every four hours (2 grains [0.13 Gm.] of potassium permanganate to 1½ pints of water). Harkavy⁴ reported a type I case cured by type I serum. Globus⁵ reported a type I case cured by forced drainage through cistern and lumbar puncture routes.

269 West Eighty-First Street—9 Post Avenue

1 Ratnoff H L and Litvak A M. Pneumococcus Meningitis Treated with Morgenroth's Optochin Hydrochloride. Report of Case with Recovery. Arch. Pediat. 43: 466-472 (July) 1926.

2 Kolmer, J A. Chemotherapy and Serum Therapy of Pneumococcus and Streptococcus Meningitis. I. Résumé of Present Status of Treatment of Septic Meningitis with Recommendation of Method. Arch. Otolaryng. 3: 481-513 (June) 1926.

3 Weinberg M H. Case of Pneumococcus (Type III) Meningitis Treated with Potassium Permanganate. Recovery. Plea for Its Trial. J. Nerv. & Ment. Dis. 74: 38-45 (July) 1921.

4 Harkavy Joseph. Pneumococcus Meningitis. Recovery with Serum Therapy. J. A. M. A. 80: 597-599 (Feb. 25) 1928.

5 Globus J H and Kaszmin J I. Pneumococcus (Type IV) Meningitis. Report of a Case Treated by Forced Subarachnoid Drainage with Recovery. J. A. M. A. 80: 599-601 (Feb. 25) 1928.

ELECTROSURGICAL EXTIRPATION OF XANTHOMA

REPORT OF TWO SEVERE CASES

LEWIS J GORMAN SILVERS M.D. NEW YORK

Two sisters, S and A R, identical twins, aged 36, complained of the unsightly appearance of the deep yellow patches completely encircling their eyes. The family history was entirely negative. No one in their family of six, all older, had ever suffered from this type of disfigurement. Prior treatment consisted of the application of a chemical caustic, probably monochloroacetic acid according to the method of McGuire,¹ at the Skin and Cancer Hospital. The prompt recurrence of the chamois-like patches with a deeper yellow hue followed after several months' treatment and observation.

Xanthoma palpebrarum planum is a fatty degeneration of the superficial fibers of the orbicularis oculi muscle, as clearly shown by the work of Pollitzer.² The etiology is as yet unknown. Pathologically the epidermis, cutis, hair follicles and glands are normal, however, the greater part of the cutis is



Fig 1—Appearance prior to treatment.

packed with cell-like masses known as xanthoma cells. These so-called cells are fragmented and degenerated remains of muscle fibers with proliferated sarcolemma nuclei. Hence it may be noted that the xanthoma cell is not a cell at all.

The most satisfactory treatment employed by Hazen³ is electrolysis, the negative pole of the galvanic current being used. In my own hands galvanism was often followed by recurrence, and so the advantages of a definite controllable high frequency current became manifest. Infiltration anesthesia is executed with a very fine hypodermic needle over the area to be desiccated. A small, pointed needle electrode connected to the Oudin or monoterminial high frequency outlet is employed. A current strength that will produce a millimeter spark on fulguration is essential. The spark must not be too intense, as scarification might result. The degenerated, fatty



Fig 2—Appearance of patient after electro-surgical extirpation. No sign of recurrence after more than one year's follow up.

fibers are then thoroughly desiccated by the penetrating active electrode. The concomitant destruction of the dermal layers is minimized by the cooling effect of the infiltrating anesthetic. The biterminal or coagulating current must be sedulously avoided, as scarring and pitting might ensue. The strength of the current remaining constant, the time required for total extirpation depended on, first the amount treated at each sitting and, secondly, the total number of patches present. Treatments were entirely ambulant, being given weekly to each lid alternately. Complete eradication of the chamois-like growths was accomplished in about ten sittings without interfering with the patient's normal activities.

1050 Park Avenue

Read before the New York Physicians Yorkville Medical Society May 22, 1935.

1 McGuire J. Cutan. Dis. 16: 328 1898.

2 Pollitzer J. Cutan. Dis. 28: 633 1910.

3 Hazen H. H. Diseases of the Skin St. Louis C V Mosby Company 1915.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING ARTICLE. H A CARTER Secretary

THE USE OF HEAT IN DISEASES OF THE NERVOUS SYSTEM

CLARENCE A PATTEN, MD
PHILADELPHIA

Heat is frequently used in the treatment of both organic and functional nervous disease and provides a very effective therapeutic agent. It is used in many ways both locally and generally.

HEAT IN THE PSYCHOSES

Heat is generally used systemically in the treatment of the psychoses and is usually of considerable advantage if used over a long period of time. It is definitely of greater value in the agitated and maniacal mental states because of its sedative effect, but it is not particularly effective in the depressions except occasionally in agitated melancholia. In the acute depressions of the manic depressive psychoses it may be of slight value, but experience has shown that it does not influence the course of the disease. The means by which heat is applied in mental states in the order of their efficacy are: 1 The continuous hot bath, 2 The cold pack, 3 The warm pack, 4 Cabinet sweats, 5 Conditioned heat.

The continuous hot bath is used particularly in cases of maniacal excitement and maintains a steady temperature of about 96 to 98 F and sometimes more. Such baths have been employed in mental hospitals for a considerable number of years and are a necessary part of the modern hospital's equipment for handling excitable patients. Large tubs are used of sufficient length to accommodate the patient comfortably. They are frequently equipped with canvas slings, which are used to keep the patient from contact with the bottom of the tub. The temperature is controlled by a mixer, which regulates the temperature of the water. The attendant, however, must always use a bath thermometer as a check on the thermometer in the mixer. Patients are kept in the continuous bath for various periods of time, depending on their condition. No clothing is worn and any form of restraint is unwise. The soles of the feet and the palms of the hands must be well greased before the patients get into the tub. Many patients receive their meals while in the water, sleep there, and may be kept in the tub for days at a time. The continuous bath offers a means of inducing sedation which is unparalleled so far as physical measures are concerned, and by this means violent patients are controlled more rapidly than by the use of drugs. A caution is to be observed in that a nurse or attendant must be constantly present during these baths to see to it that no harm comes to the patient and that the water is kept at the desired temperature.

In case a properly constructed continuous bath is not available for excitable patients an ordinary tub can be used for short periods frequently repeated, provided a nurse or attendant constantly watches the temperature of the water and keeps it at the desired degree of heat.

Cold packs, which are really forms of heat therapy, are given in the following manner. The full length of

a mattress is covered by a rubber sheet, over which are placed two or three woolen blankets. A sheet is wrung out in cold tap water and spread over the topmost blanket and the patient laid on it. The sheet is wrapped about the patient and folded over the feet and about the shoulders. The topmost blanket is brought up over the patient and another blanket is spread over him and tucked beneath him. The second lower blanket is folded over the patient and another one spread over him and tucked beneath him. The third, or even a greater number of blankets, is folded about the patient in the same manner. An ice bag is placed to the patient's head, which is supported by a small pillow, and the patient is encouraged to drink water freely. The patient is allowed to remain in the pack until he has perspired freely and usually for a considerable period after that, depending on his condition. Cold packs offer a very effectual means of restraint in excited cases, as well as producing a marked sedative action. Warm packs are used in the same manner as cold packs except that the sheets are not wetted and the blankets are carefully warmed beforehand. Certain patients, however, who are put in a pack only when they are markedly disturbed come to have the idea that it is a form of punishment for them. It is best to use the packs or even the baths at stated times to obviate this reaction.

Neither cold nor warm packs are used in the presence of circulatory or cardiac derangement or when the patient is in a very weakened condition. During the time the patient is in a pack a nurse must be in constant attendance, observing the color and pulse rate of the patient. In case of an abnormal reaction the patient must be immediately removed from the pack. When the treatment is to be terminated, one blanket is removed at intervals so that the patient cools down gradually. A pack is usually followed by a shower and then an alcohol rub or a light massage.

Electrical cabinet baths are frequently used for cooperative mental patients for the purpose of obtaining the effects of varying degrees of heat over a short period of time as well as elimination through free perspiration. Usually the cabinet is followed by a needle spray of warm and then cold water for its tonic effects and after that massage may be employed.

At the present time certain equipments are being experimented with for the purpose of giving patients conditioned heat. These consist of appliances much like respirators and so constructed that the patient lies wholly within them except that the head protrudes through an opening at one end. The body is thereby subjected to a uniform heat. The temperature of the air, which is moist, is gradually increased until the patient's temperature reaches the desired point, which may be anywhere from 102 to greater degrees. By means of this type of apparatus, effects are obtained similar to those following other methods for the application of continuous heat, with the added advantage of a moistened air. The contraindications are the same as those for the cold and warm packs. Conditioned heat, however, is probably less used in the psychoses than are the continuous tubs, for the obvious reason that a part of its success depends on the full cooperation of the patient, which cannot be obtained as a rule in excited patients when it is most needed.

Various forms of heat therapy are used in the organic psychoses, particularly dementia paralytica. In dementia paralytica the continuous baths are helpful

when the patients are markedly excited, but only for the sedative effects. For the purpose of combating the disease, more vigorous heat therapy is needed. This is accomplished by raising the body temperature to 104, 106 or even higher for a period of hours. Some form of diathermy may be employed but in using diathermy there is always danger of producing burns where the electrodes are placed. Cabinet bakes, electric heat blankets and the conditioned heat apparatus previously mentioned are quite effective.

HEAT IN THE PSYCHONEUROSES

The systematic use of physical therapy in the treatment of the psychoneuroses had its inception under the direction of Dr. S. Weir Mitchell. In the so-called rest cure named after him the use of electric light baths, combined with hydrotherapy, massage and moderate exercise, is of great benefit. The same causes that operate in the production of physical disease in one patient may produce a nervous or mental disorder in another, therefore the physician should be guided by the same general principles and by a balanced conception of therapy.

In the psychoneuroses the so-called tonic electric cabinets given every day and followed by hot and cold contrast showers afford a great stimulus to the patient and in addition occupy a certain part of his time, which is of importance. Hydrotherapy in the form of hot and cold showers alone can be given daily. The method of application of these procedures has been commented on under arthritic and rheumatoid conditions, but it must be again emphasized that electric "baking" with hydrotherapy is only a part of the general treatment of the neuroses and dependence must not be placed on it alone.

HEAT IN ORGANIC NERVOUS DISEASE

Heat is of the greatest value in inflammations of the peripheral nerves and in vascular diseases in which implication of the nervous system is evidenced by pain of greater or lesser severity. In the various neuritides, in neuralgia, in radiculitis or in inflammation of any of the nerves in the limbs, heat, and particularly dry heat, allays the inflammation and pain. In neuritis in certain areas care must be taken to give a sufficient amount of treatment, for the penetration must be deeper in some parts than in others. Heat is only one mode of treatment, as frequently a neuritic condition is part of an arthritis. Electrical treatment, principally in the form of diathermy, may be more efficacious. In cases of toxic infectious multiple neuritis, heat is applied to the extremities by attaching electric light bulbs to the central pole of a cradle placed over the patient. In these cases any degree of heat may be used that is desired and most patients find it very comfortable. The cradle serves the additional purpose of keeping the bedclothes off the patient's sensitive limbs. This form of heat therapy may also be used for a neuritis or vascular disorder localized to one limb and, by continuous application, may afford a progressive relief from the painful symptoms.

In certain vascular diseases of the limbs, such as erythromelalgia, Raynaud's disease, thrombo-angitis obliterans, thrombophlebitis and endarteritis obliterans, dry heat applied to the diseased parts more or less constantly over a period of days causes an alleviation of the symptoms of pain. It is not a cure but is used mainly for the relief of pain and for improvement of

the circulation. The modern operation of sympathectomy offers much more hope of permanent relief in certain types of cases.

Even in chronic diseases of the nervous system, such as hemiplegia or lateral sclerosis, when the limbs are spastic, heat will decrease the spasms and contractures, at least for a time and will moderate other symptoms. In chorea of the acute variety, provided no heart disease exists, any method of applying heat generally will be found to produce remarkably sedative results. Most frequently the continuous tub is employed, but only for an hour or two at a time.

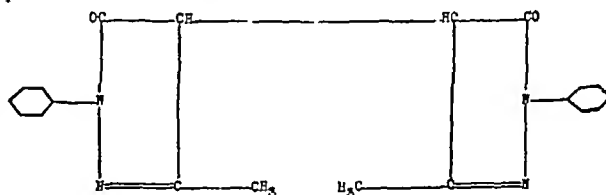
Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH, Secretary

ROSSIUM NOT ACCEPTABLE FOR N. N. R.

Rossum, which is stated to be Di-phenylmethyl-pyrazolonyl, was presented for the Council's consideration by the Medico Chemical Corporation of America. The following structural formula was presented as representing the composition of the product:



The product is marketed in capsule form and is advertised for use in the treatment of drug addiction.

With the information concerning the product, the firm submitted the following material:

1 A typewritten copy of a paper by Dr. Ivan I. Ostromis lensky, entitled "Morphinism and Anaphylactic Shock," which appears to have been read at the meeting of the Russian Medical Society of New York, Nov. 25, 1931.

2 A discussion of the chemistry of Rossum, to which is attached a statement, a part of which will be quoted.

3 A Preliminary Report having the title "Rossum," and a subtitle "A New Therapy for Drug Addiction Morphinism Heroinism-Codemism-etc."

4 (a) Several tables showing the activity of Rossum and of insulin in antagonizing the effects of an antigen in guinea pigs. (b) A similar study with forty-one other preparations.

In the absence of any satisfactory evidence in support of the therapeutic claims made for Rossum, this report will present only so much as may be necessary to give a true indication of the claims made for it. The following is taken from Ostromis lensky's paper on "Morphinism and Anaphylactic Shock."

"The theory is that when morphine preparations are injected daily in man for a sufficient length of time there appears in the blood a new kind of protein—an auto-protein which acquires the properties of an antigen. Although formed in the body this protein acts on the organism in the same manner as a foreign protein causing the formation of a specific antibody. The quantity of the specific auto-antigen circulating in the system of morphine addicts gradually increases. Therefore as a rule, a morphine addict requires a gradual increase of his daily dose of the drug. The basic premises and conclusions of this theory may be formulated as follows:

1 The symptom-complex appearing in morphine addicts at the withdrawal of the drug should be considered as the symptom-complex of the anaphylactic shock.

2 An individual who takes morphine daily in about three weeks usually becomes an addict supposedly at the time when the corresponding specific antibody is formed in his system.

3 The addict's imperative need of morphine can be explained through the ability of morphine to prevent the possibility of chemical reaction between the antigen and its antibody. To avoid the anaphylactic shock,

hence prevent withdrawal symptoms one must replace the morphine by a chemical substitute preventing the combination between antigen and antibody

4 A morphine addict who has stopped taking morphine continues for a long time to be a carrier of the specific antibody. Hence, he may be said to remain in a state of potential addiction for an indefinite length of time. Subsequently, on the very first injection of a quite insignificant dose of morphine, if the antibody still exists there appears again in the system of the addict a specific autoantigen which provokes the inevitable relapse

5 At any given period of the disease, a definite quantity of the antigen is circulating in the system of morphine addicts. Therefore at any given period of the disease an addict always requires a definite and precise quantity of morphine which suffices to neutralize all of the auto-antigen present in the system"

The following statement is attached to the second communication, "The Chemistry of Rossium"

"Clinical studies of this preparation have been conducted from 1931 to 1934 particularly at Blythwood Sanatorium Greenwich Connecticut Stony Lodge Ossining New York St Michael's Hospital Newark New Jersey, and Towns Hospital, New York City

"Clinical observations show that Rossium checks the most severe symptoms of withdrawal in drug addicts (Morphinism Heroinism Codeinism etc) and markedly decreases all other symptoms

"The following physicians are amongst those who have had an opportunity to administer Rossium in the cases mentioned

"Dr Alexander Lambert, 43 East 72nd St. New York City

Dr P R Vesic, % Stony Lodge Sanitarium Ossining, N Y

Dr Silkworth % Towns Hospital 292 Central Park West New York.

"Prof Dr Ostromislensky 256 West 116th St. New York

Dr M W Openchowski together with Dr W J Donahue 324 Parker St. Newark and City Hospital as well as St. Michael's Hospital Newark.

Dr N N Harin 324 Parker St Newark, N J

The Council's secretary wrote to Dr Lambert calling his attention to the fact that his name was being used in connection with Rossium. Dr Lambert replied

I have your letter of recent date regarding my name in the use of Rossium

I did not give permission for any such use of it as you mention that is entirely reprehensible, and I have so written to the Medico Chemical Corporation of America

I have been clinically trying Rossium to alleviate the withdrawal symptoms of morphinism. This it does exceedingly well but this is not the eradication of the morphine habit which is quite another story

Thank you for drawing my attention to this otherwise I should not have heard of it

The letter of the Council's secretary, to which this was a reply, read as follows

"We are receiving many inquiries from state hospitals health commissioners, etc concerning letters sent out by the Medico Chemical Corporation of America on behalf of Rossium. Paragraphs appear in these letters somewhat as follows

We wrote you that DR ALEXANDER LAMBERT of New York is using this drug with great success and we now have other clinical data to substantiate our claims. Animal experimentation as well as clinical experiments with humans have proven the non-toxicity of this drug which incidentally is non-habit forming

It seemed advisable for this office to obtain from you a statement as to whether or not your name is being used in this connection with your permission. Your name is always capitalized whereas no other part of the paragraph is so emphasized

In the presentation submitted by the firm (which accompanied the firm's letter of Oct. 29, 1934), the following statement occurs under "Therapeutic Indications"

Drug addiction disease (Morphinism Heroinism etc.) Rossium checks the most severe symptoms of withdrawal in drug addicts and markedly decreases all other symptoms. In cases of cocaine addiction Rossium is inactive

The tables submitted by the firm support the statement that Rossium prevents the symptoms of anaphylactic shock in guinea-pigs previously treated with an antigen, and according to the theory of Ostromislensky this must be true if it is valuable in reducing withdrawal symptoms (anaphylactic shock) in addicts

A physician in charge of the allergy laboratory in a large hospital informed the Council's referee that he knew of nothing to support the theory that when morphine is injected, an auto-protein having the properties of an antigen appears in the blood of man.

The Council cannot accept the fifth statement in the theory of Ostromislensky that at any given period of the disease [morphinism] a definite quantity of the antigen circulates, requiring a definite and precise quantity of morphine to neu-

tralize all of the auto-antigen present in the system, because it is well known that morphine addicts who take excessive daily amounts of morphine (up to 30 grains or more daily), may have the daily dose reduced rapidly without serious inconvenience, until only a very small fraction of the customary dose is taken daily

Rossium has been known for three years, and has been used in a number of hospitals and by a number of physicians, but no convincing therapeutic evidence in support of the claims has been submitted, it must be remembered that therapeutic evidence means more than unsupported statements. Furthermore, the directions for the use of Rossium include the use of hypnotics and other sedatives such as are commonly used in the treatment of the withdrawal symptoms. Finally, the studies of toxicity are wholly inadequate, and the Council is not convinced that the doses recommended are always harmless.

In the absence of convincing evidence concerning the therapeutic value of Rossium, the Council, without further consideration of its name, chemical properties, pharmacology, etc., declared the product unacceptable for inclusion in New and Nonofficial Remedies

A statement of the Council's consideration was transmitted to the Medico Chemical Corporation of America in conformance with the Council's custom of giving a firm the opportunity to comment on the report before publication. The firm's reply contained nothing to change the attitude of the Council with regard to acceptance of Rossium, and the firm was so informed. The firm subsequently submitted a further reply which likewise contained nothing to warrant a change in the Council's action. In its letter the firm made the following statement

We are well aware of the fact that we are not precluded from presenting additional evidence to the Council and then get the desired admission but wish to direct the attention of the Council to the fact that the mere publication of the above conclusion of the Council under the above circumstances may cause this applicant unreparable damages and greatly handicap the development of its business without any fault what soever on its part

It thus admits that additional evidence is necessary. The Council desires to point out that its duty is first to the physician and to the public. It would be remiss were it not to inform physicians concerning the status of a preparation which is being actively exploited, for which there is not sufficient evidence to justify claims made, and in the use of which there is the possibility of as yet unknown untoward effects

Subsequently the firm presented a paper entitled 'Preliminary Clinical Report—ROSSIUM, A New Treatment for Drug Addiction' by Herman E Bauer, M.D. The Council found that this study, which was conducted without careful control, offered no reason for changing its decision to publish the foregoing statement.

In connection with the matter of control evidence for preparations of this sort the Council recalls that two highly qualified men reported that Narcosan was of great value in the treatment of morphine addiction (*M J & Rec* 124 764 [Dec. 15] 1926). They reported on the treatment of 219 men and 147 women, a total of 366 patients in a special ward. Nevertheless within a little more than two years, the Mayor's Committee of New York on Drug Addiction, reported that Narcosan treatment was given to sixty-eight patients, that the results were clear-cut, that there was a greater occurrence and intensity of all the symptoms mentioned in those treated with Narcosan, that there was more marked restlessness and muscular twitching and particularly a greater intensity in vomiting, diarrhea, cramps, and in general prostration. In short, symptoms occurring in patients receiving Narcosan were more severe than in those not receiving Narcosan, and there was no advantage shown in recuperation after the withdrawal period of those receiving Narcosan.

That record could be duplicated in essentials with reference to many so-called cures for morphine addiction, and the Council cannot accept any study in which careful controls are not conducted, and it cannot accept a study of a small number of cases, even with satisfactory controls

The Council authorized publication of this report declaring Rossium unacceptable for New and Nonofficial Remedies

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION



RAYMOND HERTWIG Secretary

CELLU SLICED PINEAPPLE PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Hawaiian Pineapple Company, Ltd, San Francisco

Description—Canned cooked sliced Hawaiian pineapple packed in water without added sugar or salt.

Manufacture—The method of manufacture is essentially the same as for Doles 1, 2 and 3 Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, page 1106), with the exception that the fruit is packed in water

Analysis (submitted by distributor) —

	per cent
Moisture	86.5
Total solids	13.5
Ash	0.4
Fat (ether extract)	0.1
Protein (N × 6.25)	0.3
Total sugar as invert sugar	10.8
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	11.5
Titratable acidity as citric acid	0.9
pH	3.4

Calories—0.5 per gram 14 per ounce

Claims of Distributor—For diets in which sweetened fruit is proscribed

COFLO—McMATH PROCESS PARTIALLY DEFATTED COOKED COTTONSEED FLOUR

Manufacturer—Traders Oil Mill Company, Fort Worth, Texas

Description—Partially defatted, cooked, pulverized, dehulled cottonseed

Manufacture—Selected cottonseed obtained from the cotton gins is further delinted and hulled. The decorticated seeds are pulverized and are cooked in a definite quantity of water for from seventy to ninety minutes in steam jacketed cookers. During the last ten minutes the moisture level is reduced to 12 per cent. The temperature during the first fifteen minutes is rapidly raised to 102 C. and subsequently gradually to 108 C. The cooked material is defatted in hydraulic presses to about 9 per cent fat content, the resulting cake is ground and the flour separated by air flotation.

The temperature and moisture are controlled in the manufacturing process to convert the gossypol content to a nontoxic form.

Analysis (submitted by manufacturer) —

	per cent
Moisture	5.5
Ash	6.0
Fat (ether extract)	9.4
Protein (N × 6.25)	50.0
Crude fiber	2.1
Carbohydrates other than crude fiber (by difference)	26.0

Calories—3.9 per gram 111 per ounce

Vitamins—Biologic assay shows the flour to be a good source of vitamin B

Differences Between Gossypol from Raw and Processed Cottonseed Flours and Nontoxicity of Gossypol of Processed Cottonseed—

1 Absorption spectrum readings taken across the visible part of the spectrum of recrystallized dianiline gossypol prepared

from the ethyl ether extract of the raw and processed cotton seed flours are distinctly different and individual

2 Recrystallized dianiline gossypol prepared from raw cottonseed flour is readily distinguishable crystallographically from that prepared from the processed cottonseed flour

3 Feeding tests with guinea-pigs and white rats show that the processing inactivates any toxic materials that may be present in the raw cottonseed

4 Clinical tests in which twenty-five nurses and two doctors in a hospital were fed 60, 30 and 20 Gm daily for eight weeks showed that the processed cottonseed flour was well tolerated with no untoward effects

Claims of Manufacturer—Rich in high quality protein, and a good source of vitamin B. Free from toxic form of gossypol.

LULLABY

Distributor—Milk Foods, Inc., San Francisco

Manufacturer—Golden State Co., Ltd., Newman, Calif

Description—Sterilized, concentrated, homogenized mixture of milk, cream, dextrose and lactose

Manufacture—Milk and cream from state accredited dairies are mixed in definite proportions and heated. Lactose and dextrose are added in definite quantities. The mixture is pasteurized at 88 C., concentrated under vacuum to the desired percentage of solids, homogenized, cooled, automatically canned and processed to sterility at 117 C.

Analysis (submitted by distributor) —

	per cent
Moisture	62.1
Total solids	37.9
Ash	1.1
Fat (ether extract)	10.5
Protein (N × 6.38)	5.2
Carbohydrates (by difference)	21.1
pH	6.4

Calories—2.0 per gram 57 per ounce.

Claims of Distributor—A liquid food for infants deprived of breast milk, to be fed under the direction of a physician. Diluted with two volumes of water, it resembles human milk in percentages of fat, protein, carbohydrate and total minerals (ash)

CHIPPEWA FREE RUNNING SALT

Manufacturer—The Ohio Salt Company, Wadsworth, Ohio.

Description—Table salt containing added magnesium carbonate (1 per cent)

Manufacture—Salt brine is treated with sodium carbonate largely to precipitate out calcium and magnesium salts. Insoluble matter is allowed to settle out, the brine is filtered and is evaporated under vacuum, and the crystallized salt is separated, dried, screened, admixed with magnesium carbonate (1 per cent by weight) and automatically packed.

Analysis (submitted by manufacturer) —

	per cent
Moisture	trace
Calcium sulphate	0.8
Calcium chloride	0.06
Magnesium carbonate	1.0
Sodium chloride (by difference)	98.1

Claims of Manufacturer—For all table and cooking uses. The added magnesium carbonate tends to preserve 'free running' qualities.

(1) COLONIAL WHEAT BREAD

(2) COLONIAL WHEAT BREAD AND WHITE BREAD, SLICED

MADE OF WHOLE WHEAT FLOUR AND WHITE FLOUR

Manufacturer—Colonial Baking Company, Cedar Rapids and Des Moines, Iowa

Description—(1) Sliced and unsliced wheat bread made by the sponge dough method (method described in THE JOURNAL, March 5 1932, p. 817) prepared from water, whole wheat flour, flour, sucrose, powdered skim milk, yeast, salt, lard and a yeast food containing calcium acid phosphate, ammonium sulphate, sodium chloride, potassium bromate, potassium iodate, corn starch and malt. (2) Combination package of Colonial White Bread and Colonial Wheat Bread, sliced

JUNKET POWDER CARAMEL FLAVOR

Manufacturer—Chr Hansen's Laboratory, Inc., Little Falls, N Y

Description—Dessert powder containing sugar, caramel, calcium glycerophosphate, vegetable gum, true maple concentrate, and the Junket enzyme.

Manufacture—The method of preparation is the same as described for Junket Tablets (Not Sweetened or Flavored) and Junket Powder (With Sugar and Flavor) Vanilla, Chocolate, Lemon, Orange, Raspberry and Coffee Flavors (THE JOURNAL, Sept. 30, 1933, p 1076)

Analysis (submitted by manufacturer) —

	per cent
Moisture	0.5
Ash	2.0
Fat (ether extract)	0.1
Protein (N X 6.25)	0.1
Sucrose	96.8

Calories—3.9 per gram 111 per ounce

RELIANCE COFFEE

Manufacturer—Reliance Pure Foods, subsidiary of National Grocery Company, Seattle, Wash

Description—Coarse ground roasted coffee.

Manufacture—Green American, Hawaiian and African coffees are cleaned, blended, roasted under automatic heat control, chilled, ground, and mechanically packed in glass jars, which are sealed under "vacuum"

Analysis (submitted by manufacturer) —

	per cent
Moisture	3.6
Soluble solids	21.5
Ash	3.6
Petroleum ether extract	15.6
Total nitrogen	2.1
Reducing sugars as invert sugar	0.5
Sucrose (copper reduction method)	1.4
Caffeine	1.4
Crude fiber	15.9
Total acidity	4 cc. 0.1 N alkali per gram of coffee

Claims of Manufacturer—Sealed in "vacuum" to retain freshness and flavor

- (a) GRIDLEY FAST FROZEN VANILLA ICE CREAM
- (b) GRIDLEY FAST FROZEN CHERRY ICE CREAM
- (c) GRIDLEY FAST FROZEN MAPLE NUT ICE CREAM
- (d) GRIDLEY FAST FROZEN MINT ICE CREAM
- (e) GRIDLEY FAST FROZEN PEACH ICE CREAM
- (f) GRIDLEY FAST FROZEN PISTACHIO NUT ICE CREAM
(ADDED ALMOND FLAVOR)
- (g) GRIDLEY FAST FROZEN STRAWBERRY ICE CREAM

Manufacturer—Gridley Dairy Company, Inc., Milwaukee

Description—(a) Prepared from a pasteurized homogenized mixture of evaporated milk, sweet cream (26 per cent), sucrose, egg yolk, vanilla extract and gelatin. Contains not less than 13 per cent milk fat

(b) Same as (a) with added cherries and sugar

(c) Same as (a) with added maple syrup and pecan nuts

(d) Same as (a) with added mint emulsion prepared from U S P oil of peppermint glycerin and U S Department of Agriculture certified color

(e) Same as (a) with added fresh peaches and sugar

(f) Same as (a) with added pistachio nuts, almond extract and U S Department of Agriculture certified color

(g) Same as (a) with added frozen strawberries, sugar and U S Department of Agriculture certified color

Manufacture—Formula quantities of the ingredients of the basic ice cream are mixed pasteurized by the holding method

at 66 C for thirty minutes, homogenized, cooled to 4 C., stored in brine-jacketed glass-lined storage tanks and held at 0 C. After twenty-four hours the mix is drawn into ice cream freezers, frozen at -6 C. and automatically packaged. The packaged ice cream is hardened at from -34 to -45 C

Brick ice cream is automatically packed in waxed paper, bulk ice cream in cleaned cans. The ice cream is transported in refrigerated trucks (-16 to -21 C)

The various types of ice cream are prepared by adding appropriate flavors, fruits, nuts, etc., in definite proportions to the basic ice cream mix.

Analysis (submitted by manufacturer) —

Vanilla Ice Cream	per cent
Moisture	60.0
Total solids	40.0
Ash	0.9
Fat	13.9
Protein (N X 6.38)	3.9
Carbohydrates by difference (essentially lactose and sucrose)	21.3
Maple Nut Ice Cream	per cent of fat
Mint Ice Cream	13.4
Pistachio Nut Ice Cream	13.5
Strawberry Ice Cream	13.6
	11.4

Calories—2.3 per gram 65 per ounce

NUTRIVOID FLOUR

Manufacturer—Nutrivo Products Sales Company, Jersey City

Description—Powdered selected white portions of ivory nut (Phytelphas macrocarpa)

Manufacture—Selected white portions of the ivory nut are ground to a flour, screened, and packed in cans

Analysis (submitted by manufacturer) —

	per cent
Moisture	8.2
Ash	1.2
Fat (ether extraction method)	0.9
Protein (N X 6.25)	4.3
Crude fiber	6.4
Unavailable carbohydrates other than crude fiber (by difference) (essentially mannan 92.5 per cent and pentosans 2.5 per cent* starch and dextrins absent*)	79.0

* Journal of Agricultural Research 7:301 1916

Calories—0.3 per gram 9 per ounce

Claims of Manufacturer—A special purpose food for diets restricted in dextrose formers yielding 17 Gm. of dextrose per hundred cubic centimeters. Contains little food value. High in indigestible material

CELLU JUICE-PAK STRAWBERRIES

PACKED IN UNDILUTED JUICE WITHOUT ADDED SUGAR

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Eugene Fruit Growers Association, Eugene, Ore

Description—Processed stemmed strawberries, packed in undiluted juice without added sugar

Manufacture—Ripe strawberries are placed in small containers to prevent crushing, conveyed to the factory, stemmed, graded according to size, inspected for removal of foreign material, spray washed, packed into cans and covered over with undiluted juice expressed from other strawberries. The treatment thereafter is essentially the same as for Cellu Juice-Pak Red Raspberries (THE JOURNAL, May 4, 1935, p 1606)

Analysis (submitted by distributor) —

	per cent
Moisture	89.8
Ash	0.4
Fat (ether extract)	0.8
Protein (N X 6.25)	1.0
Reducing sugars as invert sugar	5.9
Sucrose	1.2
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	7.1

Calories—0.4 per gram 11 per ounce

Claims of Distributor—Packed in undiluted strawberry juice without added sugar

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 7, 1935

SPECIFICITY OF STAPHYLOCOCCI

In view of the frequency of acute and chronic staphylococcal infections and the promising results of specific therapy, the recent work of Julianelle and Wiegand¹ is significant. In the first of their series of studies the occurrence of serologic types of staphylococci was investigated. The agglutination reaction, they found, presents an uncertain and inconclusive method for distinguishing immunologic types among the staphylococci. In the determination of immunologic specificity of other bacteria, this property is frequently associated with the polysaccharide fraction of the cell, therefore a similar method was tried with the staphylococci. Precipitation tests were made with a number of purified carbohydrates derived from different strains of staphylococcus. On the basis of precipitation of the purified carbohydrates in antibacterial serums, staphylococci are sharply separable into two distinct types. Nine, isolated from different human infections and therefore considered virulent, fell into one type designated A, and the remaining seven, all isolated from nonpyogenic sources and therefore regarded as avirulent, fell into the second type, called B. While the carbohydrates of type A and type B staphylococcus are precipitated in homologous immune serums, they do not precipitate in antipneumococcus types I, II or III serums or anti-Friedländer types A, B or C serums or in antityphoid serum. It is obvious, therefore, that the carbohydrates are genuinely specific of staphylococcus. It was found possible, furthermore, to employ crude extracts of the bacteria for typing purposes in order to avoid the slow and laborious method of obtaining the relatively purified carbohydrate.

Also the chemical nature of the soluble specific substances was investigated. Chemical differences between type A and type B carbohydrates (probably not chemically pure) were demonstrated. The specific optical rotation of type A was +67, as compared with +69.4

for type B. Following hydrolysis, type A yielded 26.1 per cent reducing sugars, of which 17.8 per cent was fermentable and 24.32 per cent was nonfermentable. Type B, on the other hand, yielded 38.84 per cent reducing sugars, of which 35.01 per cent was fermentable and 3.87 per cent was nonfermentable. Moreover, the simple sugar of type B seems to be dextrose, while that of type A remained undetermined but suggests, because of its crystalline formation, a different structure. The immunologic specificity of both polysaccharides is dissipated as hydrolysis proceeds.

In the final paper of this group the authors studied the interrelationships of the cell constituents. A study of the antigenicity of the polysaccharides of staphylococcus indicated that, in the condition originally used, they possessed no antigenic properties if the failure to stimulate agglutinins or precipitins in rabbits is accepted as a measure of antigenicity. Acetylation or adsorption of the carbohydrates on colloidal particles does not render them antigenic. They may be employed, however, to elicit immediate, type specific skin reactions in patients with staphylococcal infection. In contrast, the protein constituent does evoke an antibody response in rabbits. In hypersensitive persons the protein causes a species specific, delayed, inflammatory skin reaction.

The fundamental investigations reported should find an almost immediate practical application in the use of staphylococcus toxoid in clinical staphylococcal infections. The further usefulness is not yet clear but should be manifold.

PRIMARY CARCINOMA OF THE LUNG

The recent literature abounds with references to carcinoma of the lung. Although there is only one reference under the subject of lung cancer in volume 5 (1920) of the *Quarterly Cumulative Index*, there are forty-one in volume 16 (1934). The increasing interest is due to the alleged rising incidence of cancer of the lung and to improvement in surgical technique, which offers a cure of the disease in its early stages. To determine the characteristics and malignant potentialities of different types of carcinoma of the lung, Olson¹ studied sixty-nine cases at the Mallory Institute of Pathology at the Boston City Hospital and classified them on the basis of the microscopic morphology. Investigators have not followed a uniform method in the classification of lung cancers. The older writers divided their cases into tumors arising (a) from the epithelium lining the bronchi, (b) from the epithelium that is said to line the pulmonary alveoli, and (c) from the epithelial cells that form the mucous glands. The more recent writers have suggested a classification of these tumors from a histologic point of view. In 1912 Adler² stated that most lung carcinomas were bron-

1 Julianelle L. A. and Wiegand C. W. The Immunologic Specificity of Staphylococci. I. The Occurrence of Serologic Types. *J. Exper. Med.* 62:11 (July 1) 1935. Wiegand C. W. and Julianelle L. A. II. The Chemical Nature of the Soluble Specific Substances. *ibid.* p. 23. Julianelle L. A. and Wiegand C. W. III. Interrelationships of Cell Constituents. p. 31.

1 Olson K. B. Primary Carcinoma of the Lung. *A Pathological Study.* *Am. J. Path.* 11:449 (May) 1935.
2 Adler Isaac. Primary Malignant Growths of the Lungs and Bronchi. New York: Longmans Green & Co. 1912.

chogenic in origin. Fried³ reviewed the subject recently, concluding that all primary lung carcinomas originate from the mucous membrane lining the bronchi. Olson likewise believes that if nonbronchiogenic carcinomas of the lung exist they are rare. He classified histologically into three main groups the sixty-nine cases that came to necropsy: squamous cell carcinomas, adenocarcinomas and undifferentiated carcinomas. The squamous cell carcinomas comprised 42 per cent of the cases, and 28 per cent of them showed the characteristic epithelial "pearl" formation. These tumors were single, gray or white solid masses in 75 per cent of the cases. Multiple masses in one lung were found in only 8 per cent. Areas of tumor necrosis were relatively infrequent. The adenocarcinomas comprised 24 per cent of the entire series. Their chief distinguishing feature was the secretion of mucus and their resemblance to bronchial mucous glands. Since more than half of them showed definite secretory function, this group was subdivided into mucinous and nonmucinous adenocarcinomas. The resemblance of the mucinous type of adenocarcinoma to bronchial mucous glands, and the presence of a mucoid secretion in the alveoli, mark them as a characteristic lung carcinoma. Careful search in the adenocarcinomas nearly always revealed scattered cells in secretory phases, and their metastases in the majority of instances showed mucinous secretion. Grossly, the adenocarcinomas usually appeared as gray, firm, scirrhous tumors with scattered areas of softer yellowish tissue showing visible mucus. Necrosis was uncommon in this group of tumors.

The undifferentiated group of lung cancers was composed of "small cell" tumors, which in the past were often called sarcomas. They have been shown recently by several investigators to be really carcinomas. Of the total series of sixty-nine cases, 33 per cent were of the undifferentiated small cell type. The primary tumor in this group was a mass at the hilus in 65 per cent of the cases, while a secondary or primary bronchus was involved or occluded in 100 per cent. Only 43 per cent of them could be localized by lobes. The entire left lung was infiltrated in 9 per cent and the entire right lung in 4 per cent. The primary bronchi were involved in more than twice as many cases as in either of the other two types of tumors. Grossly, the undifferentiated carcinomas varied from a soft pink mass to hemorrhagic, necrotic and sometimes caseous masses. Necrosis and hemorrhage were prominent in this group.

Metastases from carcinoma of the lung have been reported in practically every part of the body. Among sixty-seven cases in which the body was examined, Olson found somatic metastases in 92 per cent involving forty-five locations in the following order of frequency: the regional nodes, liver, adrenals, vertebrae, kidneys, retroperitoneal nodes, mesenteric nodes and

cervical nodes, opposite lung, mediastinal nodes and stomach. The undifferentiated small-cell type of tumor showed the most vigorous tendency to metastasize. In view of the relatively high incidence of lung cancer reported among the Schneeberg miners, it is interesting that in the Boston series pneumoconiosis was found in only 29 per cent of the cases. It appears that, in the general population, pneumoconiosis is not an important factor in the production of carcinoma of the lung.

PERPLEXING FEVERS

Immense progress in the understanding of fevers has been made since Galen divided fevers into three main groups: ephemeral, putrid and hectic.¹ While similar meaningless classifications of febrile disturbances appear throughout the writings of later medical men, the number and types of unexplained fevers have been enormously reduced by modern research. Pyrexia of unknown origin may be today the only available diagnosis in some obscure cases, but that cannot excuse its hasty adoption in any case.

Alt and Barker² investigated the subsequent histories and fate of 173 patients diagnosed over a period of years at the Peter Bent Brigham Hospital as having unexplained fevers. Of the 101 cases in which follow-up information was obtained, there were seventy-eight in which the cause of fever was never determined. In the majority of these, however, the fever was of less than ten days' duration. In twenty-three a pathologic condition that could account for the fever was later discovered. Tuberculosis, rheumatic infection, malignant disease and sepsis were encountered most frequently in this group.

In 1934 Kintner and Rowntree³ reported an analysis of 100 cases of long continued, low grade idiopathic fever. This group, like that of Alt and Barker, included more females than males. They believed that the basis for designating this type of fever as neurogenic or psychogenic was insufficient. Neurotic manifestations, however, were pronounced in at least 25 per cent of the cases. Focal infection was present in 35 per cent and its removal, though often individually helpful, did not much increase the percentage of recoveries. Ultimate discovery of the cause of fever in this group usually was conspicuously lacking.

Douthwaite⁴ recently suggested a broad classification of perplexing fevers. His first group is the endocrine in which the thyroid is the only member that at all frequently gives rise to slight but persistent pyrexia without obvious signs. In the fevers of toxic origin he includes degenerating new growths, cardiac infarctions, alcoholic hepatitis and certain drugs taken to reduce

3. Fried, B. M. Primary Carcinoma of the Lung. *Medicine* 10: 775 (Dec.) 1931.

1. Garrison, F. H. *History of Medicine*, ed. 4, Philadelphia: W. B. Saunders Company, 1929, p. 114.

2. Alt, H. L., and Barker, M. H. Fever of Unknown Origin. *J. A. M. A.* 94: 1457 (May 10) 1930.

3. Kintner, A. R., and Rowntree, L. G. Long Continued Low Grade Idiopathic Fever. *J. A. M. A.* 102: 889 (March 24) 1934.

4. Douthwaite, A. H. Pyrexia of Obscure Origin. *Lancet* 1: 1320 (June 8) 1935.

weight The third group comprises fevers of psychic origin He believes that the majority of these are fictitious, although some may be legitimate in nervous persons and especially in children As is well known, the tricks for the production of pyrexia by malingerers are legion Douthwaite's fourth group, the largest, includes the fevers of microbial origin, which agrees with the observations of Alt and Barker He places infective endocarditis, staphylococcic infections, food infections and tuberculosis especially high

Both Douthwaite⁴ and Wilson⁵ stress the importance of obtaining accurate and painstaking histories in attempting to detect the cause of obscure fevers The leukocyte count and a rectal examination may often lead to clarification Wilson adds the agglutination test for undulant fever and, on occasion, roentgen examination of the sinuses To these diagnostic procedures might be added the need for continued observation of those patients in whom all available measures fail to produce the diagnosis Greater care in the use of methods now available should lead to a further reduction in the percentage of fevers of unknown origin

Current Comment

ORAL IMMUNIZATION TO COLDS

For the last two winters, investigators have been studying the efficacy of an orally administered heterophile antigen vaccine in reducing the incidence of the common cold¹ The strains of common respiratory organisms used in the vaccine were selected for heterophile content and ability to resist the effects of gastrointestinal secretions The bacterial cultures were sterilized and the bacteria separated, absorbed on starch, dried and finally placed in capsules The organisms contained in each capsule were pneumococci, 25 billion, Hemophilus influenzae, 5 billion, streptococci, 15 billion, and Micrococcus catarrhalis, 5 billion The capsules were administered on an empty stomach daily during the first week and thereafter once or twice a week during the season The effectiveness seems to have been judged by the average number of colds occurring in the vaccinated group when compared with their average during the preceding three years and with "controls" not taking the vaccine In the winter of 1933-1934, 1,036 persons were included in the experiment, of which number 500 were given the vaccine In the succeeding winter 445 were given the vaccine and 469 others served as "controls" The statistics of the second year showed a decrease of 70 per cent in the average number of colds in the vaccinated group as compared with a decrease of 26.3 per cent in the "control" group Aside from the theoretical objections to oral vaccination for colds, many of which are obvious, there are some specific reasons against the acceptance of this

work as adequately controlled For example, the group taken as controls had, in all instances previous to the experiment, a lower average number of colds per season than the vaccinated group This factor alone does much to invalidate the control group Furthermore, in view of the known factors of age, exposure and tremendous variation in colds from season to season and in different locations, any yearly variation in cold morbidity in one location or in small groups is of small utility as scientific evidence The reports of the therapeutic value of orally administered "cold" vaccines are hardly convincing

DANGERS OF SLIMMING

Repeatedly and emphatically THE JOURNAL has published statements relative to extraordinary hazards involved in the sudden reduction of weight, occasionally described as banting, slimming, thinning, slenderization and in other ways From the time when dinitrophenol was first proposed as a product with specific favorable attributes for this purpose, THE JOURNAL warned against its uncontrolled use This was particularly the case because the product itself is not standardized and because there was hardly sufficient evidence available in the way of long continued study to say what the ultimate effects of the drug might be Now it appears that one of the ultimate and disastrous effects is in some persons rapidly developing cataracts Recently the occurrence of such cases was for the first time announced in THE JOURNAL² and in this issue several additional cases are reported Readers will remember records in relationship to the introduction of cinchophen, tetra-ethyl lead, carbon tetrachloride and carbon disulphide as well as many other products used in medicine and in industry in which only long continued observation permitted any final conclusion as to both the virtues and the hazards of the drug concerned Now comes evidence from many places that in certain instances the long continued use of dinitrophenol is followed by the development of cataract In occasional cases there are sensitizations which result in eruptions that may be dangerous to life and there are also records of granulocytopenia after taking this drug The Food and Drug Administration points out that dinitrophenol now forms the basis of a half dozen or more "patent medicines," including one called "Slim," which has been confiscated under the Food and Drugs Act, as well as others called Nitromet, Dimitrolac, Nitra-Phen, Dimitriso, Formula 281, Dimitrose, Nov Ben-01, Re-Du, Aldinol, Dimitronal, Prescription No 17, Dinitrole, Tabolin and Redusols In calling attention to these products Mr W G Campbell, chief of the Federal Food and Drug Administration, says "It is interesting to note that all the so-called reducing preparations on the market fall into three categories first, laxatives that deny the body the benefit of its food intake, as the salts, crystals and herb teas, second, obvious frauds that depend for effect upon the stringent diets prescribed as part of the 'treatment,' as

⁵ Wilson C M Fever Without Signs Lancet 2:874 (Oct 17) 1931

¹ Rockwell G E Van Kirk H C and Powell H M Oral Immunization to Colds J Immunol 28:475 (June) 1935 Further Studies on Oral Immunization to Colds Science 82:177 (Aug 23) 1935

² Boardman W W Rapidly Developing Cataract After Dinitrophenol J A M A 105:108 (July 13) 1935 Horner W D Jones R B and Boardman W W Cataracts Following the Use of Dinitrophenol ibid p 108

'Syl-Vette' and 'Stardom's Hollywood Diet', and third, the unquestionably effective but dangerous articles containing thyroid or dinitrophenol, both of which act by speeding up the utilization of food. All of them are unwarranted impositions upon the public, which cannot evaluate claims made for the preparations and cannot readily appreciate the harm that may result from careless use of the products." His pronouncement is well warranted by the evidence available. For the benefit of the American people, it should be widely circulated through every means of dissemination of information to the public.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Plague-Infected Ground Squirrels—According to *Public Health Reports* the director of public health of California reported positive findings for plague in thirty ground squirrels and four wood rats found in Modoc County and received at the laboratory May 8, June 1 and June 13 to 16. The squirrels were found on ranches near Alturas and the wood rats on a ranch near Likely. Eight ground squirrels from the Alturas vicinity received at the laboratory June 17 and one on the 21st were also found positive for plague.

COLORADO

Graduate Course in Ophthalmology and Otolaryngology—The thirteenth annual summer graduate course in ophthalmology and otolaryngology was held in Denver July 15-27, under the auspices of the Colorado ophthalmologic and otolaryngologic societies. Physicians giving lectures were:

Hans Barkan, San Francisco, Industrial Accidents;
John Milton Griscom, Philadelphia, External Diseases of the Eye;
Phillips Thygeson, Iowa City, Bacteriology of the Eye;
Edward Jackson, Denver, Causes and Management of Myopia, The Pupil in Vision;
William C. Bane, Denver, Photography of the Eye for Case Record Purposes;
Melville Black, Denver, Ocular Therapeutics;
Donald H. O'Rourke, Denver, Clinical Aspects of Glaucoma;
Ralph W. Danielson, Denver, Recent Advances in Illumination Relative to Visual Comfort and Acuity;
Samuel Iglauer, Cincinnati, Anatomy of the Neck;
Mervin C. Myerson, New York, Suppuration of the Petrona Pyramid;
Robert Levy, Denver, Laryngeal Tuberculosis;
Thomas E. Carmody, Denver, Malignancy of the Mouth and Face;
Frank R. Spencer, Boulder, Recent Advances in Otolaryngology;
George L. Patter, Denver, Diagnosis of Chronic Maxillary Sinusitis;
Herman I. Laff, Denver, Pathologic Demonstration Cases of Post-auricular Sinusitis;
Harold L. Hickey, Denver, Management of Otic Blood Stream Infections;
Cecil H. Darrow, Denver, Practical Considerations in Peroral Endoscopy;
Harry L. Baum, Denver, Specific Convalescent Serum Treatment in Otolaryngology.

GEORGIA

Annual Registration of Licentiatees of State Examining Boards—The joint secretary, state examining boards, will mail about September 1, to all licentiatees of the state board of medical examiners and of other Georgia state examining boards blanks to enable them to comply with the law requiring annual registration. No fees attach to such registration. Physicians will do well to execute the blanks furnished and to return them to the joint secretary as promptly as possible.

Tuberculosis Work Increasing in State—More accomplishments were noted in tuberculosis control in the first six months of 1935 than for any other similar period, owing largely it was stated, to the service rendered by the ten tuberculosis nurses furnished by the Federal Emergency Relief Administration. During this period these nurses made visits to 7,432 families and visited 2,436 cases of tuberculosis making a total of 16,766 visits to suspected cases, contacts cases and other persons. In addition to the work done by the nurses, 3,249 tuberculin tests were made by county health commissioners and public health nurses who organized nineteen clinics

and had 1,534 roentgen examinations made by the x-ray unit of the state department of public health. There were 109 clinics held to serve 115 counties, and 7,567 roentgen examinations were made. Of this number, 562 persons were found to have tuberculosis, 389 of whom were white and 173 colored. It was pointed out that of the 100 new cases brought to notice each month through the tuberculosis control division of the state department, at least 90 per cent need treatment, medical supervision and social service to some degree for a long indefinite period. The disease now holds sixth place among all causes of death in the state. The death rate was 58.9 per hundred thousand of population in 1934, 73.7 in 1931 and 78.5 in 1926.

ILLINOIS

Urge Discontinuance of Shipment of Dogs' Heads by Mail—The illegal practice of shipping mad dog heads to state diagnostic laboratories in Springfield has grown to such proportions that Dr. Frank Jirka, state health officer, has appealed to the postoffice department in Washington for assistance in discouraging the use of the postal service for this purpose. It was pointed out that it is illegal, hazardous and nearly always worthless to ship dogs' heads by mail to the laboratories for examination for rabies, furthermore, since the heads are not in sealed metal containers, they expose postal employees to infection, not being packed in ice they decompose en route, making it difficult if not impossible for laboratory technicians to determine whether or not the dog was rabid. To date this year 559 heads have been examined, the largest number in several years, while about 1,435 persons have received antirabic treatment.

INDIANA

Society News—At a meeting of the Vanderburgh County Medical Society, June 25, a resolution was adopted favoring the appointment of a full time health officer for Evansville and Vanderburgh County.—Dr. Carl D. Camp, Ann Arbor, Mich. discussed "Disturbances of Sleep, Insomnia and Hypersomnia" before the Tippecanoe County Medical Society, September 10.

Memorial to Physician—A portrait of Dr. William J. Bauer with a bronze memorial tablet, was presented by the Medical Staff Society to the Methodist Hospital, Indianapolis, June 30. It will hang in the resident physicians' office. Dr. Bauer, who died in February during his term as chief resident physician, established the resident physician and intern service in the institution as it now is, according to the Indianapolis Medical Society Bulletin. He graduated in 1933 from the State University of Iowa College of Medicine, Iowa City. About 100 physicians attended the ceremony, during which Drs. Edmund D. Clark and John M. Whitehead unveiled the portrait, and John G. Benson, D.D., superintendent, and Dr. Clark paid tribute to Dr. Bauer.

KANSAS

Annual Registration Now Due—Physicians licensed to practice medicine in Kansas are required to renew their licenses annually, between July 1 and October 1, and to pay a fee of \$1 to the secretary of the board of medical registration and examination. The secretary must strike from the register of licensed physicians the names of all physicians who fail to pay their annual registration fees as required by law. Physicians whose names are so removed may be reinstated by paying the secretary \$5 and submitting to him satisfactory proof of moral fitness.

MARYLAND

Dr. Hughson Leaves Johns Hopkins—Dr. Walter Hughson, associate professor of otology at Johns Hopkins University School of Medicine, Baltimore, has resigned to become director of a new otologic research laboratory at the Abington Memorial Hospital, Abington Pa., near Philadelphia. The new laboratory, which is said to be specially designed for Dr. Hughson, was made possible by a special fund for otologic research at the hospital. Dr. Hughson, who has been teaching at Johns Hopkins since 1920 graduated from the institution in 1918. He will take over his new position in September.

Expedition to South Seas—Dr. Francis D. Coman, Baltimore, who was medical director of the first Byrd Expedition to the antarctic, chartered a two masted schooner, the *Kuikajon*, and sailed, July 15, on an expedition to the South Seas. He will gather meteorological and other data for a projected commercial airline to the antipodes. Dr. Coman is on leave from his position as assistant in psychiatry at Johns Hopkins Uni-

versity School of Medicine. A graduate of Johns Hopkins, Dr Coman has been associated with it since his graduation in 1924. He was medical director of the Byrd expedition from 1928 to 1930 and received the Congressional Medal for his services on that trip.

New Baltimore General Hospital—The new building for the general division of the Baltimore City Hospitals was dedicated recently with former Governor Albert C. Ritchie presiding. Accommodating 400 patients, the unit is part of a construction program begun at the Baltimore City Hospitals in 1927. This program is financed by a loan of \$4,000,000 approved in that year by the state legislature. New units include the nurses' home, which has accommodations for 253 nurses, an addition for chronic patients now under construction, which will care for 240 additional patients, an addition to the tuberculosis building now being erected to care for 134 additional patients, and a power plant. When all the units now under construction are completed and the contemplated changes are made, 2,800 beds will be available, of this number 1,700 will be patients and 1,100 indigent old persons. This number will be reduced by 300 over the next three years as the state gradually takes over the institution's insane patients, in accordance with a plan already worked out. The speakers at the dedicatory ceremony included Dr Thomas R. Boggs, physician in chief of the Baltimore City Hospitals, who sketched the history of the institution from its inception in 1776 to its present place in the community. The Baltimore City Hospitals, founded in 1865, had its beginning in the old "poorhouse" for care of the indigent. From year to year since that time its other services have been added.

MICHIGAN

State Medical Meeting—The Michigan State Medical Society will hold its annual meeting at Sault Ste Marie, September 23-26, under the presidency of Dr Richard R. Smith, Grand Rapids. The house of delegates will meet Monday afternoon and Tuesday morning. The scientific program will be presented by the following physicians:

Jennings C. Litzberg, Minneapolis. Maternal Mortality.
John H. Musser, New Orleans. Medical Aspect of Gallbladder Disease.
George W. Hall, Chicago. Relation Between Physical and Psychic Disturbances.
Frederick A. Collier, Ann Arbor. Surgical Aspect of Gallbladder Disease.
Harry L. Huber, Chicago. Allergy and the General Practitioner.
Walter G. Maddock, Ann Arbor. Diseases of Peripheral Arteries—Their Interference with Normal Physiology and Evaluation of Newer Methods of Treatment.
Martin A. Mortensen, Battle Creek. Hypoglycemia in the Vagotonic.
William H. Gordon, Detroit. Compensatory Hypertrophy and Hyperplasia of Islands of Langerhans in Utero. Congenital Hypoglycemia Due to Hyperinsulinism.
Lester M. Wieder, Milwaukee. Common Fungus Dermatoses.
Clyde Emerson Vreeland, Detroit. Achlorhydria—Its Clinical Significance and Management.
Norman F. Miller, Ann Arbor. Common Lesions of the Cervix.
Erwin R. Schmidt, Madison, Wis. Postoperative Oxygen Therapy.

Dr Smith will deliver his presidential address Wednesday evening, and Dr Solon Marx White, professor of medicine, University of Minnesota Medical School, Minneapolis, will present the first Andrew P. Biddle Oration, entitled "The Status of the Hypertension Problem." Arrangements are being made for physicians in the southern part of Michigan to attend the meeting on a special boat cruise.

MINNESOTA

Contaminated Wells Closed—The survey of the water systems of Minneapolis and St Paul that followed the outbreak of typhoid involving more than 100 cases, has resulted in the closing of twenty-four contaminated wells in various parts of Minneapolis, newspapers stated.

MISSISSIPPI

Personal—Dr George F. Carroll has been assigned as chief of surgical service at the Veterans Administration Facility in Biloxi.

Society News—The Northeast Mississippi Thirteen Counties Medical Society was addressed in Houston, June 18, by Drs James B. McElroy, Memphis, on heart diseases, Frank L. McGahey, Calhoun City, toxemias of pregnancy, John G. Lilly Jr., Tupelo, transfusions, and Laurence B. Morris, Macon, empyema. Dr Jesse T. Davis, Corinth, reported a case of Madelung's deformity. —Dr Thomas D. Moore, Memphis, discussed the "Conservative Treatment of Surgical Lesions of the Kidney," July 17, before the quarterly meeting of the North Mississippi Medical Society in Holly Springs and Dr Edward C. Mitchell, Memphis, spoke on diarrhea.

NEBRASKA

Annual Registration Now Due—Physicians licensed to practice medicine in Nebraska are required by law to register with the department of public welfare annually, on or before October 1, and to pay a fee of \$1. A license expires if the licensee fails to register, but within the thirty days next following its expiration it may be revived by the payment of the registration fee and a penalty of \$1. If that is not done, an order of revocation is issued and thereafter the revoked license can be reinstated only on the recommendation of the board of examiners in medicine and on the payment of the renewal fees and penalty then due.

Annual Clinical Meeting—The Omaha Mid-West Clinical Society will hold its third annual meeting at the Hotel Paxton, Omaha, October 28-November 1. Guest speakers include the following physicians:

Joseph Brennemann, Chicago. Pediatrics.
William B. Carrell, Dallas, Texas. Orthopedic surgery.
Arthur B. Cecil, Los Angeles. Genito-urinary.
Russell L. Cecil, New York. Medicine.
Arthur C. Christie, Washington, D. C., radiology.
Vernon C. David, Chicago. Surgery.
James R. Goodall, Montreal, Que., gynecology and obstetrics.
Roy R. Grinker, Chicago. Neurology.
Andrew C. Ivy, Chicago. Clinical physiology.
Jay Arthur Myers, Minneapolis. Tuberculosis.
Edward C. Sewall, San Francisco. Eye, ear, nose and throat.
Udo J. Wile, Ann Arbor. Dermatology.

NEVADA

Personal—Dr George R. Smith has resigned as superintendent of the Nevada Hospital for Mental Diseases, Reno, and Dr James C. Ferrell, Fallon, has been appointed to succeed him.

NEW JERSEY

Personal—Dr Jesse Lynn Mahaffey, Haddonfield, was reelected director of the state department of health for a term of four years. Dr Irvin E. Deibert, Camden, was elected president of the state board of health.

Joint Meeting—The Bergen County Medical Society and the Bergen County Pharmaceutical Association will hold a joint session at the Englewood Hospital, September 10. Lloyd K. Riggs, Ph.D., director of research and professor of physiology, New Jersey College of Pharmacy, Rutgers, will discuss "Evaluation of Antiseptics in Modern Practice," and Dr Albert F. R. Andresen, clinical professor of medicine, Long Island College of Medicine, Brooklyn, "Focal Infection."

NEW MEXICO

British Physicians Visit Indian Village—Members of the British Medical Association, on their way to Australia to attend the association's annual meeting in September, were greeted in Albuquerque, August 10, by the Bernalillo County Medical Society and taken by motor to Isleta Pueblo, one of the largest Indian villages in the state. In this pueblo is one of the famous old mission churches erected about 1621, which is considered the seat of the earliest attempt by white men to educate the Indian. After a visit to the pueblo the guests were entertained at a tea before their departure.

NEW YORK

Precipitated Toxoid Ready for Distribution—Precipitated diphtheria toxoid is now available for general distribution through district supply stations, the state department of health announces. The toxoid will be distributed in small packages for the convenience of physicians and in larger ones for use in clinics and institutions.

New York City

Epidemic May Delay Opening of Schools—If the outbreak of infantile paralysis in the city continues to increase, the opening of schools may be postponed, it was reported, August 28. With sixty-three new cases reported on this date, the year's total stood at 1,007 cases, with forty-two deaths.

Health Needs of Vagrants—The New York Emergency Relief Bureau made a health study of 505 persons arrested for vagrancy in the police drive to halt crime in the parks. Of this number 116 were hospitalized, forty-seven for social diseases and fourteen for acute infections. One case of epilepsy was found, one case of tuberculosis and one psychopathic case. Many of the men were found to be in various stages of alcoholism. According to the New York Times, the study was carried on for one week in August as a part of the mendicancy project of the relief bureau.

Eighth Graduate Fortnight—The New York Academy of Medicine will present its eighth annual graduate fortnight, October 21 to November 2, on the general subject "Diseases

of the Respiratory Tract" Eighteen hospitals will present clinics and clinical demonstrations in the afternoons, and evenings will be given over to formal meetings at the academy. Speakers at the evening sessions will be

Landell Henderson Ph.D. New Haven Conn. Atelectasis, Massive Collapse and Related Postoperative Conditions (the Wesley M. Carpenter Lecture)
Dr. Maximilian A. Ramirez New York, Allergy in Its Relationship to Diseases of the Respiratory Tract
Dr. Jonathan C. Meakins Montreal Chronic Pneumonitis
Dr. Charles Hendee Smith New York The Pneumonias of Children.
Dr. Charles T. Porter Boston Sinus Disease from Infancy to Old Age
Dr. Charles J. Imperatori New York Diseases of the Larynx Trachea and Main Bronchi
Dr. Harrison S. Martland Newark N. J., Diseases of the Mediastinum.
Dr. Lloyd F. Craver New York, Tumors of the Lung
Dr. Leroy U. Gardner Saranac Lake N. Y., Pneumoconiosis
Dr. James Burns Amberson Jr. New York, Bronchiectasis Types
Diagnosis Prevention and Treatment
Dr. Arnold R. Rich Baltimore, Immunity in Tuberculosis
Dr. James Alexander Miller New York Evolution of Pulmonary Tuberculosis
Dr. Chevalier L. Jackson Philadelphia Bronchoscopy in Its Relation to Diseases of the Respiratory Tract
Dr. David Riesman Philadelphia Emphysema
Dr. George Blumer New Haven Thrombosis and Embolism.
Dr. Harry Wessler New York Abscess and Gangrene
Dr. Alphonse R. Dochez New York, The Common Cold.
Dr. Henry T. Chickering New York Influenza of the Respiratory Tract.
Dr. Adrian V. S. Lambert New York Surgery of Tuberculosis of the Chest
Dr. Howard Lilienthal New York Chronic and Subacute Empyema.

A comprehensive exhibit with demonstrations at regular intervals will also be part of the program

NORTH CAROLINA

Personal—Dr. Clarence H. White, Kenansville, has been made district health officer, with jurisdiction over the health boards of Avery, Yancey and Watauga counties.—Dr. Alfred D. Gregg, Liberty, has been appointed health officer of Edgecombe County to succeed Dr. Rembert E. Broadway, Tarboro, who resigned to engage in private practice. Dr. George H. Sumner, Asheboro, has been appointed health officer of Randolph County to succeed Dr. Gregg

OHIO

Meeting at Marion.—At a meeting of the Northwestern Ohio Medical Association, September 24, in Marion, speakers will be

Dr. Henry H. Ritter, New York, Ambulatory Treatment of Fractures
Dr. Harold Feil Cleveland Changing Trends in Heart Disease.
Dr. Rupert Franklin Carter New York Appendicitis in Children.
Dr. William H. Gordon Detroit Malignant Neutropenia
Dr. Henry Schmitz Chicago Cancer

At a public meeting in the evening, Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will give an address on "Medicine in the Changing Social World."

OKLAHOMA

Personal—Dr. Dock Long, Duncan, has been appointed health superintendent of Stephens County, and Dr. James E. Jones, Hollis, of Harmon County.—Dr. Perry J. Cunningham, Afton, has been named physician of Ottawa County, he will reside in Miami after September 1.—Dr. George N. Bilby, former state health commissioner, has reentered the practice of medicine at Alva.

Committee to Standardize Institutions for Crippled Children—A standardization committee has been appointed and a state commission for crippled children created under a law that went into effect July 1. The standardization committee, composed of Drs. Maurice J. Searle, Tulsa, Earl D. McBride, Oklahoma City, William P. Fite, Muskogee, John F. Park, McAlester, and Walter M. Browning, Waurika, will pass on hospitals and convalescent homes in the state qualified to care for crippled children. The commission for crippled children will consist of the state superintendent of health as chairman, the dean of the medical school and the state superintendent of public instruction, and will probably be designated to handle the federal grant for crippled children. The hospitals of the state have been divided into four classes according to the type of case handled: crippled children's hospital, general hospital, standard hospital and convalescent homes. To be approved each institution must conform with certain standards. The amended crippled children's law now provides for medical and surgical treatment and hospital and convalescent care for children who are afflicted with any malady or deformity that can be remedied, whose parents are unable to provide it for them. Formerly this care was provided for in state institutions but now the state will pay for this care in any institution approved by the committee on standardization.

OREGON

State Medical Meeting at Gearhart, September 19-21—The sixty-first annual session of the Oregon State Medical Society will be held at the Hotel Gearhart, Gearhart, September 19-21. Out-of-state speakers will include Drs. Hubbard T. Buckner, Seattle, "Treatment of Supracondylar Fractures of the Elbow," and Hans Lisser, San Francisco, "Pituitary-Adrenal Relationships." In addition to a symposium on common errors responsible for maternal mortality by Drs. Raymond E. Watkins, Virgil E. Dudman, Goodrich C. Schaeffer and Theodore W. Adams, all of Portland, the following physicians will speak

Paul H. Nitschke Portland Causes and Treatment of Urinary Retention
Thomas D. Robertson Portland An Analysis of Fatal Thrombotic Pulmonary Embolism
Roy C. McDaniel Portland Eradication of Hernia by Injection
George W. Millett, Portland, Significance of Gastro-Intestinal Hemorrhage
Lorenzo D. Inskeep Medford, Etiologic Factors in So-Called Idiopathic Epilepsy
Millard S. Rosenblatt Portland Goster Interesting Practical Points
Arthur C. Jones Portland Diathermy and Short Wave Radiotherapy
Otis B. Wight Portland Plans of the State Cancer Committee and Fundamentals of Cancer
James C. Hayes Medford, Torsion of the Testis
Banner R. Brooke, Portland Phases of Rectal Pathology
James Marr Bissillon Portland Differential Diagnosis of Thoracic Disease
Eugene W. Rocky Portland, Problems of the Physician and the State Industrial Accident Commission
Samuel G. Henricke, Portland Preventive Medicine in Private Practice.

Dr. Lisser will also give a lantern slide clinic on endocrine disorders. The annual banquet will be Friday evening, when the presidential address will be given, and the ninth annual golf tournament will be held Saturday afternoon. The prizes will be awarded at a dinner that evening.

PENNSYLVANIA

County Society Operates Contagious Disease Hospital—The Municipal Isolation Hospital of Johnstown, a new seventy-five bed institution owned by the city and operated by the Cambria County Medical Society, was dedicated June 14. This hospital was founded in 1902 in a tent. The next year a rough building was erected as an isolation camp during an epidemic of smallpox. A few years later convalescent patients partly finished the interior and the building remained in that condition until 1928, when the county medical society took it over, with Dr. Henry W. Salus as director. It has now a staff of fourteen physicians. After several years' efforts, funds were acquired for the new building, which was begun in November 1934. It is a one-story structure of cut stone and covers a fourth of a city block. At the dedication in June a bronze tablet was presented to Dr. Salus by the directors and the staff in recognition of his work in building up the hospital.



Isolation Hospital

TENNESSEE

Personal—Dr. Edward A. Guynes has been named chief of staff of the Knoxville General Hospital to succeed Dr. Andrew Smith, who was recently made superintendent of the hospital.—Dr. Perry Priest has resigned as medical superintendent of the Tennessee Home and Training School for Feebleminded Persons at Donelson, and Dr. Oscar S. Hawk of the staff of the Central State Hospital at Nashville has been appointed to succeed him.—Dr. Hilton R. Carr, Memphis has resigned as superintendent of the Shelby County Hospital to enter private practice.—Dr. Bernard W. Patton, Lebanon, was recently made health officer of Wilson County to succeed Dr. William D. Cagle.

Society News—At a meeting of the Hardin, Lawrence, Lewis Perry and Wayne County Medical Society, July 30, Drs. Joseph P. Gilbert discussed mental disease, Milton Smith Lewis Nashville, diagnosis and management of the occipito-posterior position, and Eli H. Etheridge, Loretto, diagnosis of cancer of the lungs.—The Washington County Medical Society was addressed in Johnson City, July 11, by Drs. Cassius W. Friberg on toxemias of pregnancy, and Lee K. Gibson, appendicitis.—The Black Patch Medical Society was

addressed by Drs Murray B Davis and William H Witt, Nashville, on treatment of burns and symptoms of diseases, respectively

WEST VIRGINIA

Dr Simpson Retires as Dean—Dr John N Simpson, dean of the medical faculty of West Virginia University School of Medicine since he organized it in 1902, has retired with the title of dean emeritus, and Dr Edward J Van Lue, since 1922 professor and head of the department of physiology, has been named acting dean. Dr Simpson is 66 years of age. He was professor of physiology at the school from 1902 to 1920, since which time he has been professor of medicine, and director of the hygiene laboratory of the state department of health from 1913 to 1917. He graduated from the Johns Hopkins University School of Medicine in 1902. The West Virginia University School of Medicine, which offers only the first two years of the medical course, is now being reorganized (THE JOURNAL, August 24, p 606)

WISCONSIN

Bequest for Cancer Therapy—Columbia Hospital, Milwaukee, has received a bequest of \$7,000 from the estate of the late Mrs Sarah A Spalding to finance a new department for treatment of cancer by high voltage roentgen therapy. Two rooms have been set aside for the new department, in which a high voltage x-ray machine is to be installed. Dr Silvanus A Morton will be in charge.

Cancer Clinics—Six clinics on cancer were conducted in different parts of the state of Wisconsin, July 8-13, under the auspices of the Wisconsin State Medical Society, the University of Wisconsin Medical School and the American Society for the Control of Cancer. The clinics were held by Drs Ellis Fischel, St Louis, William P Healy, New York, and Frank L Rector, Evanston, Ill., to demonstrate new methods of diagnosis and to present to the general practitioner the latest data on prevention and cure of cancer. A public lecture was given after each clinic.

Society News—Drs William E. Bannan and James A. Evans, La Crosse, addressed the Barron-Sawyer-Washburn Counties Medical Society, Rice Lake, June 4 on "Urologic Pathology in General Practice" and "Heart Failure and Treatment," respectively. Dr Owen C Clark, Oconomowoc, addressed the Waukesha County Medical Society, Waukesha, June 5, on agranulocytosis. The Fifth District Medical Society held its annual meeting at Sheboygan, July 11, with the following speakers: Drs Samuel F Haines, Rochester, Minn., "Medical Aspects of Thyroid Disease", Elmer L. Sevringhaus, Madison, "Diagnostic and Therapeutic Problems of the Menopause", Arlie R Barnes, Rochester, "Coronary Sclerosis", and Ralph M Carter, Green Bay, "Orthopedic Conditions of Interest to the General Practitioner". Dr Gilbert E. Seaman, superintendent, Northern Hospital for the Insane, Winnebago, made an address at a banquet in the evening on "Problems in the Care of the Mentally Ill".

GENERAL

Medical Facilities on the Normandie—Two hospital units of thirty-five beds each for passengers and crew are a part of the equipment of the new French liner *Normandie*. Dr Joseph Bohec, Paris, is ship surgeon, assisted by two physicians and seven nurses. The medical equipment includes physical therapy apparatus, a radiology room and an apothecary shop. There is also a fully equipped medical and surgical clinic.

Examination in Obstetrics and Gynecology—The American Board of Obstetrics and Gynecology announces that the next written examination and review of case histories of group B applicants for certification will be held in various cities in the United States and Canada, December 7. Application blanks and further information may be obtained from Dr Paul Titus, secretary of the board, 1015 Highland Building, Pittsburgh (6), Pa. Applications must be filed not later than November 1.

Prevalence of Infantile Paralysis—Seventeen new cases of infantile paralysis reported in Virginia, August 19, according to the newspapers, brought the total in the state since the first of the month to 202. Twenty-two new cases, August 27, brought the total in Massachusetts for the month to 408. Fifty-nine cases were reported to the New Jersey Department of Health between July 1 and August 21. As a precautionary measure in Grand Rapids, Mich., wading pools have been closed and children up to 11 years of age have been barred from swimming pools in the city. The health officer of Bay City, Mich., and the Bay County Medical Association have jointly

asked for the donation of blood by persons who have recovered from the disease, the contributions to be used for serum treatment of active cases. Playgrounds and theaters in Wyandotte were ordered closed to children under 17, and three boys' camps in the state have been closed. In Louisville, Ky., there have been thirty-eight cases, with two deaths.

Tuberculosis Mortality Lower—A study of the tuberculosis death rate in forty-six large cities in 1934, recently issued by the New York Tuberculosis and Health Association, indicates that the rate for the whole group is 4 per cent lower than the 1933 rate, 69.6 per hundred thousand as compared with 72.5. Sixteen cities showed increases, however, as follows: Denver 3 per cent, Cleveland 3, Buffalo 3, Minneapolis 8, Cincinnati 2, Indianapolis 3, Houston 6, Rochester, N Y., 18, Columbus 15, Oakland, Calif., 12, Atlanta 16, Akron 3, Syracuse 3, Omaha 39, Paterson 7, Elizabeth 21. New York, Chicago, Detroit and Los Angeles showed decreases, and Philadelphia's rate did not change. Dallas showed the greatest decrease, 25 per cent. Akron, Ohio, had the lowest rate, 35, and San Antonio the highest, 145. A separate compilation of Negro deaths showed a rate of 220.9 per hundred thousand among Negroes, a reduction of 5 per cent from 1933. The white death rate was 56. These figures include deaths of residents out of town whenever they were known.

Life Expectation in Rural Areas Greater—Figures relating to the white population of the United States for 1930 recently made available by the Metropolitan Life Insurance Company, reveal that the rural dweller has, on an average, four or five years longer life than the urban resident. At birth, a white male has an expectation of life of 56.73 years if an urban resident and of 62.09 years if dwelling in a rural section. The corresponding figures for a white woman are 61.05 and 65.09. The figures cited are not adjusted for deaths of rural inhabitants who die in city hospitals but, broadly speaking, they are characteristic of urban and of rural longevity. The states with especially high expectation of life are typically agricultural, while the typically industrial states are below average or only a little above. New Mexico and Arizona show a very low expectation of life in spite of a low degree of industrialization, however, these states have a high percentage of Mexican population whose mortality is markedly above that of other persons together with whom they have been classified as white.

Control of Compounds of Codeine—A recommendation that exemption from the import certificate system be allowed to solid compounds containing codeine and ethylmorphine hydrochloride (dionin) only when these drugs are associated with other medicinal substances was brought in by a special subcommittee at the twentieth session of the Advisory Committee on Traffic in Opium and Other Dangerous Drugs of the League of Nations, at Geneva, Switzerland, May 20-June 5. It was also recommended that exemption should not be allowed to liquid compounds consisting of codeine or ethylmorphine hydrochloride in one or more inert fluids. The Opium Advisory Committee at this session recognized that the menace of cannabis is increasing in many countries. Plans were made to build up a library on cannabis in the League of Nations and to develop chemical tests to show the presence of cannabis derivatives by processes suitable for use by police officers. Dr Walter L Treadway of the U S Public Health Service was appointed to a committee to study the effects of the abuse of cannabis and methods to cure addiction. The views of the United States that dried poppy heads and poppy straw are to be classified as raw material and subject to national and international control were also accepted by the committee.

LATIN AMERICA

Pan-American Congress on the Child—The seventh Pan American Congress on the Child will be held in Mexico City, October 12-19, under the auspices of the department of public health. Dr Abraham Ayala Gonzalez, chief of the health department is president of the organizing committee, and Dr Alfonso Pruneda general secretary. There will be the following seven sections of the congress: pediatric medicine, pediatric surgery and orthopedics, child hygiene, social service, legislation and education. Subjects to be treated in the medical section include rickets, allergic states in children and mucohemorrhagic colitis in the surgical and orthopedic section, focal infections, paralysis in children and tuberculous osteoarthritis.

CORRECTION

Diagnosis of Congenital Syphilis—At the end of the article by Drs A H Parmelee and L J Halpern in THE JOURNAL, August 24, page 563, the address of Dr Halpern should be 6355 Broadway at Devon.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 10, 1935

The Second International Neurological Congress

The second International Neurological Congress was held in London from July 29 to August 2. It was attended by 677 members from forty-two countries (almost all the civilized countries of the world), about sixty members coming from the United States. The chief officials were Dr Gordon Holmes, F.R.S., president, Dr S. A. Kummer Wilson, secretary general, Dr Macdonald Critchley and Dr E. A. Carmichael assistant secretaries, Dr Anthony Feiling, treasurer, Dr Bernard Sachs and Sir C. S. Sherrington, honorary presidents. The congress met in seven sections for which ample accommodation was provided at University College, and nearly 300 papers were presented. The arrangements were excellent except that the time limit for papers was not always observed, with the result that some papers were crowded out. The mornings were devoted to discussions on selected subjects, which began with a series of papers and then became open. These subjects were "The Epilepsies," "The Physiology and Pathology of the Cerebrospinal Fluid," "The Functions of the Frontal Lobes" and "The Hypothalamus and the Central Representation of the Autonomic System." The afternoons were devoted to miscellaneous papers, which were grouped as follows into the various sessions: Clinical Neurology, Pathology, Physiology, Anatomy, Physiology of the Autonomic System, Clinical Physiology, Intracranial Tumors, Pathology of the Cerebrospinal Fluid, Psychopathology, Diagnostic Methods and Surgical Diseases, Experimental Neurology and Treatment. The member of the congress who attracted most attention was Professor Pavlov. Though an octogenarian, he is still alert. When he got up to speak as well as when he sat down he received an ovation.

THE MOTOR CORTEX IN THE LIGHT OF HUGHLINGS JACKSON'S DOCTRINES

The congress attended a special meeting of the Neurological Section of the Royal Society to hear the lecture in commemoration of the centenary of the birth of Hughlings Jackson, which was delivered by Prof. Otfried Foerster of Breslau. The congress medal bore the effigy of Hughlings Jackson. Professor Foerster said that Jackson was the first to point out the existence of the motor cortex, which he inferred from the experiments performed on the brain by disease before physiologists confirmed his view. The motor functions of the cortex were then unknown and epilepsy was believed to be a manifestation of disorder of the pons and the medulla. Jackson relied on his incomparable power of deductive reasoning. He recognized that epileptic convulsions were a caricature of normal movements and announced the then revolutionary view that the cortical motor cells must be concerned. He believed that no part of the cerebral hemispheres was purely motor or purely sensory and so it has proved, for Professor Foerster by electrical stimulation of the human cortex has shown that, from areas other than the precentral complex movement and postures can be elicited. Foerster believes that these extrapyramidal motor centers are the source of the relatively cumbersome movements possible in the hemiplegic patient after damage of the pyramidal tract. There was scarcely a neurologic problem that had not been illuminated by Hughlings Jackson's ingenuity. Dr Sittig of Prague pointed out that Jackson had anticipated Freud in his view of the unconscious, a fact that has previously been unnoticed. Jackson held that when in disease insanity or

dreams the highest cerebral level was put out of function the next lower level became more active. The positive symptoms of insanity thus came out of the unconscious.

PAIN RESULTING FROM PRODUCTS OF METABOLISM OR TISSUE DAMAGE

Sir Thomas Lewis said that because simple physical interferences are apparently capable of stimulating nerves directly there has been a tendency to interpret most pains as a result of physical changes induced in nerve endings directly. This may be true in many instances, but other methods of stimulation are becoming apparent. Evidence has been accumulating which suggests that malnutrition or injury of tissues may so change the local chemical or physicochemical environment of nerve endings as to stimulate them. Thus it seems established that the products of the work of somatic muscle may accumulate in the tissue spaces until they start pain impulses. In the case of injuries to the skin there is definite evidence that substances released from the skin act thus. The idea that sensory nerve endings may be stimulated by natural chemical or physicochemical tissue changes has been taken beyond the stage of theory by the pain produced by the arrest of blood flow to a part.

THE EFFECT OF REMOVAL OF BOTH FRONTAL LOBES

Dr R. M. Brickner of New York described a unique case in which both frontal lobes were removed for meningioma. Broca's area and the motor cortex were left intact. In all, 116 Gm of brain tissue was removed. As the amount of damage done to the brain was known with fair exactness, the function of the missing parts in this patient, a man of 44, could be deduced. The changes were of two kinds: (1) intellectual defects, such as impairment of memory, (2) impairment of control over emotional drives, perhaps because he had lost knowledge of the social gain from such control. He became like a child who had not yet learned to adapt himself to the people he must meet in the world. The whole effect might be interpreted as loss of the elaborate association or synthesis into complex structures of the simpler engrammatic products associated in the more posterior parts of the brain. It might be described as loss of ingenuity. The indication is that man needs a frontal lobe which can ingeniously comprehend the emotions well enough to control them instead of yielding to them.

THE PATHOGENESIS OF EPILEPSY

Dr W. G. Lennox of Boston had found that certain alterations of physiologic processes of the brains of epileptic patients modified the frequency of the seizures. 1. Acid base equilibrium. Alkalosis by overventilation or by ingestion of alkali tended to increase seizures, acidosis induced by fasting, a ketogenic diet, ingestion of acids, breathing carbon dioxide or muscular activity tended to decrease seizures. 2. Cerebral blood flow. The total blood flow through the brain, measured by a thermo-electric recorder, does not show reduction before the seizure except when this is induced by overventilation. Hence general cerebral anemia is not the cause of the seizures. 3. Oxygen. The volume of oxygen consumed between seizures is normal or moderately reduced. Immediately before and during nonconvulsive seizures there is no significant alteration in oxygen consumption. Induction of cerebral anoxemia (by breathing pure nitrogen or ingestion of sodium nitrite) produced an attack in only one out of twenty cases of grand mal, but in petit mal a seizure was constantly produced. 4. Electrical activity of the brain. Petit mal seizures were found to be invariably preceded or accompanied by a burst of electrical potentials about ten times the voltage and about one-fifth the frequency of the patient's usual potentials. Clonic movements were synchronous with these large waves, similar voluntary movements were unattended by differences in electrical potential. The conclusion was that abnormal physiologic states, such as

alkalosis, cerebral anemia or anoxemia, are not the usual causes of seizures but that they may alter the seizure threshold and precipitate seizures in petit mal

THE SURGICAL TREATMENT OF HYPERTENSION

Dr Max M. Peet described sixty cases in which operation for hypertension had been performed at University Hospital, Ann Arbor, Mich. He resected the greater and lesser splanchnics and the lower dorsal sympathetic chain (tenth to twelfth ganglions). The operation was done above the diaphragm after resecting the eleventh rib. The blood pressure in all cases was at some time over 200 and it ranged from 210 to 300. Many of the patients had retinal hemorrhages, masses of exudate and papilledema. Severe kidney damage in the absence of high nonprotein nitrogen was not considered a contraindication to operation. Improvement was obtained in 85 per cent, varying from simple relief of headaches to apparently complete cures. Ten per cent were not benefited and about 15 per cent were apparently cured. In some of the latter a blood pressure as high as 285 was reduced to 130-140 over periods ranging from six to seventeen months. A complete return to normal vision and normal kidney function took place.

PARIS

(From Our Regular Correspondent)

July 26, 1935

Bone-Muscle Syndrome Improved After Parathyroidectomy

Richet and his associates reported a case presenting a curious syndrome at the April 12 meeting of the Société médicale des hôpitaux. A man, aged 27, complained of impotence and complete rigidity of the lower extremities, trunk and neck of seven years' duration. Active and passive efforts to move the affected muscles were impossible owing to the pain during such movements. There was a complete ankylosis of both hips. The muscles, especially of the thighs, felt very hard, having almost the consistency of a board. There was a well marked Chvostek sign, and tic movements of the facial muscles frequently occurred. The tendon reflexes were normal. There was a similar history in the mother of the patient. The blood examination of the latter revealed at times a marked calcium retention, while at other examinations the calcium content of the blood showed a hypocalcemia. All efforts in the form of a diet, low in calcium but rich in acid content, as well as the daily injection of parathyroid extract were of no avail. Biopsy of the muscular tissues revealed an advanced sclerosing myositis. Removal of one of the parathyroids was decided on. The gland was very large, and histologic examination revealed a marked adenomatous change. This operation was followed by disappearance of the pain on movement and of the board-like rigidity of the muscles. The hypercalcemia disappeared and roentgenography revealed a recession of the periosteal proliferations. The patient for the first time in two years is now able to get out of bed and walk. In the opinion of Richet and his associates, the case represents a dysfunction of the parathyroids resulting in an osteoarthritis and a sclerosing myositis.

Innocuity of BCG Vaccine

Negre and Valtis of the Pasteur Institute (Paris), at the May 7 meeting of the Academy of Medicine, reported their observations on fifty-seven infants, who were given the BCG vaccine at birth and kept under observation from 1928 to 1935. It was always possible to isolate tubercle bacilli of the human type from lesions found in infants who had been given the BCG vaccine but who had been raised in an environment in which they were exposed to tuberculous infection. These infants were contaminated in spite of having been vaccinated. This, according to Negre and Valtis, excludes the possibility of a recrudescence of the virulence of the filtrable virus in the

BCG vaccine. Bacteriologic examination of the pus from suppurating lymph nodes in twenty-one infants, immunized by the buccal route, gave the following results. In thirteen of the twenty-one, no pathogenic germs were found, in six cases only ordinary pyogenic organisms, in one case (the child had been in contact with a case of virulent tuberculosis) and a second case, only acid-fast bacilli were found. The inoculation of which into guinea-pigs failed to result in evidences of tuberculous infection. Eighteen infants who were given the BCG vaccine at birth have died of various intercurrent disorders. At necropsies on these children it has never been possible to find either in the alimentary tract, lymph nodes or solid viscera any virulent strain of tubercle bacilli to which death could be attributed. Thus, in not a single case has it been possible to find that any accidents reported as occurring in infants vaccinated at birth were due to a recrudescence of the virulence of the filtrable virus contained in the BCG vaccine.

Intermittent Hemiplegias Due to Spasm of Cerebral Vessels

Tinel and Pottier call attention in a paper published in *La pratique médicale française* to a form of transitory hemiplegia not infrequently observed in apparently normal young persons in whom there is no evidence of syphilis or of arterial changes, such as hypertension or sclerosis, as well as absence of uremia or cardiac disease. The only way such cases can be explained is that they are due to a vascular spasm. Such an explanation may suffice for intermittent, transitory hemiplegia that is observed in cases of cerebral tumors, syphilis of the central nervous system and atheroma. These temporary hemiplegias occur more commonly than has been generally supposed.

Does Tracheobronchial Adenopathy Exist in Children?

Lestocquoy in the May 5 issue of the *Concours médical* answers negatively, so far as a nontuberculous infection is concerned, whether tracheobronchial adenopathy really exists in children. The only conditions under which one encounters such nontuberculous enlargements of the tracheobronchial lymph nodes is in Hodgkin's disease, lymphosarcoma and mediastinal tumors. In tuberculosis the adenopathy never occurs alone but is accompanied by pulmonary lesions. Tuberculosis of the lymph nodes at the hilus is found in three forms.

1. Caseation of the bronchial lymph nodes during the first year of life. The concomitant pulmonary lesions are usually minimal. When the lymph nodes are very large and the pulmonary lesions small, the prognosis is not favorable. The diagnosis is based on the stridor and a "bitonal" cough accompanied by loss of weight and appetite and a positive skin reaction. Radiography is the best diagnostic method and enables one to see a convex contour on each side of the trachea or a dark band of right sided parasternal shadow. These cases frequently terminate in meningitis or a generalized miliary tuberculosis.

2. Enlargement of the bronchial lymph nodes of young children. This occurs associated with adjacent small pulmonary tubercles. It should be looked for in all children who have a positive skin reaction. Here radiography is virtually the only method of diagnosis, because percussion is unreliable. One sees the juxtatracheal, juxta-aortic and, in profile, real mediastinal shadows. The prognosis is more favorable than in the first group. Many of these nodes seem to disappear gradually under appropriate treatment.

3. Calcification of the bronchial lymph nodes. This is the most typical group and is observed in older children who are fretful and poorly nourished and who have at intervals slight febrile attacks. The physical examination is not of much aid, the condition exists almost without any clinical signs. The radiologic observations, however, are typical, in the form of uniformly dark shadows at the pulmonary hilus, surrounding the bronchi. In spite of representing an apparently healed lesion,

these calcified nodes represent a latent stage of tuberculosis from which virulent bacilli frequently enter the circulation in adolescents and adults. From these peribronchial lymph node foci arise the pulmonary lesions in the majority of cases.

BERLIN

(From Our Regular Correspondent)

July 8, 1935

Popular Medicine in Germany

The nature cure movement, which under the new regime in Germany receives strong support, was recently given a new impetus toward a wider development. From May 12 to May 26 an exposition of German popular medicine, which enjoyed the protection of the district leader Julius Streicher, was held in Nuremberg. The protracted session brought together the supporters of all trends and groups representing "popular medicine" and "life reform" and resulted in an enthusiastic demonstration. That in this movement political and so-called racial points of view play a great part is well known. Researches into the family histories of leading German investigators with a view to discovering a strain of non-Aryan blood in their ancestry are now popular, the ultimate aim being to discard rational scientific methods in the treatment of disease (syphilis, for example) and to substitute hydrotherapy and herbal treatment, homeopathy and the like. The movement claims to have 12,000,000 adherents in Germany, and almost a million families organized in the "gesundheitsvereine," or health clubs. The demonstration culminated in the Reichstagung der Deutschen Volkshelbewegung, at which Dr. Wagner, the present fuhrer of German medicine, gave several speeches in which he outlined programs for the future of German medicine. The most significant thing about the session as the official *Deutsches Aerzteblatt* points out, is the fact that in Nuremberg the foundation was laid for the creation of a new comprehensive system of German medicine that will include both trends, scientific medicine and nature cure practice. In the addresses and papers the well known points of attack on "old school" medicine were again brought out—in some instances by physicians themselves. Thereupon the fuhrer of German medicine announced in a special ceremony the creation of the Reichsarbeitsgemeinschaft der Verbände für naturgemässe Lebens- und Heilweise and of the Reichsarbeitsgemeinschaft für eine neue deutsche Heilkunde. The last mentioned merger will take upon itself the task of providing training in the new system of medicine and of creating suitable chairs at the universities. Leadership in the new movement was entrusted to Dr. Kötschau, professor of nature cure practice at the University of Jena. The merger first mentioned, that for nature cure and the natural mode of living, is designed to bring together the lay groups that support the movement and to strengthen among the people their understanding for biologic therapeutic methods. With this merger will be affiliated the Biochemischer Bund Deutschlands, the Felke-Bund, the Reichsbund für Homöopathie, the Kneipp-Bund, the Deutsche Gesellschaft für Lebensreform, the Priessnitz-Bund, and the Schüssler-Bund der Biochemiker. The character of the constituent elements reveals the nature of the task proposed. The following citation from an address of the fuhrer of German medicine illustrates his point of view: "A materialistic age was so arrogant as to imagine that the eternal secrets of life may be fathomed with the aid of the exact natural sciences alone. One must not suppose that in a period of so great mental storm and stress such as we are passing through the great revolution will stop short before the gates of the German universities or before the barriers erected by their scientists. The foundation for the new system of medicine cannot be the exact natural sciences but only the national-socialist world views concerning the natural and fundamental biologic 'laws' controlling all events. It is by no means part of our conception that the old school

medicine should be entirely rejected or that the technical acquisitions that it has brought us should be renounced. It is our aim to effect a synthesis of the onesided old school medicine and the nature cure methods. We turn aside from the extremists and fanatics of both camps." In spite of all the agitation there was until recently no clinic for nature cure medicine at any German university, but now the Faculty of Medicine of Erlangen has decided to establish such a clinic and to create in association with it a professorial chair.

In addition, the Reichsarbeitsgemeinschaft der Naturärzte (merger of nature cure practitioners) has been created, with which a number of leagues have become affiliated, their character indicating plainly the nature of the merger, for example, the Deutsche Allgemeine Aerztliche Gesellschaft für Psychotherapie, the Deutsche Gesellschaft für Bäder- und Klimakunde, the Zentralverein Homöopathischer Aerzte, the Bund der Kneipp-Aerzte, the Reichsverband der Naturärzte and the Vereinigung Anthroposophischer Aerzte. According to a published utterance of the director of this merger, the nature cure practitioner is helping the German people to bridge the gap to the German physician of the future. In an address before this new merger, Professor Kötschau proclaimed that biologic medicine achieves success in some cases in which old school medicine is at a loss what to try next. He stated further that biologic medicine is ready to show that it possesses effective weapons with which to combat epidemics successfully. It opposes the lack of confidence in and the distortion of nature, which find their expression in exaggerated sterilization, conservation and disinfection measures. It is interesting to note that as eminent a clinician as Professor von Krehl of Heidelberg has expressed his views on nature cure medicine not only in an address before the Heidelberg Medical Society but also in an article in *Therapie der Gegenwart*. While he makes a number of concessions to nature cure medicine, he endeavors, on the other hand, to defend old school medicine, of which he has been, in a sense, an exponent for thirty years or more. He admitted that he had been unable fully to understand the standpoint of the representatives of nature cure medicine in their attitude toward medicines. He had observed that, in adducing proof, it was always certain prominent nature cure practitioners who were cited. Of the mediocre practitioners little or nothing is heard, particularly the many patients who fail to receive any benefit are silent on the subject. It had been his experience that persons of a very definite type, from the standpoint of disease and personality, are adapted to the application of nature cure methods. Patients of this type are sometimes cured by nature cure practitioners after regular physicians have failed. It is evident that suggestion plays an important part in such cases. But that any patient with a grave organic disease had been cured in this manner had not come within his observation. He expressed further the view that, if medical overspecialization and overburdening of physicians could be done away with, it would inure to the benefit of a rational mode of treatment in general. His statements were worthy of attention because of his skilful argumentation.

Seventieth Birthday of Professor Brauer

Prof. Ludolph Brauer, for many years professor of internal medicine and director of the Eppendorf Hospital, celebrated his seventieth birthday, July 1. A pupil of the Heidelberg clinician Erb, he obtained a chair at the University of Marburg, whence he was summoned to the University of Hamburg, where he remained until his retirement. Brauer's fame rests chiefly on his researches in the field of tuberculosis, for example, on the treatment of adhesive pericarditis, in which he recommended the removal of ribs adherent to the pericardium, in order to eliminate the manifestations of cardiac insufficiency. The overpressure procedure in the surgical treatment of the thorax originated with him. For the pneumothorax procedure he

created, through numerous researches, a broad scientific basis and brought it about that this procedure became accepted by those who opposed it. Importance attaches also to his researches on pleural shock and arterial air embolism in connection with the institution of pneumothorax or during the reinsertion process. He supplied the scientific basis for more extensive thoracoplasty. Brauer has reached his goal, in aiding the widespread use of physical and surgical treatment of pulmonary tuberculosis, lung gangrene and bronchiectasis, and in the inauguration of functional tests in all diseases of the thorax by means of ingeniously devised endurance tests. Brauer combined great talent for organization with unusual skill in carrying on negotiations. He succeeded in winning over boards and philanthropists in favor of his plans for the creation of the tuberculosis institute, the department of metabolism, the diet kitchen, the institute for research on light, the institute for medical research in the field of aviation, and others.

BUCHAREST

(From Our Regular Correspondent)

July 20, 1935

Conference on the Problem of Abortion

The Rumanian Medical Association, the Society of Transylvanian Gynecologists and the medical chambers of the counties of Transylvania convoked a congress, which was attended also by many judges and lawyers, to discuss the problem of induced abortion and to draft a new law on criminal abortion. The congress found that

1 The law drafted in 1934 largely satisfies the requirements. The congress approved prosecution for criminal abortion. However the congress voted to appeal to the competent authority requesting a change in the law so that artificial abortion may be permissible from medical, eugenic and ethical points of view. Accordingly the law should not apply to the use of contraceptives, and their sale by druggists should be permitted. 2 Abuse of the eugenic and ethical indications for artificial abortion should be severely punished. The congress held that the paragraph of the law that requires physicians preliminary to performing such operations to notify the police should be canceled. 3 The general council of the Rumanian Medical Chambers should be invited to compile a guide as to the indications and methods of operation. 4 At the investigation of cases of criminal abortion, the presence of a medicolegalist is imperative. 5 If a doctor becomes suspended from practice on account of a gross error in performing the operation or malpractice, he may be allowed to continue practice if he passes an examination before the faculty of medicine of the university. The examination has to be in the subject in which he displayed incompetence.

The National League Against Tuberculosis

The minister of public health referred to the Chamber of Deputies the draft of a law on the organization of the National League Against Tuberculosis. The objectives of the league would be to conduct the antituberculosis campaign, to coordinate existing similar institutions to enlighten the public by adequate propaganda, to train special personnel—physicians assistants, nurses—and to found dispensaries, isolation hospitals, sanatoriums, preventoriums and all institutions necessary in the treatment and prophylaxis of tuberculosis. The king is the president of the council of the league. The administrative body is a central managing committee of seven members elected for five years. The income of the league would be 60 per cent of the net profit from the state lotteries, 60 per cent of the revenue derived from the taxes on cosmetics and proprietary medicines (5 per cent ad valorem duty, paid by the pharmaceutical manufacturers on imported foreign specialties), 10 per cent of the revenue from the manufacture of narcotics, and 2 per cent of the profit earned by the state alcohol monopoly. In addition, all public institutions engaged in treating the sick

—for example, the social insurance office, the sickness club of the state railways, and private sickness clubs—will have to contribute annually to the campaign against tuberculosis. The branches of the league will get subsidies from the counties, cities and villages. The budget of the league will be subject to approval and control of the chamber of deputies. The medical positions will be temporary. All physicians will be appointed for two years, after the lapse of which time their positions will be surrendered to younger men, that these may have competent training in the prophylaxis and treatment of tuberculosis. These physicians will not receive pay, excepting their board, in hospitals and sanatoriums. Professor Cantacuzino, a zealous promoter of the antituberculosis movement, has been untiring in preparing the soil for the establishment of the national anti tuberculosis league.

Infant Mortality in Bucharest

According to the last annual report of the demographic bureau the most conspicuous phenomenon in connection with the increase of population is the rapid increase of mortality in the last year. Of 1,000 infants born alive, fourteen die within the first year.

There were 87,824 marriages in the country and 914 divorces. The most unfavorable position is in Bucharest. While the birth rate decreased considerably, the death rate increased. In May 1935 the number of births was 1,073 while the number of deaths amounted to 1,051. Infant mortality is still more unfavorable. In Bucharest, 23 per cent of all infants die under the age of 1 year. There are two other Rumanian towns in which infant mortality is similarly high, namely, Jassy, the capital of the province of Moldavia, where it is 26 per cent, and Tighina, close to the Russian frontier, where it is 27 per cent.

Public health conditions in general were better in 1934 than in 1933.

Regulation of the Use of the Term Radiologist

The Bucharest Association of Radiologists, at a recent meeting, gave expression to the opinion that the time has come when steps should be taken to prevent the use of x-ray apparatus by those whose capabilities are insufficient. At present, any physician may purchase and use x-ray equipment for diagnostic and therapeutic purposes. The frequent accidents that have occurred, one of them fatal, makes it imperative that some discrimination be made. The association would not object if private practitioners used x-ray equipment for their own patients for diagnostic purposes, but no one excepting competent radiologists should make x-ray reports that may serve as a ground for operations. High voltage therapy, which is dangerous even in the case of well trained radiologists, should be applied only by radiologists who have passed special examinations proving their fitness. The association sent a memorandum to the Central Medical Chamber to elaborate the draft of a new enactment prescribing the qualifications of a physician who is to practice as a radiologist.

Observations of Effect of Radio Waves on Employees

Some time ago W. W. Parker, an English physicist, stated in a treatise that the radiations of radio broadcasting stations are apt to cause neurasthenia and certain other abnormal states of the nervous system. Prof. Dr. Francis Porsche of the Cluj University has made extensive investigations into this subject. He says that as a check on the probability of the correctness of the statements of Parker he made thorough investigations at several radio stations. He examined individuals who are employed at the transmitting stations and who are exposed in a concentrated measure to the actions of the radio waves. Such observations on the employees as he made, says Professor Porsche, and those of physicians employed at such stations for many years, did not corroborate Parker's assumptions.

AUSTRALIA

(From Our Regular Correspondent)

July 11, 1935

Tuberculosis Campaign in Australia

The federal health council has drawn up plans for a nationwide effort to combat tuberculosis. These recommendations will be forwarded to each state health department to the end of securing uniformity of action. In Australia each year, tuberculosis kills 3,000 people, two thirds of them being under the age of 45. The rate keeps fairly constant at 45 per cent of total deaths. The age of death is at a maximum in the 30-40 age group for females, and the 40-50 age group for males. It is seventh in order of importance as a cause of death, being preceded by heart disease, cancer, nephritis, senility, accidents and diseases of early infancy, in that order.

The federal health council considers that the economic factor is the most important aspect of the campaign against tuberculosis. The wage earner of a family frequently will not leave his family as long as he is able to contribute anything toward its support. Possibly the greatest of the advances toward an effective control of tuberculosis would be the introduction of some system for providing economic conditions of at least a bare living standard for the family, to enable the affected wage earner to enter a treatment institution as early as possible. The amount of 17/6 per week paid under the invalid pensions act is not more than a partial relief of the inevitable economic distress in a home in which there is a member with tuberculosis. The attention of the commonwealth government is directed to the fact that before a person can receive an invalid pension he must be certified as permanently and totally incapacitated, whereas in every early case of tuberculosis the hope for which there is reasonable ground, is that there will be a cure. If possible it would be desirable to alter the wording of the pensions act in relation to tuberculosis.

The compulsory notification of all forms of tuberculosis is considered to be essential to success in the campaign against tuberculosis. It is strongly recommended that there be an adequate fee for such notification and that in any case arrangements be made for payment direct to the notifying physician without cumbersome procedure. It is considered essential to have a full-time tuberculosis officer in every state. Periodic medical examination of all persons in the community should be encouraged. An effective organization should exist in every state for the periodic examination of house and family contacts of a patient with tuberculosis, when necessary, without charge to the persons examined. The examination of sputum should always be available without charge at the request of any medical practitioner.

A practical method of providing skilled supervision of cases and contacts, of providing consultant advice to all medical practitioners and of educating the public, would be to provide a mobile tuberculosis unit.

It is regarded as of primary and immediate importance to establish an effective system where it does not now exist for the earliest possible treatment of early cases. When conditions are entirely suitable but not otherwise, there are advantages in home treatment that should not be overlooked. Legal power should be available when necessary, for compulsory isolation in advanced cases in which the conditions involve danger to the public health. It is desirable to bring into effect, and maintain separation of the advanced and hopeless cases from cases with prospect of cure. Probably the best method of achieving this is hospital accommodation under the same management as that of the sanatorium.

The conference believed that for the success of the campaign against tuberculosis it is desirable to establish close cooperation between health departments, education departments, hospitals, the medical and nursing professions, local government authorities and all other agencies concerned. Especially is

cooperation between health departments and the commonwealth pensions department necessary. The work being done by the Red Cross homes and similar institutions in building up the resistance of children was greatly commended, but the conference believed that the work of these establishments would be considerably improved in extent and value if the authorities would agree to admit children who, although known to be infected with tuberculosis, have been certified by a selected medical officer as not infective. The provision of preventoriums at which may be treated persons who have been exposed to infection and whose health and environmental conditions are unsatisfactory is an essential link in the chain of preventive measures.

The Spread of Tumors in the Human Body

R. H. Willis of the Baker Institute of Medical Research, Melbourne, has reviewed the literature and recorded personal and meticulous observations of 323 necropsies in cases of malignant disease. It is felt that this book, published by J. & A. Churchill of London, will for years be a standard work of reference. Willis clears up many pathologic pitfalls. He strongly doubts the entity of primary endothelioma of the lymph gland and considers these tumors usually carcinomatous metastases. He decries the possibility of specific premetastatic changes in lymph glands and of tumor cells being destroyed in lymph glands. He draws attention to the distinction that exists between the phenomena of contiguity invasion and metastasis. He refutes the hypothesis of tumor cell implantation of contact or "kissing" cancers on epithelial surfaces. The adherence and departures from structural types in metastases are indicated, and the literature covering the interesting occurrence of spontaneous retrogression of tumors is reviewed and our ignorance of some deeply underlying biologic laws indicated. In view of the unfortunate absence of pain in early malignancy it is interesting to note Willis's inability to demonstrate nerve fibers (that were not included residues) in tumor cells and their stroma. In 7 per cent of his series of necropsies, metastatic growths had been clinically mistaken for the primary. Attention is directed to the effect of these errors on statistical figures. The important clinical question of the safety or otherwise of the biopsy incision he settles by stating that the risk is negligible. The only dangers are (a) implant tumors when healthy skin is cut through and (b) dissemination aggravation by rough handling. It is advisable, however, to proceed with the radical treatment, if called for, within a few days.

Shark Acts as Detective

Medicolegal experts in Sydney are involved in a case that sounds more like fiction than a real life and death problem. The story starts on the ocean beach at Sydney, where some fishermen had set a bait for a man-eating shark that had been roaming up and down the surfing beaches. The shark did not take the bait but became so hopelessly foul of the line that it was hauled ashore alive. The shark was then taken alive to the large sea-water pool in the aquarium at the Sydney Zoological Gardens. For a few days the shark was listless and appeared ill. Suddenly, however, it became excited, thrashed the water into foam, and to the horror of several casual onlookers vomited a human arm. The limb was recovered from the pool and a close examination revealed some tattoo marks of a type that sailors adopt for the adornment of their bodies. Police inquiries were made toward identification of the arm and by means of the tattoo marks it was recognized as belonging to James Smith, a sailor. Further inquiries elicited the news that about April 8 this man went fishing in a boat with one Patrick Brady and that the latter returned alone. It now appears that Smith was murdered by Brady in the boat and that his body was dismembered and thrown into the water. A startling sequel was the murder of the chief witness in the case, William Holmes, a boat builder

This man was taken for a ride in his own car and shot. The car containing the body was found in a lane in the shadow of the great North Shore bridge at Sydney.

The Menace of the Cat

In the editorial comment in *THE JOURNAL*, April 30, 1932, entitled "The Menace of the Cat" appears the statement that "millions of domestic cats gone wild are said to inhabit Australia and are rapidly destroying the bird life of that continent." While there are many instances in this country of primarily domestic animals "going bush" and becoming a menace, the cat is not a serious problem. The chief problem is the dog, who becomes a dingo and causes havoc among the sheep pastured in the outback country. To a lesser extent the horse becomes a "brumby." The damage he does is tempting the ranch horses to escape. The health hazards that the cat introduces are mainly skin diseases of the trichophyton type, infected scratch marks and, indirectly, strychnine poisoning of children from the baits that are placed for the destruction of the animal. While cats destroy birds, their activities are not of any moment to the avian life of the country.

NETHERLANDS

(From Our Regular Correspondent)

July 17, 1935

Traffic Accidents During 1932

The Central Bureau of Statistics has published for the first time a monograph giving detailed information on the causes of traffic accidents. All accidents on the public highways that caused substantial material damage and resulted in the death or injury of human beings are taken into consideration. The work reveals that in a total of 41,195 accidents the driver was responsible in 28,221 instances and the pedestrian was at fault in 2,975 cases. In 2,788 cases the bad condition of the road was the cause of the accident. In addition, there were 6,254 "diverse" causes. Collisions between bicycles or between a bicycle and other vehicle are most frequent, because of the large number of bicycles on the streets. To enumerate: There were 381 instances of a collision between a bicycle and a street car, 3,564 collisions between a bicycle and a truck, 7,336 with an automobile, 981 with a motorcycle, 2,928 with another bicycle, 145 with a pedestrian, 150 with a pushcart, and 559 with a horse-drawn vehicle.

Of collisions of an automobile with a street car there were 851 instances, with a truck, 3,215, with another automobile, 4,582, with a motorcycle, 1,067, with a bicycle, 7,336, with a pushcart, 556, with a horse drawn vehicle, 835, and with a pedestrian, 1,441.

Of collisions of a truck with a street car there were 728 instances, with another truck, 1,617, with a motorcycle, 447, with a bicycle, 3,564, with a horse-drawn vehicle, 611, with a pushcart, 427, and with a pedestrian, 739. One should take account of the fact that 94 per cent of the vehicles were bicycles, 156 per cent were trucks, and 274 per cent were automobiles.

The source of information concerning the fate of persons seriously wounded is not reliable. Many communes have no infirmary. The wounded in that case are transported to the nearest city, where the consequences of the accident are often lost sight of.

First Aid Stations Along the Highways

A society has been recently organized in the Netherlands for the purpose of establishing 2,550 first aid stations along the principal highways at intervals of approximately 5 kilometers (3 miles). The administration of the work of the society has been entrusted to Dr. J. G. Van Turenhout. At each station there is a telephone, which enables an injured person to get in touch with a physician, police station, sanitary service, the clergy, or other connections. The station consists essentially

of a large square box, which contains a small supply of bandages ready for immediate use. There is also a larger box of dressings for the use of the physician. A folding stretcher, of special construction, makes it possible to transport an injured person in an automobile. The medical control of this new service will be entrusted to the Red Cross, in collaboration with the Orange Cross. A large number of physicians have expressed their willingness to cooperate with the members of this society.

Convention on Aviation Medicine

The draft of legislation approving an international sanitary convention in relation to aviation was recently submitted to the general assembly. The convention was drawn up by the international sanitary bureau, the headquarters of which is at Paris, and will consider what measures should be taken to prevent the dissemination of contagious diseases through aviation. The endorsement of the Netherlands is manifested by the fact that the aviation centers at Schiphol, Weelhaven, Schellingwoude, Flushing and Twente are to have a "health organization" that will adopt all measures necessary to prevent the spread of contagious diseases. A physician will be available for each center of aviation. If circumstances seem to require it, passengers and crew will be subjected to a medical examination before the departure of each plane. Authority to embark will be refused to any person who presents symptoms of a contagious disease. A rapid enforcement of the terms of the convention is to be desired. It has been found acceptable in all respects to the Dutch East Indies. As for Surinam and Curaçao, the expense involved will be too high for those countries.

Tuberculosis in Schools

The large number of cases of contagion from tuberculosis occurring in certain schools last year has shown the absolute necessity of adopting preventive measures.

The draft of a law the purpose of which is to protect school children against contagious diseases that are likely to be communicated to them by the instructional corps has been submitted. The law would require applicants for positions in schools to present a medical certificate attesting that they are not affected with open or active tuberculosis. Periodic medical examinations of the instructing personnel are associated with difficulties by reason of the excessive number of persons who would be required to submit to the examination. The measure will probably be just as effective if all the suspicious cases are reexamined by the health officers of each commune.

Several articles that have appeared were conceived with the purpose of removing from the schools all persons who are not holders of a health certificate. If, after a certain length of time, teachers who are removed are not reinstated, they will be subjected to a medical examination and will be pensioned.

The government admits the justice of according a new medical examination to every person dismissed who makes such a request. The sanitary commission appears fitted to organize such sanitary control.

Marriages

PAUL S. SLOAN, Charlevoix, Mich., to Miss Alta La Verne Zimmerman of Oberlin, Ohio, June 17.

JAMES STANLEY SMITH to Miss Eleanor Dexter Mussina, both of Williamsport, Pa., June 7.

JUSTIN ANTHONY ROGERS to Miss Alice Jane Vessey, both of San Francisco, August 14.

EUGENE C. EPPINGER, Boston, to Miss Catherine Codman at Westwood, Mass., July 13.

MORRIS ZIMMERMAN to Miss Estelle Keller, both of New York, August 20.

NED CAMP Atlanta, Ga., to Miss Julia Thompson of Barnesville June 15.

Deaths

George Hughes Kirby, professor of clinical psychiatry at Cornell University Medical College, New York, died suddenly August 11 at Wentworth-by-the-Sea, Portsmouth, N. H., aged 60. Dr Kirby was born at Goldsboro, N. C., in 1875. He received a bachelor of science degree from the University of North Carolina in 1896 and doctor of medicine from the Long Island College Hospital, Brooklyn, in 1899. From 1902 to 1908 he was associate in clinical psychiatry at the Psychiatric Institute in New York, he was director of the institute from 1917 to 1931 and he planned the New York State Psychiatric Institute and Hospital as a unit of the Columbia-Presbyterian Medical Centre. From 1908 to 1917 he was director of clinical psychiatry at the Manhattan State Hospital. During the World War he served in the Army medical corps and since the war has been consultant in neuropsychiatry for the United States Public Health Service. In 1921, he was appointed by the Secretary of the Treasury a member of the Board of Consultants to Develop Hospital Facilities Throughout the Country for Ex-Soldiers. He was professor of psychiatry at the University and Bellevue Hospital Medical College from 1914 to 1917, Cornell University Medical College from 1917 to 1927 and the Columbia University College of Physicians and Surgeons from 1927 to 1932. He was a member of the Medical Society of the State of New York, the American Neurological Association, the Association for Research in Nervous and Mental Disease and the National Committee for Mental Hygiene. Dr Kirby was a past president of the American Psychiatric Association, the New York Neurological Society, the New York Psychiatric Society and the New York Society for Clinical Psychiatry. He was a member of the medical council of the Veterans' Administration, Washington, D. C., consulting psychiatrist to the Presbyterian Hospital, New York Psychiatric Institute and the New York Neurological Institute. He was a member of the medical advisory committee of the New York State Hospital Development Commission. Dr Kirby was also associate editor of the *American Journal of Psychiatry* and was on the editorial board of the *Psychiatric Quarterly*.

Cornelius Van Zwaluwenburg of Riverside, Calif., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885, member of the House of Delegates of the American Medical Association, 1919-1923, past president of the California Medical Association and formerly counselor of the first district past president and secretary of the Kalamazoo (Mich.) Academy of Medicine, fellow of the American College of Surgeons, on the staff of the Riverside Community Hospital, aged 72, died, July 23.

John Murray Johnson of Bridgeport Conn., Long Island College Hospital, Brooklyn, 1895 past president of the Fairfield County Medical Society, member of the New England Obstetrical and Gynecological Society, fellow of the American College of Surgeons, formerly member of the board of education, on the staff of St. Vincent's Hospital, aged 61, died, July 2.

James Cornelius Gill, Chicago, Rush Medical College, Chicago, 1890, professor of clinical neurology at his alma mater, member of the Central Neuropsychiatric Association, on the staffs of the Presbyterian Hospital, Cook County Psychopathic Hospital and the Illinois Masonic Hospital, aged 69, died July 1, in the Washington Boulevard Hospital of uremia.

Walter Beran Wolfe of New York, Washington University School of Medicine, St. Louis, 1924 at one time served in the medical corps of the U. S. Navy, formerly psychiatrist of the Children's Court of Manhattan, author of a recent book entitled "A Woman's Best Years", aged 35, was killed, August 15, at Martigny, Switzerland, in an automobile accident.

William Matthew Kenna, Washington, D. C., Yale University School of Medicine, New Haven, 1892, assistant in clinical medicine, 1897-1898, and assistant in neurology 1900-1904 at his alma mater, served during the World War, aged 66 on the staff of St. Elizabeth's Hospital, where he died, July 1, of heart disease.

John Arthur Turner, Cincinnati, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1909, member of the Ohio State Medical Association, served during the World War, aged 51, died June 19 in the Deaconess Hospital, of coronary thrombosis and arteriosclerosis.

Homer Brush Jones, Brooklyn, University of the City of New York Medical Department 1891, member of the Medical Society of the State of New York, for many years connected

with the health department, on the staff of the Brooklyn Eye and Ear Hospital, aged 69, died, July 27, in the Brooklyn Hospital.

Gayle Aiken, New Orleans, Tulane University of Louisiana Medical Department, New Orleans 1891, Hahnemann Medical College and Hospital, Chicago, 1892, formerly secretary of the Homeopathic Board of Medical Examiners, aged 75, died, July 20, in the Baptist Hospital, of carcinoma of the prostate.

Frank Adelbert Southwick of Stevens Point, Wis., Medical School of Maine, Portland, 1881, for many years member of the school board, formerly health officer of Stevens Point, aged 77, on the staff of St. Michael's Hospital, where he died, July 23, of pulmonary embolism.

John W. Hermetet of Macomb, Ill., Chicago Homeopathic Medical College, 1896, formerly secretary of McDonough County Medical Society, medical director of the Marietta Phelps Hospital, aged 63, died, August 4, in the Memorial Hospital, Buffalo, of pneumonia.

William Jennings Bryan McAuliffe of Juneau, Alaska, University of Louisville (Ky.) School of Medicine, 1926, served during the World War, surgeon in charge of the United States Hospital for Natives, aged 38, was found dead, July 4, of coronary thrombosis.

Fred Wood Phifer of Wheatland, Wyo., University of Maryland School of Medicine, Baltimore, 1902, formerly secretary of the Platte County Medical Society, on the staff of the Wheatland General Hospital, aged 58, was killed, May 31, in an automobile accident.

Richard Ernest Poole, Veterans Home, Calif., University of Maryland School of Medicine, Baltimore, 1892, member of the California Medical Association, on the staff of the Veterans Home Hospital, aged 58, died, June 13, of chronic myocarditis.

John Hillman McLain, Jackson, Miss., Jefferson Medical College of Philadelphia, 1913, served during the World War, formerly on the staff of the Mississippi State Charity Hospital, aged 47, died, June 6, in a local hospital.

Stewart Vernon Irwin of Oakland, Calif., Johns Hopkins University School of Medicine, Baltimore, 1915, fellow of the American College of Physicians, served during the World War, aged 44, died, July 1, in San Francisco.

Otto Hensel of New York, Columbia University College of Physicians and Surgeons, New York, 1900, on the staff of the Lenox Hill Hospital, aged 59, died suddenly, July 14, in Honesdale, Pa., of coronary thrombosis.

Henry Charles Schomberg Elliot, Toronto, Ont., Canada, Trinity Medical College, Toronto, 1888, L.R.C.P., Edinburgh, Scotland, 1893, served during the World War, aged 68, died, July 1, in the Toronto General Hospital.

Allen Lewis Krepps, Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1897, member of the Medical Society of the State of Pennsylvania, aged 63, died, June 24, of chronic myelogenous leukemia.

James Monroe Smith, Watertown, N. Y., University of the City of New York Medical Department, 1889, member of the Medical Society of the State of New York, aged 72, died, May 10, of angina pectoris.

Menzo White Herriman, Long Island City, N. Y., Syracuse University College of Medicine, 1881, member of the Medical Society of the State of New York, aged 77, died, July 26, of carcinoma of the bladder.

George Noble Macomber, Denver, Pulte Medical College, Cincinnati, 1878, associate member of the Colorado State Medical Society, aged 81, was found dead, July 15, of angina pectoris and chronic myocarditis.

Jean Philippe Auguste Martin, Montreal, Que., Canada, School of Medicine and Surgery of Montreal, 1904, formerly on the staff of the Hotel Dieu Hospital, Campbellton, N. B., aged 58, died, April 1.

Mary Scott Jones, Boston, Woman's Medical College of Pennsylvania, Philadelphia 1892, member of the Massachusetts Medical Society, aged 80, died, June 16, in the New England Deaconess Hospital.

Roy McMillan Wheeler, Sycamore, Ill., Northwestern University Medical School, Chicago 1900, member of the Illinois State Medical Society, aged 64, died, May 19, of carbon monoxide poisoning.

William Henry Taylor, Chicago, Bennett College of Eclectic Medicine and Surgery, Chicago, 1904, served during the World War, aged 56, died, June 18, of heart disease and chronic nephritis.

Thaddeus M McNamara * Bakersfield, Calif., Cooper Medical College, San Francisco, 1905, past president of the Kern County Medical Society, aged 54, died, July 15, of coronary occlusion

Joseph Stanley Swoboda, Butte, Mont., University of Nebraska College of Medicine, Omaha, 1927, member of the Medical Association of Montana, aged 38, died, June 26, of acute myocarditis

Louis Adolph Grimme * Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1891, aged 70, died, July 21, of myocarditis and coronary sclerosis

Charles Vernell High Sr, Midland, Mich., Starling Medical College, Columbus, 1888, member of the Michigan State Medical Society, served during the World War, aged 69, died, June 15

George Robert Taylor, Clinton, N. Y., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1886, aged 75, died, May 11, of carcinoma of the colon and peritoneum

Charles Ridgway Blundell, San Gabriel, Calif. (licensed in New Jersey in 1894), veteran of the Spanish-American War, aged 66, died, June 25, of cerebral hemorrhage and bronchopneumonia

Goldie Dean Tyler, Jackson, S. C., Medical College of the State of South Carolina Charleston, 1896, aged 64, died June 1, in the University Hospital, Augusta, Ga., of lobar pneumonia

Oswald B. H. Bowser, Richmond, Va., Howard University College of Medicine, Washington, D. C., 1901, aged 55, died, July 6, of coronary embolism chronic myocarditis and nephritis

Joseph McGowan Harrigan, Wilkes-Barre, Pa., Temple University School of Medicine, Philadelphia, 1928, member of the Medical Society of the State of Pennsylvania, aged 33, died, June 15

James Clair Glasser * Blairsville, Pa., Medico Chirurgical College of Philadelphia, 1914, aged 48, died, May 18, in the Allegheny General Hospital, Pittsburgh, of streptococcal endocarditis

Jonathan O. Torrence, Hot Springs National Park, Ark., Meharry Medical College, Nashville, Tenn., 1917, aged 45, died, May 9, of pulmonary tuberculosis and cirrhosis of the liver

Robert M. Tafel, Phoenix, Ariz., Bennett College of Eclectic Medicine and Surgery, Chicago, 1895, aged 76, died, July 3, in Williams, of myocarditis and coronary thrombosis

Sam E. Rees, Purvis, Miss., Memphis (Tenn.) Hospital Medical College, 1902, member of the Mississippi State Medical Association, aged 64, died, July 2, of carcinoma of the lung

William Ernest Hubbert, Dallas, Texas, University of the South Medical Department, Sewanee, Tenn., 1901, served during the World War, aged 55, was shot and killed, July 31

Jessie Amelia Birnie, Peterborough, Ont., Canada, Trinity Medical College, Toronto, 1898, aged 77, died, June 17, in San Rafael, Calif., of carcinoma of the transverse colon

Elias Mortimer Duffield, Glassboro, N. J., Jefferson Medical College of Philadelphia, 1899, formerly mayor and president of the board of education, aged 60, died, June 27

William Vaux Ewers, Somerset, Bermuda, University of Pennsylvania Department of Medicine, Philadelphia, 1894, served during the World War, aged 63, died, July 4

Harper W. Robertson, Waelder, Texas, University of the City of New York Medical Department, 1890, aged 71, died, May 3, of coronary thrombosis and chronic myocarditis

Oran Merton Belfry, Lansdowne, Pa., Trinity Medical College, Toronto, Ont., Canada, 1884, L.R.C.P., L.R.C.S. Edinburgh, Scotland, 1884, aged 79, died, July 22

Francis Emerson Johnson, Erving, Mass., Dartmouth Medical School, Hanover, N. H., 1882, member of the Massachusetts Medical Society, aged 78, died, May 1

John S. Strickland, Alice, Texas, University of Tennessee Medical Department, Nashville, 1892, county health officer, aged 69, died, June 15, of pulmonary tuberculosis

John Bates Todd, Syracuse, N. Y., Albany (N. Y.) Medical College, 1874, member of the Medical Society of the State of New York, aged 80, died suddenly, June 23

William S. Yazell, Maysville, Ky., Cincinnati College of Medicine and Surgery, 1891, member of the Kentucky State Medical Association, aged 68, died, June 14

Anderson F. Brown * Malta Bend, Mo., Washington University School of Medicine, St. Louis, 1904, aged 58, died, July 5, in Kansas City, of pulmonary edema

Charles L. Boyd, Greeneville, Tenn., Baltimore Medical College, 1901, aged 58, died, June 19, in the Greeneville Hospital, of angina pectoris and hypertension

Harry Lee Brush, Conneaut Lake, Pa., Starling Medical College, Columbus, 1889, served during the World War, aged 69, died, June 22, of cerebral hemorrhage

Lyle Lester Bristol, Caliente, Nev., Loyola University School of Medicine, Chicago, 1930, aged 30, died, July 5, in Los Angeles, of melanosis

William Joseph Love * Opelika, Ala., Atlanta Medical College, 1882, past president of the Lee County Medical Society, aged 75, died, June 29

Levi Abram Sherk, Avon, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1873, aged 84, died, May 21, of cerebral hemorrhage

Charles William Marlatt, St. Thomas, Ont., Canada, Trinity Medical College, Toronto, 1872, M.R.C.S., England, 1872, aged 89, died, May 31

Elizabeth C. Zindel Taylor, Paris, Texas (licensed in Texas under the act of 1907), died, June 21, of a streptococcal infection of the lower lip

Charles Lemaire, Ste. Clothilde de Horton, Que., Canada, Victoria University Medical Department, Coburg, Ont., 1890, aged 70, died, March 27

Walter S. Wallace, Long Beach, Calif., College of Physicians and Surgeons, Keokuk, Iowa, 1878, aged 83, died, June 4, of valvular heart disease

Charles Henry Kingsbury, West Brookfield, Mass., University of Vermont College of Medicine, Burlington, 1899, aged 68, died, June 26

Mary Bird Bowers, Los Angeles, College of Physicians and Surgeons of San Francisco, 1898, aged 83, died, June 30, of cerebral thrombosis

John T. Pitkin, Buffalo, University of Buffalo School of Medicine, 1884, aged 78, died, May 17, of epithelioma of the hand with metastasis

William Henry Porter, Beaver, Pa., Western Pennsylvania Medical College, Pittsburgh, 1897, aged 74, died in June, of cerebral hemorrhage

William P. Thelen, Wilton, N. D., University of Minnesota Medical School, Minneapolis, 1902, aged 59, died, July 19, of heart disease

William Stephen Keegan, New York, Bellevue Hospital Medical College, New York, 1894, aged 84, died, July 26, of chronic myocarditis

Gustav Adolf R. Koerber * Hoisington, Kan., Omaha (Neb.) Medical College, 1897, aged 60, died, May 31, of diabetes mellitus

Joseph Jacobsohn, Memphis, Tenn., University of Louisville (Ky.) Medical Department, 1887, aged 79, died, May 13, of myocarditis

William Stanton Card, Fredonia, N. Y., Denver and Gross College of Medicine, 1903, aged 68, died, July 27, of cerebral hemorrhage

Thomas Eldon Graham, Albany, Mo., Barnes Medical College, St. Louis, 1893, aged 73, died, July 11, of coronary thrombosis

John Alexander Jones, Ottawa, Ont., Canada, Queen's University Faculty of Medicine, Kingston, 1874, aged 80, died, May 15

Rankin S. Reiff, Los Angeles, Jefferson Medical College of Philadelphia, 1907, aged 50, died, June 13, of chronic myocarditis

George Allen Kennedy * Limon, Colo., Denver and Gross College of Medicine, 1906, aged 55, died, June 27, of myocarditis

Wiley E. Sturgis, Los Angeles, Kansas City (Mo.) Medical College, 1897, aged 64, died, June 17, of carcinoma of the rectum

James Edward Rainey, Clarksville, Texas, Kentucky School of Medicine, Louisville, 1904, aged 57, died, June 20

Frank M. Jackman, Mead, Okla., Louisville (Ky.) Medical College, 1891, aged 72, died, June 16, of angina pectoris

Eli James, Fairland, Okla., Joplin College of Physicians and Surgeons, Joplin, Mo., 1881, aged 85, died, July 2

John A. Pennington, Cato, Ark. (licensed in Arkansas in 1907), aged 63, died, June 18, of heart disease

Correspondence

DIAGNOSIS BY CULTURAL METHODS OF RECTAL GONORRHEA IN WOMEN

To the Editor—The excellent results obtained by Dr A Charlotte Ruys in the diagnosis of rectal gonorrhea by cultural methods, as reported in her communication in *THE JOURNAL*, May 18, page 1844, indicate painstaking effort. To clarify my own position. In the article entitled "Rectal Gonorrhea in Women" (*THE JOURNAL*, January 19, p 192) it was stated "In our experience, cultural methods of isolation and identification [of gonococci from the rectum] have been inconclusive in too many instances to justify confidence in them." The value of cultural methods for the isolation of the organism is not questioned, but their application is difficult and the laboratory reports we received evidence this. I am informed by Herrold that the use of the oxydase reaction as emphasized by McLeod and his co-workers might increase the value of cultivation methods when gonococci are associated with a number of other bacteria, as in rectal cultures. The addition of 1 per cent p-aminodimethylaniline hydrochloride to the surface growth is followed by a black appearance of the gonococcus colonies within a few minutes. This procedure may simplify the problem.

To study by cultural methods a series such as I reported, a laboratory technician under competent direction, devoting a major portion of his time, if not all of it to the work would have been needed and such was not available. My experience leads me to believe that a diagnosis can generally be made from smears. The practical aspect of the matter is that such smears should be made from the rectum of women who have genital gonococcal infection and if well stained and properly studied will reveal the gonococci in the great majority of cases if these organisms are present.

CLEMENT L. MARTIN, M.D., Chicago

SUTURE OF STAB WOUND OF HEART

To the Editor—In their article on suture of stab wound of the heart (*THE JOURNAL*, June 1, p 1979) Drs George Benet and Charles Gordon Spivey say "The first recorded attempt to suture a stab wound of the heart was made by Cappelan in 1895." I desire to call to their attention the fact that on July 9, 1893 Dr Daniel Hale Williams, Negro surgeon of Provident Hospital in Chicago, performed a successful surgical exploration of the heart for a stab wound. He recorded this case in the *New York Medical Record* (51:437 [March 27] 1897) under the title "Stab Wound of Heart and Pericardium."

CHARLES H. GARVIN, M.D., Cleveland

ACETYL-BETA-METHYLCHOLINE

To the Editor—In the interest of scientific accuracy, attention should be called to certain misconceptions likely to arise from the report of the Council on Pharmacy and Chemistry on acetyl beta methylcholine (*THE JOURNAL*, July 27, p 281) and the editorial on the same subject (p 284). Both items suggest that this substance was first prepared by Taveau (*Bull 73, Hyg Lab U S P H S* October 1911) and that its pharmacologic properties were first established by Hunt (*ibid* and *J Pharmacol & Exper Therap* 6:477 1914-1915). Since serious doubt on the chemical identity of the compound prepared by Taveau for Hunt was shown by Major and Cline (*J Am Chem Soc* 54:244 1932) who did definitely synthesize acetyl beta-methylcholine and establish its true physical and chemical properties, it seems only fair that the Council at least should refer to Major and Cline's work. Simonart's

statement on the pharmacologic study of the pure compound and Major and Cline's statement on priority of its synthesis perhaps appeared too recently (*J Pharmacol & Exper Therap* 54:105 and 131 [May] 1935) for inclusion in the Council report.

Since the Council presumes to discuss the general physiologic significance of choline derivatives, it would also seem only fair to refer to the excellent review on this subject prepared by G. A. Alles (*Physiol Rev* 14:276 [April] 1934).

C. D. LEAKE, PH.D., San Francisco

Professor of Pharmacology, University
of California Medical School

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

TREATMENT OF SYPHILIS

To the Editor—A woman, aged 24 contracted syphilis about February 1933. It was a primary positive case when treatment was instituted (about the beginning of April 1933). Until May 10, 1933 she had received six weekly injections of neoarsphenamine at a clinic. On May 10 and 17 I gave her an injection of 0.6 Gm of neoarsphenamine. From May 4 to June 30 she received twice a week an intramuscular injection of 2 cc of Sol-Bi (Fraissee) and during this time she was on mixed treatment by mouth. Starting on July 10 she was given weekly injections of 0.6 Gm of neoarsphenamine up to September 11. September 18 biweekly injections of iodo-bismutol 2 cc were given until October 16. Starting October 16 she received weekly injections of 0.6 Gm of neoarsphenamine and on the same days that the neoarsphenamine was injected she would be given an intramuscular injection of 4 cc of iodo-bismutol. This was continued until December 11. On December 15 I started her on biweekly injections of 2 cc of bismogenol and continued this treatment until Jan. 29, 1934 on which she was given 0.3 Gm of neoarsphenamine. On February 2 she received 2 cc of bismogenol and on February 5 she received 0.3 Gm of neoarsphenamine. The Wassermann reaction on several occasions prior to this time had been 4 plus but on Jan. 15, 1934, it was plus minus and on February 5 it was again 4 plus. On February 19 she was again started on biweekly injections of bismogenol 2 cc and this was continued until April 6. On April 9 she was started on weekly injections of 0.6 Gm of neoarsphenamine until June 11. A spinal Wassermann test May 7 was reported as negative but the blood was still 4 plus. June 15 she was started on biweekly injections of 2 cc of mercuriosal and during this time was given 30 grains (2 Gm.) of potassium iodide three times a day. These were intramuscular injections but from July 12 to August 16 she was given 4 cc of mercuriosal intravenously twice a week and also was taking the potassium iodide by mouth. From August 20 to October 10 she received weekly injections of 0.45 Gm of neoarsphenamine. From Oct. 15, 1934 to Jan. 5, 1935 she received biweekly injections of 0.2 Gm of thio-bismol intramuscularly. December 11 the Wassermann reaction was 1 plus and on January 8 it was again 4 plus. January 8 I started her on weekly injections of silver arsphenamine 0.2 Gm and am also giving her injections of bismogenol 2 cc. at the same time. Do you advise continuing treatment in this case and if so how long and what treatment should the patient receive? If she should become pregnant would it be necessary to treat her during the pregnancy? Please omit name if published.

M.D. New York

ANSWER.—As near as it can be made out, the patient has had her syphilis about two years. In this period she has received forty-three injections of neoarsphenamine and three injections of silver arsphenamine, making a total of forty-six doses of an arsenical, sixteen injections of a bismuth preparation, with accompanying treatment of an unstated nature by mouth sixteen injections of iodo-bismutol, twenty-six of bismogenol, a bismuth salicylate, eighteen of mercuriosal, and twenty-two of thio-bismol—or a total of 80 bismuth and 18 mercuriosal injections. Continuous therapy has been wisely used. The only criticism that one would have of this therapy would be that the correspondent has not used Council accepted products entirely thus running the risk of using preparations of uncertain contents and actions. This applies to Sol-Bi. With respect to mercuriosal, it has been shown by Sollmann, Schreiber and Cole (Comparative Diuretic Response to Clinical Injections of Various Mercurials in process of publication) that this product has the same type of action as salyrgan and novasurol, a very high and rapid excretion of mercury, which drops rapidly and probably has little or no effect on syphilis. Thus in the period from June 15 to August 15, when the patient was under

therapy with mercurous either intramuscularly or intravenously, one would be forced to conclude that she was practically on vaccination.

A lumbar puncture has been wisely done and nothing found present in the spinal fluid. The chances are that the patient will not develop an involvement of this system in the future.

Probably a careful examination of the cardiovascular system should be made to rule out the possibility of an aortitis, to explain the persistently positive Wassermann reaction on the blood. If this is done and no evidence of cardiovascular disease is found after roentgen examination, one would be inclined to advise simply giving the patient a rest for two months, with plenty of fresh air and good food and regular hours, and then giving her a course of bismuth salicylate intramuscular injections, each 0.1 Gm, for a series of twelve injections once in six months for a period of another year or more, depending on circumstances. After all, the patient and not the syphilis is being treated, and the patient has already had good therapy. In a case like this, which has received good continuous treatment, a fetish should not be made of a positive Wassermann reaction. The Cooperative Clinical Studies have shown that the average patient who gets a total of from twenty to thirty injections of an arsenical and a like amount of heavy metals will probably escape most of the severe ravages of late syphilis.

In regard to the query as to the necessity of treatment during pregnancy, the Cooperative Clinical Group (Syphilis in Pregnancy, *Veneral Disease Information* March 1934) advises the treatment of every syphilitic woman through each pregnancy, whether she is considered cured or not.

THE STERILITY FERTILITY RHYTHM

To the Editor—In the book *The Rhythm of Sterility and Fertility of Women* by Leo J. Latz, M.D. the following statements are made based on the works of Dr. K. Ogino of Japan and Dr. H. Knaus of Austria: 1. The spermatozoa live about two days after being deposited in the mother's body. 2. The unmaturing ovum retains its germinating ability only for twenty-four hours after it leaves the ovary. 3. Conception depends entirely on whether or not the spermatozoon happens to be in the fallopian tube within a day after the ovum has left the ovary. 4. In the twenty-eight day cycle, the periods from the first to the tenth day and from the eighteenth to the twenty-eighth day are totally sterile periods of the woman. I should like to know how medical science regards these statements and how reliable and authentic they are. Kindly omit name.

M.D. Indiana

ANSWER—The statements made by Latz in regard to the fertility-sterility rhythm are subject to controversy.

1. Spermatozoa have been found alive in the fallopian tube of women for as long as three weeks and a half (Dührssen) and two weeks (Fraenkel) after coitus. It has not been proved, however, how long the human spermatozoa retain their fertilizing power. Knaus's experiments were made on lower mammals and this may not be exactly comparable to human conditions.

2. There is available some evidence in favor of the view that the human ovum is fertilizable for only a short time after it leaves the ovary. Allen and his co-workers obtained human ova from washings of the fallopian tubes at operation between the fifteenth and eighteenth days of the menstrual cycle, showing definite signs of degeneration. Too few such observations have been made, however, to serve as conclusive evidence of either the time of ovulation or the life of the ovum.

3. Conception requires that fecund male and female gametes unite in the fallopian tube or in the uterine cavity. While they usually meet in the ampulla of the tube, they may meet, rarely, in the fimbria or even in the ruptured graafian follicle (primary intrafollicular ovarian pregnancy). When the ovum has definitely been proved to live for only twenty-four hours, one may rightly conclude that the spermatozoon must reach the ovum within a day of its expulsion from the follicle in order for conception to occur. The proof, however, is still lacking.

4. There is considerable controversial evidence in the literature on whether or not in the human being there is a definite sterile period. That some women have sterile days is likely, however. Dickenson presented the following evidence of 1,342 cases of women having a regular twenty-eight day cycle, with a history of a single coitus resulting in pregnancy. Conception occurred in 13 per cent during menstruation, in 72 per cent during the first two weeks of the cycle, and in less than 10 per cent in the fourth or premenstrual week. Fraenkel, from a personally observed series, similarly reported that there was no time in the month at which conception has not occurred in some women. Asdell, from a study of 568 cases, showed that the conception curve rose from the first to the eighth day of the cycle, falling first rapidly, then gradually to the eighteenth day, and then falling abruptly to a low level. In the last ten days (premenstrual) he found 10 per cent of concep-

tions, and no complete period of sterility. In the human being it appears that the period of ovulation may be variable, occurring most frequently in the first two weeks of the menstrual cycle. In view of such data the theory of a regular fertility-sterility rhythm in women cannot yet be generally accepted. New data concerning ovulation and conception may be made available in the next decade if careful records are kept of the histories of fertile couples who are willing to follow the Ogino-Knaus program. This may prove or disprove the theory of a sterility-fertility rhythm.

POST TRAUMATIC EDEMA OF HAND

To the Editor—July 3, 1933, a weaver in a cotton mill sustained a contusion in the palm of the left hand getting it caught in the weaving machine. There was a good deal of reaction in the hand. No laceration was sustained. The reaction did not subside. Roentgenograms, which were taken later, revealed a small piece of steel near the head of the second metacarpal. This was removed by a physician but the hand continued swollen particularly along the course of the third metacarpal shaft and most apparent on the dorsum of the hand. This swelling has persisted to the present time. It has been incised twice and no pus obtained. The wounds healing promptly after each incision. Roentgen examination has always been negative for any bony pathologic changes. Foci of infection in the teeth were cleared over a year ago. The prostate was carefully checked by a competent genito-urinary man over a year ago. The tonsils are out and no suspicious tags remain. The Wassermann reaction is negative. General examination gives no other observations. Urinalysis is negative and the blood pressure normal. The patient is a former professional baseball player. At this time there is apparently a generalized swelling of the dorsum of the hand apparently centered about the shaft of the third metacarpal. The patient complains and has always complained of constant pain and the swelling is tender to pressure. There is some discoloration of a bluish character. Kindly omit name.

M.D. North Carolina.

ANSWER—This patient is probably suffering from a group of symptoms, which, for want of a better classification, are grouped under the name "post-traumatic edema." The symptom complex is a fairly common one. It is not possible to state what produces it and how best to relieve it. There is no doubt that repeated additional traumatizations—operative incisions, infection, vigorous massage and excessive manipulation or use of the hand—can accentuate and prolong the disability. Sympathectomy has been advised by some surgeons, but since the exact cause of the symptoms is not known or its exact nature understood it is obvious that such treatment does not rest on any definite logical basis.

Soaking of the hand in warm water for fifteen minutes twice daily, gently washing the hand throughout that period with an abundance of soap suds (a form of simple and gentle massage) and gentle use of the hand have gradually brought about recovery in a certain number of cases. The best indication that such treatment is helpful is a gradual disappearance of the swelling, discoloration and pain. The margin between the most helpful degree of activity and excessive activity is slight, and the patient's impatience to secure improvement frequently leads him to excessive activity in the hope of bringing about recovery. Persistence of pain and swelling usually indicate that the patient is doing too much and that the hand needs more rest and less exercise.

TREATMENT OF TUBERCULOSIS

To the Editor—A man recently came to my attention who developed signs and symptoms of incipient pulmonary tuberculosis a year ago. He was placed in bed for approximately three months. Following this he increased his exercise to the amount of becoming ambulatory. This was associated with a feeling of exhaustion, pleurisy pains and a small amount of coughing. After approximately three months he returned to bed for five months. Recently he has resumed light work. This was followed by abdominal pains, distention and embarrassed breathing. A fairly clear straw colored fluid was removed by paracentesis. There has been a loss of weight of approximately 15 pounds (6.8 Kg.) recently. A few teaspoonfuls of soft cereal causes abdominal cramps. The evening temperature ranges from 38 to 39 C (100.4 to 102.2 F). What is the treatment indicated in this case? Can you suggest any articles or recent textbooks that deal with treatment of this phase of tuberculosis? Kindly omit name.

M.D. Washington.

ANSWER—One would want to know whether there was any more evidence than signs and symptoms of minimal (incipient) pulmonary tuberculosis a year ago. Were x-ray films made of the chest? If there were only signs and symptoms available for making a diagnosis, the chances are approximately 80 to 20 that the disease already was moderately or far advanced, since signs and symptoms are usually late manifestations of pulmonary tuberculosis. To place this patient in bed constituted excellent treatment. Provided x-ray films were made and collapse therapy, particularly artificial pneumothorax, was not indicated. However, if the disease was unilateral and even minimal (incipient) in extent, artificial pneumothorax, in addition to bed rest, should

have given him a much better prognosis. Three months of bed rest alone usually is not enough but might have been adequate had artificial pneumothorax been instituted.

The appearance of symptoms, such as exhaustion, chest pain and coughing when the patient became ambulatory, was excellent evidence that the disease was not under control. This should have been determined by periodic x-ray films, red cell sedimentation tests and differential white cell counts (according to the method of Medlar) before or while graduated exercise was being employed. Being ambulatory for three months certainly did the patient no good. While five months back in bed probably controlled the symptoms, periodic x-ray films and the tests just mentioned would have shown that the lesions were far from being under control. This is a typical history of the tuberculous patient who does not have anything more definite instituted in the beginning than strict bed rest. In every case of minimal, progressive, pulmonary tuberculosis, which is unilateral, artificial pneumothorax should be instituted, since it is the only method of bringing about adequate rest of the diseased part. Lying in bed gives the lung but little rest.

It would now appear that the patient has a definite tuberculous peritonitis. This usually is not a serious condition in itself and the outcome probably will depend largely on the pulmonary disease, that is, its extent, its progressiveness, and the treatment that is possible at this stage. Most certainly the patient should be on strict bed rest, and if the pulmonary disease has not progressed beyond the stage at which artificial pneumothorax is indicated it should be instituted at once.

Heliotherapy administered to the abdomen, through the use of either of natural sunlight or of the mercury quartz vapor lamp, may aid considerably. In some cases oxyperitoneum is helpful. It consists of introducing oxygen or sterile air into the peritoneal cavity. Usually not more than 500 cc is administered at one time. This can be done with ordinary artificial pneumothorax equipment.

The presence of abdominal cramps following a few teaspoonfuls of soft cereal is suggestive of tuberculosis of the intestine. Heliotherapy might prove beneficial also for this condition. All rough food should be removed from the diet. More detailed description of the treatment is to be found in the recent edition of "Pulmonary Tuberculosis," by Fishberg, published by Lea & Febiger, Philadelphia, and "Tuberculosis in the Child and the Adult," by Pottenger, published by the C V Mosby Company, St. Louis 1934.

POISONING FROM SHOE DYE

To the Editor—I have a patient who operates a shoe shining parlor and who apparently is developing an allergy to the dyes. The satin dyes come from the Omega Shoe Polish Company of Los Angeles; the black leather dyes from the Angelus Shoe Polish Company of Los Angeles; and the spray dyes from the S & W Corporation Ltd of Los Angeles. Could you tell me what these dyes contain? I intend to do a series of patch tests on the patient but if any of these contain cyanide do you think it is safe procedure? If it is safe what is the exact technique of testing? Please omit name.

M D California

ANSWER—In some skin clinics patch tests are carried out as a routine with shoe dressing material as a test agent. No reasons are known for apprehension when the quantity of these test materials is kept low. In one university clinic records were found showing tests on one or more products of two of the companies specified in the query. However it is pointed out that certain reactions after patch tests may reflect the effects of direct irritation rather than sensitization. No attempt has been made to detect the precise ingredients of the products of the companies mentioned, instead, reference is made to the constituents common to products of many manufacturers. Despite some protestations to the contrary a fair number of shoe coatings still contain nitrobenzene as an ingredient, sometimes aniline and possibly wood alcohol. The chemicals are, however, more important as sources of systemic disease rather than dermatoses. Orthodichlorobenzene is much used in shoe dyes. Aniline black is a well known coloring agent. Paraphenylenediamine and other diamines find some application in coloring cheap yellow leather shoes. In the *Deutsche medizinische Wochenschrift* (52 451 [March 12] 1926) is a report of cyanide poisoning from an American made shoe cleanser. Dyers of shoe leather redyers of shoes such as in shoe-shine parlors and occasionally wearers of dyed shoes are known to develop skin disorders caused by shoe dyes solvents for such dyes various resins mineral and vegetable waxes and greases entering shoe dressings.

The following is a simple method for patch testing. The skin area (usually the forearm or the thigh) is gently cleansed. A few thicknesses (two or three) of gauze about 1 inch square are prepared. On this gauze is placed the test material either liquid, solid or semisolid. One drop is sufficient particularly

in the case of materials suspected of irritation. The rough equivalent of one drop represents the amount of solid or semisolid material to be applied in the test. At the same time, times water in equivalent amount to the test material is used for control purposes. At other times only the gauze itself is should be covered over with rubber damming or equivalent impervious material. These somewhat larger squares of rubber damming should be held in place by adhesive plaster. Finally a few turns of bandage should be applied. At the end of twenty-four hours, observation should be made for evidences of skin irritation. Unless the irritation is distinctly greater for the test material than for the controls, the test should be regarded as negative.

INFECTION OF SKIN FROM MICA

To the Editor—I am out on the Big Ditch 17 miles from Riverside Calif. We are building the last 7 miles in Mocking Bird Canyon through an old river bottom and it is one wet job. We carry about 400 men on our rolls all the time. We do have one time with boils and infection from mica. It will penetrate the hands and after two days a terrible infection will develop. It acts in a peculiar way seeming to bore right in through the skin and forming blebs which swell up and fill with fluid in size from a dime to a quarter. We blame lack of care the men take of themselves for the boils or rubbing of oil. Have you any suggestions? Where can I find discussion of the subject? I am interested how to prevent such occurrences.

ROBERT M DOWNSWORTH M D Perris Calif

ANSWER—Mica is, or may be similar to asbestos in its chemical nature. In the case of asbestos, it has been known that skin injuries after abrading contact lead to more than ordinary effects from mechanical injury. It is assumed that asbestos implanted in or beneath the skin exerts fibrogenic action such as is well known to take place in the lungs and peritoneum. A similar action possibly may be associated with mica, but this is not fully proved. It is not tenable to attribute "boils and infections" directly to mica. However, the cutting action of particles of mica may pave the way for the entry of infecting organisms.

California has the reputation of harboring a variety of fungus agents conducive to dermatoses. Because of the nature of the work described, invasion of the skin of the workers by mycotic agents is believed to be a reasonable possibility. On this account it is suggested that appropriate laboratory work be procured seeking the demonstration of the particular causative agent. In the meanwhile, as a preventive measure, it is believed that much may be gained by bettering the personal hygiene of the exposed workers. Thorough cleansing of the hands and forearms regularly should be obtained, possibly making use of disinfecting solutions. After thorough cleansing with or without resort to disinfectants, nonirritating emollients should be applied to the skin. Prior to undertaking work and for the purpose of lessening the cutting action of mica particles, something may be gained by the application to the hands and forearms of workers small quantities of hydrous wool fat. Carbolyzed lanolin may prove to be superior to the unmedicated variety.

These lesions are initiated by mechanical action of fine mineral particles into which there is a secondary invasion of either pyogenic or mycotic organisms.

PROTEIN PRODUCTS AND VASCULAR SPASM

To the Editor—What products of protein decomposition cause vascular spasm? What products of protein decomposition cause vascular dilation? Please omit name.

M D Connecticut

ANSWER—There is no specific product of protein that is known to cause spasm of the blood vessels. Excessive vasoconstriction of the peripheral vessels is seen in the course of some infectious diseases. Intravenous injection of foreign protein with production of a chill and fever, may be followed by constrictive effects during the period of chill. This vasomotor reaction is not specific but is simply a part of the mechanism of the chill and fever reaction. The most common basis of spasm of the small blood vessels is a hyperreactive sympathetic vasomotor mechanism. The vasomotor centers overreact to different stimuli. This constitutional form of vasoconstriction is believed to be present in Raynaud's disease. An opposing view is that there is some abnormality in the smaller vessels. There is a large group of secondary forms of vasospasm that are seen in the course of other conditions such as neuritis, organic disease of the blood vessels and poisoning by heavy metals such forms may be present also after disuse of an extremity or after trauma. In these recognized forms of abnormal vasoconstriction there is no reason to believe any protein is responsible.

Protein products may cause vasodilatation. Tissue extracts prepared from skeletal muscle, pancreas and heart muscle, when injected into the body, cause some degree of peripheral and general vasodilatation. There is widespread distribution of choline, which has vasodepressor effects, in tissues of the body. Histamine, an amine, may be found whenever protein is broken down into its amino acids, in the presence of putrefactive organisms. It is thus found in the intestinal tract and also in the tissues of the body. Histamine, or substances closely allied to it, may be released from the skin of certain subjects by cold. This may produce edema of the skin and typical systemic vasodepressor effects similar to those seen after the injection of histamine.

POSSIBLE CYST OF OVARY

To the Editor—Mrs. C. C., aged 45 was operated on when she was in her late twenties. The nature of the operation she does not know except that her ovaries were removed and that she has not menstruated since she was about 30. This is the best information she can give. Before the operation she gave normal (?) birth to one child who is still alive. In 1934 she slipped on an icy pavement, injuring her left side. She was dizzy following the fall had severe pain in the left utero-ovarian region and was confined to bed for six weeks. One month after the fall she had a profuse flow of blood from the vagina which lasted for one day and has not recurred. At present there is felt a mass about the size of an orange in the left ovarian region. The nature of the mass has not been determined. The woman feels fairly well and has gained weight. Hypothetically it is possible that she sustained a hematoma in the left pelvic region following the fall that some of the blood escaped through the vagina a month later, and that an organized clot is still present in that side? Kindly omit name. M D New York

ANSWER—The information concerning this case is incomplete. The statement is made that the patient was operated on when she was in her late twenties and an additional statement gives the information that the patient ceased menstruating when she was about 30 years of age. Presumably menstruation continued for a short time after the operation. If this is so, either both ovaries were not entirely removed or there existed some additional ovarian tissue outside the two ovaries.

While a hematoma in the left pelvic region may have resulted from the fall, it is hardly likely that this blood could have found its way into the vagina unless there existed a perforative injury on the left side of the vagina or the hematoma caused pressure necrosis at some point in the vagina. A more probable condition is a cyst of the remaining ovarian tissue. This cyst was most likely present before the accident. The latter may have resulted in injury to the cyst and in some way the mechanical insult to the cyst brought about bleeding from the uterus. The mass may be a special type of tumor of the remaining ovarian tissue. This group includes granulosa cell tumors, arrhenoblastomas, dysgerminomas and Brenner tumors. Some of these tumors induce bleeding in the uterus many years after the menstrual flow has ceased. In the presence of such tumors, no accident is necessary to bring about bleeding from the uterus. If the mass grows, bleeding recurs or there is pain and tenderness in the mass, it should be removed.

MIGRATING PHLEBITIS

To the Editor—I am treating a convalescent from lobar pneumonia and am quite puzzled by complications I have never seen before. She has multiple phlebitis over her entire body and all four extremities. She gives a history of having had the same thing about a year ago but at that time the phlebitis developed independently of any disease. She has an old myocarditis but no endocarditis as far I can make out.

D. STODDARD DOOMAN M.D. Garden City N. Y.

ANSWER—Migrating phlebitis is mostly regarded as a low-grade systemic infection, in which the intima of the vein is abnormally vulnerable or perhaps sensitized to a bacterial or toxic agent. The fact that the patient had multiple thromboses once before and has had a recurrence after pneumonia permits the assumption that the recent infection has acted as a sensitizer or reactivator of a slumbering process. Pneumonia per se is sometimes followed by thrombosis, as changes in the composition of the blood, such as increase in fibrinogen, produce a tendency to clotting of the blood.

The treatment is not very satisfactory. The disease runs its course and may end in a bland obliteration of the affected segments or may involve other segments and produce emboli. Every effort should be made to recover the organism from the blood stream or from an excised thrombotic vein so that a vaccine can be prepared. Minimal doses of this vaccine should be given so as to avoid general reactions or chills. In the absence of a specific vaccine triple typhoid vaccine may be administered cautiously from 100,000 to 1,000,000 bacteria being given intravenously, twice a week. Intravenous antiseptics have been advocated from time to time, more recently gentian violet.

Perhaps the best and certainly harmless is 40 per cent solution of methenamine, which can be given in 5 to 10 cc. doses daily. Needless to say, a satisfactory water intake and the maintenance of vitamin and mineral balance are important.

DERMATITIS

To the Editor—A woman, aged 43 complained of severe itching of the face and neck, with some redness of the face and neck and swelling of the face. There was large vesiculation with breaking of the vesicles. The rash extended to the chest and the back of the neck. The skin was flushed and there was a maculopapular type of rash with some small area on the neck which formed scaly patches almost like a crust. There was a maculopapular rash on the flexor surface of the lower arms and papules closely grouped on the dorsal surface of several of her fingers on the second phalanx. The rash is a dusky pink. The patient has been upset and nervous since the rash appeared and cannot sleep well because of the itching and burning. Scratching seems to bring out more papules which are light pink or the color of the skin. She has developed several boils on the back of the neck and in the axilla. Can you suggest a diagnosis from this history? Please omit name. M D, Alabama

ANSWER—The description suggests a dermatitis from some external contact. Does the patient have any house plants or has she handled paints or insect powder lately? All contacts, and there are many possibilities, should be investigated. Patch tests of cosmetics, cooking materials, feathers in pillows, and so on may be made, a small amount of the suspected material being placed on the uninvolved skin under a piece of oiled paper or gutta percha, fastened with adhesive plaster, and allowed to remain two days, provided itching does not occur in less time than that. If a dermatitis develops under any patch in two days or less this substance should be retested and, if again found positive, removed from the environment.

Scratching must be prevented, best by giving an antipruritic lotion to apply when itching occurs. Solution of aluminum acetate, 1 to 10, in cool water, as thin wet dressings alternating with calamine lotion with 0.5 per cent phenol are as good as any, but the patient's choice should determine the treatment as a rule. For the nervousness, bromides may be given by mouth or intravenously. The treatment of such cases is often difficult, as is the determination of the exciting cause.

The boils were secondary to the dermatitis, which caused a *locus minoris resistentiae*.

SILICOSIS NOT A SERIOUS HAZARD IN CAST IRON FOUNDRY

To the Editor—I have been doing the insurance work for a cast iron foundry for several years and would appreciate any information that you might give me regarding the danger of silicosis in men engaged in cleaning and polishing castings. After the castings are made they are put in a revolving machine called a rattler, to shake the excess sand and loose iron from the surface. They are then polished on emery wheels. How much danger is there of silicosis developing in men who have done this work for years and what would be the best way of keeping down this dust? Would early silicosis show on x-ray plates? Please omit name. M D, Virginia.

ANSWER—There is no reason why men engaged in cleaning castings and in tending machinery used for this purpose should be subjected to silicosis-producing dusts in harmful concentrations. Prevention of dust inhalation is an accomplished fact in many well conducted foundries, and improper conditions can be corrected by wholly practical devices (McConnell, W. J., and Fehnel, J. W. *J. Indust. Hyg.* 16:227 [July] 1934; McCord, C. P. Pamphlet published in 1932 by the National Foundry Association, Chicago).

Cleansing sand from castings by sand blasting or shot blasting is a recognized silicosis hazard entirely avoidable with modern equipment. Chipping off burrs and irregularities from sandy castings is likewise a practice that may cause silicosis and is readily avoidable.

The polishing of sand-free castings on emery wheels is standard foundry practice. The wheels gradually wear down, so that some finely divided abrasive and some iron dusts are thrown into the air. Neither of these dusts alone has been shown to cause silicosis. Information from the Norton Company, Worcester, Mass., is available on the design of dust exhausts for use with artificial abrasive wheels of all types. Such exhausts improve the working conditions.

Undoubtedly there is a silicosis hazard in the foundry that is conducted carelessly. At present the only method available for diagnosing early silicosis is by x-rays, and the foundry industry, like any other industry with a possible silicosis risk, should require periodic roentgen examinations of men with suspected dust exposure (Gardner, L. U. *The Pathologic Reaction in Various Pneumoconioses*, *THE JOURNAL*, Aug. 19, 1933, p. 594; Pancoast, H. K., and Pendergrass, E. P. *Roentgen Technic with Especial Reference to Examination of Diaphragm or Exclude Silicosis*, *J. Indust. Hyg.* 16:165 [May] 1934).

SINUS ON BRIDGE OF NOSE

To the Editor—A boy aged 12 years has a discharging sinus on the bridge of the nose it has been present since birth. At times no drainage will occur for days or weeks, then the nose and forehead will swell markedly over the base of the nose and inner half of each supra-orbital region. If the swelling is opened or allowed to open spontaneously pus and mucus drainage occurs and the swelling disappears. Then for days or weeks a slight drainage is present. During the time of drainage no other symptoms are present. I have tried injecting the sinus with Beck's paste and roentgenographing but I get a poor outline of the tract. The damming up caused by the paste causes swelling, headache, some fever and general toxemia. I thought the paste might aid in the healing process. Branchial cleft and dermoid cyst with sinus occur to me as likely diagnoses.

B B PARKER MD ALLERTON IOWA

ANSWER—The condition described is obviously rare. These fistulas have their openings high, as a rule, and may be followed downward to the lower end of the nasal bone or farther. They end nearly always blindly, not communicating with the nasal cavity. They may be classified as primary or secondary and when secondary usually are due to opening by a physician or to the spontaneous bursting of a dermoid cyst. The primary fistulas cannot be easily explained. One authority believes that the most likely cause is the improper closure during fetal life of the median nasal cleft, with possibly the capture of some amniotic membrane.

As to further diagnostic efforts, one might inject oil diluted one half with olive oil to avoid reaction and follow by roentgen examination.

Treatment rests between surgical extirpation and the use of some sclerosing preparation, as a modified Carnoy's solution (Cutler, E C, and Zollinger, R. M. Use of Sclerosing Solutions in Treatment of Cysts and Fistulas, *Am J Surg* 19 411 [March] 1933). Surgical removal would have to be complete. A small remnant of the tract left behind would in all likelihood cause a recurrence of the fistula. The use of a solution, as suggested, would probably be followed by painful reactions and would have to be repeated more than once and with proper safeguards.

BURSITIS

To the Editor—A man, aged 55 whose weight was between 233 and 240 pounds (106 and 109 Kg.) blood pressure 168 systolic, 90 diastolic, and urine examination always normal had negative past history except for rheumatic pains. Aug 25 1934 he struck his knee against an icebox and did not think much of the injury at the time although the knee felt sore and he lumped. September 5 he complained of pain in the knee and in various joints. He was given large doses of sodium salicylate and a bandage was applied to the knee which contained no fluid at that time. The patient continued to work in a store. October 18 20 cc. of syrupy fluid was withdrawn from the bursa under the quadriceps tendon above the patella. This was not connected with the knee joint. November 17 25 cc of the thick fluid was aspirated. November 19, 25 cc. was aspirated and the knee was put in a plaster cast. The cast was removed December 20 and 15 cc of fluid was aspirated and the cast reapplied. The fluid was aspirated Jan 8 and 18 1935. Following the last aspiration no fluid appeared and the knee felt well until February 28 when 25 cc of the thick fluid was aspirated and about 10 cc of salt solution injected. The knee was then tightly bandaged and the patient was told to remain in bed. He has not worked since early November. I have been anxious to inject the cavity which has been shut off from connection with the joint but have been advised not to taking the last aspiration when the salt solution was injected as my own tryout. A surgeon advised against removal of the sac. Please omit name.

M D New Jersey

ANSWER.—The case in question is classed as synovitis of the bursa, or bursitis.

It is probable that surgery including synovectomy or bursotomy, will be necessary but before this procedure is carried out the elements of trauma, infection and allergy should be investigated as thoroughly as possible otherwise recurrence might follow.

REMOVAL OF SILVER DEPOSITS FROM SKIN

To the Editor—In THE JOURNAL, May 11 page 1771 is a query from a doctor in Massachusetts about silver deposits on the skin. From the answer I judge that it was assumed that the deposit was below the epidermis. It is perfectly easy to remove superficial silver deposits by soaking the hands in a mixture of equal volumes of 25 per cent sodium hyposulphite (the ordinary hypo) and 10 per cent potassium ferricyanide. This is Farmer's reducer used in photography and is safer than the other effective mixture which is tincture of iodine followed by a dilute solution of potassium cyanide. The latter is dangerous except in the hands of experts who know enough not to dip their fingers into potassium cyanide if there are any cracks on them. Ordinary tincture of iodine is satisfactory and a 5 per cent cyanide solution is strong enough and will remove the silver iodide produced by the action of the iodine on the silver sulphide.

FRANCIS CARTER WOOD MD New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada Dec. 7. Applications must be filed not later than Nov 1. Sec. Dr Paul Titus 1015 Highland Bldg Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis Nov. 18. Application must be filed before Sept 15. Sec. Dr William H Wilder 122 S Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY St. Louis Jan. Sec. Dr Fremont A Chandler 180 N Michigan Ave. Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY Cincinnati Sept 14. Sec. Dr W P Wherry, 1500 Medical Arts Bldg Omaha.

AMERICAN BOARD OF PEDIATRICS Philadelphia Oct. 10 and St. Louis Nov 20. Sec. Dr C A Aldrich 723 Elm St., Winnetka Ill.

AMERICAN BOARD OF RADIOLOGY Detroit Dec. 12. Sec. Dr Byrl R Kirklin, Mayo Clinic Rochester Minn.

ARIZONA Basic Science Tucson Sept 17. Sec. Dr Robert L Nugent, Science Hall University of Arizona Tucson. Medical Phoenix Oct 12. Sec. Dr J H Patterson 826 Security Bldg Phoenix.

CALIFORNIA Sacramento Oct 21 24. Sec. Dr Charles B Pinkham 420 State Office Bldg Sacramento.

COLORADO Denver Oct 1. Sec. Dr Harvey W Snyder 422 State Office Bldg, Denver.

GEORGIA Atlanta Oct. 8-9. Joint Secretary State Examining Boards Mr R C Coleman 111 State Capitol Atlanta.

IDAHO Boise Oct 1. Commissioner of Law Enforcement, Hon Emmitt Pfost, 205 State House Boise.

ILLINOIS Chicago, Oct 22 24. Act Supt. of Regis Dept of Regis and Edu Mr Clinton P Bliss Springfield.

MICHIGAN Lansing Oct 8. Sec. Board of Registration in Medicine Dr J Earl McIntyre 202 3-4 Hollister Bldg Lansing.

MINNESOTA Basic Science Minneapolis Oct 12. Sec. Dr J C McKinley, 126 Millard Hall University of Minnesota, Minneapolis. Medical Minneapolis Oct 15 17. Sec. Dr Julian F Du Bois 350 St Peter St St. Paul.

MONTANA Helena Oct 1. Sec. Dr S A. Cooney 7 W 6th Ave. Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, Sept. 16-18. Ex Sec. Mr Everett S Elwood 225 S 15th St Philadelphia.

NEW HAMPSHIRE Concord Sept. 12 13. Sec. Board of Registration in Medicine Dr Charles Duncan State House Concord.

NEW JERSEY Trenton, Oct. 15 16. Sec. Dr Arthur W Belting 28 W State St Trenton.

NEW MEXICO Santa Fe Oct. 14. Sec. Dr Le Grand Ward Sena Plaza Santa Fe.

NEW YORK Albany Buffalo New York and Syracuse Sept. 16 19. Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany.

RHODE ISLAND Providence Oct 3-4. Dir. Department of Public Health Dr Edward A McLaughlin 319 State Office Bldg Providence.

WISCONSIN Basic Science Madison Sept 21. Sec. Professor Robert N Bauer 3414 W Wisconsin Ave Milwaukee.

WYOMING Cheyenne Oct. 7. Sec. Dr G M Anderson Capitol Bldg Cheyenne.

Mississippi June Report

Dr Felix J Underwood, executive officer, Mississippi State Board of Health, reports the written examination held in Jackson, June 25-26, 1935. The examination covered 12 subjects and included 96 questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, 30 of whom passed and 1 failed. Ten physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad (1935)	Per Cent	Reciprocity with
Emory University School of Medicine	811 86 861 867	(1935)	81	
Louisiana State University Medical Center		(1935)	82.8*	Georgia
Tulane University of Louisiana School of Medicine	(1935) 806 824 825 846 847 848 865, 868	(1931)	84.9	Kentucky
Meharry Medical College	874 879 886 887 89 89.2	(1934)	77.4	Louisiana
University of Tennessee College of Medicine	(1935) 769 813 816 832	(1934)	80.5	Alabama
Vanderbilt University School of Medicine	(1935) 853 859		86.4	Tennessee
School	LICENSED BY RECIPROCITY	Year Grad	Per Cent	Reciprocity with
Emory University School of Medicine		(1932 2)		Georgia
University of Louisville School of Medicine		(1928)		Kentucky
Tulane University of Louisiana School of Medicine		(1933)		Louisiana
Duke University School of Medicine		(1933)		Alabama
Meharry Medical College		(1907)		Tennessee
Univ of Tennessee College of Medicine		(1932)		Tennessee
School	LICENSED BY ENDORSEMENT	Year Grad	Per Cent	Reciprocity with
Northwestern University Medical School		(1934) N B M Ex		

* This applicant has received an M B degree and will receive an M D degree and Mississippi license on completion of internship. † Permitted to come before the board for examination by special act of the legislature.

Virginia June Examination

Dr J W Preston, secretary, Virginia State Board of Medical Examiners, reports the written examination held in Richmond, June 19-21, 1935. The examination covered 8 subjects. An average of 75 per cent was required to pass. Ninety-nine candidates were examined, 98 of whom passed and 1 failed. Eleven physicians were licensed by reciprocity and 1 physician was licensed by endorsement after a written examination. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1934)	82	
Howard University College of Medicine	(1934)	86	
Cornell University Medical College	(1934)	89	
University of Pennsylvania School of Medicine	(1935)	82	
Medical College of Virginia	(1934)	81	
82 (1935) 78 78, 80 80 81, 81, 82, 82 82, 83			
83 83, 83, 83 83 83 84 84 84 84 84 84			
85 85 86 86, 86, 86 86 87 87 87 88 88 88, 88			
University of Virginia Department of Medicine	(1935)	76	
78 79 79 80, 80 82, 82 83, 83, 83, 84 84 84			
84 84, 84 85 85 85 85, 85 85 85 85 85 86			
86 86, 87 87 87, 87, 88 88, 88 88, 89 89			
89 90, 90 90 93			
Osteopaths		75 81 84 84	

School	FAILED	Year Grad
Leonard Medical School, N C	(1910)	

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1930)	Colorado	
Howard University College of Medicine	(1933)	Missouri	
National Medical College Chicago	(1897)	Alabama	
University of Kansas School of Medicine	(1927)	New York	
Univ. of Maryland School of Medicine and College of Physicians and Surgeons (1932) Maryland	(1933)	N Carolina	
Long Island College of Medicine	(1933)	New York	
University of Pennsylvania School of Medicine	(1932)	Wisconsin	
McHarr Medical College	(1934)	Tennessee	
University of Tennessee College of Medicine	(1922)	Tennessee	
Medical College of Virginia	(1924)	W Virginia	
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad	of
Duke University School of Medicine	(1933)	N B M Ex	

Book Notices

The Treatment of Fractures. By Dr Lorenz Böhler, Director of the Hospital for Accidents Vienna. Fourth English edition translated from the fourth German edition by Ernest W Hey Groves, M.S. M.D. F.R.C.S. Consulting Surgeon Bristol General Hospital. Cloth. Price \$12. Pp 578 with 1 059 illustrations. Baltimore: William Wood & Company 1935.

Previous editions of this book in German and French have been reviewed in THE JOURNAL. The qualifications of the author are excellent. Hey Groves, the translator, has contributed much to the principles and practice of the treatment of fractures. Few books on the subject have presented the material as clearly and concisely as this one. Almost none have had the large number of beautiful and instructive illustrations. The book represents the outcome of the experience of nineteen years of treatment of more than 10,000 cases of fractures, the study of about 70,000 roentgenograms and the dissection of more than 300 fractures of the long bones chiefly during the war. The author has treated fractures under the most diverse conditions. The results of the treatment of fractures depend not merely on the use of certain appliances and methods but even more largely on the education of the surgeon and the organization of the clinic. The fundamental principles demonstrated by Böhler are the necessity for unity of control, loyal and efficient team work, accurate knowledge of the after-results and meticulous attention to details. Böhler has demonstrated that the proper treatment of fractures is not only a scientific problem and philanthropic duty but also a business proposition. The translator states that "it pays" to treat fractures well. The new material in the English edition deals with the anatomic conditions and the treatment of fractures and fracture-dislocations of the cervical spine that have been revised in the light of recent experience. The section on the calcaneus has been thoroughly revised, as a follow up of the cases has shown that reduction by the Phelps-Gocht clamp with tenotomy of the achilles tendon has not given good results owing to the recurrence of displacement. There is a section dealing with "mistakes," which has been elaborated for each type of fracture because it is possible to avoid these only by studying the mistakes already made by

others, and some of the procedures that Böhler formerly advised he now relegates to the category of "mistakes." It would require too lengthy a review to go into details concerning the treatment of particular fractures. The reader will be well repaid for reading this book. One can easily understand why Vienna is a mecca for young and old practitioners and students of the art and science of the treatment of fractures. When the history of fractures is written, Böhler's name will appear prominently, establishing a Böhler era or milestone. This book will rank high with all traumatic, orthopedic and general surgeons.

Emotions and Bodily Changes. A Survey of Literature on Psychosomatic Interrelationships 1910-1933. By H Flanders Dunbar, M.D. Ph.D. Departments of Medicine and Psychiatry, Columbia University. Published for the Josiah Macy Jr. Foundation. Cloth. Price \$5. Pp. 595. New York: Columbia University Press, 1935.

The relationship of the body to the mind and vice versa has been the subject of much study by the psychiatric, psychoanalytic and medical groups. The present volume is an attempt to bring together some of the vast research material that has been reported in the literature. Of the author's ideas concerning the mind-body relationship there is little direct information, for the book is a systematic collection of abstracts, rather than a thesis, concerning the problem at hand. It is possible, however, to perceive that the author agrees with leading psychiatrists and psychoanalysts that much can be done with the so-called physical disorders by means of psychologic treatment and that such treatment is as "scientific" as any other medical therapeutics. On the other hand, many psychologic symptoms are conceded to rest on a physical basis. In the first of the three sections of the book the development of mind-body theories is brought out, including an excellent discussion (by means of abstracts of articles) of methods of measuring the emotions. Part II takes up the changes in the nervous, respiratory and cardiac systems due to emotional action and interaction, stress being placed on metabolism. The third part comprises a short section on therapy. The final quarter of the book consists of a thorough bibliography. There are many items in the bibliography that are merely mentioned in the text of the book. The bibliography is of as much value to the student as the main part of the book. The present work should be stimulating to any one who wishes to orient himself in the psychologic aspect of disease. With psychoanalysts relieving sufferers from gastric ulcer and psychiatrists furnishing some of the theory for treating asthma and functional heart disease, the author's point is well taken when she says "Psychiatry is finding its place within medicine on the same basis as any other specialty" and "Psyche and soma are actually two aspects of a fundamental unity." The volume gives evidence of much insight, brilliance and extensive research into the literature and may well serve as a crystallizing influence in the field of mental medicine.

Handbuch der Ärztlichen Sachverständigen Tätigkeit. Herausgegeben von Professor Dr. Paul Dittlich. Band VI. Teil 2. Der Kindesmord in der Ärztlichen Sachverständigen Tätigkeit. Von Professor Dr. Paul Dittlich. Boards. Price 10 marks. Pp 118 with 50 illustrations. Berlin & Vienna: Urban & Schwarzenberg 1935.

This is the second part of the sixth volume of a handbook on the activities of physicians as experts, published with the assistance of the department of public health of the republic of Czechoslovakia. It deals with the medicolegal aspects of murder of the new-born. Full directions are given for the examination of new-born bodies under various conditions (thirty-five pages). The next section is devoted to the legal enactments concerning the crime in question in Austria, Germany and Czechoslovakia and to the determination of how long a dead infant may have lived after it was born. Then are considered the causes of death in the new-born—death before birth, death in the course of birth, natural death after birth, and violent death after birth. The other sections concern the kinds of murder of the new-born, intentional neglect and exposure of the new-born, and illustrative postmortem examinations with reports. The illustrations tell their story well. The presentation is clear, thorough, competent. It will be of service to the physician expert when he is required to aid the course of the law against taking the life of the new-born.

Diet Control A System of Eleven Hundred Diets for the Prescription of Diabetic, Anti Obesity and Measured Diets in General By George E. Anderson M.D. Attending Physician to the Brooklyn Hospital and Paul Chadbourn Eschweiler M.D., Assistant Attending Physician to the Brooklyn Hospital. Cloth Price \$3.50 Loose Leaf New York: Gallo & Ackerman Inc. 1934 1935

This contains twenty pamphlets, one of which is explanatory of the diabetic diet system employed by the authors while the remaining pamphlets are intended to be distributed to individual patients as diet prescriptions. This particular system is built on a "basic diet" (1,085 calories carbohydrate 100, protein 70, fat 45) which supports the principle of high carbohydrate-low fat diets generally advocated today and contains the minimum food essentials for optimum needs in the form of calcium, phosphorus, iron, protein, protective foods and vitamins. These are supplemented by additional carbohydrate, protein and fat units in accordance with a sliding scale of caloric values to meet the varying tolerance of the patients. Frankly, this is one of the most satisfactory schemes of diet that have been suggested. Its merits include a minimum of calculation and explanation on the part of the physician, while the patient is allowed a wide variety of food choice and the advantage of using common household measurements. Incidentally, the basic diet also serves as an antioesity regimen. The publication is primarily intended for patients in the Brooklyn Hospital, where the system originated and where instruction is given the patient during hospitalization, but it is worthy of the critical consideration of all physicians in the diabetic field.

Klinik und Therapie der Herzkrankheiten. Vorträge für praktische Ärzte Von Privatdozent Dr. D. Scherf, Assistent der I. medizinischen Universitätsklinik in Wien. Paper Price 6.80 marks. Pp 210 with 16 Illustrations. Vienna: Julius Springer 1935

This little volume of lectures for general practitioners deserves translation into English. It is replete with fundamental physiologic and clinical facts concerning the heart and the circulation. The introductory discussion of dyspnea and other symptoms and signs of cardiac insufficiency is a model of accuracy and lucidity. The diagnosis and differential diagnosis of the various types of heart disease are then treated briefly but exceedingly well. One regrets that, for lack of space, the author omitted discussion of congenital heart disease, pericarditis, bacterial endocarditis and the arrhythmias. The section on treatment is a store of clinical experience and wisdom, with one minor exception. This is a shot-gun mixture of all the known vasodilators and other substances, which the author administers to patients with angina pectoris. The chapter on digitalis therapy is admirable. Although the author has purposely omitted references to the literature, he has succeeded in bringing into his lectures all the recent contributions of worth in the field of cardiology. Physicians who study this book carefully will acquire a real enthusiasm for the diagnosis and treatment of their cardiac patients.

The Individual Criminal Studies in the Psychogenetics of Crime By Ben Karpman M.D. Psychotherapist St. Elizabeths Hospital Washington D.C. Volume I. Cases 1-5. Nervous and Mental Disease Monograph Series No. 59. Cloth. Price \$4.50 Pp 317. Washington D.C. The Nervous and Mental Disease Publishing Company 1935

This volume is an earnest bit of work consisting of a minute analysis of five criminal cases, all from St. Elizabeths Hospital, and hence all under the cloud of mental disease. The cases are each analyzed from the standpoint of the past experiences of the offender, and to the author's interpretation of factors concerned in the case he adds a second discussion consisting largely of a differential diagnosis. The cases are not typical either of the everyday offender or of the psychotic. They are borderline cases, diagnosed with difficulty and probably with some psychoneurotic substrata, a feature much overstressed by those who know psychiatry but not criminals. Each case is interesting because much of the "interpretive" part consists of a running life story. Nevertheless sociological documents such as the Jack Roller seem to be of more significance in revealing the mental mechanisms of criminals and the etiologic factors entering into them. At the end of each study is an analysis called a 'psychobiopsy' showing the author's opinion regarding salient features of the patient's life. There are three sections entitled 'crime mechanics,' dealing with crime in general apparently

written in part by an inmate revealing little that is new and in places showing much of the stereotype thinking of the chronic offender. Some of the author's dreams and other interpretations are valuable, but there are many statements of psychiatric definition and explanation that are extremely dubious. There is a section on criminal jargon that would only be in part recognized by the hardened offender. If one accepts this book not as a presentation and analysis of five nontypical offenders but as an expose of the problem of crime in relationship to psychology, it leaves something to be desired. It would perhaps be more convincing if the cases were selected from a prison, and if the details regarding the obtaining of rapport were presented. There are two vast maps inside the back cover, which are not of great value. The volume is apparently intended to be part of a bigger work and it may be that, integrated with a broader study, it could become a distinct contribution.

Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere. Herausgegeben von M. Gildemeister R. Goldschmidt R. Kuhn J. Parnas W. Ruhland und K. Thomas. Band XXXIII. Der Wasserhaushalt des gesunden und kranken Menschen. Von Dr. Hellmut Marx. Privatdozent an der Universität Berlin. Paper Price 27 marks. Pp 335, with 52 Illustrations. Berlin: Julius Springer 1935

Marx has presented probably the most comprehensive consideration of water metabolism in health and disease that can be found anywhere. In the first chapter he discusses the property of water and its importance to the organism, in the second, the method employed in the studies of water metabolism, in the third, the role of various organs in water metabolism, in the fourth, water in relation to edema, in the fifth, water in relation to output, in the sixth, the regulation of the water balance of the body and the part played by the cerebral centers, the midbrain and the hormones, in the seventh, the physiology of thirst. The bibliography is excellent. From both the physiologic and the clinical point of view a wealth of material is presented. The volume should prove of interest and value to students of metabolism in the laboratory and the clinic. It will probably constitute a standing contribution to our knowledge of this subject.

Principles of Ethics. By Dom Thomas Verner Moore Ph.D. M.D., Director of the Clinic for Mental and Nervous Diseases, Providence Hospital, Washington D.C. Lippincott's Nursing Manuals. Cloth. Price \$3. Pp 381. Philadelphia and London: J.B. Lippincott Company 1935

This is based on a theistic philosophy covering a wide range of individual and social relationships. It gives a free interpretation of moral rather than medical ethics from the point of view of a selective group. It expounds the behavioristic as well as the debatable questions of contraception and abortion. Its greatest value is its use as a reference work rather than as a textbook in dealing with the daily problems of nurses. The standpoint toward craniotomy is one that will interest surgeons as well as obstetricians. The book throughout has an arousing interest in the old philosophers, especially the concluding chapters which are rather an abrupt departure from the preceding ones. The literary style is modern and lucid, making it easy to read instead of onerous, as are most books of this kind. The value of the volume lies in the clear exposition of deeply rooted theistic theories forming the framework and background of principles of ethics that influence moral and medical decisions of many people.

Studies on the Dissociation of the Dysentery Bacilli By Erik Waaler from the Bacteriological Laboratory of the Norwegian Army. Paper Price 18.50 kroner. Pp. 176 with 53 Illustrations. Oslo: Jacob Dybwad 1935

This monograph gives the results of a detailed study of the dissociation forms of twenty-six strains of dysentery bacilli, mostly of the Flexner and Sonne types. The variants are classified chiefly by their antigenic behavior. Much of the discussion is of too technical a character to appeal to any but special students of the dissociation problem. Two points of general interest may be mentioned. First, a new variant derived from R forms is described which produces no antibodies when injected into rabbits, it is designated as R₀. Second, the processes of dissociation in the strains studied by Waaler have taken place in one direction only from S to R and further to R₀, no antigenic reversion was observed.

The Method of Action of Radium and X Rays on Living Tissues By Hector A. Colwell M.B., Ph.D. M.R.C.P. Awarded the Garton Prize and Gold Medal of the British Empire Cancer Campaign 1934. Cloth Price \$5. Pp. 164 with 34 illustrations. New York & London: Oxford University Press 1935.

In this comparatively small volume the author deals with the various phases of radiation effects on living tissues, including biologic, serologic and histologic aspects of the problem. The first chapters are devoted to the effects of radiation on cells and their components, to the chemical action of radiation, and to the influence of radiation on the reticulo-endothelial system and on the immunity actions of the body. The most important chapters deal with the effects of radiation on tumor growth and on resistance to tumor growth, and the action of radiation on living tumors. It is impossible in a short review even to signify the full content of this fascinating book. Although the author has to discuss a number of special questions, he never loses the broad general biologic view. The book meets a need and not only is it a convenient guide for the experimental worker but it gives to the clinical radiologist who wishes to administer his treatments with an intelligent understanding a real scientific and critical basis. A short bibliography is appended.

The Newcastle upon Tyne School of Medicine 1834-1934 By G. Grey Turner. Assisted by W. D. Arncliffe. Cloth Price 10/-. Pp. 224 with 50 illustrations. Newcastle upon Tyne: Andrew Reid & Company Ltd. 1934.

On the one hundredth year of its founding, the authors attempt to give a chronological account of the history of this famous school, which changed both name and habitation often. In doing so the authors admittedly rely heavily on "The History of the Medical School," published forty years ago by Dennis Embleton. However, many new additions are said to have been made by a great number of credited contributors. An introductory poem by Maurice Jacobs recounts some of the illustrious men of the faculty, not least of whom is Murray, who first successfully treated myxedema by means of thyroid. Throughout the volume are short biographic sketches of the various teachers in the medical school during the past hundred years as well as the names of some of the students. One of the latter, John Snow (p. 20), deserves more mention than allotted him, for he was not only himself "a skilled chloroformist" and etherist but it was he who put the administration of both chloroform and ether on a truly scientific basis.

Introduction to Psychology with Special Applications to Nursing and Nursing Problems By Edward S. Robinson. Professor of Psychology Yale University and Virginia Kirk, Director of Nursing Emma Pendleton Bradley Home East Providence R. I. Cloth Price \$2.50. Pp. 368, with 55 illustrations. New York: Macmillan Company 1935.

Most of the material of this book is taken from the senior author's Readings in Psychology and put in more popular style for consumption by nurses. The work is not intended for physicians or specialists. As a textbook for nurses it seems to assume too great an academic point of view. The academic psychologist as evidenced by this and other works seems far removed from the living human being with his complicated emotional life and environmental stresses. To the extent to which this is true, the volume fails to meet the real needs of the nurse. It has, however, a fairly elementary and readable summary of current psychologic data.

A Brief Outline of Modern Treatment of Fractures By H. Waldo Spiers, A.B. M.D. Professor of Orthopaedic and Fracture Surgery College of Medical Evangelists, Los Angeles, California. Cloth Price \$2. Pp. 129 with 109 illustrations. Baltimore: William Wood & Company 1935.

In this outline the author aims to touch only the high spots and their practical application. He discusses briefly some of the more recent accepted methods of treatment and presents the fundamental principles of fracture surgery. All the illustrations are line drawings and most of them are instructive. The secret in the treatment of many cases that appear to present delayed union is to give the reparative process more time. The author states that in one's haste to do things in new and radical ways one gets patients out of the hospital and on their feet and may not immobilize sufficiently. He outlines the factors that contribute to nonunion as failure to immobilize, interposition of soft tissue, ill advised operative procedure, insufficient circulation, dietary

deficiency and certain diseases. The fundamentals of the surgical treatment of nonunion are removal of scar, both soft tissue and bony, freshening of the ends of the fragments, fixation of the fragments—internal, external or both, and stimulation of bone regeneration by grafts, osteoperiosteal grafts or multiple drilling. He advises the surgeon to roentgenograph all fractures after reduction and to retain the films himself, to roentgenograph all suspicious injuries, to be prepared to release easily and quickly all constricting circular casts or bandages on an extremity, to protect the fracture until union is firm, to take the responsibility seriously and, if in difficulty, to call skilled consultation early. Brief criticism is justified as follows: Figure 67 was undoubtedly taken from G. G. Davis's Applied Anatomy and figure 97 from R. Watson Jones without due credit being given. All in all, it is a satisfactory book for the medical student.

Miscellany

ANTEPARTUM GROUP INSTRUCTION

RICHARD A. BOLT, M.D., DR.P.H.
Director Cleveland Child Health Association
AND
ELLA GEIB
Secretary to Director
CLEVELAND

Antepartum group instruction in Cleveland was initiated in 1922 by Mrs. Ellen D. Nicely, R.N., Nurse Director of Clinics, in the University Public Health Nursing District. The time of groups of mothers, awaiting their turn to interview the doctor in the clinic, was occupied in listening to the nurse as she explained in simple language matters of hygiene, nutrition, clothing and infant care.

The program was developed further under the Cleveland Health Council, and when its value had been demonstrated it was taken over by Maternity Hospital in 1929. This made possible the extension of group instruction in the eight maternity dispensaries throughout the city and in three other hospital clinics. Owing to contraction of funds in 1932, the Maternity Hospital was unable to continue the program. It then came under the direction of the Cleveland Child Health Association, which raised special funds for this purpose. The service was expanded and a second nurse was employed to assist in the program.

TO WHOM SERVICE IS OFFERED

The lectures now are open to any woman in Greater Cleveland who wishes to avail herself of the advantages of the classes. Until 1932 the lectures were given only to "clinic" or "free" patients and were conducted in hospital clinics. During 1932 an experimental class for the patients of private physicians was started in the Academy of Medicine of Cleveland. This proved so successful that several more classes for the patients of private physicians have been opened.

HOW PATIENTS ARE RECRUITED

Contact with clinic patients is made in hospital obstetric clinics on antepartum clinic days. The class usually precedes examination by the physician. Mothers coming to these clinics automatically attend the antepartum classes.

Patients of private physicians are instructed in classes separate from clinic patients. These are located in the Academy of Medicine of Cleveland, hospitals, recreation centers, and branch stations of the Visiting Nurse Association. Patients come to the classes through reference of their own physician, recommendation of former patients who have attended the classes, and occasional newspaper publicity. Recently detailed plans were agreed on by the Academy of Medicine of Cleve-

land and the Cleveland Child Health Association for the acceptance of patients in classes for private physicians. A copy of the agreement is given at the end of this article.

OUTLINE OF LECTURES

Eight lectures comprise each course. As soon as one series is completed, another is begun, so that patients may start on any lecture and continue until they have all eight lectures. Patients may repeat lectures if they so desire, and a number of mothers avail themselves of this opportunity. An attractive mimeographed outline accompanies each talk, topics of which are

- 1 Responsibilities of Motherhood and Importance of Medical Examination
Poster demonstration of growth and development of the baby
- 2 Personal Hygiene and Proper Dressing
Demonstration of corsets and binders
Demonstration of correct positions for sitting and resting in bed to bring about the greatest comfort
Discussion of sleep exercise elimination weight teeth and clothing
- 3 Diet of Expectant Mother
Poster demonstration of foods and menus
Graphic demonstration showing needed quantities of essential minerals
- 4 The Layette
Demonstration of complete baby outfit.
Advice on what is essential together with information on where the items may be purchased and current prices of each
- 5 Preparations for Delivery
Discussion of last ten days of pregnancy and first six weeks after the baby is born
Demonstration of preparation of bed for home delivery given in clinic classes
- 6 Habit Formation
Sleeping eating bathing, and elimination habits for baby discussed
Demonstration of care of diaper and use of chamber and training panties
- 7 Emotions
Fears anger, jealousy imagination play and playthings.
- 8 Hygiene of Nursing Mother and Care of the Baby
Demonstration of breast and abdominal supports
Demonstration of use of baby's tray
Demonstration of how to nurse the baby
Demonstrations of baby's bath are given to mothers before they leave the hospital. Only when requested are they given in the classes

TEACHING TECHNIQUES

Approach to the mother in the classes for private physicians is somewhat different from that for clinic patients because, as a rule, the former have a better educational background. In clinics the class usually lasts half an hour, but it may be extended if the physician is not ready for the patients at the end of that time. Lecture topics change every two weeks.

As the expectant mothers who attend classes for patients of private physicians meet specifically for the lecture period, it is possible to add more to these classes. Here the lecture period is fifty minutes, followed by a ten-minute discussion. The topics change weekly. These patients are given postcards to be mailed to the United States Children's Bureau, requesting the following pamphlets on antepartum and child care for further study

Prenatal Care
Infant Care
The Child From One to Six
Child Care
Child Management
Are You Training Your Child To Be Happy?

MOTHERCRAFT CLASSES

In addition to the lectures mothercraft classes are held in which the women are taught to make practical layettes. Materials are purchased in large lots at wholesale prices, and the garments are cut out prior to the classes. These are sold to the mothers at cost. Instruction includes all sewing stitches, simple crocheting and embroidering. Articles that are being made in the classes include nightgowns, kimonos, pantie style diapers nainsook dresses, nainsook slips, gertrudes, saques,

bonnets, booties, blankets, towels and wash cloths, baby bunnings, carriage robes, lap protectors and bath aprons. Many of the prospective mothers secure the entire layette in this way.

PERSONAL CONFERENCES

When a mother appears to have some special problem, the instructors arrange a time for a personal conference. Often the question is one that may be covered in a subsequent lecture. Sometimes fears or superstitions have been implanted in the woman's mind. Many do not understand the value of the doctor's examination. Sometimes the mother is troubled about something and is afraid or too timid to consult her doctor. In the latter cases the instructor tries to put the woman in the frame of mind to consult her physician, and, when she deems it advisable, the nurse telephones the physician to let him know the circumstances revealed to her so that he is prepared to help the patient on her next visit. The great value of these conferences is that they ease the mind of the expectant mother, giving her a clearer picture of what has been vague.

VISITS TO PATIENTS

It is impossible for the instructors to visit all the women who attend the classes. As information regarding delivery and postpartum care of clinic patients can be obtained from the clinic records, only such cases presenting special difficulties are visited. However, an attempt is made to visit the greater number of the patients of private physicians who are delivered in the hospitals. These visits usually are made on the days in which the instructor is at the hospital for a clinic class. In the case of some complication, such as a mental condition or an abnormal baby, a home visit may be made.

CALLS ON PHYSICIANS

When a physician is informed that his patients are attending the lectures, or when he first contemplates referring his patients to the classes, he often requests an interview with the instructor to learn exactly what instruction is given. The instructor then visits the physician on appointment in his office to explain the work. This usually clears up any misunderstanding and secures his hearty cooperation.

STUDENT INSTRUCTION

Students in the University Public Health Nursing District Teaching Center attend at least one lecture for observation. This provision applies to students in all Cleveland hospitals affiliating with the teaching district, who are taking two months' public health work in the district.

As an introduction to the antepartum project, postgraduate nurses from the School of Applied Social Sciences of Western Reserve University are given two group lectures by the antepartum instructors. With the help of the instructor in preparing lecture outlines, each student then teaches two of the clinic classes, a report of which is made to the teaching district.

TALKS TO SPECIAL GROUPS

On request, the antepartum instructors give lectures to outside groups, such as parent-teacher associations and church societies. Talks have been given to the clerks in the infant departments of the larger stores in order to give them a better understanding of what garments to suggest to the customer who is trying to select a suitable layette.

RECORDS

The patient of a private physician must present an admission card signed by her physician before she is registered in the class. These cards, which contain space for the patient's name and address, the physician's signature and the date issued, are furnished to physicians by the Academy of Medicine.

When an expectant mother enrolls in the class she is registered in an attendance book, with the following information

- | | |
|------------------------|--|
| 1. Registration number | 7. Month delivery is expected |
| 2. Name of mother | 8. Name of physician (unless a clinic case) |
| 3. Address | 9. Columns in which to list dates of attendance. |
| 4. Color | |
| 5. Parity | |
| 6. Age. | |

After the mother has been confined, the following information is added to the records

1. Date of delivery
2. Home or hospital delivery
3. Any complications in delivery or deformities of the new born infant
4. Deaths of mothers or infants, with causes

This information is secured from clinic or hospital records in the case of clinic patients. Patients of private physicians are furnished follow-up cards containing space for this information, in return envelopes, to be mailed to the Child Health Association office after delivery. This may be supplemented by hospital, physician, or Division of Health records when necessary. In this way a complete record is kept of each mother.

On receipt of the card from the mother announcing the arrival of the baby, a congratulatory card signed by the instructor is mailed to the mother from the office of the Child Health Association.

PERSONNEL

Qualifications necessary for the successful instruction of expectant mothers are many. A thorough training in public health nursing, with special emphasis on the hygiene of maternity and infancy, is the foundation. The instructor must acquire a knowledge of social hygiene, child psychology and nutrition, as these play important roles in maternal care. She should be versed in teaching methods, in public speaking, and in group and individual psychology. If mothercraft classes are included in the program, she must have a teaching knowledge of sewing.

She should know the regulations of the health department and the local hospitals and the preferences of the local obstetricians. She must keep abreast of new developments in her line. She should keep informed of what maternity and infant garments and equipment are on the market in order to advise mothers in making suitable selections. Above all, she must possess a personality that will secure the confidence of both the expectant mother and her physician.

COST OF PROGRAM

In considering the establishment of an antepartum group instruction program, finances must be considered. Necessary funds for the salaries of capable instructors must be provided. There is the initial cost of setting up the demonstrations for the lectures. In Cleveland the space, heat and janitor services for the classes are furnished by the organizations operating the buildings in which the classes are held. To carry the demonstrations satisfactorily and to get quickly from one class to another, it is advisable that the instructor drive a car, which means transportation expenses. Current expenses for stationery and other supplies also should be included. A part of this expense may be met by charging a nominal admission fee of patients of private physicians and by selling at cost the outlines and materials used in the classes.

SERVICE FIGURES

During 1934, lecture classes in Cleveland for clinic patients were held in four locations and for patients of private physicians in four locations, 646 classes were held, 2,305 individuals registered in the classes, with a total attendance of 12,785. The maternal mortality rate of women attending these classes in 1934 was 1.4 per thousand live births, compared with the city rate of 5.2. If deaths from abortions are eliminated, the city rate for 1934 was approximately 4 per thousand live births.

AGREEMENT BETWEEN CLEVELAND CHILD HEALTH ASSOCIATION AND ACADEMY OF MEDICINE

Following is a copy of the plan agreed on for the conduct of the lectures presented by the Cleveland Child Health Association and the Academy of Medicine of Cleveland.

1 The Academy of Medicine of Cleveland recognizes the value of the lectures on prenatal care and feels that they meet a definite need and that they should be continued.

2 The joint sponsorship of the lectures for patients of private physicians by the Cleveland Child Health Association and the Academy of Medicine of Cleveland is entirely satisfactory and there is no criticism of the lectures as conducted or of any individual associated with their presentation.

3 In order to assist in meeting the expenses of presenting these lectures, each applicant shall be charged the sum of one dollar for the course of eight lectures. The fee shall be elastic and may be waived in case the patient shall be unable to pay. The inability to pay the fee shall be decided by the physician referring the case or by the nurse in charge of the lecture, after investigation.

4 The fee shall be collected from the patient by the nurse in charge of the lecture and an account shall be rendered to the Academy of Medicine of all such money collected. All funds collected shall be applied by the Cleveland Child Health Association to meeting expenses incident to the presentation of the lectures.

5 No patient shall be accepted at the lectures without the consent of her physician.

6 No patient shall be admitted to the lectures except upon the presentation of an admission card supplied to her physician by the Academy of Medicine of Cleveland, which admission card is herein described.

7 In the case of a patient applying for admission to the lectures without first obtaining the reference of her physician, she shall be informed at once by the nurse in charge of the proper procedure for admission, but she may be permitted to attend that lecture at which she has first presented herself.

8 In case of such patients who present themselves without the reference of their physician the nurse in charge shall, in every case obtain from the patient the name and address of her physician and such patient shall be informed that the Academy of Medicine of Cleveland will communicate with her physician, explain to him the nature of the instruction given in the lectures, and, if he desires, furnish him with a proper admission card for his signature. This card may be sent to the office of the Academy of Medicine or it may be given to the patient to present at the next lecture.

9 In case the physician does not desire the admission of his patient to the lectures she may not be admitted and she shall be so informed by letter from the Academy of Medicine before the time of the next lecture.

10 The office of the Academy of Medicine of Cleveland shall communicate immediately with any physician whose patient presents herself at the lectures without his reference and shall explain to him the nature of instruction given in the lectures and shall tell such physician that his patient may be admitted only with his consent and if he then shall desire his patient to attend the lectures he shall be furnished with an admission card by which he may refer his patient to the lectures.

11 In case a patient attending the lectures without reference by a physician shall claim to have no physician and to know of none to whom she might go, such patient shall be referred by the nurse in charge to the office of the Academy of Medicine of Cleveland, which office shall, upon her application, furnish her with the names of three physicians of the type and in the location to fit her needs. No nurse shall at any time recommend a physician or refer a patient to one.

12 All the above provisions shall apply equally to physicians whether members or nonmembers of the Academy of Medicine of Cleveland.

13 There shall be designed and furnished to physicians who desire to refer patients to the lectures an admission card, which shall state that the lectures are conducted jointly by the Cleve

land Child Health Association and the Academy of Medicine of Cleveland, and shall contain a space for the patient's name and address and the physician's signature and the date issued. Such cards may be furnished only by the office of the Academy of Medicine of Cleveland to physicians.

14 There shall be no change in the procedure or method of supervision or in the conduct of the lectures except by joint approval of the Cleveland Child Health Association and the Academy of Medicine of Cleveland.

15 Nothing herein set forth shall apply to such lectures as are now conducted at certain of the hospitals of Cleveland
1900 Euclid Avenue.

Medicolegal

Compensation of Physicians Compensation for Medical Services Contingent on Recovery of Damages, Validity of Contract—Sophie Magid was injured through the negligence of a third person. The physician-plaintiff agreed to treat her and to accept as his compensation 20 per cent of any amount she might recover from the person responsible for her injuries. If she received nothing the physician was to obtain nothing. The patient thereafter started suit against the person responsible for her injuries but was reluctant to proceed. On the physician's insistence she proceeded to trial. At the trial the physician testified and procured another medical expert to testify, and the patient obtained a verdict for \$7,200. On the failure of the patient to pay the physician, he instituted this present action to recover 20 per cent of the \$7,200 verdict obtained by the patient. From a judgment for the patient, the physician appealed to the Supreme Judicial Court of Massachusetts.

The contract, said the Supreme Judicial Court entered into between the physician and the patient and the inference necessarily drawn therefrom, namely, that the physician would testify in behalf of the patient at a future trial, presents a case which has every element of an unlawful agreement. It contemplates legal proceedings it provides for a sharing in the fruits of litigation it is an agreement in which the physician had no previous interest in the subject matter of the litigation, and it provides that the fruit of the litigation contracted for shall be the only compensation the physician is to receive. Without invoking the rule governing such unlawful agreements continued the Supreme Judicial Court, it has been directly held that a contract by one injured to pay a percentage of the amount received from the one responsible for the injury to his physician for services in treating the injury is against public policy and void where the parties contemplated that the physician shall be a witness for his patient in case suit is necessary. The court accordingly affirmed the judgment of the trial court in favor of the patient.—*Venbergh v Magid (Mass)* 189 N E 110

Accident Insurance Trauma Inducing Spread of Quiescent Streptococcal Infection.—The defendant insurance company promised to pay certain benefits on the death of Lewis from bodily injuries effected directly and independently of all other causes by accidental means and due solely to external, violent and involuntary causes" resulting in continuous total disability from the date of the accident, but not for death due to disease, whether accidental or otherwise." Lewis, in diving June 15 struck his head on the bottom of a lake and fractured an infected tooth causing a generalized spread of the infection. Although complaining of dull head pains and extreme lassitude, and although having a temperature sometimes as high as 104 he continued at work until August 23, when he was taken to a hospital, where he died on August 29. His wife brought suit in the district court of the United States for the western district of Pennsylvania against the insurance company and recovered judgment. The insurance company appealed to the circuit court of appeals, third circuit, which at first affirmed the judgment of the district court but, on reargument reversed the judgment and ordered a new trial.

The insurance company contended that Lewis's death was not caused directly and independently of all other causes by accidental means, but by the dissemination of streptococci which were lodged in the roots of an abscessed tooth. To sustain its contention the insurance company cited a number of cases, which, in substance, held that no recovery may be had under a policy similar to the policy here in question if the death of the insured results from an aggravation of a preexisting disease and if the accident, alone, would not have caused the death. But, answered the circuit court of appeals, in all the cases cited the insured was not in normal health but was suffering from some well recognized present, persisting disease at the time of the accident, which aggravated the effects of the accident or which itself was aggravated by the accident, and which disease was a factor in causing the death. In this case however, Lewis was in good health not only doing his work daily without difficulty but taking part in sports and athletics. There were streptococci at the root of a tooth but they were apparently walled in and were not doing any perceptible harm. There are perhaps always germs of one kind or another in our bodies, confined quiescent and impotent, which may always remain so. The presence of these germs in an apparently normal and healthy body is not a "disease" within the meaning of the policy. The policy does not provide that the body must be free from every germ and defect, but it simply provides that it "does not cover death due to disease," such as those mentioned in the cases cited by the insurance company.

The circuit court of appeals agreed with the district court that Lewis died as a result of bodily injuries effected directly and independently of all other causes by accidental means within the meaning of the policy but reversed the judgment against the company, and ordered a new trial, because the record did not show, in the opinion of the court, that Lewis had suffered a continuous total disability from the date of the accident.—*Massachusetts Protective Ass'n v Lewis*, 72 F (2d) 952

Malpractice Sponge Left in Abdomen—The physician-defendant performed a cesarean operation on the plaintiff. The incision did not heal properly it ulcerated and discharged pus. About four months later another physician discovered a sponge in her abdomen. Thereafter the plaintiff sued the defendant and the case was tried by the court without a jury. The physician-defendant testified that the sponge found was of the type used for sponging "before entering an incision" and which should never be allowed to get loose in the body. He was unable to account for its presence in the patient's abdomen save that "its presence was the result of some accident about which witness can only advance a theory." The court rendered a judgment in favor of the physician and the patient appealed to the Supreme Court of Florida, division A.

It is negligence per se said the Supreme Court, for a physician to leave a sponge in a patient's body in the course of the performance of an operation. In such a case the burden of showing due care is on the physician. He cannot relieve himself from liability unless the sponge was so concealed that reasonable care on his part would not have disclosed it, and the patient's condition was such that, in his judgment, a special exploration for the sponge would have endangered the safety of the patient. Where a patient's condition is critical and the paramount requirement is to complete the operation in the shortest possible time, a failure to remove a sponge may or may not constitute actionable negligence, depending on the circumstances of the case the burden being on the physician to show to the satisfaction of the jury that the particular act was not blameworthy because of the supervening necessity to complete the operation without delay. In the present case the court continued, the defendant contended that a physician should not be deemed negligent when he has exercised every precaution under the exigencies of the case, to remove from the body of the patient all sponges, packs and other objects used in the operation, by removing all such objects discoverable by the sense of sight and touch and by keeping mental note of all such objects as were placed in the patient's body, and removing all of them to the best of his recollection at the time the incision is closed. But, answered the Supreme Court the evidence does not support this contention. The

defendant himself testified that he had to conclude the operation hurriedly for fear that the patient would die on the operating table before he could get the incision sewed up. But at the same time he admitted that the particular sponge, later found in the patient's body, was not an article that he had placed, or was required by any standard medical usage or practice to have placed, in the patient's abdominal cavity. On the contrary, he admitted in effect that the sponge was of a type used for sponging before entering an incision and had been allowed to get into the abdominal cavity as the "result of some accident about which witness can only advance a theory."

Even if it had been shown, said the court, that the defendant was required by the urgent necessities of the case to leave a sponge in the patient's abdomen, it was his legal duty so to inform his patient within a reasonable time thereafter so that she might seek as early relief as possible. The removal of all sponges used is part of a surgical operation and when a physician fails to remove a sponge he has used in the course of the operation he leaves his operation uncompleted and creates a new condition which imposes on him the legal duty of informing his patient and endeavoring with the means he has at hand to minimize and avoid untoward results likely to ensue therefrom.

The Supreme Court concluded that the trial court misapprehended the probative weight and legal effect of the evidence offered, reversed the judgment in favor of the physician, and ordered a new trial—*Smith v Zeagler (Fla)*, 157 So 328.

Trauma as Cause of Cancer—The plaintiff was injured, July 1, when an automobile driven by her husband collided with one of the defendant's wagons. Among other injuries sustained, one of her breasts was bruised and the overlying skin broken. Within seven weeks thereafter a mass developed at the site of the bruise, which was removed surgically, October 23. A pathologist found it to be "early carcinoma or cancer." The plaintiff sued the defendant, alleging that the cancer was caused by the accident. From a judgment for the plaintiff the defendant appealed to the Supreme Court of Wisconsin. While the appeal was pending the plaintiff died and the action was revived in the name of her administrator.

The defendant contended that the evidence was insufficient to show that the cancer was a result of the injuries sustained in the collision, that it is impossible in a particular case to say with a reasonable degree of certainty that cancer results from a specific injury. In the present case there was sufficient evidence, in the opinion of the court, to establish (a) the fact of injury or trauma, (b) that the injury was sufficiently severe to cause a bruising of the breast, (c) that prior to the injury there was no observable indication of the presence of a tumor, (d) that the tumor or cancer in question developed at the point where the injury was sustained, (e) that the presence of the tumor or cancer was observable within seven weeks from the time of the accident, and (f) that clinical diagnosis and roentgenologic evidence showed that the tumor was malignant. On the question of whether or not, in the face of these essential facts, it can be said with a reasonable degree of certainty that the cancer was caused by the injury sustained, the experts disagreed.

An expert witness, on behalf of the defendant, testified that the cancer did not result from the injury. The pathologist testified that his examination showed early carcinoma or cancer and that the breast also showed the results of chronic mastitis, some cysts and a hard area. He testified that the chronic condition had existed for several months, possibly longer, and that it might have been there for a year, that the cysts might have been there a number of weeks or several months or more. He expressed no opinion as to the cause of the cancer. An expert witness, on behalf of the plaintiff testified that the injury *might* have caused the cancer, but that physicians "are unable to look at or to examine in any known way any particular malignant growth and say that this did or it did not arise as a result of injury." Another witness stated that "Considering all the facts in hand, and the fact that so far as can be humanly told there was no tumor in her breast prior to the injury, and considering the fact that an acceptable period

had elapsed for such a cancer to develop to the size of a walnut, as given, and granting the fact that she had an adequate bruise, to the breast, it is my opinion that it is very probable that this cancer developed as a result of her injury." The testimony of this witness constituted the only evidence in the case, said the court, which tends to remove the question in dispute from the realm of doubt and speculation. The witness, however, assumed that there was an "adequate" bruise. Neither he nor any one else testified as to what an "adequate" bruise is or whether the bruise which the woman received was "adequate." He further assumed that there was no tumor in her breast prior to the injury, an assumption not warranted by the evidence. The evidence, said the Supreme Court, when analyzed, establishes no more than a possibility that the cancer resulted from the injury. Therefore the finding of the jury that the injury to the breast did cause the cancer was not sustained by the evidence.

During the trial a medical expert called by the defendant testified that he knew of no authority which stated that a sudden trauma may be followed by the development of a malignant growth. In cross-examining the witness, the plaintiff's counsel read an excerpt from a book on surgical pathology, with which the witness was familiar, to show that a reputable authority had made such a statement. Under the circumstances, said the court, the extract was admissible for the purpose for which it was offered.

In reversing the judgment of the circuit court, the Supreme Court remanded the case for a new trial, expressing the opinion that the facts in the case had not been fully developed.—*Brunns v Brandon Canning Co (Wis)*, 257 N W 35.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Cincinnati Sept. 14-20. Dr. William P. Wherry 107 South 17th Street, Omaha, Executive Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons Sky Top Pa. Sept. 16-18. Dr. James R. Bloss 418 Eleventh Street Huntington W. Va. Acting Secretary.
- American Clinical and Climatological Association Princeton N. J. Oct. 21-23. Dr. Francis M. Rackemann 263 Beacon Street Boston Secretary.
- American Congress of Physical Therapy Kansas City Mo. Sept. 9-12. Dr. Nathan H. Palmer 921 Canal Street New Orleans Secretary.
- American Hospital Association St. Louis Sept. 30-Oct. 4. Dr. Bert W. Caldwell 18 East Division Street Chicago Executive Secretary.
- American Public Health Association Milwaukee Oct. 7-10. Dr. Reginald M. Atwater 50 West 50th Street New York Executive Secretary.
- American Roentgen Ray Society Atlantic City N. J. Sept. 24-27. Dr. E. P. Pendergrass 3400 Spruce Street Philadelphia Secretary.
- Association of American Medical Colleges Toronto Canada Oct. 28-30. Dr. Fred C. Zapffe 5 South Wabash Avenue, Chicago Secretary.
- Association of Military Surgeons of the United States New York, Oct. 3-5. Dr. H. L. Gilchrist Army Medical Museum Washington, D. C., Secretary.
- Colorado State Medical Society Estes Park September 5-7. Mr. Harvey T. Sethman, 537 Republic Building Denver Executive Secretary.
- Delaware Medical Society of Wilmington Oct. 8-9. Dr. William H. Speer 917 Washington Street Wilmington Secretary.
- Indiana State Medical Association Gary Oct. 8-10. Mr. T. A. Hendricks 23 East Ohio Street Indianapolis Executive Secretary.
- Kansas City Southwest Clinical Society Kansas City Mo. Oct. 7-10. Dr. Ralph R. Coffey 1103 Grand Avenue Kansas City, Mo. Secretary.
- Kentucky State Medical Association Louisville Sept. 30-Oct. 3. Dr. A. T. McCormack 532 West Main Street Louisville Secretary.
- Michigan State Medical Society Sault Ste. Marie Sept. 23-25. Dr. Burton R. Corbus 313 Metz Building Grand Rapids Acting Secretary.
- Mississippi Valley Conference on Tuberculosis Madison Wis., Sept. 12-14. Mr. A. W. Jones 613 Locust Street, St. Louis, Secretary.
- Nevada State Medical Association Elko Oct. 25-26. Dr. Horace J. Brown 120 North Virginia Street Reno Secretary.
- Ohio State Medical Association Cincinnati Oct. 2-4. Mr. C. S. Nelson Hartman Theatre Building Columbus Executive Secretary.
- Omaha Mid West Clinical Society Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy 107 South 17th Street Omaha Secretary.
- Oregon State Medical Society Gearhart, Sept. 19-21. Dr. Blair Holcomb Stevens Building Portland Secretary.
- Pennsylvania Medical Society of the State of Harrisburg Sept. 30-Oct. 3. Dr. Walter F. Donaldson 500 Penn Avenue, Pittsburgh Secretary.
- Utah State Medical Association Logan September 5-7. Dr. George A. Curtis Judge Building Salt Lake City Secretary.
- Virginia Medical Society of Norfolk, Oct. 15-17. Miss A. V. Edwards 1200 East Clay Street Richmond Secretary.
- Wisconsin State Medical Society of Milwaukee Sept. 17-20. Mr. J. G. Crownhart, 119 East Washington Avenue Madison Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

5:140 (July) 1935

- Infections of the Hand J L Branch Montgomery—p 1
*Treatment of Severe Preeclampsia and Eclampsia with Especial Reference to Use of Ephedrine W B McGee New Orleans—p 4
The Nervous Child W H McCaslan Union Springs—p 7
Gallbladder Visualization. W Wilkerson Montgomery—p 13

Treatment of Severe Preeclampsia—McGee gives the symptoms of severe preeclampsia as generalized edema, elevation of the diastolic blood pressure to more than 110 mm. marked increase in weight, oliguria or anuria, more than a heavy trace of albumin in the urine with red blood cells and casts, epigastric pain, headache and dizziness and eye symptoms or lassitude. He advises hospitalization if possible, careful measure of intake and output of fluids, a dose of 1 ounce of magnesium sulphate, and restriction of fluids to 1,000 cc. a day if edema is present. Bidaily blood pressure and urine examinations should be made and the patient should be put on an eclamptic diet to be used not more than five days. Fruit and fruit juices, water and fruit ices, berries and melons, baked Irish potatoes, asparagus, carrots and lettuce. If the blood pressure is below 140 systolic and 90 diastolic with oliguria, three-eighths grain (0.024 Gm.) of ephedrine sulphate may be given orally every four hours. In eclampsia, in the event that convulsions or coma ensue, the treatment is wholly empirical. The fall in blood pressure, and corresponding decrease in urinary output caused by barbitol preparations, is counteracted by the administration of three-fourths grain (0.048 Gm.) of ephedrine sulphate, hypodermically, every four hours. The hypertension seen in eclampsia is undoubtedly a compensatory factor of the body in its attempt to excrete urine, chlorides and toxins through the already damaged kidneys. The ephedrine usually causes an elevation of blood pressure (Chen) this is followed by a relaxation of the spasms in the capillaries and an increased blood supply to the kidneys and brain. Any drug that tends to lower the blood pressure is contraindicated. If the convulsions persist after the intravenous injection of sodium amytal, one-fourth grain (0.016 Gm.) of morphine is indicated, followed by 3 grains (0.2 Gm.) of sodium amytal intramuscularly or 10 cc. of 25 per cent solution of magnesium sulphate, intramuscularly, repeated every three to six hours if necessary. If there is an initial low blood pressure, three-eighths grain of ephedrine should be given every four hours. Spinal puncture may help to relieve the intracranial pressure if there is an increase in spinal fluid unfortunately, the edema is usually incorporated in the brain tissues.

American Journal of Ophthalmology, St. Louis

18:605-698 (July) 1935

- Bilateral Temporal Pterygia P H Reed and L L Mayer Chicago—p 605
Aniseikonia. Some Clinical Observations W L Hughes Hempstead L I N Y—p 607
Common Disorders of Skin of Eyelids L Hollander and H L Baer Pittsburgh—p 616
Pupillary Light Reflex After Lesions of Posterior Commissure in the Cat H W Magoun S W Ranson and L L Mayer Chicago—p 624
Local Quinine Therapy in Trachoma Preliminary Report E Selinger Chicago—p 631
Uveoparotid Fever Case Report D G Cogan Boston—p 637
Malignant Anthrax Edema A S Ross and J S Shipman Camden N J—p 641
Corneal Corpuscles in Reaction of Hypersensitiveness H D Lamb St. Louis—p 644
Ocular Pathology of the New Born End Result Study W D Rowland, Boston—p 647

American Journal of Physiology, Baltimore

112:405-572 (July) 1935

- Excretion of Inulin by the Dog J A. Shannon, New York—p 405
Effect of One Border in Visual Field on Threshold of Another G A. Fry and S H Bartley St. Louis—p 414
Reflex Responses of Nictitating Membrane A Rosenbluth and H G Schwartz, Boston—p 422
Extrahepatic Biliary Tract During Anaphylaxis K Deissler and G M Higgins Rochester Minn—p 430
Effect of Intravenous Injections of Amino Acids on Motility of Stomach in Normal and Fasting Dogs H Bowman, J F Regan and E U Still Chicago—p 438
Disappearance of Digestive Inhibition with Repetition of Exercise Frances A Hellebrandt Elizabeth Brogdon and Sara L Hoopes Madison Wis—p 442
Effect of Acute Anoxemia on Hunger, Digestive Contractions and Secretion of Hydrochloric Acid in Man Frances A Hellebrandt, Elizabeth Brogdon and Sara L Hoopes Madison Wis—p 451
Tonus Rhythm in Isolated Gallbladder and Effect of Certain Drugs, G M Higgins K Deissler and F C Mann Rochester, Minn—p 461
Neurogenous Activation of Ciliated Epithelium A M Lucas St. Louis—p 468
Influence of Pituitary Growth Hormone on Phosphatase Activity of Bone and Kidney W E Wilkins J A Calhoun C Pilcher and E M Regan Nashville, Tenn—p 477
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Influence of Hyperpnea and of Variations of O₂ Tension and Carbon Dioxide Tension in Inspired Air on Hearing E Gellhorn and I G Spiesman Chicago—p 519
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Psychologic Effects from Breathing Air at Four Atmospheres Pressure A R Behnke, R M Thomson and E P Motley Boston—p 554
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American Journal of Public Health, New York

25:789-896 (July) 1935

- Significant Aspects of a Recent Official Survey Concerning the Household Use of Milk in Philadelphia S Egbert Philadelphia—p 789
*Culture Mediums Used for Routine Diphtheria Cultures with Suggested Modification of Loeffler's Blood Serum Medium. R L Laybourn, Topeka Kan—p 796
Outbreak of Milk Borne Hemolytic Streptococcal Infection A. W. Newitt J W Glasen and R W Pryer Lansing Mich—p 804
Wax Paraffin Ampules for Silver Nitrate Solution Used in Prevention of Ophthalmia Neonatorum W E Binnay Lansing Mich—p 813
Amebic and Other Intestinal Protozoal Infestations in Representative Groups of New York City R W Nauss and May H Salinger New York—p 819
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Fever of Typhoid Group in Members of Civilian Conservation Corps During 1934 G F Lull Washington D C—p 839
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Various Bacillus Typhosus Antigens Used for Macroscopic Widal M R. Moore Norwich, Conn—p 848
Analysis of Public Health Expenditures by Geographic Subdivisions W F Walker New York—p 851

Culture Mediums for Routine Diphtheria Cultures—According to Laybourn, changes in reaction occur during the storage of blood serum preserved with chloroform, which influences the reaction of coagulated serum mediums in which such serum is used. The color and consistency of serum-bouillon mediums are indicative of the reaction. The addition of sodium hydroxide solution to serum bouillon mixtures causes a hydrolysis which, if extensive, makes the consistency of the coagulum unsatisfactory for use. Human and hog serums require the use of less

alkali in the adjustment of the reaction than beef, sheep and horse serums, and they are preferable for this reason. Beef, sheep and horse serums form a softer coagulum than human and hog serums, which also makes them less satisfactory for use in throat culture mediums. The reaction of bouillon-serum mixtures changes during coagulation and sterilization, and allowance must be made for drift of reaction in adjusting the uncoagulated mixture. *Staphylococcus aureus* produces sufficient acid from the dextrose in Loeffler's medium in eighteen hours to influence greatly the luxuriance of growth, morphology and staining of *Corynebacterium diphtheriae*. A formula for diphtheria culture medium is suggested, which supports luxuriant growth of *Corynebacterium diphtheriae* with typical forms of the organism in the presence of *Staphylococcus aureus*.

American Journal of Surgery, New York

29 1170 (July) 1935

- Reconditioning the Polio Derelict. W Truslow, Brooklyn—p 4
The Injured Child. Review of Three Hundred and Twelve Cases. D Goldblatt and E Jewett, New York—p 11
*Interior Extraperitoneal Approach to Lumbar Sympathetic Nerves. P G Flothow Seattle—p 23
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Reconstruction of Columella Nasi. H L Updegraff, Hollywood, Calif.—p 29
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*Abscess of Thyroid. Discussion and Report of Four Cases. J Henderson, New York—p 36
Five Year Survey of Ectopic Pregnancy. C. W. Mueller, Brooklyn—p 42
*Bacteriophage in Treatment of Urinary Infections. H L. Wehrbein, Brooklyn—p 48
Id. Appendix on Technique of Phage Preparation. L. Nerb, Brooklyn—p 48
Ureteral Transplant. Preliminary Report of New Technique. W L Sherman, Eloise, Mich. C J Dinardo and J M Bowers, Detroit—p 54
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Progress of Maggot Therapy in the United States and Canada in Treatment of Suppurative Diseases. W Robinson, Washington, D C—p 67
*Maggot Therapy. Rapid Method of Removing Necrotic Tissues. L K Ferguson and C W McLaughlin Jr, Philadelphia—p 72
Pancreatic Lithiasis. Report of Cases. T C Bost, Charlotte, N C—p 85
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Free Perforation of Jejunal Ulcer. B W Wilkinson, Clarksburg, W Va.—p 120
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Vicious Jejunocolostomy with Chronic Ileac Obstruction. Importance of Intestinal Localization. F Christopher, Evanston, Ill.—p 124
Volvulus Neonatorum. L. P. Wershub, New York—p 128
Prevesical Abscess Following Acute Mastoiditis. L. G. Goldberg, Jamaica, N Y—p 133
Sarcoma of Cervix Uteri. G H Romberg, White Plains, N Y—p 136
Inguinal Hernia with Incarcerated Ovary and Tube. Infant of Six Weeks. L V Rush and H L Rush, Meriden, Miss.—p 140
Epithelioma Following Chronic Paronychia. I Silverman, Brooklyn—p 141
Compound Fracture Complicated by Prolonged Streptococcus and Staphylococcus Septicemia with Recovery. D C Moore, A B Blinn, East Orange, N J and W J MacNeal, New York—p 143

Extraperitoneal Approach to Lumbar Sympathetic Nerves.—In performing a lumbar sympathectomy, Flothow makes an incision almost transversely at the level of the umbilicus, extending from the edge of the rectus muscle to the flank. The skin and subcutaneous tissues down to the fascia of the oblique muscle are dissected widely to expose a large portion of the external oblique fibers. An incision is made in the fascia of the external oblique muscle parallel with its fibers, well laterally, almost to the costal margin down to the fascia of the rectus muscle. The fibers of the muscle are separated and retracted widely, exposing the internal oblique muscle. The internal oblique is separated in the direction of its fibers

from above the crest of the ilium again to the rectus muscle and retracted widely. The transversalis muscle is separated in the direction of its fibers as far as the exposure will permit. The transversalis fascia is opened and an extraperitoneal dissection of the retroperitoneal tissues is made. The retroperitoneal tissue, the peritoneum and its contents are pushed medially until the psoas muscle is reached. The abdominal contents are retracted medially, the fascia covering the psoas muscle is opened throughout the length of the exposure, and the aorta or the vena cava is retracted medially. The sympathetic ganglions will be found lying under either the aorta or the vena cava on the bodies of the lumbar vertebrae at the medial edge of the insertion of the psoas muscle to the vertebrae. The entire chain from the first to the fourth lumbar ganglions inclusive is exposed. After the operation is finished, it is only necessary to take a few sutures in the transversalis muscle, a running suture in the internal oblique muscle and a running suture in the fascia of the external oblique. The operation was done in as little time as twenty-five minutes. The operation is without shock to the patient. It offers a rapid entrance and an adequate exposure.

Abscess of the Thyroid.—Henderson states that thyroid abscess occurred only four times in 545 consecutive thyroid cases. The most common symptoms are deep unilateral pain in the thyroid region, painful swallowing, hoarseness and malaise. There is sometimes tumefaction of the gland, with tenderness and reddening of the overlying skin. The chin is often depressed on the sternum during swallowing. The temperature curve is septic in type with a tachycardia disproportionate to the pyrexia. A differential diagnosis must be made from acute infections of the upper respiratory tract, cervical lymphadenitis, hemorrhage into an adenoma, malignant conditions, Riedel's struma and, very rarely, thyroglossal or branchial cysts and cystic hygromas. The complications are those attendant on spread of the infectious process into the surrounding tissues. The treatment comprises prevention of suppuration if possible. When it does occur, early, adequate and prolonged drainage is indicated. Prognosis is guarded. It is poorer in the suppurative than in the nonsuppurative variety. Four cases are reported in patients aged from 2 to 46, three of whom were males. The etiologic agents were *Bacillus influenzae*, a non-hemolytic streptococcus and a hemolytic streptococcus. In the fourth case cultures did not yield any organism and it is possible that this was due to the tubercle bacillus or less likely to one of the higher micro-organisms. There was recurrence, probably due to insufficient drainage, in two cases. The author concludes that tuberculosis and other granulomas of the thyroid may occur but are rare.

Bacteriophage in Treatment of Urinary Infections.—According to Wehrbein, only relatively superficial infections can be treated by bacteriophage application. Pyelitis and cystitis are ideal conditions for this type of therapy, but, if kidney abscesses have occurred or if the prostate or seminal vesicles are infected, cure cannot be expected by means of bacteriophage therapy. The bacteriophage must be quickly effective before it is used. It should lyse one billion micro-organisms per cubic centimeter in from three to five hours. Prolonged incubation should show no second growth. The bacteriophage should be placed in as large a quantity and in as concentrated a form as possible in the infected area. If the kidney pelvis is infected, the pelvis should be actually filled with the bacteriophage solution by the use of a large catheter. If only the bladder is infected, at least 50 cc should be put into the empty bladder. All antiseptics must be avoided. If the first application of the bacteriophage is unsuccessful, it is useless to repeat. Of thirty-four cases treated by the author, ten were acute pyelitis cases. Of these, seven were cured through one application. The other three were improved but not cured. Of the twenty-four chronic and subacute cases of pyelitis, only five were cured, thirteen were benefited and six were failures. In addition to the thirty-four cases treated, the author successfully used bacteriophage in postoperative infections and in incised abscesses.

The Larval Treatment of Osteomyelitis.—Ferguson and McLaughlin widely incise the soft tissues and saucerize the bone to expose the involved area. The wound is packed with

gauze, which is not changed for at least three days except to renew the outside dressings. The muscle and skin wound is lined with petrolatum gauze to facilitate removal of the packing and to minimize the associated pain. On the fourth day the packing is removed. When the capillary ooze has ceased, the wound is irrigated with warm physiologic solution of sodium chloride and the maggots are introduced. Several methods of introducing maggots were used, all of which proved satisfactory. In small wounds it is frequently possible to transfer the maggots from the bottle to the wound with the handle of a sterile scalpel. When the larvae are embedded in food material, a small amount of physiologic solution of sodium chloride is poured into the bottle. The maggots usually float to the top of the fluid after gentle shaking. They may be caught on several layers of sterile gauze as the solution is poured from the bottle. The maggots are shaken from the gauze on the wound. In cases in which the compress form of dressing is used, the gauze containing the maggots is introduced directly into the wound. The chief complication observed is the marked skin excoriation produced by the wound secretion after introduction of the maggots. Pain and discomfort are complications frequently noted. These symptoms are due to the introduction of too many maggots into the wound. Removal of some of the maggots usually relieves most of the discomfort. Maggot therapy is especially effective in removing necrotic areolar tissue. Maggot action alone gives a more complete result than can be obtained by excision and without injury to recovering tissue. Maggot action is less rapid but distinctly helpful in attacking the necrotic fibrous tissue. Maggot therapy is useful not only in the treatment of osteomyelitis but in any other wound containing sloughing tissue that can be exposed by adequate incision. The authors report the successful treatment of thirteen cases of osteomyelitis, eight carbuncles, six sloughing ulcers of the leg, seven cases of gangrene and thirteen other lesions of soft tissues.

Archives of Internal Medicine, Chicago

56 1210 (July) 1935

- *Biologic Effects of Thymus Extract (Hanson). Accruing Acceleration in Growth and Development in Five Successive Generations of Rats Under Continuous Treatment with Thymus Extract. L. G. Rowntree, J. H. Clark, Philadelphia, and A. M. Hanson, Fairbault, Minn., with technical assistance of A. Steinberg, Philadelphia.—p. 1
- Cost of Work in Patients with Hypermetabolism Due to Leukemia and to Exophthalmic Goiter. Stella Paisley Briard, J. T. McClintock, and C. W. Baldrige. Iowa City.—p. 30
- Treatment of Congestive Heart Failure and Angina Pectoris by Total Ablation of Normal Thyroid Gland. XVI Sensitivity of Man to Epinephrine Injected Intravenously Before and After Total Thyroidectomy. J. E. F. Riseman, D. R. Gilligan, and H. L. Blumgart, Boston.—p. 38
- *Circulatory Changes in Angina Pectoris. Experimental Study. P. Shambaugh. Boston.—p. 59
- Acute Cardiac Infarction Involving Anterior and Posterior Surfaces of Left Ventricle. Electrocardiographic Characteristics. C. C. Wolferth and F. C. Wood, with collaboration of S. Bellet. Philadelphia.—p. 77
- *Action of Oil of Peppermint on Secretion and Motility of Stomach in Man. J. Meyer, L. Schuman, and H. Necheles. Chicago.—p. 88
- Acute Carbon Tetrachloride Poisoning. Report of Case. E. R. Lehnheer. Boston.—p. 98
- Diseases of Adrenal Glands. Review with Especial Reference to Clinical Aspects. E. J. Kepler. Rochester. Minn.—p. 105
- Disease of Thyroid Gland. Interpretative Review of Progress Toward Solution of Problem. W. M. Boothby. Rochester, Minn.—p. 136

Biologic Effects of Thymus Extract—Rowntree and his associates found that the thymus extract prepared from the thymus glands of young calves by Hanson when injected intraperitoneally, seemed to increase the weight and growth of prepubertal male and of mated mature female rats but exerted no noticeable effect on the new-born animals. Treatment of parent rats seems to increase slightly the number and size of the litters and the weight of the young at birth. The most striking biologic effects are observed in the offspring of successive generations of rats continuously treated by intraperitoneal injection and consist of accruing acceleration in growth and development, early eruption of teeth, appearance of fur, opening of the eyes, descent of the testes and opening of the vagina. While precocity was lacking in the early litters born of thymus treated parents in the first generation it appeared in later litters. This precocity is apparently not effected through the mother's milk. Young rats from thymus treated strains occasionally matured and bred early whether they received injections of

thymus extract or not, as both thymus-treated and control rats in the F_1 generation cast litters at forty-two and forty-five days, respectively. It appears that thymus extract (Hanson) affects the fertility and rate of growth and development of white rats. The interruption of thymus administration for one generation nullified to a large extent the effects of the previous administration of thymus, even though the treatment may have extended through several generations of rats. Rats receiving thymus extract appear unusually docile, healthy and contented. Excessive amounts of thymus extract result in toxicity, as evidenced by increasing auriculoventricular dissociation and eventual heart block.

Circulatory Changes in Angina Pectoris—Shambaugh employed essentially the procedure described by Sutton and Lueth in his investigations on the effect of experimental angina pectoris on the blood pressure, the effect of the elevation in the blood pressure on the production of experimental angina pectoris, and the effect of increasing the heart rate on the production of experimental angina pectoris. His observations on the effect of mechanical interference with the coronary blood flow in unanesthetized dogs are in accord with those of previous observers. There is a constant typical reaction that, without doubt, signifies pain. A graphic record of this reaction can be made only by noting changes in the respiratory tracing. The changes in the respiratory tracings are merely confirmatory and, in addition, serve to record the time relations of the response. When the respiration is altered with the pain reaction, and this is the rule, the author found that an acceleration is a more accurate indication than is an increase in amplitude. It was found unnecessary to carry the stimulus beyond the point at which a moderate degree of discomfort was produced. The experimental observations lend support to the clinical concept that the elevation of blood pressure frequently observed in angina pectoris is more likely the cause than the result of the attack. The tachycardia may also play a similar part, although this has not been demonstrated in the present experiments. The fact that these circulatory changes may precipitate attacks in certain cases of angina pectoris does not mean that they are the important factors in all cases of the disorder.

Action of Oil of Peppermint on Stomach—Meyer and his co-workers discuss the action of oil of peppermint on the motility and secretion of the stomach of patients having peptic ulcer. They have made the observation on themselves that the chewing of peppermint candy or lozenges relieves pain caused by hunger and by distress after a heavy meal. Oil of peppermint when given by itself or with a secretory stimulant depresses the secretion of acid by the stomach. The chloride content has been determined on samples of gastric juice before and after the introduction of alcohol and of alcohol and oil of peppermint into the stomach. The level of the chlorides was not affected when the free and combined acidity decreased after alcohol and oil of peppermint were given. This may be indicative of a change in the mechanism of secretion, i. e., suppression of the free hydrochloric acid and possible increase of the sodium chloride. Menthol was found to have no acid depressing effects. Experiments on dogs with gastric pouches indicate that the action of the oil is probably a local one on the mucosa of the pouch. The authors are treating a number of peptic ulcer patients with the essence of oil of peppermint. Relief of pain has definitely been noted in a few, but the period of observation is not sufficient to warrant a statement. In view of the popular use of peppermint for relief of gastric distress and the interest and importance of the mechanism of pain in ulcer, it might readily be argued by those who favor the theory of acid in relation to pain that the relief of symptoms following the use of oil of peppermint is due to a diminution in free acid. However there is still considerable dispute as to the factors involved in pain in peptic ulcer. In a previous article one of the authors proved that relief of pain occurred independent of the degree of free acidity in patients with chronic peptic ulcer. It was suggested that the relief of symptoms in patients with peptic ulcer following the use of foreign protein was due to an improvement of the circulation in the vascular bed in and about the ulcerated area, and the hypothesis was advanced that the pain of ulcer is due to ischemia and asphyxia resulting from depletion of the vascular bed in and about the ulcerated area. It was on the basis of this conception of the mechanism of

pain in peptic ulcer that the effects of an essential oil were tried, a substance that might cause a local hyperemia. The sense of warmth and the feeling of ease following the ingestion of essence of oil of peppermint are well known.

Archives of Ophthalmology, Chicago

14:1182 (July) 1935

- Exophthalmos from Surgical Diseases Especially as to Involvement of Protective Retrobulbar Space W P Eagleton, Newark N J—p 1
Exophthalmos: Ocular Complications: Causes from Primary Lesions in Orbit, Surgical Treatment A B Reese New York—p 41
Suprasellar Arachnoid Cyst A Barlow Philadelphia—p 53
Disposition of Fibers of Retinal Origin in Lateral Geniculate Body: Course and Termination of Fibers of Optic System in the Brain of the Cat R W Barris Chicago—p 61
Neurinoma of Orbit Olga Sitchevska New York—p 71
Measurement of Speed of Adjustment of Eye to Near and Far Vision C J Robertson Annapolis Md—p 82
Endophthalmitis Phaco-Anaphylactica: Clinical Study E L Goodman Washington D C—p 90
Biochemistry of Lens IV: Origin of Pigment in Lens J G Bellows Chicago—p 99

Illinois Medical Journal, Chicago

68:196 (July) 1935

- Distribution of Encephalitis (St Louis Type) in Illinois During 1932, 1933 and 1934 W H Tucker Springfield—p 61
Carcinoma and the General Practitioner B Markowitz Bloomington—p 66
Vitamin G Deficiency P L Day Little Rock Ark—p 69
Spontaneous Rupture of Uterus: Report of Case E S King Chicago—p 73
*Continuous Gastric Siphonage D Kasler and H P Miller Rock Island—p 77
Tularemia, S D Rosenthal Chicago—p 80
Familial Hemorrhagic Condition of Unusual Type J B Gillespie, Urbana—p 83
Severe Whooping Cough Responding to Pertussis Vaccine (Sauer): Report of Case F Stenn Chicago—p 86
Pernicious Anemia Following Gastric Surgery S J Lang Evanston—p 86
Rectal Carcinoma: Treatment and Prognosis C F Dixon, Rochester Minn—p 89
The Schick Control A I Love Chicago—p 93

Continuous Gastric Siphonage—According to Kasler and Miller, continuous siphonage may be used with success in post-abdominal operations in which acute dilatation of the stomach, gastric retention and upper intestinal ileus are likely to occur or have occurred. The comfort of the patient is greatly helped by relief from vomiting and ability to drink water freely. The apparatus is simple and efficient but requires care in handling. It consists of three units: a receptacle, a suction chamber, which is composed of the barrel of a 20 cc. syringe fitted with a two-holed rubber stopper, and a basin. The rubber stopper is fitted with two glass connectors. One is straight and is connected by rubber tubing to the receptacle above. The other connector is curved and joins the nasal tube. The suction chamber empties into the basin by means of a suitable length of rubber tubing, the end of which is beneath the water in the basin. The receptacle is filled with water and allowed to drip at the rate of from 60 to 80 drops (4 to 53 cc.) per minute. The water runs out of the suction chamber through the tube from the chamber to the basin and creates a vacuum behind it, the force of which is exerted through the nasal tube. Soon after the suction is started, the stomach contents will appear and pass through to the basin. Continuous siphonage cannot be maintained by the simple use of a nasal catheter because the entrance of air and gas into the system interrupts the siphonage. By means of the apparatus the functional capacity of the stomach can be determined and the amount of fluid passing through the pylorus in either direction can be measured in cubic centimeters. The patient is encouraged to drink as much fluid as he likes and, as the gastro-intestinal tonus improves, increasing proportions of the oral intake will go through the pylorus instead of being removed by suction. Subtracting the oral intake from the difference between the amount in the basin and the amount placed in the receptacle above gives a certain quantity of fluid in cubic centimeters. This figure, known as the pyloric balance, tells what has happened to the fluid taken by mouth. When the amount recovered from the stomach is greater than the oral intake, the pyloric balance is negative, and when the amount taken by mouth is greater than the amount recovered from the stomach, the pyloric balance is positive. When continuous

siphonage is interrupted by a plug of mucus in the nasal tube, the tube should be withdrawn about one inch and reinserted. If this is unsuccessful in reestablishing the suction, the nasal tube should be disconnected and some water injected to clear it. The nasal tube should be removed, cleansed, sterilized and inserted into the other nostril every twenty-four hours. The authors report four cases in which continuous siphonage was employed. In the first case the patient was relieved of ileus and hiccups by this method when other methods had failed. In the second and third cases, early manifestations of ileus were present and these were checked. In the fourth case, postoperative vomiting and retention were efficiently relieved, and the apparatus added materially to the patient's comfort.

Iowa State Medical Society Journal, Des Moines

25:327-426 (July) 1935

- The American Medical Association W L Biering Des Moines—p 327
Relationship of Arterial Hypotension to Surgical Risk J S McQuiston Cedar Rapids—p 331
Aspiration Treatment of Empyema in Children R A. Strong New Orleans—p 334
Supracondylar Fractures of Humerus: New Method of Treatment V A Ruth, Des Moines—p 337
Hematopoietic Diseases and Nervous System F H Lamb, Davenport—p 340
*Some Clinical Manifestations of Chronic Encephalitis C G Barer Iowa City—p 342
Rational Treatment of Diarrhea B A Melgaard Sioux City—p 345
Intra Orbital Meningioma (Endothelioma) of Optic Nerve Sheath H E Thompson Dubuque—p 347

Manifestations of Chronic Encephalitis—Barer discusses the more common types of chronic encephalitis that result after an epidemic of epidemic (lethargic) encephalitis. The parkinsonian syndrome is most common and presents itself in various degrees at various intervals after the acute infection. The patient first complains of slowness of movement, stiffness, pain in the back of his neck, loss of vitality, shakiness and weakness. Some flexion of the entire spine is usually present. In walking there is a loss of the normal coordinated movement of swinging the arms and some festination. The eyes are fixed straight forward and there is some impairment or loss of the capacity for ocular convergence. The face has a blank, fixed expression. The skin is often greasy and the mouth is held partly open. The voice is weak, with articulation and phonation impaired. The muscular rigidity that is present in the paralysis agitans syndrome of chronic encephalitis is known as the cog-wheel type of rigidity. With this rigidity the paralysis agitans tremor sometimes develops. It is not seen as often in chronic encephalitis as it is in senile or true paralysis agitans. In all cases the tremor is synchronous and is increased in amplitude by emotion or exertion. Other symptoms and signs are palidness, micrographia, paradoxical kinesia, akathisia and disturbed liver function. The condition is progressive and after a variable length of time the patient becomes completely incapacitated. Oculogyric spasms of chronic encephalitis are pathognomonic of chronic encephalitis. With this condition the patient complains that his eyes suddenly roll upward and want to stay there. There is absence of pain, loss of vision and flashes of light or scotomas. There is sometimes an associated closing of the eyelids, turning of the head upward and to one side, and the desire to sleep. The eyes return to normal as suddenly as they go into the spasm. In the ophthalmoplegic type of chronic encephalitis there is sometimes inequality of the pupils with some impairment of the pupillary reflexes to light and in accommodation. There may be a ptosis of one or both eyelids, dimness or mistiness of vision or perhaps even definite muscle palsy. This type is frequently seen in conjunction with the paralysis agitans syndrome and the oculogyric spasm types of chronic encephalitis. In the narcoleptic type of chronic encephalitis there is an irresistible desire to sleep, which comes on at any time in the day, and the patient must go to sleep for a variable length of time. On awakening he is much refreshed. The second symptom, which sometimes occurs with the first, but never alone, is cataplexy. The author mentions the hemiplegic type, the myoclonic type, respiratory tics, tics of the facial and deglutatory muscles, the diabetes insipidus syndrome, the neuritic types, inversion of the sleep mechanism, convulsions, amyotrophic lateral sclerosis and myasthenia gravis. Chronic encephalitis is not the sequel of acute encephalitis, because the

clinical picture described does not appear immediately following the acute infection, the condition is progressive, and the histologic picture indicates an active change in the parenchyma, which is glial infiltration and perivascular infiltration. The parkinsonian syndrome of chronic encephalitis results from lesions in the substantia nigra. The symptoms being due chiefly to the death of nerve cells, attempts at specific therapy are hopeless, but palliative measures may be used.

Journal of Allergy, St. Louis

6: 415-516 (July) 1935

- Inhalation of Epinephrine for Relief of Asthmatic Symptoms J B Graesser and A H Rowe, Oakland, Calif.—p 415
Food Idiosyncrasy as Factor in Digestive Leukocyte Response. W T Vaughan, Richmond, Va.—p 421
Oral Desensitization to Common Foods Beatrice M Keston, Irene Waters and J G Hopkins New York—p 431
Studies of Specificity in Multiple Hypersensitiveness by Quantitative Titration and Absorption of Reagents J Harkavy and E Witebsky, New York—p 437
Practical Procedures in Investigation of Certain Allergic Dermatoses M B Sulzberger and A Rostenberg Jr New York—p 448
Patch Test for Gold Hypersensitivity M R Lichtenstein Chicago—p 460
Use of Horse Dust Oil and Thrasher Dust Oil in Contact Dermatitis C M Stroud St. Louis—p 464
Psychogenic Urticaria Case Study W C Menninger Topeka Kan and J E Kemp Chicago—p 467
Dermatitis from Proprietary Hair Tonic Search for Offending Ingredient by Patch Tests H Goodman New York—p 474
Drinking Water as Cause of Eczema L O Dutton El Paso, Texas—p 477
Studies in Atmospheric Pollen of San Francisco W C Deamer San Francisco and H E McMinn Oakland Calif with technical assistance of Bernadette Tilden and Elsa Brumlop—p 480
Botanical Survey of Northwestern California A H Rowe, Oakland Calif and J W Howe Arcata Calif—p 494
Death from Ten Grains of Aspirin N Francis O T Ghent and S S Bullen Rochester, N Y—p 504

Patch Test for Gold Hypersensitivity—Lichtenstein observed that exfoliative dermatitis, rashes, gastro-intestinal symptoms and neuritis in patients treated with gold compounds are due to the development of hypersensitivity. The patch test with 33 per cent gold sodium thiosulphate in hydrous wool fat is positive in about 50 per cent of those treated including all those presenting the complications mentioned and persists over a long period of time. The patch test, if performed frequently, will usually be found positive before complications occur. Patients treated with gold succinimide become sensitive to the patch test but rarely show any complications. Kidney injury cannot be correlated with hypersensitivity but appears to be a direct toxic effect of the gold compounds.

Journal of Biological Chemistry, Baltimore

110: 263-530 (July) 1935 Partial Index

- Galacturonic Acid as Precursor of Ascorbic Acid. Ruth Johnston and Kathryn Snee Potter Wellesley Mass.—p 279
Unrecognized Forms of Sulphur in Proteins Doris Blumenthal and H T Clarke New York—p 343
Determination of Thyroxine in Thyroid Substance N F Blau with technical assistance of A C Kibrick, New York—p 351
Photochemical Phenomena Involved in Vitamin G (B₂) Studies G C Supplee S Ansbacher and R C Bender Bainbridge, N Y—p 365
Composition of Cartilage Bone Dentin and Enamel M A Logan Boston—p 375
Chemo-Immunologic Studies on Soluble Specific Substance of Pneumococcus II Chemical Basis for Immunologic Relationship Between Capsular Polysaccharides of Types III and VIII Pneumococcus W F Goebel New York—p 391
Cystinuria IV Metabolism of Homocysteine and Homocystine. E Brand G F Cahill and R J Brock New York—p 399
Lactose in Plasma of Pregnant and Lactating Women R S Hubbard and H J Brock Buffalo—p 411
Availability of Calcium from Some Typical Foods M L Fincke and H C Sherman New York—p 421
Digitalis Saponogens W A Jacobs and J C E Simpson New York—p 429
Metabolism of Naphthalene in Adult and Growing Dogs J A Stekol New York—p 463
Micromethods for Determination of Ammonia Urea Total Nitrogen Uric Acid Creatinine (and Creatine) and Allantoin H Borsook Pasadena Calif—p 481
Nitrogen Metabolism of Isolated Tissues of the Rat H Borsook and C E P Jefferys Pasadena Calif—p 495
Formation of Fatty Acids from Glucose by *Aspergillus Niger* C F Schmidt Jr Rochester N Y—p 511
The Ergot Alkaloids V Hydrolysis of Ergotamine. W A Jacobs and L C Craig New York—p 521

Journal of Bone and Joint Surgery, Boston

17 531-826 (July) 1935

- Radical Operative Treatment of Bone and Joint Tuberculosis P J Erlacher Graz, Austria, translated by W P Blount, Milwaukee—p 536
Treatment of Giant Cell Tumors of Long Bones (A) by Surgery (B) by Irradiation C F Geschickter Baltimore—p 550
Association of Intrathoracic Lesions with Bone and Joint Tuberculosis Study of One Hundred Cases C M Meng and H I Chen Peiping China—p 552
Treatment of Acute Purulent Arthritis by Joint Washing and Closure H T Jones Los Angeles—p 559
Treatment of Chronic Rheumatic Polyarthritis and Spondylarthritis by Parathyroidectomy B Shkurov Kharkov U S S R—p 571
Traumatic Separation of Medial Epicondyle of Humerus in Adolescence J Dunlop Pasadena Calif—p 577
Cysts of Fibrocartilages of Knee Joint H Taylor, London England—p 588
Femoral Shortening for Equalization of Leg Length J W White Greenville, S C—p 597
Internal Derangement of Knee Joint W R Bristow London England—p 605
Knee-Flexion Deformity Following Polio-myelitis Its Correction by Operative Procedures R E Hughes Los Angeles—p 627
Spondylolisthesis Without Separate Neural Arch (Pseudospondylolisthesis of Jannhanns) T D Stewart Washington D C—p 640
Volkman's Contracture S G Jones Boston—p 649
Ischemic Paralysis from Pressure of Hematoma G M Morrison and H E Kennard Boston—p 656
Ischemic Paralysis of Leg Simulating Volkman's Contracture S G Jones and F J Cotton Boston—p 659
Treatment of Congenital Equinovarus (Clubfoot) M Forrester Brown London England—p 661
Treatment of Congenital Scoliosis Due to Hemivertebra L Mayer New York—p 671
Modification of Whitman's Treatment for Fracture of Neck of Femur G P Mills Birmingham England—p 679
Synergical Splint with Traction for Femoral Fractures A Hernandez Ros y Codornin Murcia Spain—p 682
Use of Colloidal Sulphur in Treatment of Arthritis T Wheelodon Richmond Va.—p 693
Treatment of Fractured Neck of Femur by Axial Fixation with Steel Wires D R Telson and N S Ransohoff New York—p 727
Subcutaneous Spike Fixation of Fresh Fractures of Neck of Femur F J Gaenslen Milwaukee—p 739
Destructive Spine Lesions Diagnosis by Needle Biopsy R C Robertson and R P Ball Chattanooga Tenn—p 749
Adolescent Sacro-Iliac Joint Syndrome M H Rogers and E N Cleaves Boston—p 759
Effect of Fractures on Blood Sugar R V Funsten University, Va—p 769
Slipping Patella or Recurrent Dislocation of Patella F R Ober Boston—p 774
Correction of Rachitic Deformities by Preliminary Decalcification H Finkelstein New York—p 780
Calcification in Supraspinatus Tendon E N Wardle Liverpool England—p 789
Spontaneous Shelf Formation in Ununited Fracture of Neck of Femur S Selig New York—p 792
Local Anesthesia in Knee Arthrotomies C Rombold Wichita Kan—p 794
Chair for Bilateral Ankylosis of Hip Joint J G Knobs Boston—p 796
Crepe Paper Bandage versus Sheet Wadding Roll A J Buka Pittsburgh—p 798
Spinal Pelvic Compression Brace B Koven and M T Koven Brooklyn—p 800
Ankle Joint Stabilization with Motion P M Girard Dallas, Texas—p 802

Treatment of Acute Purulent Arthritis—Jones reports eight cases and describes the method of treatment. After aspiration of the joint has given evidence of a purulent effusion and general and local symptoms have indicated more than a mild effusion, an incision is made into the joint. In the case of a knee, the incision is about 1 inch long, vertical and to one side of the proximal part of the patella. The joint is washed out carefully with physiologic solution of sodium chloride at 110 F, delivered through a catheter under moderate gravity pressure for a period of from twenty to thirty minutes. The joint is permitted to fill with fluid like a balloon and then to collapse when the fluid is allowed to escape, carrying away pus fibrin and other debris. An attempt is made to gain a water-tight closure of synovial membrane and capsule. Usually the skin also is closed. A cast is applied to afford rest to the joint and the progress is measured by noting the patient's general condition, the temperature, pulse, respiration, blood picture, urine and local symptoms and signs in the knee. The patients responded well to treatment. Trauma and a distant focus were closely related etiologic factors, causing the purulent arthritis in six of the eight patients. One cannot lightly dismiss

this relationship in a majority of the cases. In one case, in which osteomyelitis of the tibia developed associated with a septic knee joint, the septic tooth and the trauma to the region of the knee were both factors in the development of the osteomyelitis. One patient associated the onset of trouble with a very definite wrench to the knee while playing tennis, and he presented definite foci of infection. The surprising resistance of the synovial membrane to infection is illustrated by one case in which marked distention of the knee joint was discovered ten days after drainage of the adjacent tibia for osteomyelitis. The resistance of the synovial membrane to infection is probably associated with the bactericidal properties of the synovial fluid.

Treatment of Chronic Polyarthrititis by Parathyroidectomy—Schkurov investigated forty cases of chronic rheumatic polyarthrititis and spondylarthrititis treated by parathyroidectomy. Many of the patients were in the late stages of these diseases and had permanent deformities. Had parathyroidectomy been performed at an early stage, more satisfactory results would have been obtained. Parathyroidectomy cannot have any effect on the already ankylosed joints nor can it, without any subsequent orthopedic treatment, correct permanent deformities. Parathyroidectomy prevents the development of ankylosis, does away with rigidity of joints and creates the most favorable conditions for subsequent methods of correction of deformities and restoration of joint movement. The immediate results of this operation are good in almost all cases. Of the forty cases investigated, the late results proved to be good in twenty-two. This operation is only one means of prophylaxis and treatment of chronic rheumatic polyarthrititis and spondylarthrititis. In addition, it is essential to determine in each case the cause of illness and to outline a plan of treatment accordingly.

Volkman's Contracture—Jones found that certain elbow injuries, notably supracondylar fractures, are seen, together with a painful swollen elbow, an absent radial pulse and a cold anesthetic hand. If, after careful reduction, there is still diminished or absent radial pulse with loss of sensation of the hand, loss of voluntary motor power and pain in the elbow increasing hour by hour, Volkman's contracture is impending. Immediate operation is necessary. The operation of choice is fasciotomy. The author states that Volkman's contracture may occur in the absence of splints or tight bandages and that it is caused in certain cases by interruption of arterial circulation. This interruption may be due to direct injury to the artery itself or to intrinsic pressure on the artery caused by hemorrhage within the fascial envelop. The collateral circulation is sufficient if given an opportunity to function. The operation of fasciotomy, performed early, gives this opportunity.

Spike Fixation of Fractures of Neck of Femur—Gaenslen used the following method for the reduction and subcutaneous spike fixation of fractures of the neck of the femur under scopolamine-morphine anesthesia in ten cases. Roentgenograms of the two hips in the anteroposterior view are taken with the sound hip rotated inward about 15 degrees to prevent a foreshortened appearance of the neck, due to anterior inclination. This view discloses the site and character of the fracture on the injured side and the normal angle of the neck and the shaft as well as the length of the neck on the well side. A lateral view of the sound hip is taken to determine the angle of anterior inclination. Previously prepared posterior plaster half shells are applied to the lower extremities, with the hips and knees flexed to right angles to provide muscular relaxation. Strong upward traction is made in the direction of the long axis of the femur. Lateral pressure on the trochanter is made to correct possible anteroposterior displacement. Reduction was completed by these maneuvers. Abduction is added to fix firmly or to lock the fragments and also to make possible the taking of roentgenograms in both anteroposterior and lateral views without shifting the patient's position. To facilitate introduction of the spikes, the hip is abducted to bring the neck parallel to the surface of the table and rotated inward sufficiently to allow for the anterior inclination of the neck, thus bringing the neck not only parallel to the table but perpendicular to the long axis of the patient. The skin is surgically prepared and a sterile, coarse netting is stretched over the affected hip and held taut by rubber bands to displace the

heavy adipose layer. The trochanter limits are indicated on the skin surface by thrusting three hat pins into the hip region, parallel to the long axis of the neck, so that they pass tangentially over the anterior and posterior margins and the tip of the trochanter. With these pins to serve as landmarks, the cross section of the neck can be more readily visualized. This section is roughly 1.8 by 2.5 cm in diameter. Into the center of this area two Kirschner wires are introduced about 1 cm apart and to a depth of about 12 cm. The wires are identified with lead markers, and anteroposterior and lateral roentgenograms are taken. If the Kirschner wires are not satisfactory, efforts at more perfect reduction and insertion of guide wires are necessary. If the fracture surfaces overlap even slightly, the target is naturally reduced in size and the difficulties of spiking are materially increased. The first fixation spike is introduced through a tenotomy puncture wound and is drilled into the bone to a depth of from 3 to 4 cm. The spike is driven deeper with a mallet until its tip just engages the cortex of the head. If the placement of this spike is satisfactory, from two to four additional spikes are inserted. The hatpins and the two Kirschner wires are removed. The heavier fixation spikes are identified with lead markers and further roentgenograms are taken. These disclose whether the fragments are properly transfixed and whether the spikes are driven to the desired depth. If the position is satisfactory, the spikes are cut as short as possible. The skin is drawn over the ends and a dressing is applied over the puncture wounds. The patient is placed in bed with the leg resting on a pillow under the knee. Sling suspension may be added for comfort and to initiate active motion even on the first day. The spikes are removed in about three months. The author obtained good results in all cases.

Correction of Rachitic Deformities by Preliminary Decalcification—Finkelstein treated fifty cases of rachitic deformities of the lower extremities by the following method. Roentgenograms and photographs are taken. In bilateral deformities of the lower extremities, a double plaster spica is applied from waist to toes. The patient is kept in bed. All antirachitic measures are suspended. After four weeks, another roentgenogram is taken and compared with the original to ascertain the degree of atrophy. The patient is then prepared for anesthesia. After the casts have been removed, the limbs are slowly bent into a slightly overcorrected position. Excessive force is contraindicated, and complete transverse fractures with displacement of fragments should be avoided. In multiple deformities, the tibiae, the fibulae and the femurs can be corrected at one sitting. Extreme overcorrection of the deformities is unnecessary. Immediately after the correction, a double plaster spica is applied and, when the plaster is thoroughly dried, roentgenograms are again taken to determine the extent of improvement. Several days after the correction, general antirachitic measures are instituted, such as a high vitamin diet, cod liver or halibut liver oil with viosterol calcium phosphate and exposure to ultraviolet rays. Massage and exercises are begun as soon as the roentgenograms show sufficient recalcification, and gradually increased weight bearing is encouraged. The results of treatment have been satisfactory. No major complications were encountered. The hospitalization period rarely exceeded ten days.

Journal of General Physiology, New York

18:791-1010 (July 20) 1935 Partial Index

- Relation Between Birth Weight and Litter Size in Multiparous Mammals. E. V. Enzmann and W. J. Crozier. Cambridge, Mass.—p. 791
- Modification of Temperature Characteristics. I. W. J. Crozier. Cambridge, Mass.—p. 801
- Studies on Blood Coagulation. III. Constancy of Hydrogen Ion Concentration During Coagulation of Fibrinogen by Thrombin. H. Eagle. Philadelphia and J. P. Baumberger. San Francisco.—p. 809
- Id. IV. Nature of Clotting Deficiency in Hemophilia. H. Eagle. Philadelphia.—p. 813
- Correlation of Viscosities of Protein Solutions with Their Ability to Crystallize. D. B. Hand. Ithaca, N. Y.—p. 847
- Solubilities, Apparent Dissociation Constants and Thermodynamic Data of Dihaloalkylated Tyrosine Compounds. P. S. Winnek and C. L. A. Schmidt. Berkeley, Calif.—p. 889
- Vitamin A in Eye Tissues. G. Waid.—p. 905
- Response of Single Visual Sense Cells to Lights of Different Wavelengths. C. H. Graham and H. K. Hartline. Philadelphia.—p. 917
- Significance of Structure of Membrane for Its Selective Permeability. W. Wilbrandt. New York.—p. 933

Journal of Immunology, Baltimore

28: 413-496 (June) 1935

- Adaptation of Staphylococcus Bacteriophage to an Artificially Produced Antibacteriophage Serum F d Herelle and M L Rakieten New Haven, Conn.—p 413
- Chemical Composition of Active Principle of Tuberculin A L Differ ences in Antigenic Properties of Various Tuberculin Fractions Adsorption to Aluminum Hydroxide and Charcoal Florence B Seibert, Philadelphia—p 425
- Dedication of Serums and Other Biologic Products (Including Micro-Organisms) in Frozen State with Preservation of Original Qualities of Products So Treated W J Elser Roth A Thomas and G I Steffen, New York—p 433
- *Oral Immunization to Colds G E Rockwell and H C Van Kirk Cincinnati and H M Powell Indianapolis—p 475
- Relation of Heterophile Immunity to Incidence of Colds G E Rockwell and H C Van Kirk Cincinnati—p 485

Oral Immunization to Colds—Rockwell and his collaborators immunized a large group of persons orally to the secondary invaders of colds, using a vaccine made up of heterophile antibodies. The 500 patients who took the vaccine came from various walks of life and the 536 persons used as controls were chosen from the same environment. The average number of colds each patient had annually in the past three years age, sex, occupation and allergic history was obtained before the vaccine was given. The oral cold vaccine was made from pneumococci and streptococci. Since the desired immunity was a nontype specific heterophile active immunity, a single pneumococcus strain was used. This strain was DR-I, a well known nonpassaged, and mainly rough, variant from the Neufeld type I pneumococcus. The streptococcus was a hemolytic mouse-virulent laboratory strain. The treatment consisted of the ingestion of one capsule of starch adsorbed vaccine containing 100 billion pneumococci and 100 billion streptococci with a half glassful of cold water each morning before breakfast for seven consecutive mornings, after which term one capsule each week was taken throughout the season. Of the 500 treated cases thirty-eight had a history of continuous colds, while 425 had a history of from one to eight colds annually per person. Among the 536 controls, nine had a history of continuous colds, while 527 had a history of from only one to eight colds annually per person. Among the forty-seven patients who gave a history of continuous colds, the thirty eight who were given the oral cold vaccine had, for that year, a total of only forty-one colds, thus passing from a stage of continual coryza to an average of 1.08 colds per person, while of the nine persons used as controls only one reported a less severe type this year. Among those who for the past three years had a history of from one to eight colds annually per person, 462 patients having a yearly average total during the previous three years of 1,400 colds or 3.03 colds per person annually, while taking the vaccine this year had a total of only 604 colds, or an average of 1.3 colds per person and 1.73 colds less per person, a decrease of 57 per cent. The 527 persons used as controls had a yearly average total for the past three years, of 1,314 colds, or 2.49 colds per person annually. During the school year 1933-1934 this group had a total of 1,156 colds, or 2.19 colds per person, which is 0.3 cold less per person, or a decrease of 12 per cent. The essential decrease due to the oral cold vaccine is thus 45 per cent. The relationship between the response of the individual to the heterophile antigen and his incidence of colds is given in a separate article.

New York State Journal of Medicine, New York

35: 705-748 (July 15) 1935

- Some Physical Aspects of Mental Disease G Zilboorg New York—p 705
- Effect of Pollen Therapy on the Common Cold in Hay Fever Subjects L Sternberg New York—p 713
- Value of Cure Regimen in Treatment of Coronary Disease Critical Study C R Comstock H D Hunt and R S Hayden, Saratoga Springs—p 715
- Iosulin in Malnutrition of Nondiabetic Children A Tow New York—p 719
- Low Back Pain in Women B G P Shafiroff and A F Sava Brooklyn—p 722
- Acute Spurriation of the Mediastinum W B Farnum New York—p 724
- Protein Therapy for Bacillus Ducey Infections D O Gorlin New York—p 729
- Five Year Cures of Cancer Report of Group of Cases J M Swan Rochester—p 731

Oklahoma State Medical Assn. Journal, McAlester

28: 247-284 (July) 1935

- Status of Luog Compression in Treatment of Pulmonary Tuberculosis M Rogers Clinton—p 247
- Differential Diagnosis of Stones in Upper Urinary Tract, E. H. Fite, Muskogee—p 252
- Acute Appendicitis in Infants and Children A S Risser, Blackwell—p 254
- Contact Dermatitis R L Howard Oklahoma City—p 259
- Sympathetic Ophthalmia C H Haralson, Tulsa—p 262

Philippine Islands Med Association Journal, Manila

15 305-348 (June) 1935

- Iodasepine Cortical (Iodobenzomethylformine) in Treatment of Chronic Amebiasis C M Africa and E Y Garcia, Manila—p 305
- Further Observations on Course of Anesthesia Following Antileptotic Intradermal Injections M Lagrosa, J O Tioog and D Dini, Cuhon—p 312
- Parenteral Administration of Fresh and Boiled Leprotic Emulsions in Lepers M C Cruz, Cuhon—p 319
- Modified Abcession of Cornea (Keratomy) A R Ubaldo and C D Ayuyao, Manila—p 324
- Plea for Unity and Cooperation I Villarica Cebu Cebu—p 326

Science, New York

82: 19-46 (July 12) 1935

- *Lumbar Localization of Paralysis in Experimental Poliomyelitis After Intranasal Inoculation H K Faber San Francisco—p 42
- Coccobacilliform Bodies Associated with Infectious Fowl Coryza J B Nelson Princeton N J—p 43
- Role of Lipoids in X Ray Diffraction Patterns of Nerve F O Schmitt and R S Bear, St Louis and G L Clark Chicago—p 44

Lumbar Localization of Paralysis in Experimental Poliomyelitis—Faber experimented with intranasal inoculations of virus in fifty-seven monkeys to determine the region of initial paralysis. He believes that the infection beyond any reasonable doubt entered through the olfactory nerves and passed through the brain stem and spinal cord from above downward. Paralysis occurred first in the arms of twenty-five monkeys, in the legs of twenty-seven and in the arms and legs of five. These experiments, in which entrance of infection from the gastrointestinal tract can be ruled out and in which the legs were more often first involved than the arms, demonstrate that initial involvement of the lumbar cord cannot properly be used as evidence for the theory of the gastro intestinal portal of entry. They prove that the virus in descending through the cord can produce its first manifestations in the lower segments. Having observed that the virus is present in all levels of the cord including the cervical, before and when paralysis appears, the author explains the earlier and greater lumbar area paralysis by the fact that the anterior horn cell in that area are somewhat more susceptible than others to attack by the virus of poliomyelitis.

South Carolina Medical Assn Journal, Greenville

31: 111-128 (June) 1935

- Welch Bacillus Infections Treatment by Autofiltrate Method G R Dawson Jr, Charleston—p 111

Southwestern Medicine, Phoenix, Ariz

19 223-260 (July) 1935

- Some Remarks Concerning Clinical Pathology L O Dutton El Paso Texas—p 225
- Hereditary Optic Atrophy (Leber's Disease) H L Franklin Phoenix Ariz—p 227
- Missed Abortion R K Smith Tucson Ariz—p 230
- Silicosis G Thorngate, Phoenix Ariz—p 232
- Eye Problems of the General Practitioner M Greco San Francisco—p 236
- Census of Cases of Syphilis and of Gonorrhea Under Medical Care in New Mexico M J Exner and W Clarke New York—p 241
- External Otitis C Gwino El Paso Texas—p 243
- Graulocytopenia Case Report H J Felch, Phoenix Ariz—p 246

Tennessee State Medical Assn. Journal, Nashville

28 271-314 (July) 1935

- X Ray as Aid to the General Practitioner H G Reaves, Knoxville—p 271
- Disturbances of Labyrinth Causing Vertigo and Nausea R G Reaves Knoxville—p 278
- Clinical and Rehabilitation Aspects of Emphysema K. Dunham, Cincinnati—p 284
- Review of Two Hundred and Ninety Two Cases of Incomplete Abortions D W Smith, Nashville—p 288
- The Problem of the Obese E G Thompson Memphis—p 292
- Ectopic Pregnancy G R McSwain Paris—p 296

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

47: 277-318 (July) 1935

Photodynamic Sensitization Biologic Action and Therapeutic Application
A. Eidinow—p. 277

British Journal of Urology, London

7: 103-212 (June) 1935

Etiology of Urinary Calculus Observations on Two Hundred and Eighty-Three Consecutive Personal Cases H. P. Winsbury White—p. 103

Effects of Syntropan Enatin Bromsalizol and Eupaverine on Human Ureter K. Saman and M. I. El Asreegy—p. 116

Necessity for Both Excretory and Retrograde Urography in Certain Cases D. N. Elsendrath—p. 124

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Indian Journal of Medical Research, Calcutta

22: 425-594 (Jan.) 1935

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Chemical Examination of Tylophora Asthmatica and Isolation of Alkaloids Tylophorine and Tylophorinine A. N. Ratnagiriswaran and K. Venkatachalam—p. 433

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Specificity of Antivenomous Serums with Especial Reference to Serums Prepared with Venoms of Indian and South African Snakes M. L. Abuja—p. 479

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Observations on Chemistry of Oxytocin (Oxytocic Hormone of Pituitary Gland) Part IV. Action of Nitric Acid, Nitrous Acid and Sulphur Dioxide Extractions with Pyridine Ethyl Alcohol Chloroform and Acetone N. Das and B. C. Guha—p. 517

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Rabies Fixed Virus as an Antigenic Agent When Inactivated by Photodynamic Action of Methylene Blue H. E. Shortt and A. G. Brooks—p. 557

Studies on Protein Fractions of Blood Serums Part II. Blood Serums of Opioid Addicts R. N. Chopra, S. N. Mukherjee and G. S. Chopra—p. 561

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Effect of Exposure of Suspensions of Rabies Infected Brain to Radiation from Quartz Mercury Vapor Lamp G. Sankaran and W. A. Beer—p. 581

Effect of Anterior Pituitary Extract on Blood Sugar—Venkatachalam and Ratnagiriswaran studied the general effects produced in the cat by the administration of anterior pituitary extract containing the growth promoting hormone. They found that the injection of 1 cc. of the extract, corresponding to 0.5 Gm. of the desiccated gland, reduced the blood pressure almost to zero and produced respiratory failure. If the quantity was given slowly and gradually, there was an initial fall of blood pressure followed by a marked and persistent rise and the animals could survive doses up to 15 cc. If this amount was exceeded, the animals died of convulsions and respiratory failure. The extract increased the blood sugar to nearly twice the normal value and this rise was enhanced by vagisection or

atropinization. Vagisection or atropinization also produced a rise of blood sugar. Gonadal extracts reduce the blood sugar and counteract the rise due to the administration of anterior pituitary extract, this effect was not observed after vagisection or atropinization. The vagal center was made more sensitive to electrical stimulation by the administration of gonadal extract, whereas anterior pituitary extract had the opposite effect and it was less sensitive to electrical stimulus. The hyperglycemic effect of anterior pituitary extract has been shown to be the result of its depressant action on the vagal center. The authors are observing the mode of action of the anterior pituitary lobe on the vagal center and the results obtained so far indicate that the depressant action of the lobe may be due to the stimulation of the thyroid.

Antirabic Immunization.—Shortt and his collaborators describe the method of preparation, standardization, concentration of antirabic serum and the use of antirabic serum as an adjunct to treatment with phenolized dead virus, which they consider to mark an advance on the present methods of treatment by vaccine alone. Treatment by one dose of a combination of fresh living fixed virus and antirabic serum has been shown to have a considerable immunizing value although the main effect appears to have been exerted by the live virus, the serum being used mainly to render the use of the live virus more safe. They demonstrate that the use of fresh living fixed virus as an adjunct to treatment with phenolized dead virus is the most effective method yet tried for the immunization of dogs and, therefore, probably of other animals also. They believe that the future lines of advance toward the most efficacious means of producing a solid immunity against rabies will be along the path of utilization of antirabic serum and fresh live fixed virus, possibly combined with the use of a dead vaccine.

Indian Medical Gazette, Calcutta -

70: 301-360 (June) 1935

Some Biochemical Observations on Asthma. Dharmendra and L. E. Napier—p. 301

Chemotherapeutic Studies on Plasmodium Infection in Monkeys V. Action of Tebretren R. N. Chopra and S. K. Ganguli—p. 313

Passage of Hookworms After Treatment P. A. Mapleton and A. K. Mukerji—p. 320

Congenital Hydronephrosis Due to an Abnormal Attachment of Renal Fascia (of Gerota) V. Mahadevan and T. B. Menon—p. 321

Amiobarsool in Treatment of Chronic Intestinal Amebiasis R. N. Chopra, B. Sen and G. Sen—p. 324

Constants of Mustard Oil. B. B. Brahmachari—p. 329

Journal of Mental Science, London

81: 281-488 (April) 1935

The Sixteenth Maudsley Lecture. Physical Symptoms in Acute Confusional Insanity L. C. Bruce—p. 282

Association of Physique and Mental Condition J. L. Clegg—p. 297

Suggested Approach to Problems of Neuropsychiatry D. N. Hardcastle—p. 317

*Interrelationships of Mental Disorders and Diabetes Mellitus W. C. Menninger—p. 332

Achlorhydria in Psychoses with Especial Reference to Coincident Anemia R. H. O. Stern—p. 358

Depression Normal and Abnormal H. W. Edisson—p. 370

Mental Regulation of Intestinal Activity J. M. Edwards—p. 376

Syndrome of Neurotic Anxiety. Somatic and Psychic Components of Its Genesis and Therapy W. Misch—p. 389

Complement in Technic of Protein Therapy J. R. B. Robb and L. Winkworth—p. 415

Mental Disorders and Diabetes Mellitus.—In studying the relationship between mental disorders and diabetes, Menninger observed thirty cases of mental disorder associated with diabetes, ninety-three cases of uncomplicated diabetes and 400 uncomplicated cases of mental disorder. The study covers the psychologic picture in diabetes, the types and courses of mental disorder associated with diabetes and the mental symptoms with hypoglycemia. He found that certain fluctuations of a specific type occur with sufficient frequency in diabetic persons to suggest a descriptive picture of the "diabetic personality." Diabetes does not determine the type of frank mental disturbance that may be associated with it, except in a small proportion of cases referred to as toxic psychoses or true "diabetic psychoses." That psychologic conflicts may be an important etiologic factor in many cases of diabetes seems probable. Gross psychologic trauma may initiate diabetes, but the more important unconscious conflicts might conceivably be the cause of the entire picture, even in these cases, and possibly operate in

some instances to produce diabetes in the absence of any external event or situation. Mental disorder and diabetes never occur independently in the same individual. They may occur independently at different times, but once associated they bear a relationship to each other.

Journal of Tropical Medicine and Hygiene, London

38: 145 156 (June 15) 1935

- Dn 7 in Treatment of Bilharzia Disease F G Cawston—p 145
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Some Observations on Pure Line Strains of *Trichomonas Hominis* and *Trichomonas of Snake Matrix Erythrogaster* (A Nonpoisonous Water Snake) B M Das Gupta—p 148

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- Ulcer Syndrome in Tropical Africa A A F Brown—p 157
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Lancet, London

1: 1483 1536 (June 29) 1935

- The Unhappy Colon A F Hurst—p 1483
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Further Observations on Digestibility of Common Foodstuffs as Determined by Radiography W C D Maile and K J L Scott—p 1500

2: 162 (July 6) 1935

- Clinical Study of Headaches E Spriggs—p 1
Gold Treatment of Rheumatoid Arthritis S J Hartfall and H G Garland—p 8
Gold Treatment of Tuberculosis Statistical Study B A. Peters and C Short—p 11
Postoperative Intracranial Thrombosis in Childhood P R Evans—p 12
Fat Necrosis Associated with Perforated Duodenal Ulcer M J Smyth—p 15
Fatal Case of Electrocution A H D Richmond—p 16
Incidence of Proctitis in Gonorrhea of Females P A Clements and K E A. Hughes—p 18
Erythrocyte Sedimentation Rate Comparison of Methods Commonly Employed for Its Determination G E Beaumont and J W Maycock—p 19

Gold Treatment of Rheumatoid Arthritis—According to Hartfall and Garland, chrysotherapy in relation to rheumatoid arthritis is still in the experimental stages. They treated 100 cases in two years with excellent results in 70 per cent and some improvement in 90 per cent of the cases. These included many cases of long duration with gross disability. Owing to the marked variation in susceptibility, no rules as to dosage can be laid down and treatment must be individualized. In some cases, treatment must be prolonged for two years or more. Probably the doses employed are still too large and it is possible that the interval between courses should be not less than three months. Toxic reactions occurred in fifty cases. These are usually mild and do not contraindicate further treatment. Hemorrhagic reactions and exfoliative dermatitis, however, may be fatal and no more gold should be given to patients who develop them. Other than gross renal or hepatic disease, the authors found no absolute contraindication to gold therapy before the onset of these serious reactions. Gold therapy should be undertaken only by those who are fully alive to its dangers. The patient should be warned of these possibilities. The urine should be tested before each injection. Special care must be taken after the occurrence of toxic reactions. It is essential that every patient should be seen every week during and for three months after each course of treatment.

Proctitis in Gonorrhea of Women—Clements and Hughes investigated 160 patients suffering from gonorrhea of the genito-urinary passages or under tests of cure or under suspicion. Gonococci were found in the rectal secretion of sixty nine. In the majority of cases, obvious signs and symptoms were absent. By cultural methods an important proportion of cases are discovered that would be overlooked if tested only by smear on microscopic slide. In eight cases under test of cure, gonococci

were not found in the secretions of urethra and cervix either at the time of the rectal examination or later. In seven other cases examined under suspicion, no gonococci were ever found in secretions from the genito-urinary passages. Gonorrheal proctitis does not appear to be self limited. Treatment by irrigation with potassium permanganate (from 1 4,000 to 1 8,000) proved disappointing, but acriflavine hydrochloride 1 5,000 seemed satisfactory. Microscopic and cultural examination of the rectal secretion is clearly required for every woman in whom there is any question of a gonococcal infection.

Medical Journal of Australia, Sydney

1 701 732 (June 8) 1935

- *Diagnosis and Treatment of Lung Abscess C H Fitts—p 701
Suicide in Australia S J Minogne—p 707
Incidence of Rheumatic Infections in Australia Note E L. Cooper—p 714
Congenital Ectodermal Dysplasia L Dods—p 715
Malrotation of Midgut Loop with Superimposed Volvulus Case P L Hipsley—p 716

Diagnosis and Treatment of Lung Abscess—Fitts states that acute lung abscess closely resembles bronchopneumonia. Cough in the early stages is not very characteristic, frequently the patient complains of a bad taste, and offensive breath is noticed after coughing. Dyspnea may be severe. Hemoptysis occurs in most cases, and rigors, sweats and high temperature may occur at one end of the scale, at the other, the constitutional symptoms and such signs as the temperature may be slight and intermittent. Physical signs of lung abscess are clubbing of the fingers, which sometimes occurs in association with subphrenic abscess, in which there is no communication with the thoracic cavity, widening of the palpebral fissures and a slight degree of exophthalmos. The sputum should be examined for tubercle bacilli, anaerobic organisms, spirochetes, hydatid hooklets, amebas or sulphur granules of *Actinomyces*. There is no single feature, even to the duplicity of the roentgenograms that may not be common to lung abscess and carcinoma of the lung. By blockage of a bronchus, bronchiectasis may be set up distal to the growth, and this may develop into a bronchiectatic abscess. Abscess formation may occur in the growth itself, or in some slow growing tumors in the parenchyma of the lung central necrosis and cavity formation may take place. Sometimes empyema is diagnosed on physical signs and exploratory puncture, the pus being aspirated from a lung abscess. A roentgenogram would prevent this mistake. Septic bronchopneumonia may terminate cases of lung abscess in the acute stage. Empyema may complicate it and death may occur from toxemia. Cerebral abscess may occur even in the chronic abscesses in a late stage and seems to be more frequent after operative intervention. The author advocates complete discharge of the abscess contents through the related bronchus and closure of the cavity. A chronic cavity in the lung is a potential source of danger from recurring infection, hemoptysis and secondary bronchiectasis in the neighboring portions of the lung and from cerebral abscess. Medical treatment of lung abscess should be continued until the patient is definitely going down hill, until the successful evacuation and closure of the cavity occur or until such time as it is obvious that the cavity is not going to close. If the patient is definitely going down hill surgical intervention may be life saving. Pleural adhesions are first promoted with an extrapleural iodine pack. A week later an exploratory puncture is made and, when pus is found, a track is produced by diathermy along the needle, which has been left in place. Bronchial fistulas are always present, and often, after closure of the cavity, a fresh pocket forms. Chronic cavities are difficult to close. Some of them are said to be lined with stratified epithelium. When there are widespread bronchiectases and not a very large cavity thoracoplasty may be necessary. For chronic abscess suitably situated, whether or not there is secondary bronchiectasis, lobectomy should be seriously considered. Artificial pneumothorax should be looked on as a means of closing a cavity that is not too thick in the wall or as a means of controlling hemoptysis. In some cases there is grave danger of rupture into the pleural cavity and of the development of pyopneumothorax. The author believes that every chance should be given the patient to close the cavity by postural and bronchoscopic drainage whenever possible and that operation should be performed only when these fail.

Chinese Medical Journal, Peiping

49: 397-506 (May) 1935

- Nature and Treatment of Congestive Heart Failure I Clinical Picture and Its Physiologic Pathology F. R. Dieuaide—p 397
- Surgical Treatment of Trigeminal Neuralgia and Description of Case of Tumor of Gasserian Ganglion Successfully Removed in Monkden Medical College Hospital C. Chang—p 412
- Osteomyelitis of Mandible Observations of Etiology Pathogenesis and Diagnosis J. J. Wolfe—p 422
- Cysticercosis Cellulosa in Man, with Especial Reference to Involvement of Central Nervous System H. L. Chung and C. U. Lee—p 429

49: 507-608 (June) 1935

- Nature and Treatment of Congestive Heart Failure II Prevention and Treatment F. R. Dieuaide—p 507
- Pathology and Treatment of Joint Sprain L. J. Miltner, C. H. Hu and H. C. Fang—p 521
- *Preliminary Observations on Longevity of Infective Larvae of *Wuchereria Bancrofti* Cobbold in *Culex pipiens* Variety *Pallens* Coquillett S. M. K. Hu—p 529
- Suprapubic Drainage of Bladder Its Indications, Contraindications Method of Accomplishing It J. Gray—p 537

Longevity of Larvae of *Wuchereria Bancrofti* Cobbold in *Culex pipiens*—Hu found viable infective larvae in the labia of two mosquitoes sixty-eight days after the fourteen days of incubation. The infective larvae of *Dirofilaria immitis* were found to be able to survive for a considerable period in the mosquito host. Of a batch of *Culex pipiens* mosquitoes infected on a filarial dog, the last positive mosquito dissected sixty-seven days later was found with two infective larvae moving about actively in its labium as well as one other living infective larva in its abdomen. The intensity of infestation of *Culex pipiens* mosquitoes in the Shanghai area was found to be affected by the abundance of microfilariae ingested by the mosquito at the time of infection. Of forty-eight positive *Culex pipiens* mosquitoes experimentally infected on a patient lightly infected with filariae, the average number of infective larvae per mosquito was 39, whereas of twenty-nine *Culex pipiens* mosquitoes experimentally infected on a patient heavily infected with filariae the average intensity of infestation was 144. As many as forty-three living infective larvae were found in a single *Culex pipiens* mosquito that had been allowed to feed only once on a patient heavily infected with filariae. *Anopheles punctipennis* was found experimentally to be a good carrier of the dog filaria, as the average number of filariae per mosquito was about 235. Some of the experimentally infected mosquitoes, which were found with infective filarial larvae of *Dirofilaria immitis* in their labia and abdomen, were used for these observations. Some *Anopheles punctipennis* mosquitoes infected about twenty-four days previously and found harboring infective *Dirofilaria immitis* larvae in their labia and abdomens were allowed to feed on a dog. Of the three infective mosquitoes in this batch which had bitten the dog, two were found to be still harboring some infective larvae in their abdomens, although all their labia were now negative for infective larvae. Two infective larvae were found remaining in the abdomen of one mosquito, while another still contained six infective larvae in its thorax and one in its abdomen. The third mosquito was found with one infective larva still in its thorax. These mosquitoes were still likely to be infective to dogs, as their supply of filarial larvae had not been exhausted by their first bite after the incubation period of their parasites had been completed. The ability of a mosquito to serve as a suitable host for a heavy infection of *Wuchereria Bancrofti* larvae may vary with the kind of mosquito, as indicated by Hicks. Many specimens of *Culex pipiens* heavily infected with matured larvae survived for a considerable length of time. An engorged *Culex pipiens* mosquito dissected on the third day after feeding on a filarial subject was found harboring four *Wuchereria Bancrofti* larvae of an early sausage form and twenty-three infective larvae. The infective larvae of this mosquito were doubtless filariae that were ingested during an earlier blood meal rather than filariae in the blood meal taken three days before the specimen was dissected. Those in the sausage form were likely to have been filariae taken along with the blood meal on the day the mosquito was captured. Multiple infections of a susceptible mosquito may thus increase its supply of parasites considerably. In mosquitoes with several broods of filarial larvae, infective larvae of an earlier brood which had not escaped from their mosquito host may be harbored along with those of a later brood.

Annales d'Anatomie Pathologique, Paris

12: 621-744 (June) 1935

- Zone of Myoneural Junction or Motor Plaque in Normal and Pathologic State R. Noel and B. Pommé—p 621
- Experimental Contributions to Study of Hydronephrosis E.-C. Cracium and D. Zanne—p 643
- *Anatomic and Physiopathologic Study of Lung Infarcts of Embolic Origin Role of Vasomotor Nervous System J. Delarue, L. Justia Besançon and P. Bardin—p 681

Experimental Lung Infarcts of Embolic Origin.—Delarue and his co-workers studied experimental pulmonary embolism. At first they used enamel beads of from 1 to 8 mm. diameter injected into the external right jugular vein. After the dog had been anesthetized the vessel was dissected free for about 5 cm and the superior extremity ligated. It was opened for from 0.5 to 1 cm and the orifice maintained by a fine cannula, by means of which twenty beads having the maximum caliber of the vein could be introduced. The beads were pushed by the thumb to the retroclavicular junction of the jugular vein, after which the central end of the jugular was tied. All operations were performed aseptically. The animals were killed at varying intervals: immediately, fifteen minutes, thirty minutes, one hour, twenty-four hours, forty-eight hours, seven days, fifteen days, three weeks, one month, and three months later. The immediate result is an intense congestion of a large zone of pulmonary parenchyma. After some hours the lesion appears more circumscribed, while the diffuse congestion is less marked. Intra-alveolar hemorrhages become the predominant lesion. The typical hemorrhagic infarct is not present until after forty-eight hours. This is a massive and homogeneous bloody infiltration of one or more pulmonary lobes. Little by little after a dozen days the limits of the lesion become demarcated until it is surrounded by a practically intact pulmonary parenchyma. At the same time local hemolysis or sclerosis is observed appearing in the region of hemorrhagic infiltration. Further investigations showed that section of the left vagosympathetic trunk in the dog and unilateral section of the pneumogastric or of the sympathetic in the rabbit produce disseminated congestive pulmonary lesions, hemorrhages and edema. All these facts offer evidence in favor of the hypothesis that hemorrhagic infiltration of the pulmonary parenchyma is above all the effect of a sudden capillary vasodilatation of reflex nervous origin in a limited territory, followed by hemorrhage by erythrodiapedesis.

Annales de Médecine, Paris

38: 1116 (June) 1935

- *Early Uremic Nephritides of Scarlet Fever A. Lemerre—p 5
- *Disorders of Dextrose Metabolism in Nephritis F. Rathery—p 18
- Action of Primary Octyl Alcohol (Octanol) and of Certain Negative Tension Bodies on Kidney A. Clerc, J. Sterne and R. Paris—p 32
- Experimental Study of Dechlorination L. Ambard, J. Stahl and D. Kuhlmann—p 46
- Polypeptides of Blood in Nephritis P. Cristol—p 58
- Pure Renal Form of Spirochetosis J. Celice and M. Albeaux-Fernet—p 70
- Evolution of Lipoid Nephrosis Toward Uremia P. Valléry Radot, P. Delafontaine and J. Trombert—p 79
- Experimental Nephritis Obtained by Injection of Rabbit with Streptococcal Filtrates P. Valléry Radot, M. Derot and Mlle. P. Gautier Villars—p 100

Early Nephritides of Scarlet Fever.—Lemerre studied scarlet fever patients from the standpoint of urea retention. He concluded that there is a frequent renal involvement coinciding with the eruptive phase of scarlet fever. Thus renal involvement is usually silent, and measurement of the blood urea is the only method of discovering it. It may be slight and indicated only by a moderate uremia. If more intense, it causes a more accentuated and persistent rise in blood urea. In this case it may be accompanied by extreme oliguria almost equivalent to scarlatinal anuria, which occurs later. In the course of early uremic nephritis, hypertension is always absent, albuminuria is rare, and if it exists it is late and transitory. Edema appears only under exceptional circumstances. These characters contrast with those of the nephritides of convalescence in which albuminuria, hematuria, edema and arterial hypertension are present, apparently unrelated to the level of blood urea. The prognosis of these early nephritides is benign. In the fatal cases that the author has observed the termination has been due more to the scarlet fever itself than to the renal involvement.

Dextrose Metabolism in Nephritis.—Rathery studied the free and protein-bound sugar of the blood plasma in more than 250 patients with nephritis. He distinguishes three groups of hyperproteinoglycemia—slight, around 1.2 Gm., average, from 1.2 to 2 Gm., and high, above 2 Gm. Urea determinations were also made on these patients. The question raised is whether hyperproteinoglycemia has a special prognostic significance different from that of uremia. It is certain that in severe cases the level of urea and protein-bound sugar take the same upward course, but it is not so in all cases. An average uremia with a normal protein-bound sugar indicates in general the existence of a serious renal lesion, but the prognosis is relatively favorable. Inversely, a protein-bound sugar relatively high with a practically normal blood urea level indicates that the kidney itself is not profoundly affected but that the organism is not defending itself well. Hyperproteinoglycemia persisting in the course of a chronic nephritis is in general a worse prognostic sign than the degree of uremia. No relations exist between the level of free sugar and protein bound sugar. Normal or below normal free sugar concurrent with elevated protein-bound sugar is frequently observed. There seems also to be no relation between hyperproteinoglycemia and renal acidosis. Systematic study of the variations in protein-bound sugar in the nephritic patient is a valuable aid in measuring the intensity of the metabolic disorder. It acquires for this purpose a special importance and a significance entirely different from that of elevated blood urea.

Presse Médicale, Paris

43: 1017 1040 (June 26) 1935

- *Early Diagnosis of Malignant Chorio-Epithelioma. A Brindeau H Hinglais and M Hinglais—p 1017
Sudden Death in Serofibrinous Pleurisy J Trouser M Bariety and H Brocard—p 1019
Surgery of Middle Turbinate in Treatment of Headaches G Departout—p 1023
Rest Tremor or Intention Tremor? R Nyssen and R Dellaert—p 1024

Early Diagnosis of Chorio-Epithelioma.—Brindeau and his co-workers studied systematically the luteinizing factor of the anterior pituitary-like principle present in the blood serum of women who had evacuated a mole. Twenty-three cases of mole without subsequent malignant condition and four followed by malignant conditions were studied. They believe that these observations allow the early and rapid diagnosis of postmolar chorio-epithelioma. They conclude that the disappearance of the gonadotropic hormone from the blood does not occur at a constant rate or follow a regular rhythm identical in all cases. The prolonged period of hormone elimination and the consequent persistence of a positive Zondek reaction does not necessarily indicate the malignant evolution of the molar rests. The authors' method is based on the curve of a series of regular titrations of the luteinizing factor of anterior pituitary-like principle made on the blood serum during the six or twelve weeks following expulsion of a mole. Ordinarily the amount present decreases progressively at varying rates. This conclusion is based on three facts: 1 The presence of a chorio-epithelioma is accompanied by the luteinizing factor. 2. The quantity of this factor secreted is in direct relation to the vitality and abundance of the plasmodial elements. 3 The rapid and precise titration of the factor is possible by using the rabbit. In the twenty-seven cases discussed, the four positive results were histologically verified. Finally, in the authors' experience, the reappearance of the hormone after its complete disappearance has never been observed.

Schweizerische medizinische Wochenschrift, Basel

65: 653-672 (July 20) 1935

- Hypomania and Vitality O Hinrichsen—p 653
Treatment of Seborethelial Conditions with Hydrochloric Acid and Pepsin Preparations. M A Schoch—p 656
*Rare Forms of Osteomyelitis R Meyer Wildisen—p 658
Copper in Its Biologic and Therapeutic Significance. Von Linden—p 660
Experiences with Ramon's Prophylactic Vaccination Against Diphtheria M Frey—p 662

Rare Forms of Osteomyelitis.—Meyer-Wildisen points out that osteomyelitis usually attacks the lower extremity, chiefly the femur, and that it is generally caused by *Staphylo-*

coccus pyogenes-aureus. This report shows that osteomyelitis may attack other bones and may be caused by other micro-organisms. He discusses three cases. In one patient the second metatarsal was involved, in another the proximal phalanx of the middle finger, and in the third the femur. In the latter case it appears probable that typhoid was the cause of the osteomyelitis. The patient had typhoid twenty-one years before this attack of osteomyelitis. During the period of convalescence from typhoid she had had severe pains in the right thigh, and these pains had recurred from time to time. The present attack of osteomyelitis developed following overexertion. The pus of the osteomyelitic abscess was free from typhoid bacilli and also from other micro-organisms. The author says that the pus has been known to be sterile in other cases in which typhoid is the cause. He considers this case a relapsing osteomyelitis of typhoid origin. Traumatic origin was evident in the case in which the osteomyelitis was localized in the finger, but no such cause could be detected in the case in which the metatarsal was involved. In this case further inquiry disclosed that several months before the onset of the suppuration in the foot the patient had had a varicella-like disorder. Since the vesicles of varicella are readily infected by the staphylococcus, it is assumed that the accidental infection of the impetiginous pustules was the cause of the osteomyelitis.

Clinica Medica Italiana, Milan

66 507 595 (June) 1935

- *Importance of Yeast in Metabolism of Carbohydrates. V G Barone—p 507
Treatment of Mercuric Chloride Poisoning F Serto and I Capizzi—p 523
Single Cyst of Kidney Case. M Umberto—p 540
Spleen in Chronic Lead Poisoning A. Fontana—p 559

Yeast in Metabolism of Carbohydrates.—Barone reviews the literature on the action of yeast on the metabolism of carbohydrates and reports his results from the administration of fresh yeast to normal persons and diabetic patients. In both groups the author's results proved that fresh yeast has a hypoglycemic action if given by itself, a decreasing action on the hyperglycemia provoked by the administration of dextrose and galactose if given simultaneously with these sugars, and a remarkable although transient increasing action on the alcohol in the blood if given simultaneously with dextrose. The author concludes that his results justify further clinical investigations by giving yeast to diabetic patients with the aim of ascertaining its possible therapeutic applicability in the disease.

Policlinico, Rome

42: 325 376 (June) 1935 Surgical Section

- *Bleeding Breast Case. A Bellini—p 325
Primary Adamantinoma of Fisher's Type (So-called Malpighian Epithelioma) of Osteomyelitic Tibia Case A Casini—p 338
Encephalocele Case M Contestabile—p 352
Benign Angiomatous Tumors of Skeletal Muscles. G Zappalà—p 367

Bleeding Breast.—Bellini reports four cases of bleeding breast caused by an intracanalicular papilliferous fibro-adenoma. In the first case, an intracanalicular epithelioma degenerating into pericanalicular epithelioma in the second, and an intracanalicular hemorrhagic cystic epithelioma in the third. Biopsy or operation was not performed in the fourth case. The author says that the treatment should be based on the results of the biopsy without giving any importance to data of relative value, such as the duration of the development of the disease and the age of the patient, but having in mind the frequency with which bleeding breasts degenerate into precancer or cancer, he advises resorting to a total mastectomy with emptying of the axillary space in all suspected cases of cancerous degeneration.

Semana Medica, Buenos Aires

42: 172 (July 4) 1935 Partial Index

- Surgery in Pulmonary Tuberculosis Results R A. Izzo O P Aguilar and H D Aguilar—p 1
Psychologic Significance of Laughter in Dementia Praecox A Raitzin—p 40
*Partial Amputation of Cervix Uteri in Chronic Cervicitis E A Boero—p 48
Technic for Electrocardiograms J Comas—p 54

Partial Amputation of Cervix in Chronic Cervicitis.—Boero thinks that chronic cervicitis in women around 40 years of age is a prodrome in the development of cancer of the

cervix indicating the removal of the infected area. He uses a modification of the Sturmdorf operation, the original technic of which was illustrated in *THE JOURNAL*, Nov. 27, 1926, page 1802. In this modification he does not use the flap of a partial mucosa to cover the denuded area after removal of the pathologic tissues, and he makes a dissection at the commissures of the external orifice of the uterus. His technic is as follows: With the patient in the lithotomy position and under local or parametrial anesthesia, the cervix is exposed. The anterior and posterior lips of the cervix are grasped by two four-tooth forceps placed at the commissural line, and the cervix is pulled down toward the vulva. A Hegar dilator of the same caliber as that of the cervical canal is introduced through the canal down to the bottom of the uterus to keep the canal dilated during the operation. While traction is made on the cervix by the forceps and the dilator held in the left hand, a sharp and pointed bistoury is introduced at a point 2 or 3 mm within the healthy tissue and the entire glandular area surrounding the cervical canal is coned out. The cone excision extends up to the internal os. The incision leaves a conic cavity of normal muscle and conjunctive tissue. The surfaces of the cavity bleed slightly. The commissural points of the lips are then grasped with the same kind of forceps and wedge-shaped pieces of cervical tissue are removed. The superior and inferior lips are then folded by two lines of catgut sutures in each lip and the denuded surfaces are brought in apposition to form the new neck. A raw area that remains about the internal orifice after the operation deserves no attention, since it is spontaneously epithelialized shortly after. A packing of gauze impregnated with iodoform ends the operation. The new cervix, after the operation, looks like the opened bill of a duck, a few months later its shape improves and the orifice looks like that of a primiparous woman. The operation is not advisable in young women who desire children.

Beiträge zur Klinik der Tuberkulose, Berlin

861 289 342 (June 25) 1935 Partial Index

- *Does Intracutaneous Injection of Tuberculin with Subsequent Control of Differential Blood Picture Make Possible a Differentiation Between Active and Inactive Tuberculosis? H. Decker—p. 291
- *Significance of White Blood Picture in Its Relationship to Sedimentation Speed of Erythrocytes in Clinical Evaluation of Some Forms of Pulmonary Tuberculosis. J. Leitner—p. 297
- Endopleural Photography. A. Gullbrigg—p. 309
- Spontaneous Pneumothorax Developing on Same Side on Which Severe Years Before an Exudative Pleurisy Had Existed. L. Vajda—p. 312
- Rapid Diagnosis of Tuberculosis by Direct Injection into Lymph Nodes of Guinea Pigs. E. Plasecka Zeyland—p. 328

Differentiation of Active and Inactive Tuberculosis.—Investigations on the differential blood count following the Pirquet reaction conducted by Engel and Ockel and the studies of Bredeck on tuberculin and the blood differential count in the diagnosis and classification of tuberculosis induced Decker to give his attention to this problem. He adhered largely to the method employed by Bredeck, but he injected only 1 mg of old tuberculin and examined the blood picture shortly before and twenty-four and forty-eight hours after the injection. In order to reduce the errors, 500 leukocytes were counted in each cell count. An increase in the staff cells was disregarded unless it was at least 4 per cent in forty-eight hours, and in the case of lymphocytes 5 per cent was considered the minimum. Lesser changes were considered within the margin of error. The author made the test on fifty patients with demonstrated active tuberculosis, three patients with renal tuberculosis, fifty persons without tuberculosis and eighteen patients who formerly had had tuberculosis but in whom clinical examination now gave no indications of activity of the process. In all patients with active tuberculosis, the tuberculin injection was followed by an increase in the staff cells and the lymphocytes were decreased in twenty-nine, remained unchanged in seventeen and were increased in four. It is noteworthy that the staff cells were increased even in hopeless cases, in which the defense powers seemed to be exhausted. Two of the three patients with renal tuberculosis reacted with an increase in the staff cells, while in the third one there was only a reduction in lymphocytes. The fifty nontuberculous control persons disclosed no change in the staff cells after the tuberculin injection. The eighteen persons who had recovered from pulmonary

tuberculosis likewise had no change in the staff cells, while the number of lymphocytes remained unaltered in fourteen and was increased in the other four. The author reaches the conclusion that, if a patient with normal blood picture or with one that has shifted to the left, and for which no other explanation can be found, reacts to an intracutaneous injection of 1 mg of old tuberculin with an increase in the staff cells, this is an indication of the presence of active tuberculosis. A decrease in the lymphocytes probably has the same significance.

Leukocyte Count and Sedimentation Speed in Tuberculosis.—Leitner reports the results of comparative studies on the sedimentation speed of the erythrocytes and on the white blood picture in 137 cases. Of 109 patients with active tuberculosis, ninety-two, or 84.3 per cent, had a shifting to the left of the neutrophils, whereas this shifting to the left was lacking in seventeen cases, or 15.7 per cent. The sedimentation reaction was normal in thirty-five cases (32.1 per cent) and was increased in seventy-four (67.9 per cent). This shows that the sedimentation test failed more often than the white blood count. In ten patients who in the beginning had a normal sedimentation speed there was later an increase, so that in serial sedimentation tests the number of failures was reduced to twenty-five (22.8 per cent). Of twenty-six patients with inactive tuberculosis, only two showed an increased sedimentation speed and an altered blood picture (7.6 per cent). If, in addition to the neutrophils, the other cell types are considered, pathologic blood changes are demonstrable in a still higher percentage of cases of active tuberculosis. In some instances even the red blood picture may be valuable for the diagnosis (observation of the reticulocytes), but the behavior of the monocytes, eosinophils and lymphocytes is more important. The monocytes are always an indication that the tuberculous process has not yet come to rest but that the organism is still in the defense phase. The outcome of the defense is indicated by the status of the neutrophils or lymphocytes. Contrary to former opinions, eosinophilia is not a sign of cure but always a symptom of activity, for it occurs also in hyperallergic reactions. Moderate lymphocytosis does not necessarily signify a curative phase, but characteristic lymphopenia as a rule indicates severe, active tuberculosis. The subsequent lymphocytosis is favorable and indicates an improvement, usually a tendency to latency. Changes in the leukocytes, in the form of toxic granules or nuclear pyknosis, likewise are of some diagnostic significance. The diagnostic possibilities are further enhanced by combining the study of the blood picture with the tuberculin test. The author thinks that Schilling's blood count is more practical for clinical use than Arneith's count, the latter being too complicated. He recommends the combined use of the sedimentation test and the analysis of the blood picture.

Deutsche medizinische Wochenschrift, Leipzig

61: 1145 1184 (July 19) 1935 Partial Index

- New Method for Treatment of Female Sterility Caused by Hypofunction of Genitalia. C. Claiberg—p. 1149
- *Some Aspects of Meinicke's Clarification Reaction and Remarks on Serodiagnosis of Syphilis. F. Koch—p. 1153
- Erroneous Diagnoses in Shoulder Pains. B. W. Ercklentz—p. 1155
- *Treatment of Rheumatic Disorders with Soaked Venom. A. Burkardt—p. 1159

Meinicke Clarification Reaction.—Koch states that in his clinic the Meinicke clarification reaction has been employed in approximately 36,000 cases. He thinks that the micromethod of the clarification reaction is valuable, for it is rapid. However, it has been known to fail, particularly in strongly positive serums, a factor to which Meinicke himself has called attention. This is not caused by a lack of sensitivity but rather by the great sensitivity, and Meinicke has advised the dilution of the serum with sodium chloride solution in such cases. The author found this unnecessary, because other reactions insured the diagnosis in these cases. In analyzing twenty-seven cases in which the Meinicke clarification reaction had failed he found that failure was most frequent in cases of congenital syphilis and in patients with the late forms of syphilis, especially with aortic syphilis and dementia paralytica. He advises that in these cases other serologic tests should be made in addition to the Meinicke clarification reaction. Since the withdrawal of a sufficient amount of blood may be difficult in nurslings,

the author thinks that puncture of the superior sagittal sinus by way of the large fontanel will yield a sufficient amount of blood, and he states that this intervention is comparatively simple.

Treatment of Rheumatic Disorders with Snake Venom.—Burkardt discusses the chemistry and toxicology of snake venoms and calls attention to former therapeutic experiences with snake venom, particularly in thrombopenia and in the control of pain in malignant tumors and in sciatica, neuralgias, tabes dorsalis and so on. In these conditions the chief advantage of venom therapy lies in the fact that it does away with the use of morphine, so that the patients have a better appetite and their physical and psychic resistance is better. Körbler noticed that an arthrosis of the hip joint improved considerably following the administration of snake venom and he assumed that the venom not only reduces the pain but also influences the metabolic processes. In view of these observations and after several years of experience with bee venom in the treatment of rheumatic disorders, the author decided to try snake venom in the hope of overcoming certain disadvantages of the use of bee venom. He thought that the possibility of using larger doses might improve the results and that with a less expensive product the venom therapy might become possible for a larger number of patients. He administered the venom by intracutaneous injection and was almost always able to counteract the pain in seventeen cases of sciatica and various forms of neuralgia. In secondary chronic articular rheumatism the results were not convincing, but then the number of cases was rather small. At any rate, in some cases with acute exacerbations with swelling, pain and reddishness of several joints three or four treatments were quite effective. In primary chronic arthropathy, improvement could be obtained in three fourths of the cases, the general condition, the joints and the sedimentation speed of the erythrocytes indicated improvement. In the gonorrheal and tuberculous arthritides, the articular swelling and the pains were considerably improved in eight of ten cases. Improvement was produced also in four cases of spondylitis. Even in degenerative arthroses the results were gratifying.

Klinische Wochenschrift, Berlin

14 1017 1056 (July 20) 1935 Partial Index

Linkage of Chemical Processes in Muscle I K Parnas.—p 1017

Studies on Allergic Diseases Causal Therapy of Asthma and Hay Fever F E. Haag.—p 1024

*Corpus Luteum Hormone and Castration Hypophysis W Hohlweg.—p 1027

Origin and Nature of Wassermann Reagents I Györfy and K Lissák.—p 1028

*Cerebrospinal Fluid in Whooping Cough W Bayer.—p 1032

Corpus Luteum Hormone and Castration Hypophysis—Hohlweg demonstrates that the corpus luteum hormone does not prevent the development of castration changes in the anterior lobe of the hypophysis. His experiments were made on castrated female rats. The animals were given daily 540 micrograms of crystallized corpus luteum hormone (progesterone). This quantity is twice the daily dose for adult rabbits, but it did not prevent the development of the hypophyseal changes that are characteristic of castration.

Cerebrospinal Fluid in Whooping Cough—Bayer demonstrates that the cerebrospinal fluid shows pathologic changes in a relatively large number of children with whooping cough. These changes concern the pressure, the quantity, the number of cells, the quantity of protein, the mastic curve and the blood-cerebrospinal fluid barrier. These changes may be present and may be severe, even if there are no indications of nervous complications, they indicate pathologic changes in the meninges. It is difficult to find a satisfactory explanation for the changes in the cerebrospinal fluid, but it may be assumed that toxic influences are responsible, as in other infectious diseases. However, in whooping cough it is likely that certain mechanical factors likewise play a part. The author calls attention to the repeated pressure fluctuations in the cranium caused by the paroxysms of coughing. He was able to observe in a number of children an increase in the intracranial pressure during the attack of coughing and he found that the pressure of the cerebrospinal fluid increased by from two to three times

the original value. These increases in pressure are of short duration and probably are due chiefly to the venous stasis that develops during the attack of coughing. The pressure in the cerebrospinal fluid subsides again together with the venous stasis, that is, immediately after the attack of coughing. It is probable that these recurrent pressure fluctuations exert an unfavorable influence on the cells of the cerebral meninges and on those of the brain. The development of edemas can be explained on the basis of such mechanical influences. Moreover, the cells that have been impaired by mechanical influences are of course more sensitive to toxic influences.

Medizinische Klinik, Berlin

31 933 964 (July 19) 1935 Partial Index

*Etiology of Tear of Interarticular Disk F Linde.—p 942

*Craniocerebral Iontophoresis and Transcerebral Dielectrolysis in Functional and Organic Cerebral Disorders H Ehrenwald.—p 943

Influence of Nutrition on Constitution of Organism R Berg.—p 947

Self Purification of Rivers R H Francé.—p 950

Etiology of Tear of Interarticular Disk—Linde discusses whether the tear of the interarticular cartilage of the knee joint, which is a rather frequent complaint in miners, is always traumatic or whether it may be the final result of a wearing away of the cartilage, as the miner frequently has to work on bended knees. The author accepts the traumatic origin and points out that, if the wearing away was the cause of the tear, it should occur with considerable frequency not only in miners but also in other occupations that require working in the kneeling or squatting position. However, in many of these occupations other disturbances, such as bursitis, develop, but tearing of the interarticular cartilage is not associated with this. Therefore it seems logical that in the miner's occupation some other factor besides the kneeling must play a part in the development of the tears in the interarticular cartilage. The author thinks that the use of pneumatic tools plays an important part in the development of the tears, for the miner uses these tools either in the kneeling position or while his knees are partly bent. He shows how this may influence the menisci. He thinks that the development of impairments of the menisci in ski runners and mountaineers does not disprove the part played by the pneumatic tools in miners, for the concussions and vibrations to which the knees of mountaineers and ski runners are exposed under certain conditions largely resemble the concussions produced by pneumatic tools.

Craniocerebral Iontophoresis in Cerebral Disorders—Ehrenwald describes his method of craniocerebral iontophoresis. He saturates a piece of cloth or blotting paper, 15 by 7 cm. in size, with an urticariogenic substance (such as histamine or acetylcholine), puts under it a piece of lead or zinc foil of proper size and fastens it at the hair line on the forehead or the neck. Another metal foil with a dampened base serves as a cathode on the opposite side. The histamine was used in a concentration of 1:5,000. The galvanic current of from 4 to 5 milliamperes is passed through for about five minutes. The active substances exert their influence from the positive pole. With this treatment the author obtained favorable results in all forms of angiospastic circulatory disturbances of the brain, such as migraine, habitual anemic headaches of neurotic patients and some symptoms occurring in patients with hypertension (headache, vertigo and tinnitus).

Münchener medizinische Wochenschrift, Munich

82 1143 1184 (July 19) 1935 Partial Index

Serotherapy During Diphtheria H Kleinschmidt.—p 1143

Anal and Rectal Prolapse and Its Treatment A Mühlberg.—p 1156

Selective Action of Short Waves J Kowarschik.—p 1158

*Treatment of Exophthalmic Goiter with Large Doses of Vitamin A H Wendt.—p 1160

Critical Evaluation of Stationary and Centrifugal Sedimentation Method on Basis of Comparisons Holzapfel.—p 1163

Treatment of Exophthalmic Goiter with Large Doses of Vitamin A—Wendt says that several years ago Abelin found that experimental hyperthyroidism could be improved or entirely counteracted by a special diet with a high vitamin content. Later others found that vitamin A is a direct antagonist of the secretory product of the thyroid. The author tried vitamin A in the treatment of hyperthyroidism. The patients

were given three times daily 30 drops of a vitamin A concentrate obtained from fish livers. In three patients with exophthalmic goiter this treatment produced a considerable increase in weight and a reduction in the basal metabolism to almost normal values, and it seems to promise favorable results in two other cases of exophthalmic goiter. It appears that the vitamin A therapy is most effective in mild cases and in cases of average severity. Cases of exophthalmic goiter caused by iodine, which as a rule are not readily influenced, likewise seem to yield to this treatment.

Strahlentherapie, Berlin

53:193 360 (June 29) 1935 Partial Index

- Further Experiences with Protracted Fractional Roentgen Irradiation in Carcinoma of Female Genitalia H Kirchhoff—p 193
- *Treatment of Malignant Tumors with Concentrated Fractional Roentgen Irradiations Applied from Short Distance H Chaoul—p 202
- *Short Distance Roentgen Irradiation in Gynecology W Schaefer—p 210
- Radiologic Treatment of Esophageal Carcinoma R Hummel—p 225
- *Continuous Roentgen Irradiation of Cancer by Means of Supertele roentgentherapy G G Palmieri—p 247
- Contribution to Casuistics on Roentgen Carcinoma R Muller—p 261
- Biologic Action of Filtered Sunlight (Experiments on Plants) H Amende—p 308

Treatment of Malignant Tumors with Fractional Roentgen Irradiations—Chaoul points out that the superiority of radium therapy over roentgen therapy is not so much due to the character of the rays as to the manner of application. For this reason attempts have been made by Holthusen and others to devise a method of roentgen irradiation the action of which resembles that of radium rays. The author worked with a modified roentgen method that applies the rays to small fields. The focal skin distance is generally 5 cm., the tension 60 kilovolts and the filter 0.2 mm of copper. In this manner the depth dose is somewhat greater than is generally the case in radium contact irradiation, but the author sees in this an advantage of the treatment. He administers daily from 300 to 400 roentgens. The irradiation time is rather short, for, with a minute flow of from 100 to 150 roentgens, the 300 or 400 roentgens can be applied in about two minutes. The total dose varies between 4,000 and 8,000 roentgens. This amount is applied within a period of from two to four weeks. If in the course of the irradiations dark red erythemas develop, accompanied by a loosening of the epidermis, it is advisable to interrupt the irradiations. Generally the reactions after this form of short distance irradiation resemble those of Coutard's method. The modification of the tumor often becomes manifest in the course of the treatment, and, if this is the case, high doses may be dispensed with. Caution is necessary if the patient has previously been irradiated by some other method, because there is danger of necrosis. For the same reason the author rejects the combination of this short distance irradiation with some other form of roentgen irradiation. He considers the treatment indicated in the same cases in which contact or implantation radium therapy would be employed. So far the treatment has been used in 146 cases, among which were all forms of skin carcinomas and carcinomas of the lip, the oral cavity, the parotid, the breast and the rectum, the latter following resection of the coccyx and opening of the intestine. The author stresses the advantages of this treatment in cases in which it is impossible to obtain adequate amounts of radium.

Short Distance Irradiation in Gynecology—Schaefer administers x-rays from a short distance by means of a special x-ray tube that can be introduced into the body cavities. This tube is constructed like a Lenard tube, except that, instead of the thin window that allows the passage of cathode rays, this tube has thicker metal, which does not permit cathode rays to escape and serves as an anode. This tube in combination with suitable filters permits the localization of the rays on the tumor and the preservation of the normal tissues. The author stresses the following as the advantages of the treatment: 1 The skin is not impaired, because the rays are applied directly to the tumor. 2 As the result of the short focus distance and of the filter action the spatial dose is small and the surrounding healthy tissues (intestine and bladder) are not impaired. 3 The method makes possible a separate irradiation of the

parametrium with larger doses than were formerly possible. 4 In case of recurrence the method permits the application of large doses in patients in whom the skin would not tolerate large doses. The author employed the treatment especially in inoperable tumors of the cervix uteri. He usually introduces radium into the tumor, so that from 3,000 to 4,000 mg element hours is applied. Then he irradiates the small pelvis from the outside by means of an x-ray tube suggested by Martius, which insures an even distribution of the rays and preserves the tissues. Finally he applies a separate irradiation to the parametrium by means of the tube that can be introduced into body cavities. At a 5 cm. distance from the filter, from 2,000 to 2,500 roentgens is applied to the pelvic wall. In some patients the use of radium and the external irradiation were dispensed with and only the x-ray tube for use in body cavities was employed. It was found that the primary tumor was destroyed just as if radium had been used and that the mil trates in the parametrium disappeared completely. Nevertheless, the author thinks that it is advisable to combine internal with external irradiation.

Continuous Roentgen Irradiation of Cancer—The roentgen method suggested by Palmieri permits the simultaneous irradiation of several patients at a distance of from 4 to 5 meters. The irradiation intensity is slight and can be compared with that of radium therapy. The main purpose of the method is to imitate radium therapy in its time factor, as the author thinks that the chief advantage of radium therapy is its selectivity, which is due to the fact that the radium is employed continuously for long periods. He points out that his "superteleoroentgentherapy" somewhat resembles the so-called telepanirradiation employed by Heublein in New York. He describes his apparatus, which permits the simultaneous application of x-rays to four patients, the cabins in which the patients are placed during the irradiation and the arrangement and measurement of the doses, the marking off of the fields and the method of filtration. The treatment was employed in cancers of the oral cavity, the upper air passages, the esophagus, the stomach, the lung, the uterus and the skin. In some instances the results were gratifying but complete cure was not effected in any of the cases.

Wiener Archiv für innere Medizin, Vienna

27:159 318 (July 6) 1935 Partial Index

- Prodromal Symptoms of Phthisis A Kirch—p 159
- *Modification of Epinephrine Hyperglycemia by Preceding Diet and Insulinization R Boller and K Makrycostas—p 179
- Dehydration in Addison's Disease and Its Mechanism G Marañón and J A Collazo—p 189
- Diagnosis of Latent Diseases of Cardiac Muscles A Leimdorfer—p 215
- *Dissociated Bile Retention L Mitow—p 241

Modification of Epinephrine Hyperglycemia—In persons without metabolic disturbances, Boller and Makrycostas investigated to what extent certain diets or insulinization during the preliminary period influence epinephrine hyperglycemia. They state that the blood sugar curve following an injection of epinephrine is not changed by the diet given during the period preceding the epinephrine injection. However, chronic insulinization during the preliminary period increases considerably the action of epinephrine on the blood sugar. It was found in several cases that this increase is most noticeable when insulinization is done while the person receives a diet deficient in carbohydrates. An epinephrine injection during a dextrose tolerance test demonstrates that the increased permeability of the liver for sugar following a diet deficient in carbohydrates or following insulinization can be throttled.

Dissociated Bile Retention—Mitow says that Lemerre and Brulé in 1910 called attention to the so-called dissociated bile retention, which was ascribed to the fact that the hepatic cells are not always impaired in the same manner, in that in some instances they retain all bile constituents, in others only the bile salts and in others only the bile pigments. In the author's clinic it was assumed that the problem could be cleared up if the duodenal juice was examined in the doubtful cases. If the theory of Lemerre and Brulé is correct, it might be expected that, if the bile salts are absent from the urine of patients with jaundice, they should be present in the duodenal

juice, in which they are carried with the bile. If there is no dissociation, if the bile salts are destroyed somewhere in the organism or are retained, or if they are not even formed, they will not be found in the duodenal juice. The author studied this problem on patients with various types of jaundice. He reaches the conclusion that Lemerle and Brule were right when they spoke of a dissociated bile retention.

Zeitschrift für Kinderheilkunde, Berlin

57 289 382 (July 6) 1935 Partial Index

Distribution of Phosphorus Compounds in Blood of Man and Animals
H. Nissen—p. 289

*Erythema Nodosum in Scarlet Fever. E. Morn—p. 321
Serum Disease. Influence of Serum on Water Exchange in Patients with Tuberculosis. L. von Kostyal—p. 326
*Total Calcium Content of Blood in Normal and Spasmophilic Children
S. Siwe—p. 368

Erythema Nodosum in Scarlet Fever—Morn stresses that during childhood cases of erythema nodosum may appear that have no connection with tuberculosis. He reports a case that developed during scarlet fever and in which repeated tuberculin reactions were negative. He emphasizes that the notion of erythema nodosum of childhood as a sure symptom of tuberculosis should be abandoned. Erythema nodosum in scarlet fever nearly always appears during the third or fourth week, that is, during the same critical period during which such complications as late lymphadenitis, hemorrhagic nephritis, secondary anginas, the true scarlet fever relapse, late synovitis and late endocarditis develop. Schick considered these manifold "after diseases" of uniform pathogenesis and the manifestation of a "period of specific predisposition."

Calcium of Blood in Spasmophilic Children—Siwe studied the total calcium content in normal and spasmophilic children. He determined the calcium values of blood specimens withdrawn in the morning and in the evening. In normal cases he found regular curves at a high level. In spasmophilic cases the curves indicate considerable instability, there are great differences between the morning and evening values and there are irregular increases and decreases in the total values. In patients with spasmophilia who have convulsions the calcium level is usually rather low, but the sudden changes are more characteristic than the low values. In the patients in whom convulsions developed during the time they were under observation, considerable reductions always appeared suddenly followed by more or less pronounced increases in the total calcium values. The author thinks that these sudden fluctuations explain the so-called exceptional cases in which high calcium values are observed during spasmophilic convulsions, for the calcium value in such cases depends entirely on the time of withdrawal of the blood specimen. No other factor is necessary to explain these cases. Although convulsions seem to develop at the time of considerable reductions in the calcium content, they do not necessarily or regularly develop at these times. The author concludes that the determination of the total calcium content of the serum can never definitely exclude spasmophilia, even if the result indicates practically normal values.

Zeitschrift für klinische Medizin, Berlin

128: 223 342 (June 25) 1935 Partial Index

Kymographic and Electrocardiographic Studies on Disturbances in Cardiac Rhythm. W. Brednow and B. Deppe—p. 223

*Venesection in Treatment of Erythremia. F. Reimann and A. Breuer—p. 238

Congenital Dilatation of Pulmonary Artery. L. E. Przywara—p. 260
Complete Sinus Block with Branch Block in Myocarditis. H. Marzahn—p. 270

Disturbances in Blood Perfusion of Right Coronary Artery. G. W. Parade—p. 273

*Pathogenesis, Clinical Aspects and Surgical Treatment of Spontaneous Hypoglycemia. M. Schur and M. Taubenhaus—p. 292

Venesection in Treatment of Erythremia—According to Reimann and Breuer it is generally believed that venesection is of only slight value in the treatment of erythremia. They cite reports which indicate that, although venesection has been resorted to in erythremia, it has been rarely made use of in a systematic and well planned manner. They were induced to try systematic venesection in the treatment of erythremia by observations in a case of erythremia in which severe hemorrhages resulted in anemia. They employed venesection in the

treatment of seven cases of true erythremia. As a rule the venesections were made twice weekly, from 300 to 400 cc being withdrawn each time. This treatment was continued for several weeks. During this time the patients were kept under constant control as regards the blood status as well as the general condition. When the hemoglobin had decreased to from 80 to 90 per cent the venesections were discontinued, but the patient was still kept under clinical and hematologic control. The withdrawal of the relatively large quantities of blood was nearly always well tolerated. After the third or fourth venesection the patients generally reported considerable improvement. The external characteristics of erythremia, such as redness of the skin and of the mucous membranes, improved and the subjective complaints in the form of headaches, rushing of the blood to the head, vertigo, tinnitus aurium, fainting, palpitation of the heart and others disappeared. The authors think that the success of the venesection is chiefly due to the fact that the substances, such as iron, which the organism requires for blood formation, are removed to a considerable extent and the pathologically increased blood formation is inhibited. The vascular system is relieved of its surplus load, the overfilling of the organs with blood is reduced and their normal functioning is thus improved. After the venesection treatment, a tendency to remission frequently becomes noticeable and this improves the action of the blood withdrawal. The effects of the venesection therapy persisted for approximately two years. In comparing the results of venesection with other therapeutic methods that are successfully employed in erythremia, particularly with roentgen therapy and the use of phenylhydrazine, the authors found that venesection is equivalent to these.

Complete Sinus Block with Branch Block in Myocarditis—Marzahn reports the history of a patient in whom a rare combination of cardiac defects occurred. In the course of a subacute myocarditis following influenza, a complete sinus block occurred with a branch block of the right side. The patient died from acute pulmonary edema. The auricular waves were absent in all three leads of the patient's electrocardiogram, which indicated an atrioventricular automatism of relatively high frequency. The author assumes that juxtasinusal, supranodal inflammatory degenerative changes were the eliciting cause of the abnormal stimulus formation in the atrioventricular node, for on the basis of the anatomic observations, particularly in view of the multiple necroses that interspersed the entire bundle, such changes seem probable. Inflammatory changes in the region of the sinus node must have interrupted the conduction between the sinus node and the auricle. The branch block is sufficiently explained by the necroses and the indurations.

Spontaneous Hypoglycemia—Schur and Taubenhaus show that the symptoms of spontaneous hypoglycemia resemble largely those of insulin shock. There may be slight discomfort, a feeling of hunger, profuse sweating and tremor, or coma and convulsions. The authors mention three conditions that may produce spontaneous hypoglycemia: (1) increased insulin formation resulting either from a quantitative increase in the islands of Langerhans or from a hyperfunction of these islands; (2) a disturbance in the counterregulation by hormones; and (3) a disturbance in the mobilization of the glycogen. They concede that there are a number of cases in which nothing can be found that would explain the attacks of hypoglycemia. Formerly the treatment of hypoglycemia was largely limited to the attempt to prevent the reduction in carbohydrates by the frequent administration of small amounts of carbohydrates. The single administration of large quantities of carbohydrates was avoided so as to prevent hyperglycemic attacks. The authors admit that the administration of small amounts of carbohydrates is only a symptomatic treatment which does not counteract the cause of the disorder, but they think that this treatment is sufficient for the milder cases. They say that the surgical treatment, which was first suggested by American authors, should be resorted to when an adenoma or a carcinoma of the islands of Langerhans exists or when there are inflammatory disorders in the biliary passages. The surgical intervention itself, as far as it concerns the pancreas, should be limited to the removal of the tumor.

The authors consider the resection of normal portions of the pancreas inadvisable. They cite a case in which they opened the abdomen in the belief that an insular adenoma existed, but, when no neoplasm was found, the abdomen was closed again. It was found that after this laparotomy the attacks of hypoglycemia ceased. The authors are unable to explain this peculiar effect but point out that the result of this laparotomy is practically the same as that achieved by resection of portions of the pancreas. They report a second case in which surgical correction of disorders of the biliary tract resulted in a disappearance of the attacks of hypoglycemia.

Zentralblatt für Chirurgie, Leipzig

62: 1633 1680 (July 13) 1935 Partial Index

- *Etiology and Histology of Nonspecific Chronic Epididymitis J Jordans —p 1634
- Contribution to Jedlička's Surgical Method in Case of Pancreatic Cysts E Polák —p 1641
- Bleeding Jejunal Varices W Latten —p 1643

Nonspecific Chronic Epididymitis—Jordans points out that the majority of authors designate the gonorrheal, syphilitic and tuberculous forms of epididymitis as specific and apply the term nonspecific to all other forms of epididymitis. Many clinicians are of the opinion that the nonspecific epididymitis, as a rule, takes a chronic course. The author says that the surgical specimens which are sent to a pathologic institute for examination are nearly always from chronic or at least from subacute cases. He made studies in seventy-nine cases. Practically all age groups were represented in this material and he was unable to corroborate the opinion of a higher incidence of nonspecific epididymitis in the age group that follows puberty. He says that many investigators consider a urethrogenic and a metastatic pathogenesis but reject a purely traumatic origin. In cases in which an involvement of the spermatic cord can be demonstrated, urethrogenic continuous inflammation is generally assumed. However, involvement of the spermatic cord is often missing and in such cases some authors are inclined to assume a metastatic infection, while the majority believe that the origin is likewise urethrogenic. The author points out that mild forms of inflammation are readily overlooked in the specimens and are discernible only if microscopic inspection is made. Thus there arises the question whether cases of deferentitis may not be overlooked when the changes are slight. The author decided to examine the spermatic cords in the twenty cases of nonspecific epididymitis in which material was available. He detected a deferentitis of intracanalicular origin in eighteen of these cases, which again indicates a urethrogenic pathogenesis. The microscopic examination of seventy-nine surgically removed epididymides disclosed that nonspecific chronic epididymitis is localized particularly in the caudal portion of the epididymis and that it develops by the canalicular route. The author discusses the differentiation of nonspecific epididymitis from the tuberculous and the gonorrheal form.

Zentralblatt für Gynäkologie, Leipzig

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- Artificial Cervical Endometrioses O Frankl and L Kraul —p 1683
- Carcinomatous Cyst of Uterus H E Eichenberg —p 1686
- Another New Method for Tubal Sterilization H Hinselmann —p 1689
- *Does Anemia Exist in the New Born in Case of Placenta Praevia? K Heising —p 1691
- Surgical Experiences in Enforcement of Law for Prevention of Defective Offspring G Kleff —p 1700
- Results of Treatment of Sterility E C Lork —p 1705

Does Anemia Exist in the New-Born in Placenta Praevia?—The observation that the infants of mothers with placenta praevia have an anemic appearance induced Heising to compare the hemograms of these with the hemograms of normal new-born infants. He detected an anemia in eight of twenty-seven new-born infants from mothers with placenta praevia. In the most severe case of anemia the hemoglobin value was approximately 52 per cent below the average for the normal new-born, and the erythrocytes 45 per cent below the normal. The author points out that his observations corroborate the opinion expressed by Stoeckel and Zangemeister to the effect that in placenta praevia not only does the mother bleed profusely but also the infant may bleed.

Norsk Magasin for Lægevidenskapen, Oslo

66: 673 792 (July) 1935

- Investigations on Syphilitic Aortitis C Müller —p 673
- *Gaucher's Disease Three Cases A Kveim —p 696
- *Fate of Our Eclampsia Patients During Subsequent Pregnancies and Deliveries S Kjelland Mørde —p 712
- *Poisoning with Blue Rocket Larkspur Case A Jakobsen —p 725
- Rat Bite Fever Case G Benestad —p 729
- Colchicine Treatment of Malignant Tumors in Mice Control Investigation K T Poulsen —p 735
- *Angiomatosis of Brain and Trigeminal Region with Intracranial Calcification and Epilepsy E H Schjeltz —p 737
- Clinical Roentgenologic Contribution to Question of Pathogenesis of Open Pulmonary Tuberculosis A H Brinchmann —p 758
- Ring Shadows on Roentgenogram of Lung A H Brinchmann —p 765
- Traumatic Pneumothorax on Basis of Rupture of Lung H C Wennevold —p 770

Gaucher's Disease—Kveim has found thirty four cases of this disease in the literature. In his three personal cases, in a sister and two brothers aged 23, 28 and 26, there were considerable enlargement of the liver and spleen, leukopenia and thrombopenia, an increased sedimentation reaction, a tendency to bleeding, partly with subperiosteal hemorrhages, marked petechiae with consequent hemochromatosis, especially of the lower extremities, and brown coloration of the skin, mostly of the uncovered parts of the body. In the young woman pronounced changes in the bones also appeared, with typical wine bottle shape, chloasma-like spots on the face and yellow spots in the sclerae, and histologic examination of the bone marrow revealed the characteristic picture of Gaucher's cells. In this case a hitherto undescribed symptom also was present, namely, an almost black coloration of the instep and the leg almost up to the knees, directly dependent, the author avers, on the hemorrhagic diathesis, the special localization being due to mechanical and static reasons.

Fate of Eclampsia Patients—Of sixty-one cases of eclampsia in forty-eight patients, nine were without symptoms. Of the fifty-two remaining cases, thirty were complicated with recurring intoxication of pregnancy (eighteen with albuminuria, five with eclampsia, seven with eclampsia), grave in fourteen cases. Premature detachment of the placenta occurred in three instances the fatal case representing the only death in the material. Of forty-nine of the offspring, thirty-six (twenty eight mature) were alive and viable and eleven (one mature, seven viable) were stillborn, most of them macerated. Kjelland Mørde emphasizes that, while the question of interrupting the new pregnancy must be decided for each individual case, interruption is usually not necessary.

Poisoning with Blue Rocket Larkspur—Jakobsen says that the case resembled intoxication with an aconite alkaloid. The active substance was probably the alkaloid delphinine. He ascribes the comparatively mild effect to the use of extract of the root of the rocket larkspur instead of the seeds, which contain the main quantity of the alkaloid. Treatment was the same as for intoxication with aconite.

Angiomatosis of Brain and Trigeminal Region—In Schjeltz's case of epilepsy, the first symptoms set in before the sixth month of life. The patient, a man aged 44, had a vascular nevus of the face, the extent of which corresponds approximately to that of the first branch of the trigeminal nerve on the right side. The roentgenogram of the head shows numerous gyroid form calcified lesions, partly with double contours, their seat corresponding to the right lobe of the occiput. The author states that the combination of vascular nevus of the trigeminal region, telangiectasis of the pial vessels and glo-angiomatosis of the brain with debility or epilepsy (most often contralateral jacksonian epilepsy), or with both, is a special syndrome first clinically described in 1879 by Sturge. As the hemangiomas have a tendency to calcification, they become visible in the roentgenogram. He has collected eighty-six cases from the literature. Of the total eighty-seven cases, fifty-eight have been verified at necropsy, roentgenologically or operatively. The time of the appearance of the first symptom is known in sixty cases in forty this was at the age of 1 year or earlier, in twelve between 1 and 10, and in eight cases later than 10. Of seventy-six patients, fifty-three were men and twenty five women. The pathologic anatomy is reviewed with especial reference to Volland and Krabbe, who show that the calcifications lie in the cerebral cortex not in the pia mater.

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CHRONIC SUBDURAL HEMATOMA

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In this country the interest in chronic subdural hemorrhage was aroused by the report of Putnam and Cushing¹ in 1925. Curiously enough, at that time these authors could report but six cases from the Peter Bent Brigham Hospital records, although a very large amount of neurosurgical material passed through this clinic. Furthermore, in their careful review of the literature a bare half dozen American articles on this subject were available. Again, when in 1927 I² reported three instances of this condition from the Neurosurgical Clinic of the University Hospital, a cursory examination of its records failed to show any similar cases prior to this date. But when Munro³ in 1934 reviewed the literature for the past ten years on this subject, twenty-six articles were available from the American literature, eight appearing between 1926 and 1930 and sixteen since 1930. I do not believe that chronic subdural hematomas are becoming a more frequent sequela of head injuries. Cranial trauma is unquestionably increasing, owing to a speeding up of transportation due to good roads and the automobile, but the type of trauma following accidents from this source is of the more violent type, which does not usually produce this variety of lesion. As neurosurgical clinics become more widely established throughout the country, however, these cases find their way to them are recognized and are treated by surgical methods.

That chronic subdural hemorrhage should have remained an obscure condition is curious, for in 1914 Trotter⁴ reported five cases and described the type of injury and the mechanism whereby the hemorrhage occurred. He felt that bleeding resulted from a rupture of the short veins running from the cortex to the longitudinal sinus. These veins are straight and extend unsupported across the subdural space at right angles to the cortex and sinus. But little displacement of the brain in the anteroposterior plane of the head would be necessary to stretch them to the point of rupture. The falx divides the cerebral cavity in half from in front backward, checking lateral cerebral movement. But violence applied in the anteroposterior plane could

produce sufficient displacement of the cerebral mass to tear these veins. Brodie⁵ has recently emphasized this point.

In my series of sixteen cases, the head was struck in ten in either the frontal or the occipital region. But other veins run across the subdural space from the lateral sinus to the cortex and from the dura to the cortex over its convex surface. Rand⁶ reports three of seven cases in which he found such a vein thrombosed within the clot and hence a possible source of the hemorrhage. In one of my series a vein lay down in the temporoparietal region leading from the lateral sinus to the cortex was found torn loose and embedded in the clot. Munro³ records a similar case. That these subdural clots are so frequently bilateral suggests the importance of violence applied in the anteroposterior plane of the skull, for only in this way could veins on two sides of the falx be ruptured simultaneously.

Gardner⁷ has offered a thoroughly acceptable explanation for increase in the size of the clot after the original hemorrhage has ceased. Based on experimental study, he believes that hemorrhage, possibly slight in amount, may follow the original trauma. This hemorrhage lies in the subdural space and as Putnam has so well shown, becomes rapidly surrounded by a layer of mesothelial cells. On the dural side this mesothelial lining becomes thickened, and large mesothelial-lined vascular spaces form beneath the dura. These spaces seem to anastomose with one another and with adjacent newly formed capillaries. Gardner is of the opinion that the center of the clot is poorly vascularized and breaks down and liquefies into fluid rich in proteins. The thin mesothelial wall about the clot against the arachnoid acts as an osmotic membrane sucking cerebrospinal fluid into the sac. Thus slow, steady expansion occurs. Munro³ helps to confirm this theory by reporting figures on the protein content of the fluid obtained from these hematomas. He finds that the amount of protein is greatest between the fifteenth and the twenty-first day after injury, with a rapid fall thereafter until about the twenty-seventh day. From this time on the fall in protein content is gradual. Although he admits that the cases from which these figures are obtained are too few to be finally conclusive in detail, he feels that it is a fair assumption that they indicate breakdown and liquefaction with dilution of the contents of the sac by osmosis of cerebrospinal fluid.

This theory will account for those cases and they are by far the more numerous, in which the hematoma is made up of a brownish fluid surrounded by a thin

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Atlantic City, N. J., June 14, 1935.
1. Putnam, T. J. and Cushing, Harvey. Chronic Subdural Hematoma.
Arch. Surg. 11: 329 (Sept.) 1925.
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4. Trotter, Wilfred. Chronic Subdural Hemorrhage of Traumatic
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20: 273 (March) 1929.
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Reference to the Latent Interval. Arch. Neurol. Psychiat. 27: 847
(April) 1932.

wall of heavy black clot. In all my sixteen cases and in twenty-nine of the forty cases recorded by Jelsma⁸ the center of the clot had liquefied. It will not account for those cases in which a solid clot is discovered. However, from reviewing the literature the impression is obtained that when this condition is encountered the history of the case is of shorter duration than when fluid and clot are discovered. Possibly sufficient time has not elapsed for liquefaction to occur. Furthermore, Gardner's theory of slow expansion of the cystic clot by osmotic increase in its fluid content fits in accurately with the clinical course that these cases run.

The injury is very frequently followed by a period of longer or shorter duration during which no evidence of an intracranial lesion can be noted. Then slowly and insidiously this develops, often with short periods of mental clouding or headache, which disappear only to recur. With each recurrence there is a slight but definite increase in symptoms, the interval between these bouts of headache or mental dullness becomes shorter and then rather abruptly obvious signs of cortical irritation appear as a convulsion or a hemiparesis, accompanied by marked increase in headache and definite clouding of consciousness. From the history, many of these subdural clots develop over periods of weeks or months and it is difficult to attribute such slowly progressive symptoms to a continuous or even an intermittent hemorrhage from a torn vein. Assuredly in other parts of the body venous bleeding is promptly checked by clot formation and does not recur.

Hematomas of this type occur with greatest frequency over the cerebral hemispheres. On rare occasions the hematomas may be subtentorial, although under these circumstances a laceration or contusion of the brain is usually the source of hemorrhage. In from 20 to 30 per cent of cases the hemorrhage is bilateral, a fact which must be kept in mind constantly. Any age may be affected, although young men predominate because they are more likely to receive head trauma. Peet and Kahn⁹ report a series of cases in infants.

Alcoholism seems to be a definite factor, although whether this is due to the fact that alcoholism leads to head injury or to some irritating effect of the alcohol on the subdural space is far from certain.

This report is based on sixteen cases of chronic subdural hemorrhage verified at operation or at autopsy. In none of them was an accompanying contusion or laceration of the brain the cause of the hemorrhage. In all there seemed to be an internal as well as an external limiting membrane enclosing a chocolate colored clot and a brownish fluid. Thus in all of them sufficient time had elapsed for liquefaction and capsule formation to occur. They fall, therefore, into groups 4 and 5, as recently described by Leary.¹⁰

The diagnosis in these cases depends on how recent and how clean cut the history of injury may be. If the clinical picture develops as a direct consequence of cranial trauma a definite conclusion that a subdural hematoma has formed may often easily be reached. But again the trauma may have been so mild that to attribute to it the development of such marked symptoms after so long a period seems ridiculous. In this series five patients were never unconscious at any time, five lost consciousness only momentarily, while none

of the remaining six were unconscious for more than ten minutes. The importance, therefore, of any injury no matter how trivial, particularly if violence has occurred in the anteroposterior plane of the head, should be stressed. In one patient even after careful questioning no definite history of injury could be discovered, however, his symptoms had been present for at least two years, a long time to remember as slight an injury as can apparently result in a hematoma.

Bowen¹¹ calls attention to the "lucid interval" existing between the injury and the development of unconsciousness and the "latent interval" or period between the trauma and the appearance of the first symptom suggesting an intracranial condition. These two intervals overlap, and, in my experience, which seemed different from Bowen's, the lucid interval is longer than the latent. None of my patients lapsed into complete unconsciousness without other evidence of cortical irritation having previously developed. Nor did I observe any definite feature in the development of symptoms which is of particular importance in differentiating between a hematoma and any other intracranial mass lesion, as tumor or abscess.

Trotter⁴ speaks of the insidious mental changes and recurring bouts of mental dullness, each slightly more severe until rather abruptly semistupor or stupor develops. All my patients complained of headache, fourteen had definite slowing in the mental reactions, but only two were entirely unconscious. Six are noted as having been lethargic, even semistuporous, and two as stuporous. If any one characteristic in this group was to be singled out as of diagnostic importance, stress might be laid on the uncertainty and variability of the neurologic symptoms. But if an equal number of cases of brain tumor or abscess were carefully compared with this group of hematomas, it is far from certain that the difficulties in diagnosis and localization would vary in any particular degree. What is surprising, however, in retrospect, is that an intracranial lesion can reach the size so often attained by these hematomas, frequently extending from the frontal to the occipital pole, and compressing a hemisphere inward for 3 to 4 cm from the dura, and produce such surprisingly indefinite symptoms. Again, with lesions as massive as those so commonly encountered, more concrete evidence of intracranial pressure might confidently be expected. However, but three patients of this series had definite choking of the disks, and of the ten in which lumbar puncture was performed the pressure was elevated in but three. Bloody or xanthochromic fluid was found on four occasions. Kaplan¹² has recently reiterated the importance of a unilateral dilatation of the pupil in determining the site of the hemorrhage. The dilated pupil lay on the side of the hemorrhage in five of my cases and contralateral in three. In one instance both pupils were dilated.

Two important facts stand out in the survey of this small group of cases. In six cases the neurologic signs pointed to involvement of the opposite side of the brain to that actually involved. In other words, in over one third of these patients the hemorrhage and the hemiparesis were on the same side. Second, on three occasions the hemorrhage was bilateral. So that whether the diagnosis is made preoperatively or the subdural clot is an unexpected finding, both hemispheres

⁸ Jelsma, Franklin. Chronic Subdural Hematoma. *Arch. Surg.* **21**: 128 (July) 1930.

⁹ Peet, M. M. and Kahn, E. A. Subdural Hematoma in Infants. *J. A. M. A.* **98**: 1851 (May 28) 1932.

¹⁰ Leary, Timothy. Subdural Hemorrhages. *J. A. M. A.* **103**: 897 (Sept. 22) 1934.

¹¹ Bowen, W. H. Traumatic Subdural Hemorrhage. *Guys Hosp. Rep.* **59**: 21 1905.

¹² Kaplan, Abraham. Chronic Subdural Hematoma. Study of Eight Cases with Especial Reference to the State of the Pupil. *Brain* **54**: 430 (Dec.) 1931.

should always be explored. In the five cases just mentioned, exploration was done on the wrong side in two, with subsequent fatality and confirmation at autopsy. In the other three patients bitter experience led to bilateral investigation and eventual recovery.

The proper treatment for chronic subdural hemorrhage is exposure and removal of the clot. A subtemporal decompression or osteoplastic flap was fashioned over the suspected hemisphere and used to evacuate the clot until 1932, when Fleming and Jones¹³ and McKenzie¹⁴ suggested that simple trephines placed anteriorly and posteriorly over the vault with drainage of the fluid in the cyst without removal of the capsule were sufficient to cure this condition. Frazier¹⁵ has recently reported success with this simpler method of attack in five of six cases. In the present series, six patients were operated on through an osteoplastic flap without any mortality. In one instance bilateral subtemporal decompression was carried out with recovery. Among the eight cases in which simple trephines and evacuation of the clot was employed, four patients recovered and four died. On but one occasion among the four mortalities could the blame be laid to the method. In this case the clot was more solid than fluid. A second operation was necessary to complete evacuation and from this the mortality occurred. A second patient died from lung abscess and pneumonia following apparently successful evacuation of the clot through two trephine openings. Two patients succumbed because of improper lateralization of the lesion. The trephine holes were made over that cerebral hemisphere which the scanty neurologic signs suggested as the site of the hemorrhage. Autopsy showed the hematoma to be on the opposite side.

My own experience and opinion lean toward the use of a small osteoplastic flap, unless the patient's condition definitely contraindicates it. I feel that in this way, with little or no increase in operative hazard, complete evacuation of the clot with removal of the membrane can be accomplished. The arguments against the use of an osteoplastic flap are the greater length of time necessary, with loss of more blood and more likelihood of postoperative shock, the difficulty of obtaining perfect hemostasis after complete removal of clot and membranes, and the great frequency with which bilateral hematomas are discovered, requiring the added risk of a second craniotomy. I believe that bilateral trephines should always be made, and if the clot is found to be unilateral I turn down a flap on that side. If the clot is bilateral it is sufficient to rely on simple trephine drainage, but, if unilateral, safety and satisfaction compel me to perform an osteoplastic flap. Then complete removal of clot and membrane can be carried through. It is more certain that recurrence will not take place and the expansion of the brain into the area occupied by the clot can be more easily determined. In either operative procedure, a drain should be left within the dura for from twenty-four to forty-eight hours. The increased bleeding following an osteoplastic flap and removal of the clot occurs mostly from the dura. If the dura is cut all the way round turned over and resutured, all oozing from its surface will promptly cease.

McKenzie¹⁴ has recently made a valuable suggestion which overcomes one of the objections to the simple trephine for hematoma. At times, after evacuation of the fluid contents of the clot, the brain does not expand to fill in the cavity. He has found this to be due to that part of the cyst wall which is adherent to the arachnoid acting as a tight band and compressing the cortex. The operator can reach in carefully through the trephine opening, seize and tear this membrane, and thus allow the brain to pulsate outward and assume its normal position.

Another advantage of the osteoplastic flap is that it affords room for decompression. Putnam, Munro³ and others have called attention to edema of the brain due to release of tension following evacuation of the clot as a cause for mortality. While this has occurred in but one case in this series, and in this could fortunately be controlled, nevertheless a better chance for recovery under these conditions would result if a larger flap had been elevated than if simple trephines had been used.

SUMMARY

1 In sixteen cases of chronic subdural hemorrhage there were five deaths, four of which were postoperative.

Summary of Data in Sixteen Cases of Subdural Hematoma

16 Cases	
13 males 3 females	Average age 36
11 patients recovered, 5 died	
16 operative cases	
11 patients recovered 4 died.	
Operative Procedures	
Osteoplastic flap	recovered 6, died 0
Subtemporal decompression	recovered 1, died 0
Bilateral trephines	recovered 2, died 2 (hemorrhage bilateral 3)
Unilateral trephines	recovered 2, died 2
14 cases with history of injury	in 8 cases discovered only after operation
1 case with no known injury	
Severity of Injury	
Not unconscious	5
Briefly unconscious	6
Unconscious 5 minutes or more	5
Time from injury to onset of symptoms	average 5 weeks
Time from onset of symptoms to operation	average 2 weeks
Symptoms	
Headache	11
Stuporous	10
Hemiparesis	11 (5 instances in limbs ipsilateral to hemorrhage)
Unilateral pupillary dilatation	7
Ipsilateral to hemorrhage	5
Contralateral to hemorrhage	3
Facial weakness	7
Ipsilateral to hemorrhage	4
Pulse rate definitely retarded	8
Choked disk	3
Convulsions	1

2 A very slight cranial injury can produce a hematoma. The neurologic evidence of its presence may be extremely vague and misleading although headache and lethargy are always pronounced.

3 The uncertainty of the neurologic signs, the frequency with which the hemorrhage and the clinical evidence are ipsilateral, and the relatively large percentage of cases in which bilateral subdural hemorrhages occur all emphasize the importance of exploring over both cerebral hemispheres in every case.

4 Exploration can be carried out through two trephine openings placed anteriorly and posteriorly over each hemisphere or by an osteoplastic flap. The general condition of the patient should determine the choice of operations. Drainage should always be instituted after evacuation of the hemorrhage.

3400 Spruce Street

13 Fleming H W and Jones O W. Chronic Subdural Hematoma. *Surg. Gynec. & Obst.* 54: 81 (Jan.) 1932.

14 McKenzie, K. G. A Surgical and Clinical Study of Nine Cases of Chronic Subdural Hematoma. *Canad. M. A. J.* 26: 534 (May) 1932.

15 Frazier C H. The Surgical Management of Chronic Subdural Hematoma. *Ann. Surg.* 101: 671 (Feb.) 1935.

16 McKenzie K. M. Discussion on Subdural Hemorrhage, meeting of the Halstead Club Toronto in May 1935.

ABSTRACT OF DISCUSSION

DR. TRACY J. PUTNAM, Boston Dr Grant has emphasized that a subdural hematoma may follow an extremely mild injury but that no history of injury may be obtainable. I believe that he does not necessarily mean that it cannot follow a severe injury but only that the injury need not be very severe. It seldom follows an extremely severe injury, and I have sometimes wondered whether that was to be explained by the fact that an injury severe enough to cause edema of the brain may cause a tamponing of a torn vein and so prevent hemorrhage. Dr Grant has referred to Dr Gardner's explanation of the early increase in size of the collection of blood due apparently to the breaking down of the protein molecules into smaller molecules, which increases the osmotic pressure. It seems to me that it is necessary also to account for the late increase in size which apparently occurs in some instances long after the increase in molecular concentration of the cyst fluid must have ceased. This is perhaps explained by the fact that man has an upright posture and a negative pressure within the skull and that a hematoma elsewhere in the body may decrease in size as the result of bandaging and compression and, contrariwise, that the cupping which the negative pressure within the skull affords may cause an increase in size in granulation tissue. Perhaps that is why the capillaries are as enormous as they are seen to be and why hemorrhages occur. It has become my custom to rely more and more on burr holes to establish the diagnosis. It has become my custom to place the burr holes just at the origin of the temporal muscle, and I believe that this allows more certainty of locating the collection of blood than if the holes were made nearer the vertex. Unquestionably there are cases in which the entire contents of the sac can be evacuated through a single burr hole, there are others in which a subtemporal decompression will suffice, and there are others in which a flap operation will have to be done. I fail to see any advantage in two burr holes over a decompression and I believe that a small decompressive opening is more rapidly carried out. I think one should rely on one's judgment in the individual case. It has been very striking to me that, in spite of the fact that this should be a benign condition, it has a very high mortality in the cases reported in the literature. I think that perhaps the diagnosis is made more promptly now, and operation is more rationally conceived and carried out.

DR. W. JAMES GARDNER, Cleveland Of twenty-two cases eighteen were seen during a period of four years and they represented about 4 per cent of the expanding intracranial lesions seen during that time. Two-thirds of the patients were more than 40 years of age. It is inconceivable that cranial trauma is twice as frequent after the age of 40 as before this age. I feel that the explanation of this increase is that with increasing age there is increasing fragility of the cerebral veins so that they tear more readily. In this series the cases were all of long standing. In the youngest patient five weeks elapsed from the time of accident to the time of operation, and the longest interval was thirty-three weeks. The trauma in every case was mild. In none was fracture of the skull demonstrable. Only six patients were unconscious as a result of their injury, and only three of these were unconscious for more than two or three minutes. The most frequent accident was a fall on the ice, the occiput striking on the pavement. The latent interval between the time of the trauma and the onset of pressure symptoms averaged 3.6 weeks, and the average interval between the accident and operation was 12.5 weeks. The most frequent symptoms were headache and disturbances in the intellectual sphere, which were present in nineteen cases. I think one very important diagnostic point is the fact that the somnolence and stupor are out of all proportion to the degree of intracranial pressure in the majority of cases. When a patient shows signs of increased intracranial pressure, with a normal spinal pressure, one should always be alert as to the possibility of subdural hemorrhage. In eight cases the neurologic signs pointed toward the side of the lesion, in five there were no localizing signs, in five the signs pointed toward the wrong side of the brain and in four unilateral lesions the neurologic signs indicated bilateral damage. The frequent incidence of homolateral

signs in these cases is due to the dislocation of the brain, with resultant pressure on the cerebral peduncle by the incisure of the tentorium. Two patients showed a homolateral homonymous field defect. I presume that it is also due to the dislocation of the brain with resulting pressure of the lateral geniculate body against the incisure. Two patients died with the condition undiagnosed. Of the twenty patients operated on, two died and eighteen recovered. In fifteen of the cases the symptomatic recovery was complete. This, therefore, represents a most benign, expanding intracranial lesion, and one should be ever alert as to the possibility of this lesion being present, because the patient's life can usually be saved if the surgeon is fortunate enough to get him before he is moribund. Eight patients, two of whom died, were treated by a single drill hole located about midway between the sagittal suture and the ear. The two who died had bilateral involvement.

DR. PETER BASSOE, Chicago I will mention one case that I think may be of some interest. A farmer in a fall struck the left side of the head on an iron roller. An hour later he staggered into the house and was quite stupid, but he recuperated. He kept on working, complaining of headache every day. He had to give up in about a month. He had dizzy spells, his headache was terrible, and he became more and more stupid. Headache and stupor were the main symptoms. I saw him in consultation. His physicians were in doubt about the diagnosis because the family said that the man had been queer. He was 56 years old, and eight or ten months previously he had married a woman who was pregnant, although he knew that somebody else was responsible for the pregnancy. They thought that there had been something wrong with his brain before the injury. When I saw him he was in a stupor. I could not examine his sensation. He had a slight choked disk on the left side and a partial right hemiplegia. His pulse rate was from 45 to 50. I made the mistake of making a lumbar puncture and got perfectly clear normal fluid. The man grew worse and worse. I advised at the time that he should be brought to Chicago to a neurosurgeon, but he failed rapidly and died six days later. The right hemisphere was entirely covered by a quite thick subdural clot, so that this was a very fine simulation of a case of meningioma.

DR. WALTER FREEMAN, Washington, D. C. I have seen at least thirty of these subdural hematomas among some 1,500 cases coming to necropsy. They were practically all free from symptoms until shortly before the end, probably because the patients were already so tangled up in their mental processes that they didn't give clear indications of the trouble within. There is a certain tendency for these lesions to occur in older persons. I question the interpretation that Dr Gardner has given. I think it is not so much the fragility of the veins that is responsible for the rupture as it is the atrophy of the brain, carrying the cerebral cortex away and leaving a longer stretch of vein to be injured. Often no history of injury is found. Is it Dr Grant's impression, or just a slip of the tongue, that cerebrospinal fluid is found in these cysts? It is my impression that the fluid is much more like blood plasma mixed with autolyzed blood. These subdural hematomas do not progress slowly over a period of time but by leaps and bounds, quiet for a while, then starting up again as shown principally by the layer after layer deposited in the clot. In my experience the clots are fairly frequently bilateral. In a few cases in which the history of trauma was not very clear, encephalography revealed yellowish fluid. In two of these cases the sac was apparently ruptured, because after withdrawal of 50 or 60 cc. of fluid by the lumbar route there was a sudden gush of brownish fluid. These patients did badly. The cause of the stupor has a particular relationship to the type of lesion. I believe that I have shown one mechanism by which this might occur, namely, compression of the corpus callosum by herniation of the brain, beneath the falx. There is a marked tilting up of the corpus callosum with considerable pressure in that region. This is the only remarkable manifestation, I think, that occurs in the displacement of the hemispheres toward one side.

DR. J. W. WATTS, Philadelphia After removal of the hematoma in some of these cases the brain fails to expand, and I should like to ask Dr Grant whether he has an explanation for that, and also what he does in the cases in which

the brain fails to expand I believe that these patients usually do rather poorly

DR. C. C. NASH, Dallas, Texas I have had one case of chronic, mild headache that follows a mild injury and suddenly becomes very severe. The interpretation was that the hematoma sac had ruptured into the subdural space, spreading the blood. Another thing is the explanation of the so called latent interval. I can understand why it gradually increases. Why do these patients carry this large sac so long and suddenly become worse, as has been brought out? In my oldest case the operation was performed two years and four months following injury. It has been my experience that the spinal fluid pressure has been increased, in some cases quite high, up to 28 or 30 mm, and that high pressure is not an indication of choked disks, as I have had many indications of high pressure due to brain tumor without the presence of choked disks. The thing that has been very valuable to me in diagnosis is the use of ventriculography, particularly in cases of unconsciousness.

DR. MAX M. PEET, Ann Arbor, Mich. A few years ago Dr. Ernest Sachs of St. Louis presented a patient with a cerebellar subdural hematoma exactly simulating in appearance and apparently exactly the same in etiology as the type that has been described today. This man had struck a wall with his forehead and the curbing with his occiput and presented symptoms of a cerebellar tumor, but at operation a suboccipital hematoma was found. So far as I know it is the only one that has been mentioned.

DR. EDGAR A. KAHN, Ann Arbor, Mich. With regard to the difference between children and adults I think that this answers the question brought up by Dr. Watts. In children there will sometimes be seen a very tough membrane holding the brain down, and the brain does not expand until the membrane has been incised. I cannot imagine fluid passing from the subarachnoid space into the sac through this tough membrane. The fluid that gradually accumulates in the sac, increasing the intracranial pressure, comes as a dialysate through the thin walled vessels of the membrane adherent to the dura.

DR. FRANCIS C. GRANT, Philadelphia. Dr. Putnam questions the severity of the injury. All these reported cases have been chronic cases in which there has been a well encysted clot and no fresh blood. They would fall into the groups, probably V and VI, of the classification that McGrath recently made of chronic subdural hematoma. I quite agree with Dr. Putnam that subdural hemorrhage is unlikely to occur after severe injury, for there is an edema of the brain following severe injury that prevents severe bleeding. Furthermore, a contusion of the brain occurs rather than rupture of the small vessels on the cortex. In chronic subdural hemorrhage it is the rupture of the small vein running from the dura to the cortex that is the etiologic factor. Dr. Kahn has given an explanation for lack of expansion of the brain: that part of the cyst wall which adheres to the arachnoid may be firmly attached to the arachnoid at two widely separated points in a tight band across the brain. If one reaches in and ruptures this membrane, the brain will expand. I have never seen this condition, but it appeals to me as a possible explanation. I have no particular method for handling the situation when the brain doesn't expand. I would certainly drain. It has been suggested that the use of hypotonic solution by vein might cause expansion of the brain. Ringer's solution has been used in the spinal canal to push the brain up. With regard to Dr. Freeman's question I said cerebrospinal fluid and I meant cerebrospinal fluid. I think that the cyst fluid is broken down blood diluted with spinal fluid. It has a lot of protein and a lot of blood clots in it but I think that the reason for the steady slow expansion is the entrance of cerebrospinal fluid into the sac. Furthermore, I have never seen a clot that had layers. All the clots have been examined microscopically and they have been entirely cohesive and entirely uniform, and there hasn't been anything suggesting a second hemorrhage following on the first. As to the question about cephalograms these were made in one case. The patient had headaches for two years and a half, and curiously enough, the cephalogram was apparently negative. The man had a right and left subtemporal decompression. A rather large left-sided subdural hematoma was found which was evacuated.

THE BIRTH ORDER OF 582 MALFORMED INDIVIDUALS

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AND

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PHILADELPHIA

The cause of congenital malformations remains unexplained. It is not known whether they are due to defects in the germ plasma of the parents or to injury of the growing embryo. In order to throw light on the question, an investigation of a series of families, each possessing a defective child, has recently been made. Among the characteristics studied in these families was the birth order of each normal and of each malformed child. An analysis of the data on this point forms the basis for the present report.

Still¹ has studied the birth rank of malformed children seen by him in private practice. He concludes that congenital heart disease, congenital pyloric stenosis and various other defects appear more often in the first born than in the later born.

Macklin² has studied the place-in-family in a series of malformed individuals reported in the literature. Contrary to Still, she concludes that congenital heart disease and pyloric stenosis do not show a bias for the first birth rank. As a result of her analysis of the birth positions of a thousand malformed individuals who exhibited defects similar to the ones in our series she believes that defects are no more likely to appear in one birth rank than in another.

A number of studies have been made on the birth order of mongols. Physicians have long noted that mongols are most often born late in large families. Statistical studies on mongols, in which a reconstruction was used to correct for variations in the size of the family, have been made by Pearson,³ Penrose⁴ and Ordahl.⁵ These observers agree that mongols appear more often in later birth ranks than would be expected by chance. It is thus quite evident that as yet there is no agreement as to the place-in-family in which malformed individuals are most likely to occur.

MATERIALS AND METHODS

Collection of Data—There were found in the files of the Bureau of Vital Statistics, Department of Health of the State of Pennsylvania, 130,132 death certificates for still-born and live-born individuals who died in Philadelphia during the five years between Jan. 1, 1929, and Dec. 31, 1933. Each of these certificates was examined, and the data on those noting the existence of any congenital defect were transcribed to duplicate official forms, 1,476 such certificates were located.

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The authors are indebted to Dr. Emlin Jones, director of the Bureau of Vital Statistics, Department of Health of the State of Pennsylvania, to Miss Florence G. Hardy, chief statistician, and to Miss Mary A. Cleckner for their continued help on the project.

The investigation of which the present report forms the first contribution was aided by the John G. Clark Fund of the University of Pennsylvania, the Federal Works Administration and the Local Works Division through the cooperation of the State of Pennsylvania Department of Health.

¹ Still, G. F. Place in Family as a Factor in Disease. *Lancet* 2:795 (Oct. 15) 1927.

² Macklin, Madge T. Primogeniture and Developmental Anomalies. *Human Biol.* 1:382 (Sept.) 1929.

³ Pearson, Karl. On the Handicapping of the First Born. Being a Lecture delivered at the Galton Laboratory, University College, London. Dnlan & Co. 1914.

⁴ Penrose, L. S. Relative Aetiological Importance of Birth Order and Maternal Age in Mongolism. *Proc. Roy. Soc. London* B 115:31 (Aug. 1) 1934.

⁵ Ordahl, G. Birth Rank of Mongolians. *Mongolism: Definite Form of Mental Deficiency Found More Frequently in the Later Birth Ranks.* *J. Hered.* 18:429 (Oct.) 1927.

The deceased individual was considered to have possessed a defect under either of two conditions (1) if the defect involved the surface of the body, or (2), if internal, if its presence had been disclosed by operation or necropsy. Diagnoses not conforming to these requirements were considered as not verified and were

TABLE 1—*Birth Rank of All Siblings in 539 Families*

Birth Rank	Siblings		
	Total Number	Defective Number	Normal Number
1	539	201	338
2	402	131	271
3	337	77	260
4	222	42	180
5	162	41	121
6	110	26	84
7	81	23	58
8	56	15	41
9	34	11	23
10	25	7	18
11	12	4	8
12	7	1	6
13	3	2	1
14	2	1	1
Totals	2,057	582	1,475

excluded from further consideration. This procedure reduced the number of usable certificates to 890, or only 60 per cent of the original 1,476 certificates.

An attempt was made to interview the mother of each of the 890 deceased individuals, the visits being made in the summer of 1934 by three fourth-year medical students, now Drs. Dorothea Kilian, Tracy Cuttle and Milton Mazer. A complete reproductive history was secured from each mother who could be

TABLE 2—*Families by Number of Conceptions, Including Abortions and Miscarriages, and by Number of Malformed Siblings in Each Family**

Conceptions Number	Families Number	Defective Siblings		
		1 Families	2 Families	3 Families
1	77	77	0	1†
2	125	118	0	1
3	116	108	0	1
4	60	50	3	1
5	46	44	2	3
6	35	29	3	3
7	26	23	1	1
8	21	20	1	1
9	9	8	2	1
10	13	11	1	1
11	6	5	1	1
12	4	4	1	1
13	1	1	1	1
14	2	2	1	1
Totals	530	506	23	10

* An example of the interpretation of this table follows. In the case of the 116 families (column 2) in which there had been three conceptions each 108 families possessed one defective child each six possessed two defective children and one possessed three defective children.

† One of the pregnancies resulted in malformed twins.

located. The group forms a consecutive series. The defective children all died within a given geographic area and a given period of time.

THE DATA

The birth rank of all siblings was determined for a total of 539 families (table 1). There were 2,057 conceptions, or an average of 4 per family.

All abortions and miscarriages were utilized in determining the ordinal number of subsequent pregnancies. When no mention was made of a defect in the embryo, it was classified as being normally developed. Of the 2,057 conceptions, 1,475 resulted in normal offspring.

The distribution of the malformed siblings by size of family and by number of defective siblings in each family is recorded in table 2. Five hundred and six

families contained one malformed sibling, twenty-three contained two and ten contained three.

The location of the chief malformation in the 582 defective individuals is shown in table 3. Of these, 77.5 per cent were external defects. Hydrocephalus and spina bifida constituted nearly one half of the total group.

There were only four patients with mongolism, which, as has been mentioned, shows a bias for the later birth ranks. These four are obviously too few to affect the attributes of the series.

The distribution of the observed malformed individuals, arranged according to birth rank, is shown in table 4, column 2, together with the theoretical distribution of the same individuals (column 3) if they had been distributed by birth rank according to the

TABLE 3—*Classification of Individuals by Location of Chief Malformation**

Malformations	Individuals	
	Number	Per Cent
External and internal	582	100.0
External by systems	451	77.5
1 Nervous	383	
(a) Hydrocephalus spina bifida	270	
(b) Anencephalus	63	
(c) Others	44	
2 Osteocommusculoskeletal	40	
3 Undescribed monsters	28	
Internal by systems (diagnoses confirmed by operation or necropsy)	131	22.5
1 Gastrointestinal	87	
2 Cardiovascular	32	
3 Genito-urinary	6	
4 Respiratory	6	

* Showing the location of the chief malformations observed in 582 defective children born to 539 mothers. All internal defects were confirmed by operation or necropsy. Note that more than three fourths of the chief defects were external.

laws of chance. The latter distribution was computed by the use of the Greenwood-Yule reconstruction.⁶ The method is as follows: The expectancy that a characteristic occurring at random will affect a particular sibling depends on the size of the family. For example,

TABLE 4—*Malformed Individuals by Birth Rank**

Birth Rank	Malformed Individuals		Expectancy Factor (Column 2 Divided by Column 3)
	Observed	Expected	
1	201	229.0	0.88
2	131	151.8	0.86
3	77	85.7	0.90
4	42	44.5	0.94
5	41	28.2	1.5
6	26	18.3	1.4
7	23	11.1	2.1
8	15	6.6	2.3
9	11	3.6	3.1
10	7	2.5	
11	4	1.0	
12	1	0.6	3.4
13	2	0.2	
14	1	0.1	
Totals	482	582.8	

* Malformed individuals distributed according to birth rank. Column 2 the observed rank of the 582 malformed individuals. Column 3 the theoretical rank of the same individuals computed on the assumption that they occurred at random by the use of the Greenwood-Yule reconstruction method. Column 4 the ratio of the observed (column 2) to the expected (column 3). If the malformations were distributed at random throughout the various ranks the expectancy factor (column 4) would be 1.0 for each birth rank. Note that in the first four ranks the malformed individuals occur less often than would be expected by chance and in the later ranks more often than would be expected by chance.

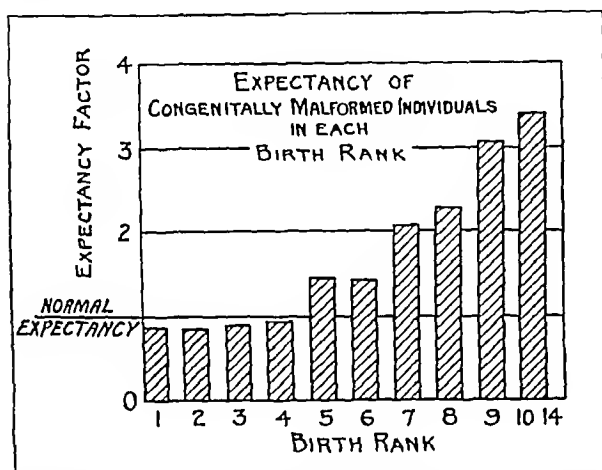
in a family of two siblings, there is one-half chance that each will be affected, in a family of three siblings, only one-third chance, and so on.

6 Greenwood, M. and Yule, G. U. On the Determination of Size of Family and of the Distribution of Characters in Order of Birth from Samples Taken Through Members of Sibships. *J. Roy. Stat. Soc.* 77: 179 (Jan.) 1914.

The fractions contributed to each birth rank by each family were then totaled by birth rank for the entire group of families. In families in which defects were observed in two siblings, each birth rank was allotted double the fractional value given to families with only one defective sibling. In families with three defective siblings, each birth rank was given triple the value of that allotted to families with only one defective child.

The relation between the distribution of the observed malformed individuals (table 4, column 2) and their expectancy if they had occurred at random (column 3) is expressed as a simple ratio in column 4 and graphically in the accompanying chart. These show that in the first four ranks the defective individuals occurred less often but in the later ranks more often than would be expected by chance. In the seventh rank the defects occurred twice as often and in the ninth rank three times as often as would be expected.

In order to determine whether these two distributions differed to a significant degree, they were compared by means of the method of Penrose.⁴ The distribution of the observed normal individuals (table 1, column 4) was determined by subtracting the observed



Graphic presentation of figures in table 4 column 4. The base line represents birth rank. The vertical line represents the expectancy factor which is derived by dividing the number of observed malformed individuals in each birth rank by the number of expected malformed individuals. This factor indicates the relative frequency with which observed malformed individuals occurred. If they had been distributed at random all the bars would have ended at the horizontal line marked normal expectancy. Note the increasing expectancy from the fifth rank onward. The malformations appeared in the seventh rank twice as often and in the ninth rank three times as often as would be expected by chance.

defective individuals (column 3) in each birth rank from the total of all individuals in that rank (column 2). The following values were then computed for the observed distributions (table 5)

TABLE 5—Observed Distribution

	Number	Mean Rank	Standard Deviation
Malformed (M)	1,82	3.02	
Normal (N)	1,475	3.35	
All (T)	2,037	3.20	± 2.32

The standard deviation of the difference between the mean ranks of the observed normal and the observed malformed individuals was calculated by the formula given by Penrose ($\sigma_{(T)} \sqrt{\frac{MN}{T}}$) and found to be ± 0.12 .

The distribution of the expected normal individuals by birth rank was then determined in the same way as for the observed normal individuals from the data in table 4 column 2, and table 1, column 2. The mean

birth ranks for both the observed and the expected distribution are given in table 6.

The mean rank of the expected malformed (2.46) is 1.13 ranks ahead of the expected normals (3.59). In other words, if it is assumed that the malformed are distributed at random by birth rank, one would expect that the mean birth rank of the malformed would, in our families, be 1.13 ranks ahead of the mean birth

TABLE 6—Observed and Expected Distributions

	Observed	Expected
Malformed	3.02	2.46
Normal	3.35	3.59
All	3.26	3.26

rank of the normal individuals. The observed malformed, however, are only 0.33 rank ahead of their normal siblings. Therefore, the observed malformed individuals occurred 0.80 rank later than would be expected, if they were distributed at random. Since the average displacement of the observed malformed in relation to their normals (0.80) is more than six times the standard deviation of the difference between the mean ranks of malformed and normals (± 0.12), this displacement is statistically significant. It may be concluded that the malformed individuals in this group are on the average later born than would be expected by chance.

COMMENT

It appears evident that congenital malformations of the types that constitute our data are, on the average, much more likely to occur in the later than in the earlier birth ranks. They took place less often than is predicted in the first four ranks but considerably more often in all other ranks. The relative probability of their occurrence rose rapidly from the fourth rank on, being twice the expected value in the seventh rank and three times this value in the ninth rank.

Our observations should not be interpreted as meaning that each of the types of malformation in the group necessarily shows a bias for the later birth ranks; they merely supply an average result. It is quite possible that some of the defects may show a preference for the first rank or may be distributed at random. These two possibilities, however, are likely only for those malformations which constitute a small part of our data, since the average is in the direction of the later ranks. While it seemed desirable in view of the work of Still¹ and of Macklin² to treat congenital heart disease and congenital pyloric stenosis as separate groups in order to determine their distribution by birth rank, the number of cases of each proved too small to justify such a procedure.

Though the frequency of congenital malformations appears to vary with birth rank, a causal relationship between the two cannot be assumed to exist. It may well be that the occurrence of malformations is actually influenced by some factor that is correlated with birth rank. Possible factors that have been suggested are paternal and maternal age. For example, Penrose⁴ has shown that the occurrence of mongols is related to maternal age and appears to be influenced by birth rank only because birth rank and maternal age show a fair correlation.

CONCLUSION

Congenital malformations of the types that constitute our data occur on the average less frequently in the earlier birth ranks and more frequently in the later birth ranks than would be expected by chance.

TOTAL CYSTECTOMY AND URETERAL TRANSPLANTATIONS IN MALIGNANT CONDITIONS OF THE BLADDER

WITH A DESCRIPTION OF A NEW OPERATIVE PROCEDURE

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The surgeon who is in constant contact with cases of bladder neoplasm is singularly struck by the paradox of curability of this disease. Whereas simple fulguration or irradiation provides absolute cure in many malignant conditions of varying size and location, one frequently sees one's best directed efforts go for naught in situations which at their onset seem the most hopeful. The Cancer Registry¹ is providing valuable data regarding progress in dealing with this problem, but a scrutiny of the reports offers a shocking reminder that in too vast a proportion of cases the generally accepted criteria of treatment are inadequate. Compared to other visceral neoplasms bladder carcinomas do not tend to become metastatic at an early date and should perhaps therefore be more often cured than is obviously the case. One might reasonably raise the question as to whether early radical surgery in the form of cystectomy might not prove advantageous in the long run. Success in the treatment of malignant conditions of the rectum has progressively followed an increase in radicalism and perfection of technic in that field during the past two decades.

Edwin Beer² and Quinby³ have pointed out that removal of the bladder with a malignant tumor is not a very formidable procedure. Were it not for the difficulties involved with the disposal of urine, it is safe

to say that cystectomy would long since have been the accepted treatment of the majority of malignant growths of the bladder.

The accepted indications for cystectomy are

1 Cases presenting involvement of the trigon⁴ so that the ureteral orifices cannot be spared when destructive methods of treatment are used

2 Those presenting infiltrative involvement of the vesical outlet,² so that adequate attack locally is destructive to the sphincters

3 Multiple infiltrative tumors

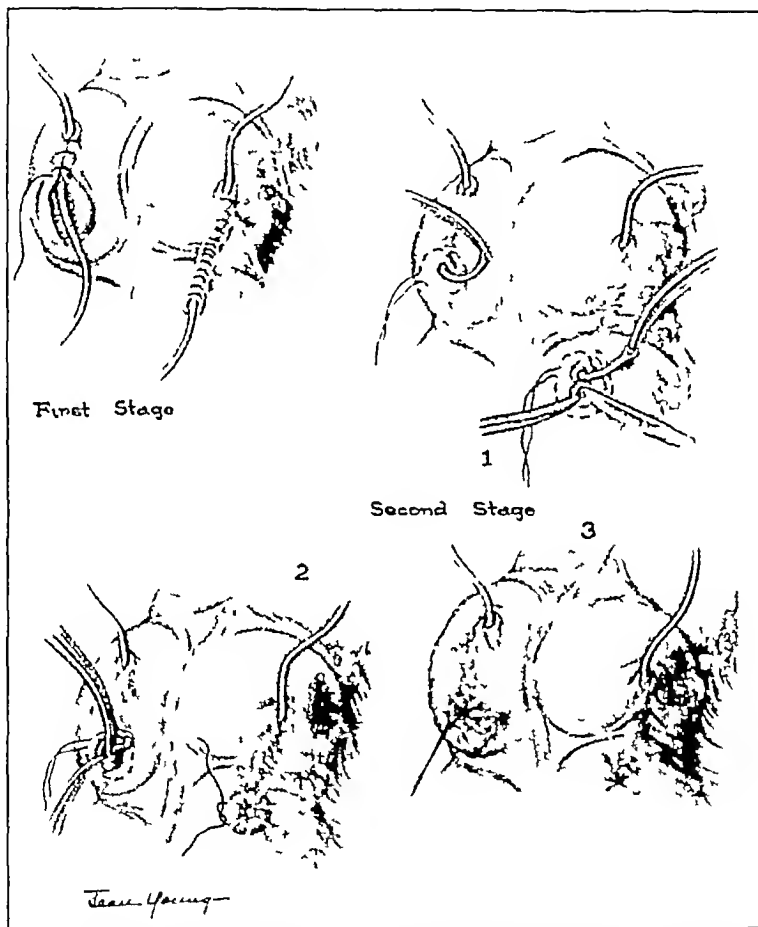
4 Neoplasms of low malignancy which show a marked tendency to recur and spread all over the bladder in spite of all conservative treatment and eventually become penetrative or highly malignant⁴

Several techniques have been described for removal of the bladder. The Coffey⁵ procedure consists of dissection downward from the fundus of the bladder to its base. Next the membranous urethra is severed between clamps, and the base of the bladder along with the prostate and seminal vesicles (in the male) is separated from the rectum by blunt dissection, completing the operation. George Gilbert Smith⁴ begins with a perineal incision, severing the urethra and dissecting the base of the bladder from surrounding structures and cutting the vasa. He then completes the operation from a suprapubic approach. One distinct advantage of this procedure is dependent drainage of the pelvis through the perineal wound. The technic recently described by Hinman⁶

appears to have distinct advantages over any heretofore offered. The method is a retrograde suprapubic dissection beginning at the urethra and is facilitated by a balloon catheter, which is retained in the bladder during operation, providing a means of traction and reducing trauma to the lesion. In performing cystectomy in the female it is advantageous to drain the vesical space dependently through a stab wound in the anterior vaginal wall.

There are three available methods of urinary disposal

- 4 Smith G. G. in discussion on Quinby³
- 5 Coffey R. C. Cystectomy for Carcinoma of the Bladder, *Am J Surg* 20: 254-297 (May) 1933
- 6 Hinman Frank. Cystectomy. A Method of Retroprostatoseminal Vesiculocystectomy. *Surg Gynec & Obst* 60: 685-688 (March) 1935



Two stage ureteral transplantation. First stage (upper left) ureters mobilized and buried beneath musculature of rectosigmoid. Second stage (1, 2 and 3) ureters cut distal to embedded area, introduced into the lumen of the bowel through puncture wound which is closed with purse-string suture.

From the Department of Surgery, University of Michigan Medical School.

Read before the Section on Urology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1 Report of Cancer Registry. *J Urol* 31: 423-473 (April) 1934.
2 Beer Edwin. Total Cystectomy and Partial Prostatectomy for Infiltrating Carcinoma of the Bladder. *Ann Surg* 90: 864-885 (Nov) 1929.

3 Quinby William. Indications for and Results of Total Cystectomy for Carcinoma of the Bladder. *New England J Med* 212: 501-503 (March 21) 1935.

Drainage of the kidney by nephrostomy or pyelostomy presents objections that contraindicate its use if other methods can be utilized

Cutaneous ureterostomy has long been in favor among European surgeons, while in this country Edwin Beer⁷ and Hugh Cabot⁸ have both stated the belief that this method is safer and therefore better than uretero-intestinal anastomosis. The drainage tubes and other apparatus necessary following the latter procedure are difficult to manage and can rarely be fitted sufficiently well to prevent some leakage of urine. Wade⁹ reported that in six cases in which he had performed cystectomy with cutaneous ureterostomy his collecting apparatus was never entirely successful in preventing leakage and therefore never satisfactory.

The ideal method from the standpoint of functional results is uretero-enterostomy. In most common use today are the three technics described by Coffey⁹ or modifications of them.

Technic 1 is probably the safest of the three, but since the transplantation is carried out in two stages, cystectomy requiring a third operation, the prolonged hospitalization period is a distinct disadvantage. This method has been utilized successfully in two cases at the University Hospital, but the objection mentioned led to the procedure being dropped.

Technic 2, in which bilateral simultaneous transplantation with ureteral catheters is done, was used in nine cases. Three of these patients died before leaving the hospital, one as an immediate result of operative shock, one of pneumonia on the sixth postoperative day, and the third on the thirtieth postoperative day of a massive collapse of the lung. The anastomoses were functioning perfectly and the patient had been afebrile for twenty-one days. The other six cases of this group did exceedingly well.

One patient was treated by a modification of the Coffey transfixion technic as recently described by Higgins¹⁰. This patient died on the fourteenth day following the first stage. Autopsy revealed the cause of death as peritonitis, probably due to a leak at the trans-fixed area.

This high mortality rate has led to search for a method offering less hazard to patients. A two-stage method was developed, which proved so satisfactory in laboratory animals that it was employed recently on two patients having malignant conditions of the bladder.

At the first stage both ureters are mobilized for a distance of 4 inches (10 cm) at about the level of the pelvic brim and are embedded between the muscularis and the mucosa of the upper part of the rectum without opening the lumen of the intestine or interrupting the continuity of the ureter, as shown in the accompanying illustration. Healing of this implantation area takes place by primary union. The second stage is done from fourteen to twenty-one days following the first. The ureters are severed an inch distal to the area of implantation. A purse-string suture is now laid in the intestinal wall about the base of the severed ureter. A small incision extending into the lumen of the intestine is made as closely as possible to the base of the stump of ureter. The end of the ureter is introduced into the lumen of the bowel and the purse string drawn,

completing the anastomosis. A procedure utilizing this principle was described by Winsbury-White in 1933.¹¹

Advantages of this method have been demonstrated experimentally. There is no interruption of urinary flow at any time. Primary union of the first-stage implantation area prevents the constriction in that area, which is so commonly seen following direct implantation operations. Ascending infections in the ureteral wall have been strikingly absent in experimental animals.

The patients operated on at the University Hospital have not been observed over sufficiently long periods to evaluate the end results. Thus far they have done exceedingly well and offer encouragement for the use of the method employed.

SUMMARY

1 Removal of the bladder with a malignant growth is not a very formidable procedure.

2 The greatest obstacle to radical surgery for the cure of cancer of the bladder is a lack of safe and satisfactory methods of urinary disposal.

3 Cutaneous ureterostomy is probably the safest method available at this time.

4 Uretero-intestinal anastomosis provides the best functional results.

ABSTRACT OF DISCUSSION

DR EDWIN BEER, New York. In doing a total cystectomy, one should remove the organ working against the lymphatic stream. This is a fundamental surgical principle, and the perineal approach or the recent suggestion of Hinman violates this principle, as they are bound to squeeze carcinoma cells into the lymphatic stream. The method of disposing of the ureter in the rectum or sigmoid prior to total cystectomy is essentially a modification of the Higgins technic but theoretically has the disadvantage that, at the second operation when the cystectomy is performed the intestine is opened at two points, with the dangers incidental to such a procedure. I believe, moreover, that it is objectionable to divide into two steps the operation for carcinoma of the neck of the bladder, carcinoma involving both ureters or diffusely infiltrating carcinoma. The final decision in any case must be made at the operating table by palpation and at times by visualization of the growth. If one transplants the ureters prior to this decision, one's bridges are burned and one is committed to a secondary total cystectomy. The mortality in this procedure seems to be more than 30 per cent, according to a recent statement published by Hinman in reviewing some 800 published case reports. When one adds to this the mortality of the essential part of the whole procedure of total cystectomy, the combined mortality rises considerably and may be too high to make this procedure in any sense popular. I have usually transplanted the ureters into the skin at the same time that I have removed the bladder, and it is a mistake frequently made to consider these patients with intubated ureters miserable, uncomfortable and ostracized from society, as most of them lead a fairly or absolutely normal existence, relieved of distressing pain which an incomplete resection might lead to. If the patients treated as just mentioned are uncomfortable and miserable, they can have a ureterocolostomy performed in the lumbar region, with comparatively little danger that the peritoneal cavity will be infected. I believe that total cystectomy for certain cases of carcinoma of the bladder is justifiable. The mortality is not prohibitive, carried out as I have suggested, and, successfully carried out, prolongs life and cures the malady, in fact, in my series of cases prior to 1930 I found that four out of seven patients lived for five years.

DR JEROME LYNCH, New York. The dual interest in this subject for both the urologist and the proctologist is clear. The trigon of the bladder is closely associated with the internal sphincter, and this can be proved by an injection of epinephrine,

⁷ Cabot, Hugh and Scherer, R. G. The Technic of Ureterostomy. Proc. Staff Meet., Mayo Clin. 9: 783-789 (Dec. 26) 1934.

⁸ Wade, Henry. Malignant Tumors of the Urinary Bladder. Surg., Gynec. & Obst. 52: 312-323 (Feb.) 1931.

⁹ Coffey, R. C. Transplantation of the Ureters into the Large Intestine. Submucous Method. Brit. J. Urol. 3: 353-428 (Dec.) 1931.

¹⁰ Higgins, C. C. Aseptio Uretero-Intestinal Anastomosis. J. Urol. 31: 791-803 (June) 1934.

¹¹ Winsbury-White, H. P. A Method of Ureteral Transplantation. Proc. Roy. Soc. Med. 26: 1214-1216 (July) 1933.

which causes a contraction of the trigon and also of the internal sphincter and accounts for many of the reflex symptoms, such as trigonitis, whereas if acetylcholine is injected contraction of the fundus of the bladder and the rectum and colon occurs. I was wondering, hearing about Dr. Lowsley's operation, whether perhaps acetylcholine wouldn't be just as good. I was struck today by the multiplicity of suggestions for the cure of these tumors of the bladder, and, while I think that it is all very well in this society of specialists to discuss it, it is unfortunate when men who are hanging on our words as to what they should do are told that there are so many methods of treating these tumors. I think it would be better to come to some conclusion beforehand as to what procedures are believed to be best and to grade them 1, 2, 3.

DR. C. C. HIGGINS, Cleveland. I believe that cystectomy and transplantation of the ureters into the rectosigmoid will be employed much more frequently in the next few years than they have been in the past. However, I feel strongly that a critical evaluation of the methods of treatment should be considered before this radical procedure is advised. If a small tumor of the bladder can be treated adequately by radium, segmental resection or the type of treatment discussed by Dr. Beer, I do not believe that there is justification for advising cystectomy. The excellent results which Dr. Pfahler has secured by roentgen therapy in cases of carcinoma of the bladder are most gratifying, and I am at a loss now to tell what type of tumor should be treated by the radical operation. In the cases that he has presented, the cystograms show extensive involvement of the bladder and they represent the type of case for which I have advised cystectomy and transplantation of the ureters in the last two and a half years. I have not secured such striking results after the use of roentgen therapy. In the past, some fundamental observations, which have proved the advisability of transplantation of the ureters into the rectosigmoid, have been the impossibility of performing a bilateral, simultaneous transplantation of the ureters without interruption of the function of the kidney and infection, which has been the most common cause of death regardless of the technic employed. Coffey's modification of Martin's technic did not permit bilateral transplantation without some danger of the interruption of renal function. By the technic that I presented in 1933, an operation can now be performed by which the two ureters can be transplanted simultaneously without any danger of obstruction if the submucous principle is used. There is practically no danger from peritonitis and the valvular mechanism is maintained. Recently Dr. Nesbit has further modified my operative procedure in a technic similar to that which has been presented by Dr. White. I believe that too much time is being devoted to the perfection of various technics for the operative procedure and that sufficient attention has not been given to investigations of the cause of hydro-ureter, hydronephrosis and renal sepsis, which have followed transplantation of the ureter. The theory of Dr. Coffey that the intrarectal pressure is responsible for the dilatation of the ureter has not been substantiated or verified by my work in the experimental laboratory.

DR. HARRY O. LEPSKY, Cincinnati. With my associate Dr. Henry Freiberg I shall report at the American Urological Association in San Francisco a new technic for total urethrocystectomy in the female for carcinoma of the bladder. The operation removes the entire urethra and bladder by a combined vaginal and suprapubic operation. In contradistinction to the average opinion that the operation of total cystectomy is a formidable one, we wish to present evidence to the contrary, because our operations have been attended with a minimum of surgical shock and absolutely no hemorrhage. Our operation also conforms to the postulates as just set forth by Dr. Beer in that the removal of the bladder should not milk out carcinomatous tissue or little nests of cells either through the lymphatics or through the blood vessels, and we obviate this by taking care of the blood supply immediately before any attempt is made to remove the bladder itself. The lateral ligaments of the bladder are doubly ligated and severed and the bladder is removed by a retrograde dissection which has been started previously in the vagina. A second feature that we have introduced in our operation is that we remove an empty bladder. The advantages of removing the empty bladder

are that we have a smaller mass to contend with in the pelvis, that the lateral ligaments are more easily accessible and that the blood supply is much more easily taken care of. The operation to which I refer is surgically correct in that we do not open the bladder at any time during the operation, and, as has been mentioned by Dr. Nesbit and others, the problem of drainage after cystectomy is certainly a very important one.

DR. WILLIAM C. QUINBY, Boston. I am in agreement with treating tumors of the bladder that are susceptible of being so treated by less radical methods, but there is no question what ever in my mind that total cystectomy is an operation that should be carried out in instances of more malignant tumors (grades 3 and 4) when they are situated at the lower segment of the bladder and when, being so situated, their resection would definitely interfere with subsequent normal function of the bladder. The method of disposition of the urine after cystectomy is a correlated subject. Transplantation of the ureters into the skin, as Dr. Beer assures us, is a comfortable procedure for some persons, but in other patients it may create a very disagreeable condition. Though a wise procedure in some instances, it is most certainly not an ideal disposition of the ureter. The methods of transplanting the ureters into the intestine vary according to whether the two must be transplanted at once or only one at a time. In the majority of experimental observations on ureteral transplantation it seems to have been forgotten that such a plastic operation depends for its success in large measure on its simplicity and absence of trauma, together with conservation of blood supply and avoidance of infection. In my opinion all so-called prosthetic aids, as buttons, catheters and electric cutting wires, only complicate and jeopardize the success of the procedure. The method of anastomosis advocated by Dr. Nesbit fulfils these postulates and so deserves commendation.

EXPERIMENTAL PERIPHERAL GANGRENE

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The intense interest which in recent years has centered about the problems presented by peripheral vascular disease has thrown into painfully clear relief the meager limits to present knowledge of the nature of these maladies. Particularly is this true of the more obscure presenile peripheral arterial disturbances. Clinician and experimentalist alike appreciate the blindness of the fight being waged with thrombo-angitis obliterans. Clinically, physicians seem to be merely marking time, while experimentally they are little nearer the solution of the etiology of the disease than they were when the disease was first described in detail by Buerger.

This is quite intelligible when one considers the fact that there is as yet no clear knowledge either of the character of the initial lesion in the disease or of its chronological development. Patients present themselves in what is essentially the end stage of the process, and the physician's concept of what has gone before is a purely hypothetical reconstruction, on which there is no unanimity of opinion. Two major schools of thought exist. The one holds that the disease begins as an acute panarteritis, associated with thrombosis, the process gradually becoming chronic and being characterized by periods of acute exacerbation relieved by stages of quiescence. The second group believes that thrombo-angitis obliterans is a chronic process from the outset,

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PERIPHERAL GANGRENE—McGRATH
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beginning as a chronic inflammatory reaction in the adventitia of the vessels associated with intimal proliferation and secondary thrombosis, that all coats of the vessel wall are progressively involved, but that the disease always remains an essentially chronic disturbance. More recently, Popoff has suggested that a congenital anatomic abnormality may be the basis for the disease.

With such heterogeneity of opinion, experimental duplication of the initial lesion of thrombo-angitis obliterans presents a practically insuperable difficulty. Laboratory workers have been satisfied to accept as adequate criteria on which to base their studies the phenomena of intimal proliferation and thrombosis, together with gross trophic changes in the area distal to and supplied by the occluded vessels. Even with these relatively simple criteria, however, previous experimental attempts, directed for the most part toward the establishment of a specific bacterial etiologic agent, have been, to say the least, disappointing. It occurred to me that possibly the direct character of previous approaches to the problem was defeating its own end. Examining the clinical nature of the disease, I felt that there could be found some salient characteristic which might offer a new experimental approach, less direct but more promising of results.

It was first necessary, however, to produce a lesion which would reasonably approximate that postulated as the early pathologic change in thrombo-angitis obliterans. Furthermore, in order to analyze mathematically whatever results might accrue from an experimental manipulation of such a lesion, it was necessary that the desired change be constant in its occurrence. The answer to this phase of the problem was suggested by the work of Kaunitz, who for several years has been studying the vascular phenomena associated with ergot gangrene in fowl. For various reasons the chicken was not satisfactory for my purposes. I therefore utilized the method of Rothlin and Polak, namely, the production of gangrene in the tail of the albino rat by the use of toxic quantities of ergotamine tartrate.

White rats, male and female, weighing between 140 and 170 Gm, were used. To them, in successive series, ergotamine tartrate (gynergen-Sandoz) was administered in doses varying from 25 to 100 mg per kilogram of body weight. The results coincided with the initial experiences reported by Rothlin and Polak. In both male and female rats there was a uniform, regular production of gangrene of the end of the tail in from ten to twenty-eight days. The gross phenomena consisted in the successive color changes of pallor, cyanosis, dry gangrene, and demarcation of the gangrenous portion, followed by anesthesia. The time of onset of these changes varied with the amount of ergotamine tartrate employed. When gangrene was definite the tails were amputated and sections for microscopic study were taken at various levels. (It should be noted at this point, lest there be any misconception as to possible dangers arising from the exhibition of ergotamine tartrate in therapeutic amounts, that, translated into clinical terms, the quantities of the drug employed in these experiments represent an enormous amount of the substance, e.g., from 1,250 to 5,000 mg for an average 110 pound [50 Kg] woman, whereas the therapeutic dose varies from 0.25 to 1 mg.)

Microscopically, the most pronounced change was the marked cellular proliferation and swelling of the intima of the small arteries, where in some sections the lumens were

almost completely occluded. To a lesser extent this process involved the veins and the large ventral artery of the tail. In the latter vessel the characteristic finding was the presence of a thrombus to which the intima was adherent. In some sections the intima seemed to have been drawn completely away from the internal elastic membrane, while at other points there was a definite attachment to the wall of the vessel. In sections taken from tails in which demarcation had occurred, the thrombus had been organized and canalized, the penetrating channels demonstrating in high magnification a definite endothelial lining. Leukocytic reaction, either in the coats of the arteries or arterioles or in the periaarterial tissues, was not appreciable.

In the veins, contrariwise, in addition to the previously mentioned changes, were found areas of marked thrombophlebitis, especially in those veins superficially placed. Here the perivenous tissues were all involved in an intense polymorphonuclear leukocytic infiltration. The only noticeable alteration in the nerves was that in high magnification there appeared to be a vacuolization of the myelin sheaths.

Thus I had found an agent that satisfied the two basic requirements essential to the experiments I had in mind. First, the lesion produced by ergotamine tartrate in toxic doses fulfilled the criteria usually accepted by workers in the field of thrombo-angitis obliterans, second, these changes were produced regularly, so that any experimental manipulation could be quantitated mathematically and the stability of the result studied by standard biometric tests.

Returning to the original objective, namely, an indirect approach to thrombo-angitis obliterans by way of some salient clinical constant of the disease, I was impressed, as all other students of the malady have been, by the fact that with the exception of hemophilia there is no other disease so markedly sex limited as thrombo-angitis obliterans. Many explanations have been offered to account for this. I chose to investigate the most obvious of these, i.e., the difference in the sex hormone.

Four series of animals were employed, series 1, 2 and 3 being composed of males and females from 140 to 170 Gm in weight, and the dosages of ergotamine tartrate being 25, 40 and 60 mg per kilogram of body weight in the respective series. The rats were divided into three groups (a) normal controls, (b) control groups in which ergotamine alone was used and (c) experimental groups to which an initial dose of ergotamine tartrate was administered, followed after an interval of twenty-four hours by daily injections of theelin in aqueous solution. The amount of theelin employed was 2, 3 and 3 rat units in the respective series. These theelin administrations were continued over a period of thirty days, and the rats were observed for an additional twenty days. The results were invariably the same. In the males there were no changes in the normal controls, and a comparable amount of gangrene appeared in the rats receiving theelin. Again the picture in the female group was quite different. The normal controls showed no change, and gangrene developed in all the ergotaminized controls. In the experimental groups, however, in which theelin had been administered daily there was no gangrene whatever, nor could microscopic evidence of vascular disease be found. Finally, the fourth series, composed entirely of females, was given the maximum amount of ergotamine

tartrate that I cared to use, that is, 100 mg per kilogram of body weight. The theelin dosage was 5 rat units daily. In this series, all but four of the experimental animals behaved as in the preceding series. In four of the rats, however, cyanosis quickly developed at the end of the tail. The theelin dosage was promptly doubled. In two of the four gangrene developed despite all efforts to allay the process. It is to be noted, however, that in these two rats the amount of tail involved in the gangrenous change was less than half that occurring in the unprotected animals. The other two animals recovered from the impending local disaster and at the end of the experiment could in no way be differentiated from the other theelinized rats. Application of the chi square test for probability to these results indicates that the probability of such a phenomenon accruing from the operation of chance alone is less than 1 in 400 billion.

The effect on the peripheral vascular system of estrogenic substances, such as theelin, is as yet too little known to offer any satisfactory explanation for the phenomena that I have observed. In point of fact, the alterations, physiologic and anatomic, in the peripheral vascular bed following the use of ergot or of its specific alkaloids in toxic quantities have given rise to a most confusing difference of opinion, which space does not permit me to discuss. I shall content myself at present with simply recording the results of the experiments.

RECAPITULATION

I do not claim to have reproduced thrombo-angitis obliterans, nor do I offer these experiments in support of the theory that the basic lesion in thrombo-angitis obliterans is attributable to ergot intoxication. I have merely utilized ergotamine tartrate as an agent to produce a lesion comparable to what is usually postulated as the initial lesion in thrombo-angitis obliterans. Nor do I offer the theory that there exists a necessary connection between the sex limitation of thrombo-angitis obliterans and the phenomena observed that female rats, protected with sufficient doses of theelin, failed to develop the gangrene which in my hands invariably resulted from the administration of toxic quantities of ergotamine tartrate. I do feel, however, that this curious phenomenon suggests the possibility that the failure of thrombo-angitis obliterans to manifest itself in the female may be associated with a protective action of the estrogenic substance in the internal secretion of the ovary. Finally, I believe that this experience offers a new, or at least rehabilitates an old, approach to the problem of the etiology of thrombo-angitis obliterans.

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ABSTRACT OF DISCUSSION

DR. D. W. G. MURRAY, Toronto. I find it difficult to add much to this interesting paper. I believe that it has opened a method of investigation which may prove useful in developing some method of dealing with this important group of vascular diseases. It is well known that ergotamine in physiologic therapeutic doses has a reversal effect on blood vessels. That is, in an area of the vascular tree which is under the effect of epinephrine the vessels that are in spasm and that are placed under the influence of ergotamine will undergo extreme dilatation. It is known that the coronary vessels of the heart, instead of being constricted by epinephrine, are dilated. I should like to ask Dr. McGrath whether ergotamine reverses this effect or if a similar effect might be expected on the coronaries, which would be a very helpful approach to the investigation of coronary disease. The length of time between the administra-

tion of ergotamine and the development of the lesion was interesting. I should also like to ask whether it is known what part of the ergotamine produces the intimal changes. This interval of eight to ten days during which time theelin is administered may provide the opportunity for the neutralization of the ergotamine by the theelin. Does the ketone group or the hydroxyl group change this ergotamine so that it does not have its important pathologic effect on vessels?

DR. E. J. McGRATH, Cincinnati. As to the effect of ergotamine on coronary vessels, I am unable to say. There has been a theory since 1927, advanced by Regniers, that the production of gangrene in the extremities, accidentally, in therapeutic doses is dependent on the blood index of epinephrine. I believe Dr. Murray had this in mind in mentioning the fact that there seems to be a reversal action in the presence of epinephrine by ergotamine. As to what fraction of the drug has its effect in producing this organic pathologic change, the Sandoz Chemical Works is unable to inform me. It is true that it has recently developed a fractionation of ergotamine with a molecule much smaller than the present one. As Dr. Rothlin himself has been unable to inform me as to which of these is the active factor, I am again unable to answer Dr. Murray's question. Concerning these particular experiments, I would again emphasize the fact that they represent merely a preliminary study. In and of themselves they probably have no definite significance, but, as I tried to indicate at the beginning of this discussion, they point a way to a new approach to what has been heretofore a most difficult problem. In view of the attitude of some workers, particularly the recent researches of Dr. Popoff, that this disease represents a congenital anomaly rather than some superimposed dyscrasia, I feel that, if anything, my observations offer a more hopeful approach to the disease than by considering it something with which a person is born and therefore with which he will ultimately die.

RODENT PLAGUE IN CALIFORNIA

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Not long after the present pandemic of plague reached the shores of America in 1900, where it was recognized in the Chinese colony of San Francisco, it was found to be present among the ground squirrels in Contra Costa County. At that time the close association of rodent and human plague was not so clear as it is at present. In 1900, when my plague experience began, the work of the English and the German plague commissions in India was only fairly begun and the idea of flea transmission was new and not generally known.

In the early days of any revolutionary discovery there is a period when those who accept it have their thinking partially clouded by the holdover of ideas from the past, and we who took part in the early history of plague in America¹ were in that transitional stage. We knew that the rat was important, but we did not proceed as if we did. The trouble probably was that the full significance of the combination of rat and flea had not become thoroughly established. I remember of Dr. Kinyoun, than whom there was no better bacteriologist probably in the country, relating the occurrence of an outbreak of plague in Hawaii in the Chinese colony immediately following the opening of some shipments of sweets from China for the New Year's celebration. There was in our minds some mysterious connection with this shipment, notwithstanding our knowledge of the fragility of the plague bacillus and its lack of resistance to drying.

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¹ Kellogg, W. H. Present Status of Plague with Historical Review. *Am. J. Pub. Health* 10:835 (Nov.) 1920.

By the time the second epidemic occurred in San Francisco, the epidemiology of plague was becoming more crystallized and Dr Blue, the federal officer in charge, ordered an examination of ground squirrels when two cases of human plague occurred in rural districts of Contra Costa County. Infected squirrels were found in 1908, and plague has been enzootic among the squirrels of California ever since. At that time an acute and very severe epizootic ensued, the number of plague infected squirrels picked up in that county being over 1,700 during the few years following 1908. This epizootic extended in the neighboring counties of the Bay area and it was accompanied by a human epidemic in San Francisco and Oakland, the number of cases between May 1907 and June 30, 1908, when the last case of this second epidemic of human plague occurred, being 160 and the number of deaths seventy-seven. A rat epizootic in the same cities was in progress at the same time, as is usual, the human outbreak being secondary to that among the rats.

Eradicative efforts were carried on by both the state board of health and the United States Public Health Service and at one time it appeared that these efforts might be successful and that the chapter would be shortly finished. In 1914 an authority in public health who was experienced in plague published an article on plague in California in which he ventured the prediction that plague was gone. The occasion for his optimism was the apparently complete suppression of plague as the result of the work of squirrel eradication that had been carried on jointly by the Public Health Service and the state health department. This campaign included a survey for the presence of plague infection beginning in 1908 covering most of California and parts of adjacent states and lasting until 1912, up to which time nine counties in California had been proved plague infected. Eradicative measures were concentrated on the nine counties and during 1914 plague was found only in four, the number of foci being seven, the number of ranches involved twenty-one, and the number of infected squirrels found sixty-nine. At the time of writing, all these ranches had been thoroughly poisoned and hunted over from three to five times with the result that on only one ranch was a plague squirrel found after the work was recorded as completed. With this cheerful picture in mind and with complete neglect of the history of plague, this author said "In view of the facts just set forth it is believed that the statement can safely be made that all discoverable plague has been eradicated from the state of California and that danger of its further spread has been removed."²

Now, what are the facts today, twenty years after the supposed complete extermination of the disease? Instead of nine known counties involved the number is nineteen, and last summer three new counties were added, in all three of which a virulent epizootic was in progress.

THE PRESENT EPIZOOTIC

March 16, 1934, on receipt of a communication from the state department of agriculture to the effect that some unknown disease was killing off the ground squirrels in certain sections of Kern and Tulare counties the bureau of sanitation of the state department of public health, under Mr Ross, launched an investigation. The plague survey crew operating with a motor truck was dispatched to the area and soon specimens

were coming in to the laboratory. Forty-one squirrels were shot and five found dead on the first day the crew started work and during the next three days 306 squirrels were shot and sixteen found dead on various ranches within a few miles of the town of Delano. These animals shipped to the laboratory were soon proved by animal inoculation and cultures to be heavily infected.

After the prosecution of work in this vicinity by our own men with the cooperation of the state department of agriculture, the latter being in charge of the exterminative measures, the chief of the bureau of sanitary inspections reported on July 21 that 5,973 squirrels had been shot and 2,853 found dead in the Kern-Tulare region, and of those sent to the laboratory 118 were reported positive. The number of plague foci located was forty-one, the area covered by the survey was about 2,421 square miles, and the extent of plague infected territory within this surveyed area was approximately 896 square miles.

While engaged in this work, about the first of June, Mr Ross received word from a representative of the United States Biological Survey that squirrels were dying in the vicinity of Alturas, Modoc County. An inspector was sent to that place at once and his first investigation resulted in the finding of twenty-eight dead squirrels and five dead wood rats on one ranch. Four of the squirrels and one wood rat were shipped to the laboratory, which soon confirmed the diagnosis of plague. This region, it should be noted, is fully 400 miles away from the Kern and Tulare focus and on the eastern slope of the Sierras.

The method of conducting the field work may be of interest. The truck is equipped with all the paraphernalia required for shooting and for postmortem dissection of the rodents. When they are brought in from the field by the hunters they are dumped into a large container in which there is compound solution of cresol, and for the transportation from the field to the headquarters at the truck milk cans with tight covers are used in which some chloroform is placed to destroy fleas in the interests of the safety of the men. From the solution the operator takes the squirrels one at a time, mounting them on a specially constructed metal tray provided with adjustable clips that hold the animal extended and with a sharp scalpel the skin is laid back completely, the lymphatic regions are inspected, the body cavities are opened and, when a suggestion of plague exists, organs are taken and placed in 6 ounce, wide mouthed, glass stoppered bottles, each bottle provided with a slip giving a description of the gross pathologic changes of the animals represented and giving the location from which they were secured, and they are then packed with ice in copper shipping cases and forwarded to the laboratory. The men in this squad have become truly expert in the skill and rapidity with which they can dissect the animals and the certainty with which they recognize the gross appearance of a plague infected animal.

On arrival at the laboratory the organs are spread out in petri dishes and examined by a bacteriologist experienced in rodent plague, as to both the macroscopic appearance and knowledge of its bacteriology. Smears are made and, when necessary, guinea-pigs inoculated. If the squirrels are from a district already proved and the appearance of the organs and the microscopic examination of the smears are definite, a positive report is

² Long. Pub Health Rep 29 3106

made forthwith. If, however, the locality is new or smears are negative in the face of suggestive pathologic changes, animals are inoculated.

THE NATURE OF PLAGUE

Plague is primarily a disease of rodents and characteristically it lies dormant in certain continuous foci of the disease, whence at intervals of decades or centuries it sallies forth in the form of human pandemics, which are not only world wide but may be century long. In these endemic foci the infection resides in some wild rodent of hibernating habit. Historical foci are those of Arabia and Mesopotamia, whence the black death of the Middle Ages emerged, and in Tibet and in Uganda in Africa. In Yunnan, in the interior of China, is the focus from which is supposed to have originated the present pandemic, which began with the appearance of plague in epidemic form in Hongkong in 1894. Calcutta was the next port of call, since which time most of the world has been visited, and plague is still active in a dozen or more countries.

The rat is the particular rodent usually thought of as the source of human plague. It is true that rats are, with an exception to be noted later, the immediate origin of human outbreaks, but they are not the remote source. The rat is the disseminator of plague by reason of his traveling propensities, and the beginning of a human pandemic nearly always is the infection of rats at some point of contact with rodents of a wild species in an endemic area. Human epidemics of bubonic plague result when plague has been introduced into the rat population, the infection spreading from rat to man and from rat to rat through the medium of the flea. The mechanics of the transfer is as follows. Fleas feeding on a rat with septicemic plague take up the bacilli with the blood. The plague bacilli do not infect the flea, but they multiply in the proventriculus, resulting in obstruction so that, on repeated efforts at feeding, blood is regurgitated onto the skin. Infection then takes place by entry of the organism through the bite puncture or other abrasion.

Plague in man assumes two clinical forms, the bubonic and the pneumonic. The former, characterized by involvement of the lymphatic glands forming buboes, is the commonest form and the one that principally prevailed during the epidemics of the Middle Ages called the black death. The pneumonic form, in which there is a pneumonia but usually no involvement of the lymphatic glands, is highly infectious from man to man direct without the mediation of rat or flea, because, the bacilli being in the sputum, transfer takes place by droplet infection. The case fatality rate of pneumonic plague is very high, almost 100 per cent, and the duration of the illness very short, from a few hours to two or three days. Since the same bacillus is concerned in the two types of infection, the reason for the occurrence of pneumonic epidemics is not clear, but there is some ground for believing that causes are both extrinsic and intrinsic. All pneumonias are favored by cold, damp weather and it is to be noted that the largest outbreaks of pneumonic plague, at least in modern times, have been in cold seasons. In India, where the climate is warm, only 2 to 5 per cent of the cases have been pneumonic except in Kashmir at an elevation of 5,000 feet, where an epidemic of 1,400 deaths occurred in very cold weather. Likewise the big pneumonic epidemics in Manchuria in 1911 occurred in winter weather. But there are manifestly other influences and these are of particular interest in relation to the present

epizootic in the new foci uncovered in the lower San Joaquin Valley and in the mountainous Modoc County district. I refer to the theory that a specific lung virulence is developed by the plague bacillus on passage through rodents of squirrel and ground hog type. This is suggested by the fact that in our experience pneumonias among rats are uncommon, but among squirrels they are very common and the character persists in guinea-pigs inoculated from these animals. Guinea pigs inoculated subcutaneously from rats and human beings during the 1907 bubonic epidemic in San Francisco, according to my recollection, never showed lung involvement, whereas in Los Angeles during and following a human pneumonic outbreak, when squirrels also were found infected the guinea-pigs frequently showed a pneumonia. Further testimony is seen in the Oakland pneumonic plague epidemic, which was started by a man who contracted an axillary bubo by contact with a squirrel and then developed a secondary pneumonia. The disastrous epidemic of pneumonic plague in Manchuria in 1910 and 1911 was not rat borne. It had its origin in trappers of tarbagans in the mountains. The tarbagan is the wild rodent that harbors plague endemically in that country.

ASPECTS OF THE PRESENT EPIZOOTIC

There are two particularly disturbing aspects of the present ground squirrel epizootic. One of these is the demonstration that the ground squirrel infection not only is not decreasing after thirty years but is, on the contrary, increasing and expanding over a much wider territory. Not only in the Coast Range and the interior valleys but now in the Sierras it is found. The establishment of a permanent endemic rodent focus is thus thoroughly demonstrated. In Asia such foci are apparently permanent. Perhaps in this country with our supposedly enlightened outlook on public health we may be able to root it out. The history of progress so far is not encouraging, however, and the more extensive the infected territory grows the more difficult and expensive will be the job.

The second important consideration relative to the appearance of plague in Kern, Tulare and Modoc counties is the evidence of renewed virulence and of increasing pulmonary tendency on the part of the prevailing strain of organism. The gross appearance of plague in ground squirrels is somewhat different from that in rats. In the latter animal there are five signs that may be encountered, rarely all at one time, frequently two, sometimes only one. These signs are subcutaneous injection, buboes, granular liver, large, dark spleen, and pleural effusion. In ground squirrels the subcutaneous injection that is of so much importance in rats is less noticeable. The liver, as in the rat, may show enlargement and a granular appearance. The spleen frequently resembles that organ in an inoculated guinea-pig, being greatly enlarged and studded with yellowish specks of focal necrosis, thus differing notably from the rat, in which animal the spleen rarely shows any specks but is smooth, dark and glistening and has a tense swollen appearance. Buboes, usually solitary, are common in squirrels, and the appearance of the bubo more often than in rats resembles the acutely necrotic and hemorrhagic bubo seen in man and in guinea-pigs. The most characteristic difference of all between rats and squirrels is the finding of nodules and hemorrhages in the lungs of squirrels but not in rats. The squirrels received from Kern and Tulare counties

have been remarkable in the number that have shown acute pulmonary plague, the appearance of the lungs being that of a lobular pneumonia with considerable edema exactly as in the human disease. Furthermore, the virulence of the strain is manifested by cases which are so rapid in their progress that no well developed pneumonia or characteristic focal necrosis of either spleen or liver had developed and no buboes, the animal dying of septicemia in a short time. This is a striking parallel to the course in human cases at the height of the epidemic of 1910 in Manchuria. There, cases were seen in which the lung involvement had not progressed beyond a stage of congestion, the victim dying of a septicemia, the progress of the condition being so rapid that death occurred within twenty-four hours, no glandular involvement whatever being found.

CONCLUSION

I will point out two or three matters that seem obviously to contradict any ideas that may have been previously entertained concerning the simplicity of the problem or its lack of public health importance.

At present there is a lighting up of enzootic plague, which had become a commonplace, into a rather alarming epizootic, which is the most extensive outbreak of squirrel plague since the peak of the epizootic in Contra Costa and Alameda counties in the period between 1907 and 1919. Other sharp outbreaks have doubtless occurred that burned themselves out without the condition being brought to attention in time to prove the nature of the epizootic. The present outbreak, however, has certain aspects that are not entirely reassuring. It is not without significance that after a considerable period of quiescence plague is found to be actively spreading among the wild rodent population of rural areas in widely separated districts and in areas far from any formerly known focus of infection. The prevalence of infected squirrels near the borders of Oregon and of Nevada and on the other side of the mountain range suggests that there is no natural limitation to the spread of plague through wild rodents to places far distant from its original entry into this country in the Bay district of California.³ Plague is very evidently a permanent problem on the Pacific Coast and the prospect of its becoming a problem in other states appears at the present time to be good. Especially to be feared so far as man is concerned is the pneumonic form of the disease, which, as I have already indicated, may be directly related to plague in animals of the squirrel and ground hog type.

³ Rodent plague has been reported by the U. S. Public Health Service, since the writing of this article in the state of Montana and in three counties of Oregon.

Buoyant Health.—More recently, the work of Dalldorf in this country and of Göthlin and of Gedda abroad seems to have shown a definite relation between the vitamin C value of the food and the resulting strength and healthy resilience of the capillary arteries or arterioles. These capillaries allow the escape of blood and the resultant formation of minute subcutaneous blood spots (petechiae) more readily in cases of shortage of vitamin C even when the deficiency is not sufficient for the development of manifest scurvy. Thus even a relative shortage of vitamin C tends to a condition of capillary fragility such as also develops with advancing age and in some diseases. Such observations lend force to the view that liberal intake of vitamin C may be a factor in the preservation of the characteristics of youth and in the development and maintenance of positive or buoyant health.—Sherman, H. C. *Food and Health*. New York, Macmillan Company, 1934.

RECOVERY FOLLOWING JAUNDICE WITH ASCITES

REPORT OF TWO CASES

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AND

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Meyer and Learner¹ have recently pointed out the rarity of recovery when jaundice and ascites occur at the same time. They review the rather scanty literature on the subject, give the small number of reports of recoveries on record and report one new case.

In this communication we report two more cases of recovery following jaundice with ascites. We shall in addition discuss our cases and those reported in detail in the literature.

REPORT OF CASES

CASE 1 (reported in August 1933 as a case of cirrhosis helped by insulin²)—Wilfred A., a carpenter, aged 36, was admitted to the New York City Hospital, Jan. 9, 1932, as a transfer from Bellevue Hospital. He stated that early in December 1931 he began to lose his appetite and to become distressed after eating even small amounts of food. About December 15 he became jaundiced. He then entered Bellevue Hospital, where he was given gallbladder dye by mouth. On January 1 he began to vomit and lost about 20 pounds (9 Kg.) by the middle of January.

The patient was well built, and examination revealed marked jaundice, mental dulness and edema of the ankles. The pulse rate was 44 and the blood pressure was 116 systolic and 56 diastolic. There was no ascites or distention. There were no visible masses or rigidity noted on palpation. Pressure over the gallbladder, however, elicited nausea and pain. The edge of the liver was not felt and the spleen also was not palpable. At no time was there diarrhea or bloody stools.

On January 11 an electrocardiogram was normal. The urea content was 20 mg. and the fasting blood sugar was 100 mg. per hundred cubic centimeters of blood. The icteric index was 200, the van den Bergh direct delayed reaction was positive and the bilirubin content was 12.5 units.

On January 12 the benzidine test revealed no blood in the stools. The Wassermann reaction was negative. Because of excessive vomiting the patient was given by vein at 11 a. m. and again at 4 p. m. 300 cc. of a 10 per cent solution of dextrose and 15 units of insulin.

On January 14 the icteric index was 150, the van den Bergh direct and indirect reactions were positive. The bilirubin content was 13 units. The patient was restless and made twitching, clonic movements. The degree of jaundice was increased. The diagnosis was acute hepatitis (subacute yellow atrophy) with early cholemia.

On January 18 the patient was better but the jaundice was still marked. An intravenous injection of 400 cc. of a 10 per cent solution of dextrose was given on January 27. On February 2 the patient was much better and the jaundice was improved, but cirrhosis was suspected. On February 5 there was evidence of ascites and of edema of the legs and scrotum. The icteric index then was 100 and the nonprotein nitrogen content was 30 mg. The van den Bergh reaction was immediate and the indirect reaction was positive. The serum albumin content was 4.3 per cent and the serum globulin 2.6 per cent.

Paracentesis was performed on February 13 and 3,300 cc. of cloudy green fluid was removed. The patient was then placed on a high carbohydrate diet and 5 units of insulin was given twice daily. The insulin was discontinued on February 23. On February 28 it was resumed and given until March 12, inclusive. A second paracentesis was performed on March 8 and 1½ quarts (1,420 cc.) of fluid was removed. The next and last tapping was carried out on March 25 and 3,500 cc. was removed.

¹ Meyer, Jacob and Learner, Aaron. *Ascites Occurring During Jaundice with Recovery*. J. A. M. A. 104:114-116 (Jan. 12) 1935.
² McCabe, John and Hart, J. F. *Treatment of Hepatic Cirrhosis with Insulin*. New York State J. Med. 33:924-929 (Aug. 1) 1933.

On March 28 the icteric index was 35, the van den Bergh direct reaction was immediate and the indirect reaction was positive. On April 2 the icteric index was 20 and on May 25 it was 10. Both van den Bergh reactions were negative.

The patient was discharged on May 26. He had at that time no complaints except tenderness about the region of the liver and a continuous itching over the entire body.

CASE 2—Mrs. R., a housewife, aged 55, had been on a low carbohydrate, low insulin diet for a number of years for diabetes. About Jan. 15, 1933, she was placed on a high carbohydrate diet with 15, 0, 15 units of insulin in twenty-four hours. Her general condition improved. About the beginning of November she sought advice because of recently noted indigestion, manifested by excessive gastro-intestinal fermentation. On November 25 jaundice of the painless type developed. An abdominal examination revealed no abnormality. The jaundice became darker, resembling that seen in carcinoma of the head of the pancreas. On January 1 the feet began to swell and in about a week the abdomen filled up with fluid under great tension. On January 16 the patient vomited dark blood and continued to do so for more than a week. The stools were tarry.

A subsidence of the ascites made tapping unnecessary. Gradual improvement continued but the jaundice did not clear up until the middle of April. Toward the end of the illness the patient stated that she had taken three tablets of cinchophen a day all through the month of September and most of October. Her present condition (two years later) is good.

COMMENT

Both our cases started like ordinary cases of catarrhal jaundice. There was a preliminary period of several weeks of gastro-intestinal symptoms followed by painless jaundice. The first patient became worse shortly after taking gallbladder dye, and it is possible that the dye increased the injury to the liver. The second patient gave a history of taking cinchophen for several weeks preceding the onset of the gastro-intestinal symptoms. There was, therefore, a justifiable cause for yellow atrophy, either acute or subacute.

Definite mental symptoms with restlessness and clonic twitchings were manifest in the first patient, while the second patient showed only mild mental aberrations. Such symptoms, in a greater or less degree, are almost pathognomonic of yellow atrophy and are a reliable clinical guide to its detection.

The jaundice in both cases was present over a long period, each patient giving signs of it for more than five months. This is many times the duration of the average infectious jaundice.

The ascites began in the first patient after seven weeks of jaundice and in the second patient following the sixth week. Toxemia was prominent in the first patient, while the second showed evidence of impairment of the hepatic corollary circulation when the gastric hemorrhage occurred.

REVIEW OF CASES PREVIOUSLY REPORTED

The first case of recovery from combined jaundice and ascites in the available literature was reported by Jones and Minot³ in 1923. From the history this case could have been termed an infectious (catarrhal) jaundice. There was an abrupt unaccountable onset without pain, followed in two weeks by jaundice. During the first four weeks the jaundice varied in intensity. The liver became palpable and tender early and as time went on grew larger. The spleen could be recognized after the liver became definitely enlarged. An exploratory operation showed the evidence of well established

cirrhosis—gross lobules and large bands of fibrous tissue. There was no sign of an obstruction, rather that of a general infection.

Bauer⁴ reported the next two cases in 1926. The first was a typical case of infectious jaundice. Ascites developed and was relieved by tapping. The patient recovered slowly and in two months was well, except that the liver and spleen showed enlargement. Bauer was strongly suspicious of the presence of subacute yellow atrophy in this case.

In his second case jaundice was noted two months after a course of arsphenamine treatment had been completed. When the patient arrived at the hospital he showed some mental symptoms. There was deep jaundice with ascites, and the liver and spleen were definitely enlarged. For thirteen days he was given 20 units of insulin daily and liberal amounts of dextrose. Considerable improvement followed. Several doses of salyrgan were given and the ascites disappeared. The patient was examined six months later and his condition was found to be good except that the liver and the spleen still showed enlargement.

Weir⁵ in 1928 added four more cases to the list. His first case was that of a patient who had partial biliary obstruction for a long time with periods of complete stoppage of bile. Finally, after about eight months of more or less continuous colic in the upper portion of the abdomen, gradual progressive enlargement of the abdomen was noted. There was tenderness in the region of the gallbladder, and the liver was enlarged, firm and somewhat nodular. The symptoms continued for more than eleven months more, during which time there was a slow but progressive enlargement of the liver. The patient was then taken to the hospital for an exploratory laparotomy. The ascites disappeared spontaneously just before operation. When the abdomen was opened, definite evidence of biliary obstruction was found in the form of a large, soft stone in the common duct. The liver was hobnailed and twice its normal size. Ascites occurred four months after operation but soon disappeared.

The next case was one of painless jaundice following two weeks of cinchophen treatment. After two weeks of jaundice there was rapid and distressing enlargement of the abdomen. At this stage neither the liver nor the spleen was enlarged. The ascites responded to the administration of merbaphen and ammonium chloride. The jaundice continued but finally disappeared.

The third case was that of a woman who suffered from a gastro-intestinal upset of apparently short duration followed by deep jaundice. She had no pain or fever. The icterus continued for three months and then cleared up. Ascites developed and required tapping about three weeks after the jaundice disappeared, and again two weeks later. The liver was not palpable at any time and was apparently not tender. The spleen, however, was markedly enlarged. Two months after the last tapping, the ascites had not returned.

The fourth case started with gastro-intestinal symptoms. Drowsiness became marked and in about a month deep jaundice appeared and continued for three months. Just before it disappeared, ascites developed rapidly. About that time there was tenderness at the right costal margin. The ascites responded to ammonium chloride and merbaphen treatment. For six months the patient

⁴ Bauer, R. "Zur Frage des Icterus Catarrhalis." *Med. Klin.* 22: 1558 1561 (Oct. 8) 1926.
⁵ Weir, J. F. "Association of Jaundice and Ascites in Diseases of the Liver." *J. A. M. A.* 91: 1888 1891 (Dec. 15) 1928.

³ Jones, C. M. and Minot, G. R. "Infectious (Catarrhal) Jaundice," *Boston M. & S. J.* 189: 531 551 (Oct. 18) 1923.

remained well but then suffered from mild jaundice and some ascites, which responded rapidly to treatment.

Meyer and Learner presented the next and latest case, that of a man in whom jaundice developed after more than a year of gastro-intestinal symptoms. This continued for about five weeks and then started to subside. About that time, however, ascites appeared and progressed to a marked degree in two weeks. Salyrgan was administered for the following two weeks and the ascites disappeared. The liver showed signs of tenderness and was enlarged. The spleen was not palpable. An operation performed after the ascites had disappeared showed a distended gallbladder that was edematous and thickened but not inflamed. The common duct was markedly dilated, though no stones were found. The liver was enlarged. An enlarged gland was found behind the common duct.

COMMENT

A perusal of the etiologic factors in these ten cases, as given, shows a wide divergence. One case was due to arsphenamine, one to a stone, one apparently to the pressure of a gland against the common duct, two to cinchophen, two were infectious, and three had no specific cause but acted like the usual catarrhal jaundice. Though ten cases constitute a small number on which to base a generalization, it is evident from these cases that jaundice with ascites can follow many of the well known causes of hepatic dysfunction.

The prodromal gastro-intestinal period was short in seven of the cases, two to three weeks being the average. In two others it lasted for over eight months. The first of these cases was due to a bivalve stone that caused intermittent obstruction. It is within reason to suspect that in that case and perhaps in the case reported by Meyer and Learner disorganization of the hepatic cells was not complete until a few weeks before jaundice appeared. The period of gastro-intestinal symptoms preceding jaundice was therefore fairly constant in this group.

The jaundice in practically all the cases was of long duration, much beyond that seen in the usual catarrhal type of case.

There was evidence of tenderness of the liver in four of the cases, and five patients showed definite signs of enlargement. In the three cases in which an operation was performed, the liver was found to be enlarged, while in two of the cases there was definite evidence of cirrhosis.

Three types of treatment were given. The etiologic factor was removed in four cases (cinchophen in two, stone in one and an enlarged gland in one). Supportive treatment, high carbohydrate diet and insulin were given in three cases. The ascites was tapped in three cases, organic mercury and ammonium chloride were administered in three, and there was spontaneous disappearance of the ascites in three.

At this time certain questions naturally arise. Why do some patients with hepatic disease have both jaundice and ascites, and why do so few of them recover? Also, what seems to be the reason for the favorable results herein described?

We shall first consider why some patients with hepatic disease present jaundice and ascites. We cannot account for the simultaneous occurrence of these two signs from an etiologic standpoint, for we have just shown that this syndrome followed each of the well known causes of hepatic disease. We suspect, however, that the intensity of the irritation coupled

with its duration regulates the presence of jaundice or of ascites, or of the two together. For example, one notes cases of common infectious jaundice with a mild course followed by complete recovery in a few weeks, while at the other extreme, in a case of acute yellow atrophy there is rapid stormy progress to death. Yet one is familiar with an intermediate course pursued in certain cases in which the symptoms are suggestive of subacute yellow atrophy and in which, after a more or less prolonged duration, cirrhosis appears.

Of the ten cases reviewed, seven easily fall into the group showing subacute yellow atrophy and hence suggest a moderately severe irritation. The three others, cases 3, 6 and 10, showed definite evidence of prolonged cellular dysfunction by the jaundice, which lasted for four months, nineteen months and more than five weeks, respectively. In the last case, 10, in addition there was a history of irritation of the liver for over a year. Hence, in this series every patient showed either moderately severe irritation or prolonged jaundice or both.

Summary of the Ten Cases Reported

Etiology	Prodromal Period	Duration of Jaundice	Condition of Liver	Treatment
Obscure, dye (?)	2 weeks	Over 4 mos	Edge not felt	Dextrose insulin tapped
Cinchophen	3 or 4 weeks	Over 4 mos	Normal	High carbohydrate diet insulin
Infectious	2 weeks	Over 4 mos	Tender and palpable at operation gross lobules large fibrous bands found	Not stated
Infectious	About 2 weeks	Not stated	Enlargement continued	Not stated tapped
Arsphenamine	Questionable	Not stated	Enlargement continued	Dextrose insulin
Bivalve stone	Over 8 mos	Intermittent long period	Tender enlarged firm nodular at operation found to be bivalved twice normal size	Stone removed
Cinchophen	Short time	3 months	Normal	Cinchophen stopped
Obscure	Apparently a short time	3 months	Normal	Not stated tapped
Obscure	3 weeks to 1 month	3 months	Tender	Not stated
Obscure	Over 1 year	Over 6 weeks	Tender and enlarged	Operation a possible aid

The presence of ascites in each of these cases is excellent evidence that the stage of cirrhosis had arrived. Further proof was apparent in several cases. Gastric hemorrhages were suggestive of an engorged coronary circulation in case 2, and in cases 3 and 6 definite evidence of cirrhosis was found at operation.

In the ten cases reviewed in this communication, definite signs of jaundice were present before the ascites occurred. There is a common type of hepatic disease in which the ascites appears as the first clinical sign. This is usually called portal cirrhosis, and it is noted for the fact that it is rarely, if ever, accompanied by jaundice even in its final stages. The exact cause of the condition is not known, but it is generally accepted to be the result of mild long continued irritation.

From the observations in these cases one may say that the etiology is no guide to an explanation of the presence of both jaundice and ascites. Any moderately

severe irritation, however, that was present for a prolonged period brought about jaundice that was followed by cirrhosis

One is interested to know why so few patients with jaundice and ascites recover. It has long been recognized that ascites is a terminal sign of hepatic disease. In fact, the majority of students of hepatic ailments have long held that once ascites appears the patient is doomed. However, an occasional case of recovery has been reported and the ten cases gathered together here may also be considered as instances of recovery after ascites has appeared. Clinical experience and pathologic studies have shown that ascites in hepatic conditions is an exhibition of an advanced stage of cirrhosis. It is the sign of a decompensation of the organ after an extensive change in its architecture has been completed. When such a pathologic stage has been reached, it is remarkable how any patient can recover.

Finally, one would like to know why in these cases favorable results are obtained after such a dangerous stage has been reached. On analysis one notes that in four cases the etiologic or irritating factor could be determined and was thereby removed or stopped. The stone was a concrete and measurable factor, while the arspenamine and the cinchophen, though measurable in the introductory doses, could not be assayed for their toxins. Clinical experience and pathologic studies, however, show that both of these drugs, when they pass the threshold of safety, act intensely on the liver. Two cases were diagnosed as resulting from an infection and the four others gave no positive evidence of their etiology and for that reason might well be classed with the infectious type. In the last six cases then the etiologic factor was an irremovable type of irritant. It is within reason to assume that there was a similar causal factor and that it closely resembled the causal factor present in cases of common benign infectious jaundice. Then if this assumption is true, one is dealing with a factor which in the vast majority of cases is self limited. Just as there are mild types of infectious jaundice, there may well be severe and prolonged ones. Following this reasoning, it is possible that the patients who recovered without any outside aid did so because the toxin involved wore itself out just at the point where the liver became decompensated. Then, in the other cases in which help was given, such help may have turned the tide. This may account for the favorable outcome in cases 1, 2 and 5, in which insulin and dextrose were employed.⁶

IMPRESSIONS

1 Jaundice with ascites may follow any known type of irritation to the hepatic cells

2 The intensity of the irritation coupled with its duration regulates the degree of jaundice or ascites or both

3 A moderately severe injury to the hepatic cells prolonged over many weeks produces subacute yellow atrophy

4 Subacute yellow atrophy continued for a number of weeks produces cirrhosis

5 An irritant intense enough to cause subacute yellow atrophy, and prolonged enough to bring about cirrhosis, will within a reasonable time, if it continues to act, cause the cirrhosis to reach the ascitic stage

6 It is evident that the removal of the etiologic factor is essential when possible. If the irritation is

intense or if it has acted for a long time before it is removed and if the factor is undeterminable, auxiliary measures should be employed. These consist of the administration of dextrose, insulin and cholagogues and biliary drainage.

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THE ETIOLOGY OF VULVO-VAGINITIS INFANTUM

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In cases of children suffering from vulvovaginitis, the first question is whether or not it is a gonorrheal infection. The clinical picture of this infection is not typical enough to allow a diagnosis to be made without a bacteriologic examination. The diagnosis is almost always made on smears of the pus stained by Gram's method or only with methylene blue. Cultures are not considered necessary. As there are some cocci that resemble the gonococci more or less when different staining methods are used, the way to a faulty diagnosis is open. Clauberg¹ pointed out that many cases of vulvovaginitis were falsely considered gonorrheal infections. From seventy children with vulvovaginitis he could not cultivate gonococci. Gradwohl^{1a} cultivated gonococci in only two out of twenty-five cases. As I had found the ascites-Levinthal-agar plates and blood-water-agar plates excellent mediums for the isolation of gonococci, I tried to find out which part this microbe plays in the vulvovaginitis of children.

TECHNIC

All smears are stained by van Loghem's² Gram method. In this method the material is evenly and thinly spread on a slide and fixed by heat. Then it is stained with carbol-gentian violet for five minutes while it is warmed a little every minute (to nearly 37 C). The stain is poured off and the film is treated with compound solution of iodine for forty-five seconds. The iodine is poured off and the film is decolorized intensely in 96 per cent alcohol for exactly thirty seconds. When some part of the film is too thick, it must be removed mechanically during decolorization. After this, the film must be rapidly rinsed in water and counterstained with a watery fuchsin solution.

For the isolation of gonococci I used Levinthal-agar plates with 20 per cent ascitic fluid and a modified blood-water-agar medium of Bieling, which was prepared as follows. Blood drawn from the vein of a horse into distilled water, equal parts, is kept at 60 C for thirty minutes. Two parts of this fluid are mixed with three parts of 2 per cent nutrient agar.

VULVOVAGINITIS GONORRHOICA

In the course of a few years I examined 292 children with vulvovaginitis. I could demonstrate by the culture that only fifty-seven were suffering from gonorrhea. These fifty-seven were all patients with a severely acute inflammation of the vulva and vagina with an abundant secretion of yellow mucopus. In the films of the pus colored with the Gram method of van Loghem I invariably found the typical gonococci. In the acute stage

From the laboratories of the City Health Department.
1 Clauberg K. W. Deutsche med. Wchnschr. 56: 524 (March 28) 1930.
1a Gradwohl R. B. H. Urol. & Cutan. Rev. July 1931, p. 434.
2 van Loghem J. J. Nederl. tijdschr. v. geneesk. 76: 2193 (May 7) 1932.

of the disease neither the culture nor the smears ever failed to show the gonococci. On several occasions only after the patients had been treated for a long time and the clinical symptoms had disappeared did I get positive cultures when no more gonococci could be demonstrated by microscopic examination. Very rarely did an overgrowth of other bacteria spoil the cultures, as is shown in the following smears taken from the vagina: smears positive, culture positive in 111, smears negative, culture positive in fourteen, smears positive or doubtful, culture negative in seven.

Several German authors describe a gonorrheal infection of the rectal mucosa in children suffering from genital gonorrhea. Their figures as to the frequency of this complication differ widely, but as they are always founded on microscopic examination alone they are never convincing. Dietel³ made smears from the mucus he found on the surface of the feces and got almost 100 per cent positives. Temesvary⁴ obtained his material with a rectal curet and got 28.9 per cent positives. The method of Glingar⁵ of rinsing the rectum and looking for flocks of mucus in the water is now used by several workers. Only Joachimovits⁶ and Bloomberg and Barenberg⁷ tried to grow the gonococci from the rectum. They did not use the best mediums and so their experiments were not successful enough for this method to be used in routine practice.

I tried to make the diagnosis by cultivation on the mediums mentioned. After I had tried in vain to obtain the right material by the rinsing method I succeeded very easily by taking it directly from the rectum by scraping softly along the mucosa with a strong loop while the anus was held open by an assistant. With this method I could grow the gonococci from the rectum of every child who suffered from genital gonorrhea.⁸ Up to the present I have examined the rectum of thirty-eight children with this infection. The direct examination of smears from material from the rectum also often reveals typical gonococci, but in most cases it is rather difficult to make a diagnosis, and on several occasions the smears were negative with a positive culture: smears positive or doubtful, culture positive in forty-nine, smears negative, culture positive in sixteen, smears positive, culture negative in five.

The children never complain of pain or other symptoms. Formerly nothing had attracted my attention to this complication. But although the course of the infection is very mild it is also very obstinate, and in most cases it withstands treatment for a rather long time.

Of these fifty-seven children with gonorrhea, only three suffered from other complications, namely, one from conjunctivitis, one from cystitis and one from a pelvic inflammation, probably a salpingitis. In women with genital gonorrhea I also succeeded in growing gonococci from the rectum, but not in such a high percentage. From sixty-nine women with genital gonorrhea I found forty-three positive at the first examination, of these, forty-two were found by the culture method. The smears were positive only twelve times and in nine cases they gave a doubtful result.

As for the chronic form of this disease, in an experience of several years I never met a nontreated case of chronic vulvovaginitis caused by gonococci. I believe that vulvovaginitis gonorrhoea occurs only in the acute form and can be compared in this respect to the gonorrheal conjunctivitis. All the children were cured after from four to eight months' treatment. Only once did a child have a recurrence or reinfection after treatment.

Since the diagnosis in children with vulvovaginitis is made by van Loghem's Gram method combined with the culture method, the number of children treated for vulvovaginitis gonorrhoea in the Amsterdam hospitals has been reduced from approximately 450 a year to twelve a year.

NONGONORRHEAL FORMS OF VULVOVAGINITIS

Some of the children in whom no gonococci were found were suffering from an acute inflammation, others complained of a more chronic state of irritation with a varying degree of secretion. In most of the cases the faulty diagnosis of a gonorrheal infection had been made in other laboratories on smears colored with a Gram method in which the films had been decolorized too much. I always use the method of van Loghem, already described, in which decolorization is done in exactly thirty seconds. In a rather long experience with all possible bacteria, it proved an excellent staining method. In the nongonorrheal cases of vulvovaginitis it gave far fewer difficulties than most other methods. With van Loghem's method, most cocci from the vagina are gram positive, the gonococci and occasionally some other cocci are gram negative.

In a large series of experiments I tried to alter the gonococci into gram-positive ones, but without success. Neither could the gram-positive cocci from the vagina of children be transformed into gonococci. There is no reason to believe that gonococci can become gram positive.⁹

With the other Gram methods many vaginal cocci are also gram negative, and these are often mistaken for gonococci. In nearly every infection of the vagina these cocci are found. In the acute gonorrheal form they almost disappear, but in several chronic forms they dominate the field with or without other microbes.

The nongonorrheal vulvovaginitides can be divided into two groups: the acute forms and those which are chronic from the onset.

ACUTE FORMS

Vulvovaginitis Scarlatinea.—Now and then during scarlatina or in the course of convalescence an acute inflammation of the vulva and vagina is seen with a seropurulent secretion. In the smears, gram-positive diplococci prevail within or outside the leukocytes. On the blood-agar plates, colonies of hemolytic streptococci grow in an almost pure culture. This complication of the scarlatina often clears up without treatment in a few weeks. In a few cases it took nearly six weeks before the infection had gone. Even in the acute stage the infection was invariably less severe than the gonorrheal form.

Over a period of a year I examined weekly all patients with scarlatina in one ward of the Wilhelmina Gasthuis at Amsterdam. In the vagina of five out of sixty-six patients I found hemolytic streptococci. Only one patient had an almost pure culture of these cocci, and this child was the only one who was suffering from

³ Dietel F. *Ztschr f artztl Fortbild* 35: 214 (March 15) 1928.

⁴ Temesvary N. *Zentralbl f Gynak* 54: 3140 (Dec 13) 1930.

⁵ Glingar A. *Med. Klin* 20: 1208 (Aug 31) 1924.

⁶ Joachimovits Robert. *Gonorrhoe der weiblichen Genitalorgane* Vienna Wilhelm Maudrich 1933.

⁷ Bloomberg M. W. and Barenberg L. H. *Gonorrheal Proctitis as a Cause of Blood and Mucus in the Stools of Infants* *Am J Dis Child* 20: 206 (Feb) 1925.

⁸ Ruys A. Charlotte and Jens P. A. *Munchen med Wchnschr* 80: 846 (June 2) 1933.

⁹ Ruys A. Charlotte. *Zentralbl f Bakt.* 127: 280 (Jan) 1933.

a real vulvovaginitis scarlatinosa. From 378 children in the hospital with scarlatina in the course of one year, only five suffered from this complication.

Vulvovaginitis with Influenza Bacilli—In several patients with an acute vulvovaginitis I found a seropurulent secretion with many fine gram-negative bacilli. On blood mediums many colonies of *Hemophilus influenzae* with all its typical properties were isolated. The smears always contained other bacteria and cocci, the influenza bacillus never growing in a pure culture. In a few cases this infection was accompanied by fever lasting a few days. In the cases that I could follow this infection cleared up very soon without any treatment.

Diphtheria of the Vulva—In one patient I found the vulva swollen and bluish, with a gray membrane on the vaginal wall. The child was feverish and complained of severe pain when urinating. The films of the exudate contained many gram-positive bacilli. In culture and animal experiments it proved to be a toxic strain of diphtheria bacilli. After serum treatment the pain and other symptoms diminished and soon the child made an undisturbed recovery.

CHRONIC FORMS OF VULVOVAGINITIS

In many cases of vulvovaginitis there is no history of an acute disease. The children suffer from a chronic state of irritation with a varying degree of secretion. They often look pale and complain of vague abdominal pains. Locally there is no severe inflammation. The vaginal wall is red but not swollen, a seropurulent secretion sometimes giving rise to a little redness of the labia. The films and cultures from the pus show different bacilli and cocci in varying quantities. A few times nearly pure cultures of pneumococci were found, which were virulent for mice. Two of the strains belonged to types XIX and XXII. In most cases mixed cultures of different microbes were obtained, namely, *Staphylococcus albus* and *aureus*, *Diplococcus crassus*, hemolytic and green producing streptococci, *Bacillus coli*, *B. proteus*, diphtheroids and once *Neisseria catarrhalis*.

It is difficult to conclude whether these microbes play a role in the etiology of the disease or are merely secondary invaders. Roscher¹⁰ states that constitutional diseases such as exudative diathesis, anemia, scrofulosis, asthenia and also masturbation cause vulvovaginitis. The success of hospital treatment with children suffering from chronic vulvovaginitis is probably due more to the improvement of the general health conditions than to the local treatment. In contrast to the gonorrheal form, which can always be cured by local treatment, these children suffer from an infection that often withstands treatment as long as the general conditions do not improve.

Attention must be paid to the fact that sometimes foreign objects can give rise to symptoms of a more or less severe vulvovaginitis. Once I found a large safety pin and two beads. *Oxyuris vermicularis* may also act as a foreign body in the vagina and give rise to irritation. In these cases the cleaning of the vagina is followed very soon by complete recovery.

SUMMARY

In many cases of vulvovaginitis the etiologic diagnosis can be made only by means of the culture method. For the examination of smears, van Loghem's Gram method gives the best results.

Vulvovaginitis gonorrhoea occurs only in the acute form. Every case of vulvovaginitis gonorrhoea is complicated by gonorrhea of the rectum.

In other forms of acute vulvovaginitis, hemolytic streptococci, influenza bacilli and diphtheria bacilli play a role.

In chronic vulvovaginitis, probably the primary cause is a constitutional disease.

POOLED CONVALESCENT SCARLET FEVER SERUM TREATMENT

OF DIVERSE STREPTOCOCCIC INFECTIONS

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AND

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CHICAGO

Not infrequently one encounters a severe or fulminating hemolytic streptococcus infection that does not yield to the accepted methods of treatment. The infection progresses, the patient goes steadily downhill, and the physician realizes that all his efforts have been futile. Under these conditions the physician searches for additional aid in treating his patient.

Our interest in this clinical therapeutic problem was aroused by physicians asking the Samuel Deutsch Convalescent Serum Center for possible help in combating these violent streptococcic infections. We did not have any serum from individuals who had recovered from such infections because it is manifestly impossible to secure an adequate supply of serum from these patients. Since we had available two types of pooled convalescent streptococcus serum, i. e., pooled convalescent scarlet fever and pooled convalescent erysipelas serum, we thought under the circumstances that they were well worth a therapeutic trial.

Apparently there is no sharp line of differentiation between many cases of fulminating streptococcic infections and certain types of septic or complicated scarlet fever. The clinical picture in many instances is identical, with the exception of a rash. In the former there may even be a local or general erythema resembling a true scarlet fever rash. This marked similarity between these two clinical conditions is an outstanding feature. Besides the clinical resemblances of these various infections to one another there are bacteriologic and immunologic resemblances of the strains of streptococci obtained from such multiform infections to those obtained from scarlet fever throats.

In our experience with the routine use of pooled convalescent serum in scarlet fever we had occasion to observe the beneficial effects of such therapy in late septic or complicated cases.¹ Frequently there occurred diminution in fever, alleviation of toxemia and prostration, and cessation or regression of a steadily advancing infectious process. At times these changes followed rapidly and quite dramatically.

It was these similarities and results that prompted us to recommend a trial of pooled scarlet fever convalescent serum for various streptococcic infections.

Recognition of the very slight and brief immunity developed by an attack of erysipelas, coupled with our experience of the inadequate therapeutic response of this disease at times to its own convalescent serum,

¹⁰ Roscher in Jadassohn, Joseph. *Handb. d. Haut u. Geschlechtskr.* Berlin: Julius Springer, 1933.

From the Samuel Deutsch Convalescent Serum Center, Michael Reese Hospital, 1 Hoyne Ave., Chicago. *Illinois Health Messenger* 7: 49 (No. 5) 1935.

made us feel doubtful of obtaining sufficient benefit from convalescent erysipelas serum in these other types of streptococcic infections. Nevertheless, a trial of this serum was made until it was learned that scarlet fever convalescent serum was more effective.

Since, in our hands, human serum, administered by any route, has been an innocuous substance and has not produced foreign protein reactions or sensitization, we felt safe in recommending this form of therapy. Therefore, even if no benefit should be derived, at least no harm would be done to the patient.

Since the latter part of 1931, when this work was begun, the serum has been employed by many physicians. Although most physicians had occasion to use it for treating only one or two patients, others employed it in a larger number.² They all appreciated the fact that it was a clinical therapeutic trial and maintained an attitude of impartial observation or even of skepticism. We believe, therefore, that the results reported to us are highly significant, because these reports come from many physicians independently studying their own cases and uninfluenced by the opinions of others. Their conclusions were based only on their own observations in the course of their own practice.

Killian,³ who has reported convalescent scarlet fever serum treatment of a number of patients with streptococcic sepsis, came to the conclusion that in some instances these patients improved remarkably after such therapy. Boente⁴ also reported with regard to the favorable effect of convalescent scarlet fever serum on the toxemia of patients with streptococcic infections.

Recently Baum⁵ has reported a number of extremely interesting cases. He secured serum from patients recently recovered from scarlet fever or from severe streptococcic infections, most of the serum being obtained from recovered scarlet fever patients. He did not pool the serum but preserved each individual serum separately. He determined the agglutination titer of the serums he had in stock against the streptococcus he had isolated from the patient to be treated. He chose for his therapeutic serum the one that had the highest titer of agglutination and obtained in many instances an excellent therapeutic response. He felt that in his small group of cases there was a correlation between the therapeutic response and the agglutination titer. In a few instances, when a serum of low titer yielded no results, the use of serum with a high titer was followed by a satisfactory response.

Our report is based on a study of 122 patients. This group is made up of a large variety of streptococcic infections, all the patients having been severely ill, the infection not having yielded to other forms of therapy. The following number of cases and conditions were treated: cervical adenitis following a streptococcic sore throat, twenty-eight; sepsis⁶ and septic complications, twenty-six; acute streptococcic pharyngitis, twenty-three; purulent otitis media, ten; streptococcic meningitis, seven; streptococcic phlegmon, six; streptococcic tracheobronchitis, six; streptococcic pneumonia, three; acute vegetative endocarditis, three; streptococcic arthritis, three; "sepsis" with possible streptococcic peritonitis in patients with chronic nephritis, two; acute nephritis and cervical adenitis as a complication of a

streptococcic sore throat, two; streptococcic lymphadenitis, one; streptococcic peritonitis, one; and streptococcic osteomyelitis, one.

As was stated previously, practically all the patients were treated with pooled convalescent scarlet fever serum, because of the general impression that the erysipelas serum was less effective, although in a few instances some benefit was reported with the use of the latter serum. Each pool was a mixture of the serum obtained from fifteen to thirty recently recovered adults. Since at each bleeding about 225 cc of blood was taken, yielding about 100 cc of serum, the pools varied from 1,500 cc to 3,000 cc. The serum is processed strictly according to the regulations of the United States Public Health Service, and under a federal license from this department. The serum was administered in doses of from 20 to 100 cc. It was soon found that, because of the virulence of the infection, large doses were necessary. When the desired effect was not obtained promptly from a single injection, we did not hesitate to recommend a second and a third dose at intervals of from twelve to twenty-four hours. Usually the serum was administered intramuscularly, because conditions in the home were not always suitable for intravenous therapy. Whenever possible, the latter route was employed because of the more rapid response obtained.

A comparable untreated group for control purposes could not be collected because of the diverse conditions encountered and also because each request for convalescent serum was for use in patients so severely ill that the request had to be granted. Therefore, one must depend for an evaluation of the results on the usual experience with these types of infections.

In 11 per cent of the cases treated, the response was considered excellent. This term was employed when there was a critical termination of the infection, with marked decrease in fever and prostration and cessation of the disease process. In 44 per cent a good effect was reported. This term was used to designate a somewhat slower but nevertheless definite and progressive improvement leading to complete recovery. This gives a total of 55 per cent of the patients who were undoubtedly benefited by serum treatment.

In 17 per cent the results were recorded as doubtful, for although the patients eventually recovered the evidence was not sufficiently clear to indicate what role the serum may have played. In the remaining 28 per cent no detectable improvement followed the use of serum and no effect was reported. Of the thirty-four patients making up this group, twenty-three died. Of the patients who died, eight had "sepsis" and septic complications, seven had streptococcic meningitis, three had acute vegetative endocarditis, two had severe streptococcic cellulitis, one was suffering from a mediastinitis that followed an acute streptococcic pharyngitis, one had a streptococcic pneumonia and one had a streptococcic peritonitis.

It is of interest that the group diagnosed as "septic with septic complications" consisted of twenty-six patients, only eight of whom died, the other eighteen patients recovering. However, although all the patients with streptococcic meningitis and streptococcic endocarditis succumbed, we still believe that early cases should not be denied treatment with extremely large amounts of convalescent scarlet fever serum, which might help in an occasional case.

It is impossible to give a graphic picture of the results in tabular form, and limitation of space will not permit

² Aldrich C. A. Report of Cases read before the North Pacific Pediatric Society June 25 1934 abstr. *Am. J. Dis. Child.* 48:1459 (Dec.) 1934.

³ Killian H. Bedeutung des Streptokokkenproblems für die Chirurgie. *Beitr. z. klin. Chir.* 143:743-769 1928.

⁴ Boente J. Wechselseitige Verwendung von Scharlachfieberserum bei Streptokokkenkrankheiten. *Ztschr. f. Kinderh.* 45:135-172 1927.

⁵ Baum H. L. A Method of Specific Treatment in Certain Streptococcic Infections. *Arch. Otolaryng.* 20:504-512 (Oct.) 1934.

a record of each case. Therefore, short abstracts of a few striking, yet characteristic, cases will be presented, although there are many similar reports in our records.

CASE 1—A boy, aged 2 years, became acutely ill with sore throat and cervical adenopathy three weeks before admission to the hospital. There had been a high, septic temperature during this entire period. For the week prior to entrance he had eaten no food and had taken liquids in small amounts only. The morning of admission the uvula became so edematous that it was necessary to make several punctures to permit adequate breathing and swallowing.

On examination the patient was extremely toxic, responding to nothing in his environment, refusing food or liquids, and lying relaxed and semistuporous. The throat was fiery red and the uvula edematous. The cervical glands were enlarged on both sides, but the swelling on the right was tense and extremely hard, so that it was not felt that incision was practicable at the time. Throat culture revealed *Streptococcus haemolyticus* and *Streptococcus viridans*. Otherwise the examination was negative.

Because of the severe intoxication it was thought advisable to inject 60 cc. of convalescent scarlet fever serum intravenously on the morning of entrance. By late afternoon the patient was talkative and willing to take fluids and nourishment and was sitting up in bed of his own volition. The temperature remained high but was modified. Two days later the glands were incised, following which recovery was uneventful.

CASE 2—An intern at the hospital contracted a severe throat infection with high fever and severe swelling of the glands of both sides of the neck. He became extremely toxic from the start. On the second day the throat became so edematous that breathing was difficult and he had to be fed continuously by tube. The condition became so severe that continuous intravenous dextrose was administered.

On the second day 20 cc. of convalescent scarlet fever serum was given intravenously (100 cc. had been advocated). No improvement was noted, so on the third day 80 cc. of the same serum was given in the same way. Improvement was immediately seen in the temperature and in subjective feelings. The patient stated that he felt better within an hour or two after the injection. Convalescence was uninterrupted.

CASE 3—A child had a severe streptococcal throat infection, complicated by a bilateral cervical adenitis and a cellulitis of the face, neck and scalp, with suppuration of the glands, spiking temperature and marked prostration. Convalescent serum was administered as a last resort, and in thirty-six hours there was definite improvement evidenced by lower temperature and improvement of the cellulitis. From then on, there was complete recovery.

CASE 4—A boy, aged 5½ years, had been ill for two weeks before admission to the hospital. For one week following a mild infection of the upper respiratory tract there was a marked bilateral cervical adenitis and septic temperature. When the glands subsided, a cough developed and the temperature remained high. The urine was cloudy and contained blood. Two injections of antistreptococcus horse serum were administered, but no improvement occurred.

On admission to the hospital the child was severely prostrated, with a purulent sinusitis, beginning right otitis media and manifestations suggestive of a bilateral bronchopneumonia. The urine contained ++++ albumin and many red and white cells and casts. The nonprotein nitrogen was 63, creatinine 2.2.

For the next four days the condition remained critical, the temperature ranging from 98 to 105 F daily. One blood culture was negative. On the fourth day of hospitalization 20 cc. of scarlet fever convalescent serum was administered intramuscularly. There was a very brief temperature rise to 103.4 F six hours after the serum was given, the temperature then dropping to normal within two hours. The patient seemed improved and brighter. The maximum temperature the following day was 100.4 F rectally and after forty-eight hours was entirely normal. The urinary complications rapidly cleared and the patient made an uneventful recovery.

CASE 5—A boy, aged 7 years, had a sore throat with vomiting, diarrhea, high fever and marked prostration. A faint

atypical rash was present. The toxicity increased and the patient became stuporous. On the third day 40 cc. of scarlet fever convalescent serum was injected intramuscularly. Improvement was marked within eight hours. The temperature subsided and the patient recovered.

We used pools of convalescent scarlet fever serum rather than serum from individual patients for the following practical and theoretical reasons. It was practical to use pooled serum because we always had it in stock and available for immediate use, and the results seem to have justified this. The theoretical reason was arrived at in the following way. It is known that, even though various strains of scarlet fever streptococci differ in many ways from one another, their resemblances are more marked than their differences. Because of this we believed it probable that a pool of the serums from fifteen to thirty patients would contain immune substances to enough separate strains of streptococci causing scarlet fever in a given year to have therapeutic value in most, if not all, of the cases in the same year. This is similar to using representative, recently isolated, strains of meningococci for producing potent therapeutic antimeningococcus serum in horses. It seems to us that the same reasoning holds for using these pools of serum for treating patients with various infections caused by hemolytic streptococci which may be related to scarlet fever strains of streptococci.

We believe that the agglutinin titer of a serum is not necessarily an index of its therapeutic potency. That the determination of known and measurable antibodies is not always an accurate criterion of a serum's therapeutic potency is borne out by the fact that pooled scarlet fever convalescent serum, though lower in antitoxin content than the artificially prepared horse serum as measured by the skin test against the specific toxin, nevertheless appears to contain enough antitoxin and other immune substances to render it extremely potent in treating scarlet fever.

We have no definite information as to the manner in which the serum acts to overcome the infection, whether by antitoxin, agglutinins, bacteriolytins or other immune substances that we cannot detect at the present time with our established laboratory procedures. In some of the patients who did not respond promptly and satisfactorily to convalescent scarlet fever serum we supplemented the therapy with direct whole blood transfusions from donors who had recently recovered from scarlet fever. This was done because of the general belief that whole blood has a greater antibacterial action than serum. We have not had the opportunity to observe a sufficient number of cases to draw any definite conclusions. We have, however, the impression that such transfusions are a valuable adjunct to convalescent serum therapy and may be combined with it. If convalescent serum is not obtainable, immune transfusions should be used, and, as in scarlet fever, may give good results.

In evaluating pooled convalescent scarlet fever serum therapy of diverse progressive hemolytic streptococcus infections, which clinically are neither scarlet fever nor erysipelas, adequate consideration must be given to the type of cases. It should be emphasized that these infections were severe or fulminating, usually having a grave prognosis. Significance can be attached to the definite improvement and recovery observed in 55 per cent of the patients and to a mortality rate for the entire group of only 19 per cent. We believe, therefore, that this form of therapy should be given serious consideration.

ERGOTAMINE TARTRATE IN THE PUERPERIUM

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In order to reduce maternal morbidity and mortality, any means to such an end is worthy of a just and fair trial. The results of one such attempt are herein submitted.

After an initial change in size and shape following expulsion of the placenta, the uterus undergoes but little change in the next forty-eight hours. The measurable mass above the symphysis varies from 12 to 15 cm in width, while the canal measures 15 or 16 cm in depth.¹ The cavity is filled with blood clot, remnants of the spongy layer of the decidua and pieces of membrane. The walls of the uterus are the seat of many large patent sinuses in the various stages of collapse and thrombosis. Obviously, if this excellent bacterial habitat is reduced in size and if the fertile cultural mediums are expelled early, it does not seem unreasonable to expect a reduction in the maternal morbidity.

In a previous report² I have shown that the oxytocic action of ergot, and more particularly its alkaloid, ergotamine tartrate, lessened the chances of postpartum infection by hastening involution. In part at least the results were comparable to those independently arrived at by Rech and Raber.³

TABLE 1—Birth Weights

Weight, in Grams	Percentage
Under 2,250	5.3
2,250 to 3,600	63.6
3,600 to 4,000	22.2
4,000 to 4,500	7.6
4,500 to 5,000	1.3

The present study represents a review of an additional 400 puerperas who received a routine course of ergotamine tartrate. There were twice as many multiparas as primiparas. Three sets of twins were delivered. There were 315 occipito-anterior, sixty-four posterior and twenty-one breech presentations in this series. Nine infants were delivered with the aid of low forceps and one with midforceps, and there were five breech extractions, one after bag induction, and one cesarean section. Manual removal of the placenta was necessary in one case. There was an operative incidence of 4.25 per cent. Over 31 per cent of the infants weighed between 3,600 and 5,000 Gm.

The plan pursued in this series was as follows:

1 Immediately after delivery of the placenta, 1 ampule (about 1 cc) of ergotamine tartrate was administered hypodermically.

2 Beginning with the first day post partum and during the succeeding three days, each patient was given orally 50 minims (2 cc) of the alkaloid solution daily in doses of 6 minims (0.4 cc) each, given between the hours of 6 a m and 10 p m, so that all medication was taken during the patient's normal waking hours.

3 Each day, beginning with the first day post partum and thereafter during the patient's hospitalization, the

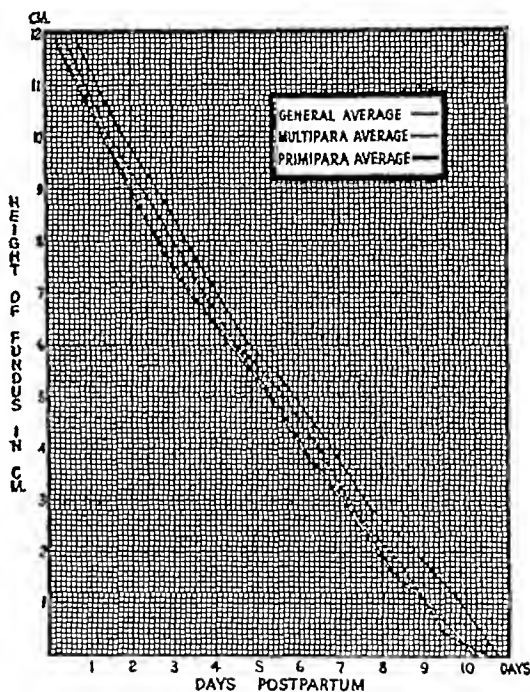
height of the fundus was measured, the character of the lochia noted and the highest of the temperatures taken every fourth hour charted on a special form.

INVOLUTION

The uniformly small size of the uterus became apparent at once. Although the extremes were 5 and 18 cm, the average height the first day was 11.82 cm. Involution thereafter proceeded steadily. On the tenth day the fundus in every case was less than 1 cm above the symphysis. In the multiparas the average height was 0.4 cm and in the primiparas 0.9 cm.

LOCHIA

The lochial discharge was in keeping with the progress in uterine involution. At the time the patient left the hospital the lochia was recorded as being moderate in amount in 144, or 36 per cent, scant in 206, or 51.5 per cent, absent in 36, or 9 per cent, and unreported in 14, or 3.5 per cent. In over 60 per cent of



Average height of the fundus for ten days post partum

all cases the lochia was either absent or nearly so. The character of the lochia in those in whom it was still present was rubra in 33 per cent, serosa in 56.5 per cent and alba in 10.5 per cent. In only three cases was it foul. Certainly such observations belie any spastic contractions of the uterus.

A comparison with the control cases of the previous series discloses that (1) some form of lochia was present in all control patients at the time they left the hospital, (2) in only four was it termed scant and (3) lochia rubra was present in 79 per cent.

TEMPERATURE

The indication for the existence of morbidity, however, is neither the height of the uterus nor the type and amount of lochial discharge, but the elevation of the temperature. Herein lies the much debated question: When is a patient considered to evidence morbidity? The nationally accepted standard is the one adopted in 1923: a rise in temperature to 100.4 F on two successive days other than the first day is considered

From the Department of Obstetrics, Coney Island Hospital.
Dr. Harvey B. Matthews, director.
1 Hendry, W. B. in Davis, C. H. Gynecology and Obstetrics.
Hagerstown, Md. W. F. Prior Company, Inc. 1934, vol. 1, chap. 7.
2 DerBrucke, M. G. Am. J. Obst. & Gynec. 29: 272 (Feb.) 1935.
3 Rech, W. and Raber, F. Zentralbl. f. Gynak. 5: 2594-2597 (Nov. 4) 1933.

to be evidence of morbidity. The British are slightly more critical, their standard being 100 F on two successive days other than the first. De Lee has expressed the opinion that a temperature of 100 F on any day should be considered as a sign of morbidity. Perhaps he is somewhat too severe in asking for a classification of all first day temperatures as evidence of infection, and therefore of morbidity. It is generally believed that the usual response to a sudden flooding of the

TABLE 2—Maternal Morbidity in Four Hundred Patients

American Standard*		British Medical Association Standard Additional		De Lee Standard				Total for All Standards	
				First Day Only Additional		One Day Only (Other Than First) Additional			
Num ber	Per Cent	Num ber	Per Cent	Num ber	Per Cent	Num ber	Per Cent	Num ber	Per Cent
15	3.75	11	2.75	16	4	38	9.5	80	20

* The corrected morbidity rate according to American standards was 2.25 per cent (nine patients).

system with a foreign protein is that of an initial rise in temperature, and such a condition may prevail at the time of parturition.

Table 2 shows the uncorrected morbidity rate in the present series according to the accepted American, British and De Lee standards. De Lee's standard has been subdivided to show those patients with only first day temperatures of 100 F or over, and those with one day of temperature of 100 F or over occurring on any other day but the first.

The morbidity in this series, judged by any or all of the aforementioned classifications, I feel, compares quite favorably with that in other series. Among the fifteen febrile patients, as judged by the American standard, were two with acute mastitis, one with acute pharyngitis and rhinitis, one with influenzal pneumonia (admitted in that state), one with pyonephrosis, one with toxemia of pregnancy, admitted with a temperature of 101.4 F, five with sapremia, three with acute endometritis and one with an infected perineal wound. The first five of these patients obviously did not show an obstetric morbidity, and the sixth, although having an obstetric complication, was admitted in a febrile state. If these patients are omitted from the series, the corrected morbidity is only 2.25 per cent. I believe that this is a fairly good showing.

COMMENT

The immediate administration of a suitable oxytocic that will maintain the tonicity of the uterine musculature may obviate the low grade, morbid temperatures which so often are classified as sapremia. In most delivery rooms it is customary to administer from 0.5 to 1 cc of solution of pituitary after expulsion of the placenta. It is known that the action of solution of pituitary is short lived. If a reasonable tonus of the uterus can be maintained for an extended period of time, the chances for the accumulation of blood clot and decidual remnants is greatly diminished.

That a mildly tonic contraction of the uterus is maintained for a longer period with 1 cc of ergotamine tartrate than with solution of pituitary is evidenced by a comparison with the series of 167 patients who received 1 cc. of solution of pituitary hypodermically immediately after expulsion of the placenta. None received the ergot derivative in this stage. The average height of the fundus in all of these cases on the first

day was 151 cm. On the other hand, in the current series, wherein 1 cc of ergotamine tartrate was almost universally replaced by solution of pituitary, the average height on the first day post partum was 118 cm.

Theoretically, at least, it would seem that the cultural mediums in the uterine canal and the gaping sinuses are reduced to a minimum. The continuation of the mildly tonic contraction is maintained during the succeeding three days by the oral administration of the oxytocic in small doses.

The absence of foul lochia bespeaks the absence of sapremia. It would seem that with the decrease in the size of the uterus, undoubtedly at the expense of the cavity, both the "soil and the pathway" for the propagation of an infection are materially reduced, thus lessening at least one possible source of infection. In the present series it was possible to reduce the morbidity in this way to 2.25 per cent.

CONCLUSION

Four hundred parturient patients were given ergotamine tartrate hypodermically immediately after delivery of the placenta and orally for the ensuing three days. It is hoped that a means has been presented for reducing the controllable maternal morbidity. It is felt that any method that will help, however slightly, to carry a parturient woman safely through the lying-in period is worthy of a trial.

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THE SPECIFIC TREATMENT OF
LOBAR PNEUMONIA

A STATISTICAL REVIEW

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The specific treatment of lobar pneumonia was attempted as early as 1897 by Washbourn.¹ His and other early attempts were not successful, because the serums were not made and given on a type specific basis. Since 1913 Cole² has used an unconcentrated horse serum in type I pneumonia with a mortality of 10 per cent. This unconcentrated serum, however, has not become popular because of its tendency to produce reactions.

In 1921 Huntoon³ produced a serum-free solution of pneumococcus antibodies in modified Ringer's solution. The potency of this product is such that it protects mice against 1,000,000 lethal doses of a virulent culture of pneumococcus type I. It is somewhat less protective against type II and protects against only 100,000 lethal doses of type III. It contains only 0.035 mg of nitrogen per cubic centimeter. Recently the manufacturers have discontinued the use of pneumococcus type III in the preparation of this solution.

In 1924 Felton⁴ described a method of concentrating and refining antipneumococcic horse serum and has subsequently improved the method. This product represents approximately a tenfold concentration of

- 1 Washbourn J. W. Antipneumococcus Serum. *Brit. M. J.* 1: 510 (Feb. 27) 1897.
- 2 Cole, Rufus. Serum Treatment in Type I Lobar Pneumonia. *J. A. M. A.* 63: 741 (Sept. 7) 1929.
- 3 Huntoon F. M. Antibody Studies. *J. Immunol.* 6: 117 (March) 1921.
- 4 Felton L. D. A Study of the Isolation and Concentration of the Specific Antibodies of Antipneumococcic Sera. *Boston M. & S. J.* 190: 819 (May 15) 1924.

the serum with a corresponding increase in its potency. It consists largely of a portion of the globulins. Its nitrogen content is about the same as that of whole serum. This concentrate is marketed in units, a Felton unit being that amount which will protect a mouse against 1,000,000 lethal doses of a virulent culture of pneumococci. As different lots of serum vary considerably in antibody content, it is important to estimate doses in units and not in cubic centimeters. Some

TABLE 1—*The Effect of Pneumococcus Antibody Solution in Lobar Pneumonia in Adults**

Types	Treated	Mortality, per Cent	Controls	Mortality per Cent	Mortality Reduced per Cent	Lives Saved per 100 Cases
I	186	14	169	23	39	9
II	96	20	71	38	24	0
III	91	36	65	42	12	6
IV	179	12	127	24	50	12
	554	20	432	29	28	9

Combined reports of Cecil and Larsen Conner Belk and Sharpe

reports, however, express doses in cubic centimeters. The reason for this is, of course, that the liability to the production of reactions is in proportion to the amount of serum given at one time and not to the unit value.

The results obtained with specific therapy are shown in the tables. These include all the reports in American and foreign literature up to January 1935 that lend themselves to statistical study.⁵ The several series differ somewhat in doses administered, in the method of selecting cases for treatment, and in the method of selecting control groups. They are, however, fairly comparable and demonstrate the value of the method under average conditions. "Serum" as used in the text and the tables indicates concentrated serum. In most instances serum was prepared by Felton's method.

In table 1, pneumococcus antibody solution is seen to be definitely beneficial in type I pneumonia, less so in type II, and of little or no value in type III pneumonia. Surprisingly, it is more effective in group IV than in type I infections. This is due, probably, to a content of

5 These include

- Cecil R L and Larsen V P. Clinical and Bacteriological Study of One Thousand Cases of Lobar Pneumonia. *J A M A* 79:343 (July 29) 1922.
- Conner L A. Experiences in the New York Hospital with the Treatment of Lobar Pneumonia by a Serum-Free Solution of Pneumococcus Antibodies. *Am J M Sc* 184:832 (Dec) 1922.
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group specific antibodies in addition to its type specific antibodies. The observation is a most important one, particularly since it is demonstrated in all of the three series. This of course has practical importance.

In table 2, antipneumococcus serum is seen to reduce the mortality in type I lobar pneumonia by 40 per cent and to save ten lives per hundred cases. It is of less value in type II but of distinct benefit in types VII and VIII. There is no apparent reason for the rather wide difference in the results of different observers. This series covers a wide range of conditions, some unfavorable, such as the beginning of treatment late in the disease and the inclusion of a number of old patients. The report of Heffron and Anderson is of special interest, as it represents the work of sixty-three practitioners in the state of Massachusetts, under the direction of the department of health and shows that the specific treatment of lobar pneumonia is not a method requiring specially organized hospital services.

When fatalities in the treatment group are considered, it is found that many of these patients were suffering from morbid processes other than the pneumonia. Senility, alcoholism, heart disease and other

TABLE 2—*The Effect of Concentrated Antipneumococcus Serum in Lobar Pneumonia in Adults*

	Dates	Treated	Mortality per Cent	Controls	Mortality per Cent	Mortality Reduced per Cent	Lives Saved per 100
Type I							
Cecil and Plummer	24-29	239	20	234	31	33	11
Park Bullowa and Rosenbluth	28-28	109	17	103	31	45	14
Baldwin	26-30	19	5	20	23	78	20
Bullowa	28-32	309	16	54	29	45	13
Sutcliffe and Finland	29-32	73	16	70	37	56	21
Medical Research Council	30-33	184	10	201	15	34	5
Heffron and Anderson	31-33	189	11	85	26	59	15
Lays	32-33	15	26	10	20	+83	-7
		1188	16	890	25	40	10
Type II							
Cecil and Plummer	24-30	202	40	203	46	12	5
Park Bullowa and Rosenbluth	26-28	56	23	61	30	23	7
Baldwin	26-30	35	26	29	52	50	20
Bullowa	28-32	76	30	84	43	30	13
Finland and Sutcliffe	29-32	46	20	61	40	50	20
Medical Research Council	31-33	164	20	300	27	23	7
Heffron and Anderson	31-33	48	20	100	37	19	7
		677	30	799	37	19	7
Type VII							
Bullowa	28-31	15	7	53	26	74	10
Type VIII							
Bullowa	33	37	5	80	16	67	11

complicating conditions were of frequent incidence, and many of the cases were treated late in the disease. Possibly a fairer picture of specific treatment is obtained by the study of its results under more favorable conditions, as shown in table 3.

Table 3 shows an average reduction in mortality of about 50 per cent, with a saving of twenty lives per hundred cases. The 78 per cent reduction in mortality in type II pneumonias, with a saving of fifty lives per hundred cases in the selected series of Cecil and Plummer, is worthy of special mention. This table illustrates the importance of beginning specific treatment as early after the onset of pneumonia as possible.

It also shows the value of this therapy in septicemia, owing to its demonstrated power of sterilizing the blood stream.

In addition to mortality statistics, all observers mention definite clinical benefits in many cases, such as

TABLE 3—*Specific Treatment of Lobar Pneumonia in Adults Selected Series*

	Treated	Mor tality, per Cent	Controls	Mor tality per Cent	Mor tality, Reduced, per Cent	Lives Saved per 100
Type I Bacteremias—Serum						
Bullowa	90	39	10	80	51	41
Sutliff and Finland	33	20	42	71	63	45
Park Bullowa and Rosebluth	23	86	23	71	49	35
Medical Research Council	28	17	23	17	0	0
	190	33	103	60	40	27
Type II Bacteremias—Serum						
Bullowa	20	69	35	77	10	8
Finland and Sutliff	11	55	29	69	20	14
Park Bullowa and Rosebluth	14	50	11	82	37	32
Medical Research Council	13	39	22	50	22	11
	69	55	97	69	20	14
Type I 72 Hour Series—Serum						
Cecil and Plummer	103	12	97	27	50	15
Type I 96 Hour Series—Serum						
Sutliff and Finland	70	10	76	37	50	15
Type II 72 Hour Series—Serum						
Cecil and Plummer	21	14	20	60	78	61
Type I 48 Hour Series—Pneumococcus Antibody Solution						
Cecil and Plummer	50	9	63	24	62	16

reduction in temperature and in pulse and respiration rates, correction of cyanosis and delirium, early crises and shortening of the duration of illness. The blood

TABLE 4—*Specific Treatment of Lobar Pneumonia by Intramuscular and Subcutaneous Administration*

		Mor tality Treated per Cent	Mor tality Controls per Cent	
Cecil and Baldwin	Pneumococcus antibody solution subcutaneously	34	30	All types late and early cases
Cecil and Baldwin	Pneumococcus antibody solution subcutaneously	24	39	All types 48 hour series
Oliver and Staller	Pneumococcus antibody solution subcutaneously	17	24	All types 100 hour series
Becker	Serum intramuscularly	8	20	Type I quinine in all cases
		15	30	Type II quinine to all cases
Belk and Sharpe	Pneumococcus antibody solution intramuscularly			Clinical improvement in children
Nemir	Serum intramuscularly			Clinical improvement to children

stream is sometimes sterilized, and extensions of the infection are often prevented. The incidence of complications, however, appears to be about the same in the treated and the untreated patients.

These statistics are based on intravenous serum therapy. The possibility of administering specific antipneumococcus therapy by intramuscular and subcutaneous injections is an attractive one because of the greater ease as compared to the intravenous route. Curphy and Baruch have shown that intramuscular

injections are as effective as the intravenous in rabbits suffering with pneumococcal skin infections.⁶ On the other hand, Rhoades⁷ found that pneumococcus antibodies injected subcutaneously often failed to appear in the circulation. In table 4 are given the results of treatment by these routes.⁸

Table 4 shows that some benefit doubtless results from intramuscular and subcutaneous injections of specific preparations, but this is clearly smaller than after intravenous administration. At present these substitute methods would seem to be justified only when it is impossible to use the intravenous route.

TABLE 5—*Dosage in Specific Antipneumococcus Therapy*

Day of Disease on Which Treatment Is Begun	Concentrated Serum		Units
	Cubic Centimeters of Serum	First 24 Hours	
1-24 hours	5 cc.		90,000
24-48 hours	5 cc.	25 cc.	225,000
48-72 hours	5 cc.	25 cc.	360,000
72 hours	5 cc.	25 cc.	495,000

Give at intervals of two hours
Amounts on subsequent days as indicated clinically
Pneumococcus antibody solution from 50 to 100 cc. three times a day

Table 5 gives a conventional scheme of dosage, that for serum being suggested by Sutliff and Finland.⁹ The first consideration of dosage is to administer serum, or antibody solution, as early in the disease and in as large amounts as is safely possible. Beneficial effects are not experienced until the soluble specific substance in the patient's blood is neutralized by an excess of antibodies. Patients first treated late in the infection, those with septicemia and those with type II pneumonia, require larger doses to effect this result. After the first day's dosage, serum is given either in the same amounts (if no improvement has taken place) or in smaller amounts, until the temperature falls and remains near normal. Armstrong and Johnson¹⁰ feel that if no benefit is observed after seven doses of 20 cc. each (given at intervals of from six to eight hours) it is probably not worth while to continue the administration.

TABLE 6—*Reactions Following Specific Antipneumococcus Therapy*

Reaction	Concentrated Serum	Antibody Solution
Severe allergic	Very rare	None
Mild allergic	5-15%	None
Thermal	10-20%	Frequent to rare
Serum sickness	25-30%	None

Table 6 gives a summary of the incidence of reactions as recorded in the several reports. The figures are only approximate. When precautions are taken to

6 Curphy T. J. and Baruch H. B. The Therapeutic Value of Intramuscular Dosage of Type I Pneumococcus Antiserum. *J. Exper. Med.* 55: 925 (June) 1932.

7 Rhoades D. R. The Fate of Pneumococcal Protective Bodies When Injected into Normal Animals and Man. *Bull. Hyg. Lab. U. S. P. H. S.* April 1925.

8 Cecil, R. L. and Baldwin H. S. The Treatment of Lobar Pneumonia with Subcutaneous Injections of Pneumococcus Antibody Solution. *J. Pharmacol. & Exper. Therap.* 24: 1 (Aug.) 1924.

9 Sutliff W. D. and Finland Maxwell. Type I Pneumonia Treated with Concentrated Pneumococcus Antibody (Feltin). *J. A. M. A.* 90: 1465 (May 2) 1931.

10 Armstrong R. R. and Johnson R. S. Homologous Antipneumococcal Serums in the Treatment of Lobar Pneumonia. *Brit. M. J.* 1: 331 (May 30) 1931.

make skin and ophthalmic tests, and to refuse serum to those with positive ophthalmic tests and also to those with a history of allergy to horses, the question of reactions appears not to be a serious one. These tests are made with a 1:10 dilution of concentrated serum or better, possibly, with a 1:10 dilution of whole normal horse serum, as the concentrated serum is said to give false positive skin tests. The mild allergic reactions are easily controlled with epinephrine. Only one allergic death is reported. The antibody solution does not cause any allergic reactions and has been given successfully to known allergic individuals.

Reports of specific antipneumococcus therapy in children are few. Nemir observed its effects in both lobar pneumonia and bronchopneumonia produced by pneumococcus types I to XXII inclusive. The mortality in the entire group was reduced from 166 per cent to 98 per cent.

The specific treatment of pneumococcal infections is probably destined to increase in popularity. Serums will doubtless be still further refined, with the result that reactions will be largely eliminated and larger initial doses will be possible. Potent serums for the recently identified types of pneumococci will in all probability soon be available commercially. The demonstrated merit of specific therapy in lobar pneumonia would seem to justify its use in bronchopneumonia and other pneumococcal infections, such as mastoiditis, thus giving it a wider field of usefulness.

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ANGINAL SYMPTOMS ASSOCIATED WITH CERTAIN CONSTITUTIONAL DISEASES

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Although angina pectoris has been recognized for nearly two centuries, its pathologic physiology continues to be obscure. Whatever theory is subscribed to, whether the coronary, the aortic or the myocardial, it is generally agreed that the actual attack is precipitated by a demand on the heart which for one reason or another cannot be met.

Keefer and Resnik¹ have proposed on excellent theoretical and factual grounds that anoxemia of the myocardium, however brought about, is the fundamental pathologic condition.

In the past few years I have had occasion to see a number of patients whose presenting complaint was typical angina or attacks indistinguishable from it. Further studies of these cases have revealed various constitutional diseases, the adjustment of which has either improved or done away with the anginal attacks. This relief allows of some interesting speculations on the cause of angina.

In the following case reports data that have not seemed pertinent have been purposely omitted for the sake of brevity.

REPORT OF CASES

CASE 1—A, a man aged 53, admitted to St. Luke's Hospital March 17, 1932, complained of nervousness and discomfort about the heart. About two and one-half years before

admission he became nervous and noticed that his heart was beating very rapidly, and at the same time his wife thought that his eyes appeared more prominent than usual. In spite of an excellent appetite he lost weight. About a year before admission he began to suffer with precordial pain accompanied by shortness of breath, which was brought on by exertion and relieved by rest. There was no edema.

During the next year all the symptoms, including the frequency of precordial discomfort, became more marked. The morning before admission, while dressing, he was seized by a sudden severe pain in the precordial region, which radiated down his left arm. There was extreme shortness of breath and the patient felt that he was in a very precarious condition. A hypodermic of morphine was necessary for relief.

On admission the temperature was 99.6 F, the pulse 140, and the blood pressure 140 systolic, 60 diastolic. The skin was moist and clammy and there was definite exophthalmos. The thyroid was moderately and symmetrically enlarged and there was a fine tremor of the extended fingers. The heart showed an apparent moderate enlargement. The rhythm was very rapid and irregular, strongly suggesting auricular fibrillation. A systolic murmur was heard over the entire precordium, loudest at the apex. The lungs were clear, the liver was not palpable and there was no edema of the feet or ankles. An electrocardiogram confirmed the impression of auricular fibrillation.

A diagnosis of exophthalmic goiter with cardiac enlargement and auricular fibrillation was made. Of course a strong suspicion of angina pectoris was entertained.

During the next several weeks the basal metabolic rate varied from plus 35 to plus 40, and there was considerable general improvement on the preliminary medical management. The cardiac rhythm became regular, with an average pulse rate of 88. April 18, one month after admission, a partial thyroidectomy was done. Recovery was uneventful. He was last seen in July 1933, somewhat more than a year after operation. He had returned to work and was in an excellent general physical condition. There had been no further anginal attacks.

CASE 2—A., a man aged 63, a clerk of the court, seen in the McGuire Clinic, Jan. 14, 1929, complained of numbness of the hands and toes, difficulty in walking, and attacks of precordial pain and oppression brought on by exertion. The present illness dated from about three years before, when he began to have attacks characterized by pain and discomfort in the left side of the chest at times radiating down the left arm, and associated with a feeling of tightness in the chest and shortness of breath. These attacks were brought on by some unusual exertion and relieved by rest. Recently they had become more frequent, and much less exertion was required to precipitate them. During the past six weeks he had noticed numbness and tingling of the hands and toes and difficulty in walking which had grown progressively worse. His hands had become so involved that he could not sign his name legibly.

On examination the temperature was 98 F., the pulse 78, and the blood pressure 150 systolic, 82 diastolic. The gait showed marked spastic ataxia. The skin was somewhat sallow. The hands were slightly edematous and distinctly ataxic. The apex of the heart was normally located and there was a systolic murmur heard at the base. There was a slight sinus arrhythmia. The lungs were clear, the liver was not palpable. Generally increased muscular tonus, anesthesia of the extremities, and loss of vibratory sense were present.

Examination of the blood revealed hemoglobin 75 per cent and red blood cells, 2,820,000, with a color index of 1.3. There was marked macrocytosis with hyperchromia. Poikilocytosis, anisocytosis and polychromatophilia were present. The reticulated count was 11 per cent, leukocytes, 8,000, polymorphonuclear leukocytes, 66 per cent, lymphocytes, 27 per cent, and eosinophils, 5 per cent. The gastric analysis showed an absence of free hydrochloric acid, with a total acidity of 6. The blood Wassermann reaction was negative. The electrocardiogram showed a sinus bradycardia with a rate of 50 but was otherwise normal. The basal metabolic rate was minus 15. Two days later the blood work was repeated with approximately the same results.

A diagnosis of pernicious anemia and coronary disease was made.

From the McGuire Clinic and St. Luke's Hospital.

Read before the Richmond Academy of Medicine Feb. 12, 1933.

¹ Keefer C. S. and Resnik, W. H. Angina Pectoris Syndrome Caused by Anoxemia of Myocardium, Arch. Int. Med. 41: 769 (June) 1933.

The patient was put on a general diet with solution of liver extract-Valentine, 1½ ounces (45 cc) three times a day, and dilute hydrochloric acid, one teaspoonful after meals.

Repeated blood examinations showed a gradual rise in both the hemoglobin and the red blood cell count. April 1, two and one-half months later, they were reported as follows: hemoglobin 84 per cent and red blood cells 5,080,000, with a color index of 0.84.

The patient was followed and the blood frequently checked by the family physician. Shortly after he left the hospital he was put on thyroid, with subsequent repetition of the metabolic rate. He was seen at intervals and heard from by letter. His general improvement was entirely satisfactory. The gait improved considerably and he could write legibly, but he continued to be annoyed by numbness and tingling of the hands and feet.

May 6, the following note was made: "Since medication was begun the patient has had no more anginal attacks nor complained of the precordial discomfort previously described."

The foregoing regimen was continued and no material change in his condition took place during the next five years until March 3, 1934, at which time he was seen at his home suffering from what was thought to be a myocardial infarction. The blood at this time showed a red cell count of 4,000,000. The patient was seriously ill for some time but is now back at his work.

CASE 3—N, a man aged 49, a lawyer coming under observation in February 1925, complained of high blood pressure and sugar in the urine. He had followed a somewhat restricted diet for about one year.

Physical examination was negative except for moderate enlargement of the heart, a systolic murmur heard best at the apex and a marked accentuation of the aortic second sound with a blood pressure of 210 systolic, 100 diastolic. The blood sugar was 265 mg per hundred cubic centimeters. The urine showed a heavy trace of sugar and a trace of albumin. The electrocardiogram was normal.

A diagnosis of diabetes mellitus, arteriosclerosis and hypertension was made.

He was put on a restricted carbohydrate diet and got along well until April 1925, when he began to complain of trouble with his right eye. Examination showed a hemorrhagic retinitis of moderate intensity on the right.

A more careful control of the diabetes was advised and carried out. Small doses of insulin were given. In this manner his condition remained satisfactory until May 1933 when he began to notice a sensation of substernal constriction and discomfort on walking, which would subside when he stopped to rest. There was no real pain. Thorough examination including an electrocardiogram, showed nothing new of significance. He was given aminophylline, one tablet three times a day.

During the next eighteen months, until September 1934 there was no particular change in his condition except that he was having attacks of typical anginal pain brought on by exertion and relieved by rest. The electrocardiogram was again normal, the blood pressure was 204 systolic, 94 diastolic, the pulse 56, and the urinalysis negative.

During the next several months the anginal attacks became more frequent and more severe, and less exertion was required to precipitate them. One unusually severe attack was relieved by glyceryl trinitrate. December 17 the blood sugar was 100 at noon. He was taking 7 units of insulin in the morning and 7 units at night. He was asked to omit the morning dose. Jan. 25, 1935, five weeks later, the blood sugar was 200 at 11:15 p. m. There had been no more of the severe anginal attacks and in fact practically no discomfort about the cardiac region.

CASE 4—Mrs. R, aged 62, a housewife, seen in November 1928, complained of nervous prostration, extreme exhaustion and precordial discomfort.

The present illness dated from the latter part of 1927, at which time she began to complain of a feeling of oppression in the chest. The family physician suspected angina pectoris and advised her to keep glyceryl trinitrate always at hand. Shortly after that she suffered a paroxysm of excruciating pain in the precordial region following exposure to severe cold. This pain was relieved by glyceryl trinitrate. During the next

year or so she had several similar attacks, which were much more frequent during the cold weather and definitely associated in her mind with exposure to cold.

In November 1928, when the cold weather began, her attacks became more frequent and more severe and a trip to Florida was recommended by her physician in New York. On her arrival in Richmond the pain was so severe that it was necessary for her to stop at a hotel. Attacks were occurring from eight to ten times a day and were only partially relieved by glyceryl trinitrate. She was brought to St. Luke's Hospital in December.

She was well developed and well nourished and in no particular distress. She appeared to be generally sluggish and mentally dull. The skin was dry. The most striking difficulty was her inability to keep warm and her great fear of becoming chilled. The heart was normal except for a systolic murmur heard over the base. The pulse rate was 80 and the blood pressure 124 systolic, 76 diastolic. The electrocardiogram showed a right axis deviation, negative T waves in lead I, and iso-electric T waves in leads 2 and 3. The P wave was absent in lead I and the QRS complexes in all three leads were somewhat slurred but not widened.

During the next three weeks in the hospital she had many severe attacks of precordial pain, occasionally requiring as many as twenty-one ½₁₀₀ grain (0.0006 Gm.) tablets of glyceryl trinitrate in twenty-four hours. In addition, she was receiving aminophylline and opiates as needed.

Owing to the failure of the customary procedures for the relief of angina and the patient's general appearance of hypothyroidism or myxedema it was decided to try the administration of thyroid. A basal metabolic rate was not done because of her critical condition. The thyroid medication was begun on Jan. 24, 1929, with 2 grains (0.13 Gm., Burroughs, Wellcome & Co.) three times a day. During the next week there was remarkable clinical improvement. The attacks had practically disappeared and for the first time she allowed the cover to be removed from her neck and arms.

The patient left the hospital February 12, remaining on the same dose of thyroid. The clinical improvement continued and she remained free from precordial discomfort. For several months the basal metabolic rate ranged between minus 4 and minus 10. The electrocardiogram returned to normal. For several years she was kept on the thyroid and suffered only an occasional attack, except on one occasion when the metabolism fell to minus 20 and there were several paroxysms of pain following exposure to cold. The patient has not been heard from for the past two years.

COMMENT

Patient 1 had suffered from exophthalmic goiter for two and one-half years. On admission to the hospital the pulse rate was 140, and it is well known that when the heart rate is greatly accelerated a marked shortening of the diastolic phase occurs. When this acceleration exists over a long period the minute volume of coronary flow is greatly decreased. In this case the heart was continuously urged on by excessive stimulation of the thyroid, and the myocardium was forced to do a greater amount of work. Therefore it is reasonable to believe that under these conditions there was not only a relative anoxemia but also a relative deficiency of fuel to supply the energy requirements of the laboring heart. Since this explanation conforms to the coronary theory in that the coronary flow was reduced, it does not seem necessary to postulate a sclerotic process or spasm to explain the pain. This case of classic exophthalmic goiter was accompanied by typical anginal attacks, which disappeared following the patient's recovery from hyperthyroidism.

In case 2 there was probably a deficiency in available oxygen due to a lowering of the normal qualitative state of the blood. The lowered oxygen supply to the myocardium was adequate to meet the demands on the heart during rest and restricted activities but inadequate

when conditions that imposed an extra load were added. In this case the anginal symptoms ceased after the blood returned to its normal state.

There are in the literature several reported cases in which hypoglycemia or insulin shock brought about typical severe anginal seizures in patients suffering from coronary disease, also deaths in which insulin shock has been the precipitating factor in patients suffering from cardiac decompensation. Middleton and Oatway,² in their studies of insulin shock and the myocardium, stress the importance of carbohydrates in all muscular activity. Evans³ calculated that the normal heart obtained one third of its energy from the oxidation of carbohydrates. They show that during hypoglycemia there are certain definite changes noted on the electrocardiogram in regard to the T waves which show the inversion usually thought to be associated with coronary disease. Some showed changes in the P waves, and slurring of the QRS complexes was also noted. In case 3 an increase in the blood sugar level brought about marked clinical improvement, theoretically by supplying the myocardium with a greater amount of dextrose and thereby an increase in available energy. It seems rational, therefore, that keeping the blood sugar level somewhat above normal limits in elderly diabetic patients subject to anginal pain is well worth a trial.

In case 4 the rate of conversion of food to energy by oxidation was probably markedly reduced. It is also likely that there was an underlying pathologic process of the coronary arteries and in the presence of this condition, the slowed up oxidative rate imposed a very real energy deficit on the myocardium. On thyroid medication this patient showed remarkable clinical improvement, which continued.

CONCLUSIONS

1 A somewhat broader concept than anoxemia as the cause of anginal pain is suggested, namely, that the paroxysms occur when the available energy is not equal to the demands made on the myocardium.

2 It would appear that this energy deficit may be brought about by many different causes, for example

(a) Reduced coronary flow or "ischemia," whether due to organic narrowing, spasm or shortening of the diastolic phase over a prolonged period.

(b) A relative oxygen deficiency alone as in anemias.

(c) A relative deficiency in available fuel, as in hypoglycemia.

(d) An abnormally slow rate of oxidation of fuel to form energy, as in myxedema.

3 With this broader concept in mind it behooves one to scrutinize each patient presenting anginal symptoms with the utmost care in an effort to uncover and correct any underlying constitutional condition which alone or in combination with reduced coronary flow might precipitate attacks.

² Middleton W. S., and Oatway W. H. Jr. Insulin Shock and the Myocardium. *Am. J. M. Sc.* 181: 39 (Jan.) 1931.

³ Evans C. L. The Effect of Glucose on the Gascon Metabolism of the Isolated Mammalian Heart. *J. Physiol.* 47: 407 1913-1914.

Diastolic Pressure—As cardiac function improves the systolic pressure may rise fall or remain stationary but whatever changes occur they tend to be in the direction of the normal. In the case of diastolic pressure the trend in blood pressure as the patients improve is decidedly downward.—C. C. Wolferth "Myocardial Disease" quoted by Fisher, Alexander. *Aphorisms in Clinical Medicine, Canad. J. Med. & Surg.* 77: 166 (June) 1935.

Clinical Notes, Suggestions and New Instruments

EPIDERMOID CYST COMPRESSING THE VERMIS OF THE CEREBELLUM

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Lereboullet¹ in a monograph on the tumors of the fourth ventricle reviews all the cases of dermoid and epidermoid tumors and cysts in the posterior fossa that he has been able to find reported in the literature. According to him, only nine dermoid and eight epidermoid cysts of the posterior fossa have been recorded. Of these, only one of each has been reported as operated on successfully: a dermoid cyst overlying the vermis of the cerebellum, reported by Brock and Klenke² (operated on by Elsberg), and an epidermoid tumor, reported by Van Bogaert and Martin³ (operated on by Cushing).

In view of the rarity of these tumors, their greater rarity in this location, and the extremely rare cure of the condition by surgery, the following successful surgical case is reported.

REPORT OF CASE

History—J. J. L., a man aged 42, a lawyer, admitted Nov. 5, 1934, complained of noise in the top of the head, an unsteady gait and vomiting.

About three or four years before the patient began to experience a loud roaring noise in the head "like Niagara Falls," which occurred intermittently and lasted from a few minutes to several hours.

About two years before, he first noticed unsteadiness of gait due not to weakness of the legs but to a loss of equilibrium and an inability to keep his direction. This progressed to the point at which he required support when walking, and a friend was devoting himself to serve as his prop.

For about six months he vomited frequently. This occurred without nausea or any other warning. It was projectile and did not seem to be related to the taking of food. Occasionally he had severe headaches, especially when reading, and his eyesight he believed, was becoming impaired.

Examination—The patient was large and showed evidence of recent loss of weight. He was intelligent and cooperative. He walked unsteadily with a broad base, swayed in the Romberg position and was unable to stand on either foot alone without falling. All coordination tests were poorly done because of ataxia, asynergia and tremor of the upper as well as the lower extremities. The voice was a little monotonous and quavering but test phrases were delivered without any difficulty.

The deep and superficial reflexes were normal, no abnormal reflexes were demonstrable. Muscle strength was good throughout and no local weaknesses were demonstrable. Sensation was normal throughout. The cranial nerves were normal except for some atrophy of the optic disks and slight blurring of their margins. The pupils reacted somewhat sluggishly to light.

Routine blood counts, urinalysis, and blood and spinal fluid Wassermann tests were all negative.

Plain roentgenograms of the skull showed a definite atrophy of the posterior clinoid processes indicating an increase in intracranial pressure. In the right cerebellar lobe a small fleck of calcification about 6 by 2 mm was present. These observations strongly suggested a right cerebellar tumor.

Ventriculograms showed a symmetrical dilatation of the ventricular system, including the two lateral and the third ventricles and the aqueduct of Sylvius. The fourth ventricle appeared somewhat flattened in the region of the festigium thus confirming the diagnosis of cerebellar tumor (C. G. Dyke).

Operation—The operation was done, November 12, by one of us (L. M. D.) under local anesthesia, the region of the cerebellum being exposed by the usual suboccipital approach.

¹ Lereboullet Jean. Les tumeurs du quatrième ventricule, Paris J. B. Baillière et fils 1932.

² Brock S. and Klenke, D. A. A Case of Dermoid Overlying the Cerebellar Vermis. *Bull. Neurol. Inst. New York* 1: 328 (June) 1931.

³ Van Bogaert L. and Martin P. Les tumeurs du quatrième ventricule et le syndrome cérébelleux de la ligne médiane. *Rev. Neurol.* 2: 431 (Sept.) 1924.

The dura was under considerable tension, and the lateral ventricles had to be emptied before this membrane was opened. As soon as the dura was opened, a very large cyst was exposed, occupying the position of the vermis of the cerebellum. The cyst wall was thin and of a dark opalescent opaque appearance. This wall was punctured and a copious flow of thick yellowish brown, opaque, viscid, oily fluid resulted. This fluid, when examined under the microscope, contained amorphous debris and numerous cholesterol crystals. Together with this fluid, large solid amorphous masses of brown material were removed. The cyst was attached to the cerebellum at only one place deep in the right hemisphere. The thin pedicle, which contained calcium (accounting for the shadow in the roentgenogram), was amputated with sufficient normal tissue to assure its complete eradication.

Pathologic Report (Wolf)—The tissue consisted of masses of homogeneous pink-staining substance, on the margins of which were strips of epithelial membrane attached to narrow bands of glial tissue. The epithelium was composed of two or three layers of cells. The basal layer was made up of large-bodied cuboidal cells with prominent dark-staining nuclei. The other cells were polygonal or somewhat flattened and markedly vacuolated, and their nuclei lay within the large vacuoles.

The diagnosis was epidermoid cyst.

Course—The patient made an uneventful recovery and was discharged much improved two weeks after the operation. When seen two months later, he was practically free from his preoperative symptoms.

COMMENT

Clinically this case presented a slowly progressive syndrome of an expanding lesion in the posterior fossa, similar to other reported cases of epidermoid cysts of the cerebellum, all of which occurred in adults and all showed a slowly progressive course of at least two years' duration. There is nothing in the clinical picture to indicate specifically the nature of the lesion beyond the evidence that the lesion is a tumor located in the posterior fossa growing slowly and therefore probably benign in character. The frequent occurrence of calcium deposits in these tumors is of aid in their localization by the x-rays. But since calcification may also occur in ependymomas, astrocytomas, hemangioblastomas and perhaps other tumors occurring in the posterior fossa, this finding in the roentgenogram is again of no aid in the diagnosis of the specific character of the tumor.

Morphologically, the tumor in our case was unusual in that it was largely cystic. As a rule the epidermoids are solid tumors and the dermoids are frequently cystic. Because of its cystic character a careful search for dermal elements such as hair, hair follicles and sebaceous cysts was made, but none were found.

For a long time the nature of these congenital tumors was not wholly understood. Cruveilhier,⁴ who was the first to describe them, called them "pearly tumors" because of the glistening appearance of the capsules in the cases that came into his hands. Johannes Müller⁵ in 1838 was able to demonstrate cholesterol crystals in the debris occurring within these growths and gave them the name "cholesteatoma," by which they are frequently known even today. Neither characteristic on which these two names are based is essential to the diagnosis. Any tumor, congenital in origin, whether glistening or not, whether it contains cholesterol or not, which consists of the ectodermal component of the skin, belongs to this group, properly called "epidermoids." The dermoids are distinguished by their origin from both the ectodermal and the mesodermal components of the skin. They frequently contain hair and functioning sebaceous cysts and are thus often cystic.

SUMMARY

Epidermoid tumors occurring in the posterior cranial fossa are extremely rare lesions.

A case of epidermoid cyst in this location was successfully treated by operation.

6 East Eighty-Fifth Street—268 Palisade Avenue.

⁴ Cruveilhier, Jean. *Anatomie pathologique du corps humain*. Paris J. B. Baillière, 1829, vol. 1.

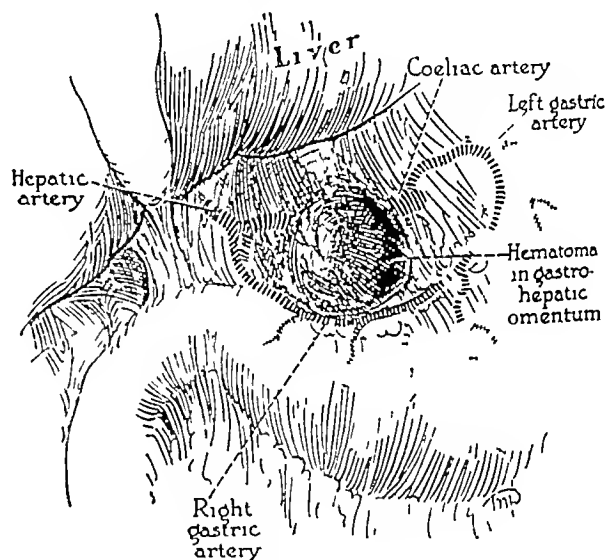
⁵ Müller, Johannes. *Ueber den feineren Bau und die Formen der krankhaften Geschwülste*. Berlin, Lief. 1, 49, 1838.

INTRA ABDOMINAL APOPLEXY

J. R. BUCHBINDER, M.D., AND EARLE I. GREENE, M.D., CHICAGO

Whereas rupture of a cerebral vessel due to arteriosclerosis is not an unusual accident, the spontaneous rupture of vessels elsewhere in the body is comparatively rare. A review of the literature reveals reports of rupture of vessels of the extremities, renal artery, cystic artery and hepatic artery, but in these cases the rupture was usually secondary to an inflammatory process. According to Fishberg,¹ "arteriosclerosis of the large arteries, in essential hypertension, is present in the vast majority of cases, often in widespread form, especially if there is an associated diabetes. In the aorta and its branches there are generally well marked or severe arteriosclerotic changes, but the vessels show little more atheromatous changes than are usual at the age of the patient."

The spontaneous rupture of an arteriosclerotic vessel into the abdominal cavity is extremely uncommon, having previously been encountered three times.² In Starcke's case a rupture of the gastroduodenal artery occurred. Budde found that one of the branches of the left gastro-epiploic had ruptured. A sclerotic branch of the left gastric artery was found to have



Hematoma into gastrohepatic omentum

ruptured by Green and Powers. Two other cases³ closely simulated this condition but are not included. In the former, no bleeding vessel was found; in the latter, the rupture occurred during labor, which should classify it among the traumatic cases.

All the cases reported have one noteworthy feature in common. Without exception, the point of rupture was found to be a vessel arising from the coeliac axis. Why this should take place is not understood.

Hypertension was another characteristic finding in all but one case. In Starcke's case, a man aged 60, a definite history of hypertension, with sclerotic vessels, an enlarged heart and an increase in blood pressure was obtained. The case described by Green and Powers gave a definite history of hypertension with indication of marked arteriosclerosis. In Budde's case, however, there is no mention made of vessel changes or increase in blood pressure. His patient was 27 years old and

From the Department of Surgery, Northwestern University Medical School, and the Cook County Hospital.

¹ Fishberg, A. M. Hypertension and Nephritis. Philadelphia, Lea & Febiger, 1901, p. 457.

² Starcke, G. Spontaneous Rupture of Gastroduodenal Artery. *Ugeskr. f. læger* 85: 963 (Dec. 27) 1923. Budde, M. Spontaneous Rupture of Gastro-Epiploic Artery. *München med. Wchnschr.* 72: 1383 (Aug. 14) 1925. Green, W. T. and Powers, J. H. Intra Abdominal Apoplexy. *Ann. Surg.* 93: 1070 (May) 1931.

³ Hillard, J. W. Spontaneous Rupture into Peritoneal Cavity. *Brit. M. J.* 1: 231 (Feb. 23) 1918. Florence, M. and Ducung, M. Contusion du rein hémopéritoine guérison spontanée. *valeur diagnostique de la ponction exploratrice du cul-de-sac de Douglas*. *Bull. et mém. Soc. de chirurgiens de Paris* 39: 645, 1913.

it is permissible, perhaps, to feel that changes in the vessels had not yet occurred. Starcke's patient was 60 years old, Green and Powers' patient was 54, our patient was 57.

REPORT OF CASE

B G, a man, aged 57, admitted to the Cook County Hospital, complained of severe abdominal pain of five hour's duration. Shortly after eating a heavy meal he suddenly experienced an agonizing knifelike pain in the upper part of the abdomen which doubled him up. Nausea and vomiting followed. After thirty minutes the pain subsided somewhat, becoming diffuse, with radiation to both shoulders. A physician was called, who advised immediate hospitalization.

On admittance to the surgical ward it was evident that the man was acutely ill. Both legs were acutely flexed and the skin was cold and clammy. A cold sweat covered the entire body. The abdomen was boardlike, with tenderness over the entire abdomen, especially in the region immediately above the umbilicus. Liver dullness was not obliterated. There was evidence of shifting dullness in the flanks. The temperature was below normal, the blood pressure was 115 systolic 80 diastolic respirations ranged between 30 and 40 per minute, and the pulse was 95 per minute. There was moderate cyanosis with some evidence of air hunger. The blood showed 3,400,000 red cells with 8,500 white cells. The urine contained a trace of albumin, a few hyaline casts and a few pus cells but was negative for blood or sugar. The patient was exceedingly thirsty, constantly moving about, and as we watched him there was definite evidence that his condition was growing more precarious.

A diagnosis of acute pancreatitis was entertained but held in abeyance because of the blood pressure of 115 systolic and 80 diastolic. The question of a perforated peptic ulcer was considered, but the presence of liver dullness made us hesitate, even though we were aware that this finding was at times absent. On the way to the operating room fluoroscopy was done but no intra-abdominal air bubble was visible. The possibility of an acute coronary disease held a prominent part in our minds, and it was not without considerable trepidation that the man was placed on the operating table. The immediate preoperative diagnosis was an acute pancreatitis.

When the abdomen was opened a considerable quantity of bloody fluid escaped. Fat necrosis was not evident. A large purplish swelling was found in the gastrohepatic omentum. When the anterior layer was opened a large blood clot was evacuated and an actively bleeding sclerotic vessel was seen and identified as the right gastric artery. The perforation had occurred immediately above the level of the pylorus. The vessel was doubly ligated, and as the man's condition was not too good the abdomen was hurriedly closed after evident clots had been removed. Unfortunately no portion of the vessel was taken for future study.

Saline and dextrose solutions were given intravenously and under the skin. A smooth postoperative period followed. Subsequent questioning revealed the fact that for a period of several years he had complained of dizziness and headaches. A year or so previously he had seen a physician who informed him that he had a very high blood pressure. Ten days after the operation his blood pressure was 190 systolic, 115 diastolic. The patient was asked to return but to date we have not seen him.

It is interesting to note that in all previously reported cases the preoperative diagnosis was either an acute pancreatitis or ruptured peptic ulcer. In every case the onset was exceedingly dramatic, characterized by sharp agonizing pain in the epigastrium with boardlike rigidity followed by manifestations of collapse. In our case the radiation of the pain to both shoulders not unlike that occurring in ruptured ectopic pregnancy might have offered a clue, but the diagnosis of an apoplexy of an intra-abdominal vessel was not thought of.

SUMMARY

The fourth case of a true intra-abdominal apoplexy on an arteriosclerotic basis is reported. In previous reports ruptured vessels were the gastroduodenal, left gastro-epiploic, left gastric and in our case the right gastric. All are branches of the celiac axis. With one exception all the cases occurred in

patients with hypertension. The onset in all cases was acute, followed by evidence of collapse. A correct preoperative diagnosis is yet to be made. In each instance a diagnosis of acute pancreatitis or ruptured peptic ulcer was made. Operation was done in the four cases, the bleeding vessel being found and ligated, with recovery in each instance.

104 South Michigan Avenue—310 South Michigan Avenue.

DUODENAL ULCER WITH RUPTURE ON THE FOURTH DAY OF LIFE

FRANK SEINSHEIMER, MD CINCINNATI

Duodenal ulcer in infants is not a rare condition. Perforation, however, of duodenal ulcer under one year has been reported only occasionally. A review of the literature reveals reports of twelve such cases since 1868.¹

The following is the report of a case of perforated duodenal ulcer occurring on the fourth day of life.

Delivery of baby boy L by Dr F A S Kautz was by cesarean section in the eighth month of pregnancy, the mother having had a hemorrhage from a placenta praevia centralis. The birth weight was 6 pounds 12 ounces (3,062 Gm). The baby appeared normal after birth, with the exception of an inguinal hernia on the left side. Breast feeding was not instituted because of the mother's condition, but the infant received 1½ ounces (45 cc) of diluted dried milk every three hours. There was persistent forceful regurgitation of the feedings. On the third day, diluted dried skim milk was given. Each feeding was preceded by atropine. On the fourth day of life there was decided icterus, and clinically dehydration was observed. On this day symptoms of shock suddenly developed and shortly afterward the abdomen became distended, and in a few hours the scrotum became edematous and discolored. There were several areas of reddish discoloration on the lower part of the abdomen. The temperature was subnormal, respiration rapid and shallow, and the pulse rapid and feeble. Physical signs of fluid developed in the abdomen, and the diagnosis was made of a ruptured hollow viscus. A transfusion was given, but the baby died shortly thereafter, before surgical intervention could be attempted.

Necropsy was done by Dr Mortimer Herzberg. When the peritoneal cavity was opened the entire peritoneal cavity and the intestine, which was collapsed, were covered over with a creamy yellow foamy fluid. The peritoneum was intensely congested and somewhat glistening. The suspensory ligament and umbilical vein were persistent and congested. The urachus was not unduly prominent. The right obliterated hypogastric vein was congested. When pressure was made over the left scrotum, thick yellowish creamy material exuded from the internal inguinal ring, which was apparently open. No similar fluid exuded from the right inguinal ring, which was apparently more firmly closed than its fellow. The retroperitoneal tissues were intensely congested and contained numerous small gas bubbles. The appendix was apparently normal except for slight congestion and pointed retroceally. There was slight dilatation or pouching of the cecum in the region of the ilioretrocecal valve. The intestinal coils, except as noted, were moderately congested but collapsed.

There was considerable dilatation of the second portion of the duodenum, and when this portion was opened a small perforating ulcer was found. The perforation was surrounded by a small circumscribed reddened area, which was not indurated. The stomach was contracted and there was a hemorrhagic necrotic area, especially in the greater curvature. When the stomach was opened the mucosa was congested and in this area the wall was markedly thin.

From the Department of Pediatrics, University of Cincinnati College of Medicine.

- 1 These include:
 - Spiegelberg, *Jahrb f Kinderh* 2, 1868-1869
 - Borland, *Lancet* 2, 1084, 1903
 - Adnan, *V Arch Pediat* 18, 277, 1901
 - Finn, *Proc Roy Soc Med London* 2, 161, 1909
 - Helmholz, *Arch Pediat* 27, 661, 1909
 - Griffith, *New York State J Med* 94, 572, 1911
 - Sommerfeld, *Lancet* 1, 1615, 1930
 - Harrison, *L. Pri Child Arch Dis Childhood* 6, 245 (Aug.) 1931
 - Brockington, C F and Lightwood R, *Lancet* 2, 1209 (Dec 3) 1932
 - Schmidt, *Berl. Klin Wchnschr* 50, 593, 1913

Below the duodenal perforation, the intestine contained a small amount of thick pasty, yellowish material. The small intestine was congested. There was no evidence of other ulcerations. The large bowel presented no evidence of ulceration.

Microscopic examination of the tissue adjacent to the perforation in the duodenum showed no cellular evidence of inflammation.

3120 Burnet Avenue

ENDOCARDITIS DUE TO THE HEMOLYTIC PARA- INFLUENZA BACILLUS

WAYNE W. FOX, M.D., ROCHESTER, N. Y.

Endocarditis due to the hemolytic hemophilic bacillus is uncommon. Four cases have been reported: the first in 1923 by Miller and Branch,¹ two in 1932 by Fothergill, Sweet and Hubbard² and one in 1933 by De Santo and White.³ In 1922 Rivers⁴ showed that influenza bacilli are not all identical in their growth requirements. Those which are not strictly hemoglobinophilic he placed in the para-influenza group. In the classification suggested by Valentine and Rivers⁵ in 1927 the hemophilic group is composed of the hemolytic and the non-hemolytic influenza bacillus, the hemolytic and the nonhemolytic para-influenza bacillus and *Bacillus haemoglobinophilus-canis*. In 1928 Russell and Fildes⁶ reported a case of endocarditis associated with a nonhemolytic para-influenza bacillus. The following is a report of a case of endocarditis associated with the hemolytic para-influenza bacillus.

REPORT OF CASE

History—Mrs. F. C., aged 40, white, a housewife, had scarlet fever complicated by multiple abscesses on the lower extremities seven years before admission. Five years before admission, after an operation for an ectopic pregnancy, the patient was told that she had "heart trouble." After that she gained over 50 pounds (23 Kg.) and for two years noted dyspnea on moderate exertion. There was no history of rheumatic fever or chorea.

The present illness began with general malaise seventeen days before admission. This lasted for three days and was followed by abdominal cramps, diarrhea, vomiting, sore throat and fever. She stayed in bed for three days, after which she felt somewhat improved. On the fourth day, however, she had a severe shaking chill followed by high fever. This recurred from two to five times a day thereafter. During the week preceding admission she noted pain in the finger tips and small red spots on the left wrist. On the day of admission she complained of a feeling of precordial oppression, which lasted about an hour. The colic, diarrhea, vomiting and headache had continued with only slight abatement up to the time of admission.

At almost the same time that the patient became ill, there were five other people in the immediate neighborhood, three of them in her own family, who complained of a similar illness. All had mild prodromal symptoms followed by an acute gastrointestinal upset lasting three or four days and accompanied by fever, backache, headache and prostration. One of the group, a child aged 6 years, had three generalized convulsions. Cultures of the stools of this patient were reported as negative for typhoid and dysentery organisms. All five persons still felt

exhausted three weeks afterward. The patient was the only one of those taken ill who did not recover from the acute symptoms in from three days to two weeks. The source of the infection was considered to be the 6 year old child who was the first to become ill.

Examination—On admission the patient's temperature was 39 C (102.2 F), pulse 88 and respirations 22. She appeared to be acutely ill and slightly disoriented. The face was flushed and bathed in sweat. One fresh petechia was noted on the conjunctiva of the left eye and another on the buccal mucosa. Fading petechiae were observed over the inner aspect of the left wrist and over the upper abdomen. The fundus of each eye showed narrow arterioles and arteriovenous notching. The nose and throat were red and dry. The lungs were clear. The heart was not accurately outlined, owing to the large breast and to the hypersthenic chest conformation. The apex impulse was not felt. The sounds were muffled but of fair muscular quality. The first sound at the apex was somewhat snapping and the second sound was more accentuated at the pulmonic than at the aortic area. The rhythm was regular except for an occasional extrasystole. There was a systolic murmur audible over the entire precordium, which was loudest and blowing in quality at the apex. The blood pressure was 180 systolic, 120 diastolic. The spleen extended 6 cm. below the costal margin in the left anterior axillary line. It was firm and tender. The remainder of the examination revealed no abnormalities.

The leukocyte count was 15,000, with 90 per cent polymorphonuclears. The hemoglobin was 148 Gm. per hundred cubic centimeters (Sahli). The Wassermann and Kahn tests were negative. The urine showed a trace of albumin and a few casts. Culture of the urine was sterile. Stools were liquid and fetid and contained small bits of mucus but no gross or occult blood. Cultures of the stools revealed no typhoid, paratyphoid-dysentery organisms. Blood cultures made on the second, fourth, seventh and fourteenth days all yielded pure growths of the hemolytic para-influenza bacillus.

Course—The course of the disease observed in the hospital was marked by shaking chills, profuse sweats and a septic temperature. On the third day petechiae were noted on the eyelids, in the retinas and on the hard palate. On the seventh day a nonproductive cough developed. Rales were heard at the base of the left lung and in the right interscapular area. These signs were observed inconstantly thereafter. On the seventeenth day left hemiplegia developed and the patient became comatose. The neck was somewhat stiff, the pupils were fixed and the optic disks were hazy in outline. Lumbar puncture yielded a clear spinal fluid with normal pressure, 3 cells per cubic millimeter and no increase in protein. No organisms were found in smear or culture. The Wassermann reaction and colloidal gold tests were negative. The patient died thirty-six hours after the onset of hemiplegia.

Treatment had consisted of six blood transfusions of 250 cc each given two or three days apart.

The clinical diagnosis was (1) subacute bacterial endocarditis, (2) hemiplegia due to an embolism in the right cerebral hemisphere, (3) bronchopneumonia, (4) rheumatic heart disease with mitral stenosis and insufficiency, and (5) hypertension.

Postmortem Examination—A complete autopsy was performed twelve hours after death. The significant pathologic conditions were found in the cardiovascular system, lungs, spleen and kidneys. The heart weighed 500 Gm. The aortic valve was normal with the exception of several small nodular vegetations at the valve margin. The mitral valve measured only 7 cm. in circumference and was deformed by fibrous thickening of the leaflets and of the chordae tendineae. Superimposed on this old process was a large pendulous vegetation attached to the right border of the anterior leaflet and fused with the right border of the posterior leaflet. The surface of the vegetation was granular and yellowish pink. The lungs showed congestion and a few small areas of bronchopneumonia. Several of the arterioles of the lungs were occluded by organizing thrombi. The spleen weighed 730 Gm. and was typical of acute splenic tumor with a few areas of organized and organizing infarction. Each kidney showed several small infarcts and evidence of an acute glomerulitis. The right kidney weighed

From the Department of Medicine, University of Rochester School of Medicine and the Medical Clinic of the Strong Memorial and Rochester Municipal hospitals.

1. Miller, C. P. and Branch, Arnold. Subacute Bacterial Endocarditis Due to a Hemolytic Hemophilic Bacillus. *Arch. Int. Med.* 32: 911-926 (Dec.) 1923.

2. Fothergill, L. D., Sweet, M. and Hubbard, J. The Hemolytic Hemophilic Bacillus (*Bacillus* N.) in Subacute Bacterial Endocarditis. *J. Pediat.* 1: 692-698 (Dec.) 1932.

3. De Santo, D. A. and White, M. Hemophilus Hemolyticus Endocarditis. *Am. J. Path.* 9: 381-392 (May) 1933.

4. Rivers, T. M. Bacterial Nutrition: Growth of a Hemophilic Bacillus on Media Containing Only an Autoclave Stable Substance as an Accessory Factor. *Bull. Johns Hopkins Hosp.* 33: 149-151 (April) 1922. Influenza Like Bacilli: Growth of Influenza Like Bacilli on Media Containing Only an Autoclave Stable Substance as an Accessory Food Factor. *Ibid.* 33: 429-431 (Dec.) 1922.

5. Valentine, F. C. O. and Rivers, T. M. Further Observations Concerning Growth Requirements of Hemophilic Bacilli. *J. Exper. Med.* 45: 993-1002 (June) 1927.

6. Russell, D. S. and Fildes, P. Case of Endocarditis in Man Associated with *Bacillus Para-influenzae* Rivers. 1922. *J. Path. & Bact.* 31: 651-656 (Oct.) 1928.

140 Gm and the left 240 Gm. The right renal artery was almost completely occluded by an antemortem thrombus, which was attached near its orifice and projected slightly into the lumen of the aorta. Just above the bifurcation of the internal carotid artery there was an antemortem thrombus about 6 cm long, which completely occluded the vessel. The right cerebral hemisphere was slightly softer than the left. The meninges were clear.

Bacteriologic Examination—Postmortem cultures of the heart blood, lungs and spleen did not yield the hemophilic bacillus, but microscopic sections and smears made from the crushed vegetation showed gram-negative bacilli the morphology of which was identical with that of the organisms isolated from the antemortem cultures.

The identity of the organism was established by its morphology, its growth characteristics and a study of its growth requirements. In stained smears the organism always was gram negative. It appeared most frequently as a short rod with quite marked bipolar staining, with numerous coccobacillary forms. After growth on artificial culture mediums for several weeks it tended to form filaments like those of the true influenza bacillus. Growth in blood broth was always diffuse, producing complete hemolysis in seventy-two hours. The characteristic colonies on rabbit blood agar plates after forty-eight hours of growth were about 1 mm in diameter, discrete, raised, translucent and smooth. Each possessed a small elevated peak in the center. Around the colony was a definite zone of beta hemolysis. The growth requirements of the organism were determined according to the method of Rivers. The two accessory growth factors, X (heat stable) and V (heat labile), were prepared from laked rabbit red corpuscles. The factor V was prepared from fresh brewers' yeast. With plain peptone water as a base, sets of tubes were inoculated which contained plain peptone, peptone plus X, peptone plus V, and peptone plus X and V. Transfers were made every twenty-four hours with a wire loop that delivered approximately 0.02 cc, and each tube that showed growth was checked by streaking to the surface of a rabbit blood agar plate. The original inoculum was a twenty-four hour culture in Douglas broth enriched with rabbit blood. In peptone water and in peptone water plus X, growth occurred through from three to five transfers. In peptone plus V and in peptone plus X and V, growth occurred with undiminished vigor through twelve transfers. According to the classification of Valentine and Rivers, therefore, the organism isolated in this case was a hemolytic para-influenza bacillus.

The agglutination reactions of the organism are of interest but apparently were of no specific significance in this infection, according to the following data. The serums of the patient and of two members of her family agglutinated the organism in a dilution of 1:320. However, the serums of eight normal controls also agglutinated the organism in titers of from 1:80 to 1:320.

The organism also proved to be nonpathogenic in the laboratory animals that were inoculated. In each injection 1 cc. of a forty-eight hour broth culture was used. Intraperitoneally it was harmless to mice and guinea-pigs. Intravenously, intrathoracally and by the intracardiac route it was harmless to rabbits. Cultures taken from the site of injection, the heart blood and the spleen were all negative when the animals were killed three weeks after the injections. No pathologic changes were observed in the organs of any of the animals except the one that received the injection into the heart. A well healed scar marked the passage of the needle into the left ventricle and apparently through it into the right ventricle. On the right side of the intraventricular septum at the site of the puncture wound of the injection, was a very small pink nodule slightly rough on its surface. The remainder of the endocardium and the valves were normal, however and the other organs, notably the lungs and spleen were entirely normal.

The case here reported is interesting not only because of the unusual organism isolated but also because no portal of entry to the blood stream could be found. This was true also of the cases of hemolytic hemophilic endocarditis previously reported. Perhaps the similarity of the early symptoms manifest in this patient and in the five other persons who were taken ill almost simultaneously is noteworthy.

Special Article

ADVANCES IN THERAPEUTIC TECHNIC

CLINICAL LECTURE AT ATLANTIC CITY SESSION

BERNARD FANTUS, M.D.
CHICAGO

It requires temerity to discuss advances in therapeutics before the most advanced group of physicians in the whole of North America. In possible justification of this paper I plead my special interest in therapeutic technology, my hope of provoking constructive criticism and my conviction that—even in these days of the airplane, telegram and radio—there still exists too great a lapse of time between the announcement of a valuable idea and its acceptance by the rank and file of the medical profession.

DRESSINGS

For instance, consider as simple a matter as dressings. Is it not a highly rational principle that clean wounds need no absorbent dressing since there is nothing to be absorbed? And yet everywhere dry absorbent dressings are still being piled inch high on clean operative wounds in spite of the fact that B. J. Golden¹ described in January 1934 a copper gauze dressing that should be superior to the conventional absorbent dressing from every point of view, including that of economy. Absorbent dressings are not only useless but even detrimental to the healing of granulating wounds after infection has been eradicated. Infected wounds need moist absorbent dressings that favor drainage. As soon as the infection has been overcome, however, such dressings do harm. Just as they would in the eye or nose, absorbent dressings produce a foreign body irritation on any raw surface, draining away a great deal of reparative material. Moist dressings also delay healing by macerating the advancing edge of epithelial growth and preventing its maturation. Dry dressings stick to the surface, with all the well known disadvantages resulting therefrom. In August 1934 John E. Cannaday² described a wire screen dressing for granulating wounds that permits exposure of the surface to air and light, thus hastening healing while saving a great deal of time and dressings, and still the fresh air treatment of sores is being sorely neglected.

The modern zinc oxide adhesive plaster is now so well borne by the average human skin that the plaster may remain in place for weeks. Hence the washable adhesive plaster that is now available should supersede the old variety without a water-proof backing. Also there is no reason why adhesive plaster should not be made the color of the skin so as to render it less conspicuous on exposed surfaces. There is also no reason why the therapeutic maxim should not be more generally followed that any pain aggravated by or produced by motion should be mitigated or checked by limiting that movement or making it impossible.

Elastic adhesive plaster has been on the market for some time and still it is not employed as extensively as it should be. When mere retention of a dressing is necessary, elastic adhesive plaster generally should be

Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, June 11, 1935.

¹ Golden, B. J. Simplified Dressing for Clean Surgical Wounds. *Am. J. Surg.* 23: 194 (Jan.) 1934.

² Cannaday, J. E. Discussion of Some of the Methods Used in Treatment of Superficial Granulating Wounds. *Am. J. Surg.* 25: 288 (Aug.) 1934.

preferred to the nonelastic kind because it is more comfortable. Elastic adhesive plaster finds perhaps its best application in the treatment of a varicose ulcer, especially when combined with the rubber sponge dressing, as suggested by A. Dickson Wright.³ The treatment of bedsores also will probably be revolutionized by providing in this manner a soft "false bottom" for the patient to lie on, as indicated by T. J. A. Carty.⁴ The pain of hepatic congestion may be minimized by subcostal strapping with elastic adhesive plaster,⁵ a strapping that might also be useful in certain stages of cholecystitis by tending to maintain a relative degree of rest. A tight abdominal binder has also been advocated⁶ in the therapy of pulmonary emphysema so as to antagonize, as far as may be, the deficiency in expiratory collapse of the lung.

Nonadhesive elastic bandages might with advantage replace rubber bandages for varicosities of the legs. They are much cheaper than elastic stockings, they always fit, they are washable and they are now made in such an attractive color (pink) and material (silk) as to suit the most fastidious. While in most instances the injection treatment of varicose veins has made the tolerating of varices an almost inexcusable neglect, there are some cases in which that type of treatment cannot be employed. For these the elastic bandage support is still of great importance, as it is also when a tendency to recurrence manifests itself after injection or surgical treatment. These bandages should find their greatest use in the prophylaxis of varicosities during pregnancy, for which purpose they should be employed as a routine measure.

MEDICATION OF MUCOUS MEMBRANES

Particularly slow is progress in those fields of medicine that require the cooperation of the prescribing physician and the dispensing pharmacist. This is well illustrated by the packaging of salves in collapsible tubes, which is still completely in the hands of manufacturers of pharmaceutical specialties, while the prescription pharmacist is in this as well as in many other respects woefully behind the times. Artists' oil paints have long been put up in tubes, tooth pastes and all kinds of toilet preparations are put up in tubes, but the doctors' salves are still dispensed in the old-fashioned salve pot, in spite of the fact that tubes are cheaper, cleaner and more economical. However, a great obstacle to the introduction of collapsible tubes in general prescription practice is the fact that these tubes are marketed only in gross lots. This would not continue to be true if the demand justified the manufacturer's putting them up in cartons of a dozen. The creating of such a demand is entirely in the hands of the prescribing physician.

The special reason physicians should be interested in collapsible tubes is that there is need of them for the medication of mucous membranes by salves and jellies, the discriminating use of which might well revolutionize the therapy of the accessible mucosae. Medication of the mucous membranes, I believe, still awaits its Unna to devise more efficient forms of administration than the too briefly acting lotions and sprays that are

employed almost exclusively at present. Salves may be produced that cling to the mucosa—they might be aqueous jellies or emulsions of butter-like consistency—and these emulsions might be either of the oil in water or the water-in-oil variety. By appropriate medication of either the watery or the oily phase of either kind of emulsion, it might be possible to secure a great variety of effects in gradations of intensity and duration of action.

Until collapsible tubes with tips suitable for rectal application are more generally available, the suppository will remain the most important type of rectal administration. It is discouraging to think that as long ago as 1920 Gilbert⁷ suggested the proper method of inserting suppositories—large end first, and that European manufacturing pharmacists produced suppositories suitable for that method of insertion about twenty-four years ago, but that as yet in this country, which is supposed to be progressive, there are but few pharmacists acquainted with the new shape. Like the automobile, the modern suppository should be streamlined, its blunt end rounded. Once the greatest circumference of the suppository has passed the sphincter, the rest of the suppository slips in easily—is almost sucked into the rectum—provided the blunt end is introduced first. A pointed tip requires pushing in the entire suppository by insertion of the finger into the rectum and soiling of the finger.

SYSTEMIC ADMINISTRATION

For the systemic administration to children of certain medicines of disagreeable taste, e. g. strychnine, the value of the small suppository still remains to be appreciated by the physician who would make children his friends. It should be the accepted maxim that insulting with nasty medicines the palate of a child is an unpardonable sin—unpardonable because no longer necessary if the physician is acquainted with the resources of modern pharmacy. Even castor oil has been made palatable in the form of the aromatic castor oil of the National Formulary.

There is no reason why such harmless substances as iron, calcium, magnesia or bismuth should ever be given to children—or to adults for that matter—in any other form than that of candy, provided of course the sugar is unobjectionable. Candy medication, which I⁸ had the privilege of studying over twenty years ago, should also be the preferred form of administration for such relatively harmless substances as phenolphthalein, terpin hydrate, acetylsalicylic acid, bromide in the form of calbromen or iodide in the form of caloben. There may be toxicologic reasons why such poisons as arsenic or antimony and potassium tartrate, santonin or strychnine should not be employed as a routine in candy form, though even these might serve extremely well in exceptional cases when used with proper safeguards.

The capsule, a relatively modern form of administration, serves its purpose so well that the maxim might be formulated: For ingestion by mouth, encapsulate everything that can possibly be given in that form. Capsules combine tastelessness with permanence, portability and efficiency.

There are numerous occasions, however, when—for one reason or another—liquid dosage becomes necessary, and for its artistic administration a knowledge of

3 Wright A. D. Varicose Ulcer. *Brit. M. J.* 2: 561 (Sept. 26) 1931. McPheeters H. D. and Verkert C. E. Varicose Ulcers. *Surg. Gynec. & Obst.* 52: 1164 (June) 1931. Schmiter A. A. Treatment of Varicose Ulcers. *Am. J. Surg.* 23: 195 (Jan.) 1934.
4 Carty T. J. A. Treatment of Bedsores with Elastic Adhesive Plaster. *Brit. M. J.* 1: 105 (Jan. 19) 1935.
5 Stolle Fritz. Mechanotherapie der entzündlichen Leberschwellung. *München med. Wchnschr.* 8: 833 (June 1) 1934.
6 Meekins Jonathan and Christie R. V. Treatment of Emphysema. *J. A. M. A.* 103: 384 (Aug. 11) 1934.

7 Gilbert A. N. and Carnot P. *L'art de prescrire*. Paris: J. B. Baillière et fils, 1920.
8 Fantus Bernard. Candy Medication. *St. Louis C. V. Mosby Company* 1915. *J. A. M. A.* 60: 842 (Sept. 14) 1912. 66: 26 (Jan. 1) 1916. Tabellae Dulces. Sweet Tablets for Children's Medication. *J. Am. Pharm. A.* May 1914.

vehicles is essential. A grant from the American Pharmaceutical Association has made it possible to study this much neglected subject and I am glad to announce that there has resulted from this study a number of new vehicles which will be available in the new National Formulary, soon to be published.

First among those I would call attention to the "iso-alcoholic elixir"⁹ which might perhaps become more popular under the shorter synonym of "iso-elixir." This is a vehicle with the flavor and taste of aromatic elixir, the alcoholic strength of which is adjusted by the pharmacist to the requirements of the medicine for which it serves as a vehicle. The physician experiences difficulty—e g, when he wishes to prescribe tincture of digitalis or tincture of belladonna, the fluidextract of ergot or of cannabis indica—in remembering what percentage of alcohol the vehicle should contain so as to be compatible with these various liquid galenicals. A marked deviation in the percentage of alcohol from that of the menstruum with which the preparation was made introduces an incompatibility and results in the formation of a precipitate that is often poisonous. This dangerous incompatibility can be completely avoided by prescribing iso-alcoholic elixir as the vehicle. The mixtures shown in prescriptions 1 to 4, for instance, might be used.

PRESCRIPTIONS 1 to 4—Mixtures with Iso-Alcoholic Elixir

R	Tincture of digitalis	15 0 cc.
	Iso-alcoholic elixir	to make 60 0 cc
M	Label One teaspoonful in water three times a day after meals	
(For auricular fibrillation)		
R	Tincture of belladonna	10 0 cc.
	Iso-alcoholic elixir	to make 60 0 cc
M	Label One teaspoonful in water after meals and at bedtime	
(For enuresis.)		
R	Fluidextract of ergot	30 0 cc.
	Iso-alcoholic elixir	to make 60 0 cc
M	Label One teaspoonful in water every four hours	(For metrorrhagia.)
R	Fluidextract of cannabis	15 0 cc.
	Iso-alcoholic elixir	to make 60 0 cc
M	Label One teaspoonful in water every two hours until relieved	(For migraine.)

In each instance the physician is assured of a perfectly clear preparation, as all the pharmacist needs to do is mix the low alcoholic elixir and the high alcoholic elixir (N F VI) in the same proportion in which alcohol and water are mixed in the menstruum of the preparation for which it is to serve as a vehicle. For nonextractive substances the lowest alcoholic strength of iso-elixir should be chosen that will yield a perfect solution, for instance as shown in prescription 5. As

PRESCRIPTION 5—Terpin Hydrate in Iso Alcoholic Elixir

R	Terpin hydrate	5 0 Gm
	Iso-alcoholic elixir	to make 60 0 cc
M	Label One teaspoonful in water every three hours	(For cough with profuse expectoration)

terpin hydrate requires strong alcohol for solution the pharmacist will employ the high alcoholic elixir as the vehicle. This will yield an elixir containing a truly medicinal dose of terpin hydrate. The dose of terpin hydrate in the official elixir of terpin hydrate is only one-fourth this quantity per teaspoonful and therefore largely a placebo. The elixir of phenobarbital of the new National Formulary will contain only 0.016 Gm per teaspoonful. Should the physician desire to prescribe a hypnotic dose of phenobarbital per teaspoonful

he may use prescription 6. The pharmacist will then use the high alcoholic elixir, which will make a perfect and permanent solution. If this is not diluted with more than an equal amount of water, it will give a better disguise for the bitter drug than if it is more highly diluted, for the following general principle has

PRESCRIPTION 6—Phenobarbital in Iso-Alcoholic Elixir

R	Phenobarbital	1 5 Gm
	Iso-alcoholic elixir	to make 60 0 cc
M	Label One teaspoonful in an equal amount of water at bedtime	
(For insomnia)		

proved true the best solvent is the best vehicle.¹⁰ This is because a substance will not readily exchange a good solvent for a poor solvent. The truth of this principle is also well illustrated by the fact that bromide is better disguised by an aqueous than by an alcoholic vehicle. It is therefore a mistake to prescribe an elixir of

PRESCRIPTION 7—Potassium Bromide in Syrup of Glycyrrhiza

R	Potassium bromide	30 0 Gm
	Anise water	30 0 cc
	Syrup of glycyrrhiza	to make 120 0 cc
M	Label One teaspoonful in milk after meals and at bedtime	
(Nerve sedative)		

bromide when syrup of glycyrrhiza (prescription 7) will yield a more palatable preparation.

The syrup of glycyrrhiza¹¹ is an admirable vehicle for salines, partly because of its colloidal nature and partly because of its double sweetness—the immediate sweetness of the sugar and the lingering sweetness of the glycyrrhizin.

PRESCRIPTION 8—Urea and Syrup of Acacia

R	Urea	15 0 Gm
	Syrup of acacia	to make 60 0 cc
M	Label One teaspoonful in a wineglassful of water every two hours	(As a diuretic.)

Another illustration of the value of colloidal nature in disguising tastes is found in the syrup of acacia, the formula for which has been improved by the addition of sodium benzoate for preservation and of vanilla for flavoring. We¹² find that this syrup is a good disguising vehicle for substances of rather burning taste, such as urea (prescription 8).

PRESCRIPTION 9—Hydrochloric Acid and Raspberry Syrup

R	Diluted hydrochloric acid	5 0 cc
	Raspberry syrup	to make 60 0 cc
M	Label One teaspoonful in a wineglassful of water taken through a straw after meals	(For hypochlorhydria)

For a sour taste, fruit syrups¹³ form the most eligible vehicles. Thus, for the administration of hydrochloric acid, raspberry syrup is excellent (prescription 9).

What could make a nicer disguise for the syrup of hydriodic acid than the new cherry syrup of the National Formulary as used in prescription 10? This

PRESCRIPTION 10—Hydriodic Acid and Cherry Syrup

R	Syrup of hydriodic acid	10 0 cc
	Cherry syrup	to make 60 0 cc
M	Label One teaspoonful in a wineglassful of water three times a day after meals	(In chronic bronchitis. For a child 5 years old)

true fruit cherry syrup, being so much more pleasant, should supplant the old-fashioned wild cherry syrup, which—being made of wild cherry bark—has an astringent and often decidedly nasty taste.

⁹ Fantus, Bernard and Snow, C. M. Iso-Alcoholic Elixirs. *J Am Pharm A*, 10: 277, 1921. Fantus, Bernard. Iso-Alcoholic Elixirs. *ibid*, 9: 708, 1920. Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. A Study of Vehicles for Medicines. *ibid*, 22: 655 (July) 1933. ¹⁰ Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. Elixir of Phenobarbital. *J Am Pharm A*, 23: 127 (Feb.) 1934. ¹¹ Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. The Glycyrrhiza Vehicles. *J Am Pharm A*, 23: 915 (Sept.) 1934. ¹² Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. Aromatic Syrup of Acacia. *J Am Pharm A*, 23: 812 (Aug.) 1934. ¹³ Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. Fruit Syrups. *J Am Pharm A*, 24: 46 (Jan.) 1935.

The syrup of cinnamon¹⁴ of the new National Formulary is the best vehicle that I know for sodium salicylate or for iron and ammonium citrate. The syrup of cinnamon listed in the fifth edition of the National Formulary was made from cinnamon bark, which contains tannic acid and is rather unpalatable as well as decidedly incompatible with either of these medicinal agents. The new syrup of cinnamon may be used as shown in prescriptions 11 and 12 with perfect results, but N F VI should be specified until the new formula has become well established.

PRESCRIPTIONS 11 AND 12—*Syrup of Cinnamon (N F VI)*

R	Sodium salicylate	10 0 Gm
	Potassium bicarbonate	10 0 Gm
	Cinnamon water	60 0 cc
	Syrup of cinnamon (N F VI)	to make 120 0 cc
M	Label: Two teaspoonfuls in a glassful of seltzer water every hour	
(For	acute articular rheumatism)	
R	Iron and ammonium citrate	10 0 Gm
	Water	100 cc
	Syrup of cinnamon (N F VI)	to make 120 0 cc
M	Label: One tablespoonful in a glassful of water three times a day	
after	meals (For anemia)	

The aromatic syrup of eriodictyon is a veritable pharmaceutical masterpiece, for the elaboration of which—I regret to say—I can claim no credit. We¹⁵ have, however, discovered that the reason for its efficiency in the disguising of the bitterness of the alkaloids is a resin that combines with the alkaloid to form a precipitate so easily soluble in acid as well as in alkali that it becomes active in the system. There is a small quantity of alkali present in the syrup, just enough to keep the resin in solution but not enough to decompose the alkaloidal compound. As used in prescription 13 it subdues the bitter taste of quinine better than any other liquid form of administration known to me.

PRESCRIPTION 13—*Quinine and Eriodictyon*

R	Quinine ethylcarbonate	5 0 Gm
	Aromatic syrup of eriodictyon	to make 60 0 cc
M	Label: One teaspoonful every four hours (For malaria in a child)	

Codeine phosphate and even strychnine sulphate in children's dosage may be given surprisingly well disguised by this syrup, employed as shown in prescriptions 14 and 15.

PRESCRIPTIONS 14 AND 15—*Aromatic Syrup of Eriodictyon*

R	Codeine phosphate	0 10 Gm
	Aromatic syrup of eriodictyon	60 00 cc
M	Label: One teaspoonful with water every two to three hours as required (For excessive cough)	
R	Strychnine sulphate	0 015 Gm
	Aromatic syrup of eriodictyon	120 00 cc
M	Label: One teaspoonful in water three times a day after meals (As a tonic)	

Eriodictyon is suitable as a disguising vehicle not only for alkaloids but also for other substances of alkaloid-like nature, such as amidopyrine.¹⁶ After considerable experimentation with this substance we

PRESCRIPTION 16—*Amidopyrine and Eriodictyon*

R	Amidopyrine	2 5 Gm
	Alkaline elixir of eriodictyon (Recipe Book II)	60 0 cc
M	Label: One teaspoonful in water every two to four hours as required (Analgesic)	

devised a formula for an alkaline elixir of eriodictyon, containing 50 per cent alcohol (the formula for which is to be contained in "Recipe Book, II") which seemed to answer the purpose best. This might be used as shown in prescription 16.

14 Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. *Cinnamon Syrup* J. Am. Pharm. A. 23: 698 (July) 1934.
15 Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. *The Eriodictyon Preparations* J. Am. Pharm. A. 22: 325 (April) 1933.
16 Fantus, Bernard, Dyniewicz, H. A. and Dyniewicz, J. M. *Elixir of Amidopyrine*, J. Am. Pharm. A. 23: 128 (Feb.) 1934.

HYPODERMIC ADMINISTRATION

Ampules containing multiple doses should be a means of considerable economy in the hypodermic administration of fluids, the high price of ampules containing single doses being largely due to the labor involved in their production and the high percentage of breakage of these fragile products. The chief objection to the use of ampules containing multiple doses is the danger of contamination of the contents if strict asepsis is not maintained in their use. The new National Formulary will contain formulas for a liberal selection of ampule solutions—those most commonly employed—and a statement of the usual concentration of solution and the average dose most frequently used. But putting up these solutions in ampules containing several doses, with the addition of a bacteriostatic agent to the solution—as will be required by the National Formulary—and by the use of an aseptic technic, a great deal of money can be saved without adding any element of danger to the administration.

Hypodermic injection by means of an automatic syringe, such as Busher's,¹⁷ is a boon for the timid person who requires the self administration of hypodermic injections, as of insulin in cases of diabetes mellitus and of epinephrine in cases of bronchial asthma. The self administration of hypodermic injections of morphine should of course be strictly taboo.

The introduction of a large quantity of fluid subcutaneously and intravenously has been one of the most important therapeutic advances of recent years. It was my privilege to be of assistance in establishing a laboratory for the preparation of solutions for injection at Cook County Hospital. That laboratory now produces almost 5,000 disks a month and at a net reduction in cost of about 1,500 dollars per month. It also has enabled us to make certain observations that are sufficiently interesting and important to be reported on in a preliminary way. We have confirmed abundantly the proposition that there are no so-called reactions if water that is freshly distilled is employed for the production of these solutions. The cause of these "reactions" is the bacterial life which finds distilled water so good a culture medium that a few spores unavoidably and invariably introduced into it during or after distillation produce within a few hours enough bacterial poisons to cause chill and fever. This occurs even if the water has been triply distilled but is not employed immediately afterward. Water distilled merely once and employed immediately for the preparation of the solutions and sterilized without delay is perfectly safe.

We are carrying on a study at Cook County Hospital of what happens to the solutions introduced into the body of patients in the Recovery Ward, a department set aside for the care of patients the first day after capital operations. We have found that the sicker the patient, the smaller the percentage of the injected fluid eliminated, so that patients who eliminate only 10 per cent or less of the fluid injected have a mortality rate as high as 75 per cent. The death rate declines progressively from this point as the percentage of elimination increases. It must be concluded from this that the sicker the patient, the more conservative should be the total quantity of fluid administered, unless there exists in the patient an extreme degree of hypohydration, and this should be antagonized by a preoperative rather than a postoperative intake of fluid.

17 Busher, Herbert. *Automatic Hypodermic Syringe for Self Administration of Insulin and Other Uses* J. A. M. A. 102: 1152 (April 7) 1934.

Equally striking have been the results of a study of the elimination of chloride in the urine. As a result of observations made on over a thousand patients with the help of Dr Robert Morse at Cook County Hospital, whose observations are to be published shortly, we are able to formulate the rule that the postoperative mortality rate is in inverse proportion to the percentage of chloride in the urine. Patients who passed less than 01 per cent of chloride in the urine had a mortality rate of 45 per cent, and the mortality rate declined as the percentage of chloride in the urine passed postoperatively increased. The cause of this is now under investigation. It may be due to preoperative salt starvation, which should be antagonized by adequate ingestion of salt before operation. It may be due to loss of salt in exudate, by emesis or by sweating. In any case, in view of these observations it must be concluded that determination of the chloride in the urine is an important measure in the preoperative as well as postoperative control of patients, and that postoperative hypochloruria should be promptly antagonized by the introduction of hypertonic salt solution until this deficiency is corrected.

We have also found that most of our patients received postoperatively more dextrose than they were able to assimilate when they were given intravenously several liters of a 5 per cent solution of dextrose. This is objectionable, if for no other reason than that the dextrose passing into the urine carries water along with it, wasting that much of the fluid introduced. The incidence of postoperative glycosuria has been much decreased in the Recovery Ward by using a mixture of equal quantities of physiologic solution of sodium chloride and a 5 per cent solution of dextrose, which is probably the best fluid for routine injection postoperatively. The urine of each patient receiving dextrose should be tested for sugar and, if sugar is passed in the urine in spite of the fact that the patient has not received a quantity excessive under ordinary circumstances, an indication for insulin is present.

SCLEROSING INJECTIONS

There is no reason why the trained surgeon should not add the needle to his resources for bloodless operations. The injection of varicose veins has been established as an orthodox procedure. A solution of quinine urethane is the safest injection fluid to employ not only because the quinine is bactericidal and prevents infection but also because it is antiphagocytic and thus antagonizes digestion and loosening of the fibrinous thrombus that is formed and prevents the development of embolism.¹⁸ Its only disadvantage is that some persons have an idiosyncrasy to quinine. In these cases solution of salt, sugar or soap must be used. Sodium morrhuate, the soap that seems to be in favor at present, is probably safer to use if 0.5 per cent of phenol is added to act as a bacteriostatic.

A patient with hydrocele should perhaps no longer be operated on. After withdrawal of the fluid a 2 per cent solution of procaine is injected, allowed to remain for a few minutes and then withdrawn, followed by the injection of possibly 8 cc of a 5 per cent solution of sodium morrhuate containing 0.5 per cent of phenol. This is permitted to remain for one minute, then half of the amount is withdrawn and a snug suspensory bandage is applied.¹⁹

The injection treatment of reducible hernia still remains to be conquered by the medical profession. The problem here is more complicated, but there can be no doubt that a certain percentage of patients with hernia can be cured by appropriate injection treatment in an ambulant and much less expensive manner than by open surgery.

An almost unlimited field for therapeutic exploitation has been opened up by the injection of alcohol and of other nerve destructive agents in the treatment of intractable pain²⁰ and to antagonize excessive nerve reactions. Thus, a few drops of absolute alcohol injected at exactly the right point in the subarachnoid space will relieve for many months the pain in the back, pelvis and legs in cases of cervical or rectal carcinoma. Injection of 60 per cent alcohol into a sensory nerve or of 33 per cent alcohol into a mixed nerve is capable of inducing therapeutic nerve block.²¹ In consequence, constant and intractable pain should be considered an indication for nerve block somewhere in the afferent tract rather than for the indiscriminate administration of analgesics.

It is freely admitted that many of the advances here discussed still lie in the future. That is but natural, for as "hope springs eternal in the human breast," and "man never is but always to be blest," so advance never is but always to be made.

719 South Ashland Boulevard

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS

HOWARD A. CARTER, Secretary

DR. WARREN'S INFRA-RED SITZ BATH NOT ACCEPTABLE

Manufacturer: Electrical Research Laboratories, Warren, Pa.

The so-called Dr. Warren's Infra-Red Sitz Bath may be described as a stool with an infra-red heating element located in the base. The patient sits on the ringlike seat, and a large gown, which reaches to the floor, covers all except his head. The heat from the electrical heating element passes up through the center as well as around this seat and the warm air is confined under the gown.

Advertising matter for this unit contains many unwarranted statements, some of which are as follows:

Men Enjoy this Convenient and Effective Method of Rejuvenation. Most effective and practical method of stimulating the genital organs. Men notice immediate results in rebuilding virility.

There is no reason why you should start to slow down at forty. Dr. Warren's Infra-Red Sitz Baths are recommended for the relief of arthritis, rheumatism, gout, menstrual pains, disorganized periods, sciatica, neuralgia, kidney and bladder trouble, prostate disorders, loss of vitality, bronchitis, insomnia, skin disorders, common colds, alcoholism, lumbago, catarrh, asthma, auto-intoxication.

Evidence substantiating these claims has not been submitted to the Council.

Under the caption "Every Man or Woman Can Preserve Physical Vigor and Health with Frequent Use of Dr. Warren's Infra-Red Sitz Bath," is recorded:

"The healthful glow following this treatment is the reaction carrying the blood away from the head and affected parts, and soon you feel an invigorated sensation that really makes you feel like yourself again. For women who have chronic catarrh of the organs of generation for men who suffer from prostate trouble, Dr. Warren's Infra-Red Sitz Bath produces a soothing and relaxing effect. There is no need for any woman to suffer from periodic pain when a few treatments in her home will bring relief. Try it! Put this electrical health building Bath to the

¹⁸ Kilbourne, J. Elimination of Certain Dangers in Treatment of Varicose Veins. *Am. J. Surg.* 25:148 (July) 1934.

¹⁹ Mainiot, Rodney. Trocar and Cannula for Injection Treatment of Hydrocele. *Lancet* 1: 850 (April 21) 1934.

²⁰ Stern, E. L. Relief of Intractable Pain by Intraspinal (Subarachnoid) Injection of Alcohol. *Am. J. Surg.* 25: 217 (Aug.) 1934.

²¹ Rnth H. S. Diagnostic Prognostic and Therapeutic Nerve Blocks. *J. A. M. A.* 102: 419 (Feb. 10) 1934.

crucial test Let it chase away the headache the backache or tired feeling—let it revive you from the fatigue of the day's work
 "The common cold never attacks the body that is free of toxins"

The Electrical Research Laboratories promotes a special club, and this appliance is sold directly to the club purchasers with a ten-day money refund rejoinder

The foregoing report was submitted to the Electrical Research Laboratories for comment prior to publication The company replied that the Dr Warren's Infra-Red Sitz Bath had never been presented to the Council, that the company had never requested the Council to consider approval of this appliance, that the outfit is not merchandized through the medical profession, and that the company did not feel that the Council had any right to issue any report without their permission

The Council maintained, however, that the policies of the firm in marketing this device were detrimental to rational therapeutics and to the public welfare Furthermore, the Council reasoned that promotional literature of this kind constituted an appeal to the public with arguments that are unscientific and may harmfully enhance a feeling of false security on the part of a person acquiring the device

Since the aforementioned reply of the firm added nothing to the original report, the Council reaffirmed its previous decision and voted not to include Dr Warren's Infra-Red Sitz Bath in its list of accepted devices

LIFE LITE NOT ACCEPTABLE

Manufacturer Ultra-Violet Home Products, Inc., Los Angeles

The Life Lite is a so called home model sunlamp It is of the mercury glow type, low vapor pressure, and most of the ultraviolet radiation energy is concentrated in the band known as the 2,735 A line

Many requests have come to the office of the Council on Physical Therapy for information concerning the efficacy of this lamp The advertising matter referred to the office by inquirers was given careful consideration by the Council Several misleading and unsubstantiated statements were noted For example, "Less tendency to catch cold," "Build up body resistance against disease," "Relieve pain and itching" and "Destroy most germs" Nothing in the way of conclusive evidence has been submitted or referred to the Council that substantiates these statements

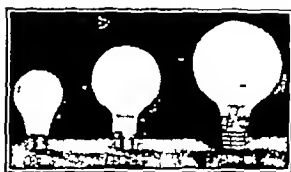
The Life Lite was also recommended for arthritis, asthma, bronchitis, burns, chilblains, falling hair, and underweight children Likewise the Council is without conclusive evidence to substantiate the efficacy of the lamp in the aforementioned conditions

In view of the objectionable advertising matter, the Council voted not to include the Life Lite lamp in its list of accepted devices for physical therapy

MAZDA CX AND MAZDA C LAMPS ACCEPTABLE

Manufacturer General Electric Company, Incandescent Lamp Department, Cleveland

These lamps are recommended by the firm as sources of infra-red energy and may be used for therapeutic purposes They come in various sizes



Mazda CX Lamps

Mazda CX Lamps, 60 250 and 500 watts, the Mazda C Lamps, 1 000 and 1,500 watts For the best results they should be installed in a properly designed reflector From four to six 60-watt lamps may be used satisfactorily in a simple electric baker

The Mazda CX and Mazda C Lamps are of the tungsten filament variety and have a

greater tissue penetrating power of the infra-red radiation than that of the carbon filament lamps, watt for watt.

In view of the usefulness of these lamps for therapeutic purposes, the Council voted to include the Mazda CX and Mazda C Lamps in its list of accepted devices

PROMETHEUS PROFESSIONAL INFRA RED UNIT ACCEPTABLE

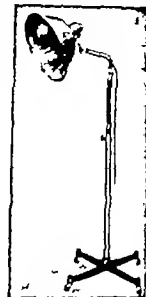
Manufacturer The Prometheus Electric Corporation, New York

This office unit is recommended for use wherever infra red therapy is indicated The reflector is 16 inches in diameter mounted on a swivel arm, and a three-legged base equipped with rubber-tired casters The stand is chromium plated and adjustable in height from 20 inches to 78 inches

Electrical measurements on this unit indicate that it draws 1,100 watts at 9.4 amperes on a 115 volt line.

The lamp was investigated to determine whether there were any "hot spots" within a circle of one meter The difference in variation in radiation intensity between the center section and the diameter was found to be 26 per cent This measurement was determined by means of a radiometer

The reflector is chromium plated and the burner is of the refractory type with the resistance wires embedded within the ceramic material



Prometheus Professional Infra Red Unit

This unit has been tried out for one month in a clinic acceptable to the Council In view of the report submitted by this clinic, the Council on Physical Therapy voted to include the Prometheus Professional Infra Red Unit in its list of accepted devices

BENEDICT-ROTH METABOLISM APPARATUS ACCEPTABLE

Manufacturer Warren E Collins, Inc., Boston

The Benedict-Roth apparatus is a closed circuit, spirometer type metabolimeter of sturdy construction The weight of the outfit, including the water in the spirometer, is 33 pounds The water required weighs 5 pounds

All exposed parts are chromium plated or made of rust resisting material The entire machine is mounted on a sturdy base, which can be readily handled and can be conveniently leveled by two thumb screws

Suspended in a water jacket in the conventional manner, the spirometer bell is counterbalanced accurately by means of a chain which runs over a pulley wheel to a counterweight, the chain being so arranged that it balances the weight of the bell at all positions Attached to this counterbalance weight is the marking pen of a simple capillary type, which will hold enough ink for several tests It swings from a pivot, which allows it to fall against the surface of the kymograph drum when writing

A spring driven clock mechanism contained in the base of the machine turns the kymograph drum This mechanism is controlled by a small lever in a convenient position at the side of the base The kymograph drum is precisely centered It does not deviate during revolution and can be easily removed for replacing drum paper A metal encased thermometer is attached to the top of the spirometer bell

Two large rubber tubes leading from the spirometer chamber to the mouthpiece are held by a flexible metal support. They are attached to the mouthpiece by a metal device, which contains a circular valve which, by a 90 degree turn, allows the patient to breathe either the air of the chamber or the outside air The patient inhales directly from the spirometer chamber and exhales through soda lime for the removal of the carbon dioxide. Both inlet and outlet flutter valves and the soda lime container are placed within the spirometer bell so that the slight leaks inherent in the Sadd valves do not affect the accuracy of the apparatus, and the soda lime container on this account needs not be absolutely tight and so makes a sliding fit over the inlet pipe, allowing an easy removal for refilling

In a clinic acceptable to the Council, the Benedict Roth Metabolism Apparatus was investigated. The kymograph clock mechanism was tested and found to gain not more than one second in 360 seconds, the time of the test runs This was considered well within that necessary for clinical accuracy

The spirometer bell volume was found to be 99.5 per cent accurate by actual removal of definite volumes of air from the bell. This shows the machine to be more accurate than the graph since the graph can be read accurately to only 1 mm. Variations greater than this may occur between successive respiratory movements of any individual. All the valves were tested and found to be leak proof or functionally perfect. The flutter valves do not hamper the movement of the air through the machine. The entire apparatus was tested for leakage under 10 to 15 pounds pressure and was found to be leak proof. The spirometer bell required a pressure of only 1 cm. of water to move it freely.

Calculations are simplified in that the charts for temperature and pressure correction, body surface area, and calories per square meter per hour are on the opposite side of the kymograph drum paper. This drum paper contains all information for calculations and data concerning the patient and actual test tracings so that when it is folded once it is of appropriate size for filing. The calculations are simplified in that there is needed only two multiplications, one subtraction, and one division to derive the basal metabolic rate of the patient. Tables and charts used in calculations have been checked as to origin and accuracy and found to be authentic and accurate within practical limits.

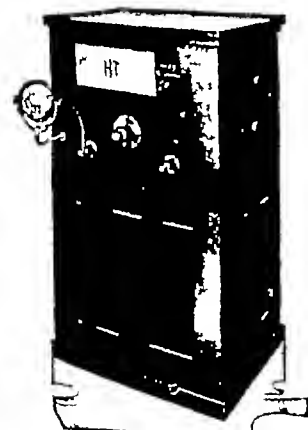
In view of the favorable report, the Council on Physical Therapy voted to include the Benedict-Roth Metabolism Apparatus in its list of accepted devices.

"STANDARD JUNIOR" DIATHERMY ACCEPTABLE

Manufacturer: High Tension Corporation, 118 West Twenty-Second Street, New York

This machine generates and delivers the standard d'Arsonval current for medical and surgical diathermy practice. It is of the spark gap type. The spark gap assembly consists of ten gaps in a series. Control of gaps is so arranged that they can be opened in any order, all simultaneously or only one at a time.

It operates on 110 volts, 60 cycle alternating current, and can be obtained for other voltages or frequencies. The transformer is oil immersed in a galvanized steel tank. The condensers in this apparatus are two Leyden jars made of pyrex glass coated on the outside with tinfoil, which in turn is covered with sheet copper. The inner conducting medium of the Leyden jar is salt water—about 45 ounces. Contact with the salt water is made through carbon rods mounted in a hard rubber cap that fits over the top of the jar. The resonator is of the flat pancake type containing both the d'Arsonval and Oudin windings.



Standard Junior Diathermy

The Standard Junior Diathermy was investigated in a clinic acceptable to the Council. Tests were made by running the machine wide open, with the controls set at

the maximum, for three hours and fifteen minutes. The output terminals were short circuited to deliver a current of 2,500 milliamperes. At the start the interior temperature of the cabinet was 77 F. At the end of this three hour and fifteen minute period the temperature rose to 102 F. Before the test a large thermometer was inserted through the air vent of the transformer case so that it came in contact with the transformer itself and the temperature reading was 71 F. At the end of the same three hour and fifteen minute test run the temperature was 126 F. These figures indicate a rise of 25 degrees in the temperature inside the cabinet, and a rise of 55 degrees F in the temperature within the transformer case and probably of the transformer itself, as the thermometer was put in actual contact. These temperature limits appear to be in accordance with the Council requirements.

HARBORVIEW DIVISION

The machine was employed in the treatment of many clinical cases characteristic of a large city clinic. The investigator reports the performance satisfactory. As a surgical diathermy machine, the unit was reported as giving good service.

In view of the foregoing report, the Council voted to include the "Standard Junior" Diathermy in its list of accepted apparatus.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

MERCUROCHROME (See New and Nonofficial Remedies, 1935, p 309)

The following dosage form has been accepted

Mercurochrome Applicators Mercurochrome (H W & D) 10 per cent and acacia dried on one end of 3 inch wooden sticks

Prepared by the Arzol Chemical Company, Nyack, N Y (J. Sklar Manufacturing Company, Brooklyn, N Y distributor)

SODIUM CACODYLATE (See New and Nonofficial Remedies, 1935, p 88)

The following dosage form has been accepted

Ampules Sodium Cacodylate Mulford 2 grains 1 cc

Prepared by Sharp & Dohme, Philadelphia

SODIUM CACODYLATE (See New and Nonofficial Remedies, 1935, p 88)

The following dosage forms have been accepted

Ampul Solution Sodium Cacodylate 0.2 Gm (3 grains) 1 cc

Prepared by the U S Standard Products Co., Woodworth, Wis.

Ampul Solution Sodium Cacodylate 0.32 Gm (5 grains) 1 cc

Prepared by the U S Standard Products Co., Woodworth, Wis.

Ampul Solution Sodium Cacodylate 0.45 Gm (7 grains) 1 cc

Prepared by the U S Standard Products Co., Woodworth, Wis.

Ampul Solution Sodium Cacodylate 0.2 Gm (3 grains) 5 cc

Prepared by the U S Standard Products Co., Woodworth, Wis.

Ampul Solution Sodium Cacodylate 0.32 Gm (5 grains) 5 cc

Prepared by the U S Standard Products Co., Woodworth, Wis.

Ampul Solution Sodium Cacodylate 0.45 Gm (7 grains) 5 cc

Prepared by the U S Standard Products Co., Woodworth, Wis.

DIPHThERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1935, p 395)

Parke, Davis & Company, Detroit

Diphtheria Toxoid Alum Precipitated (Refined) P D & Co. (See New and Nonofficial Remedies, 1935, p 397).—Also marketed in packages of one 0.5 cc vial and in packages of one 5 cc vial containing one and ten doses respectively.

ERYSIPELAS STREPTOCOCCUS ANTITOXIN (See New and Nonofficial Remedies, 1935, p 371)

Lederle Laboratories, Inc., Pearl River, N Y

Erysipelas Streptococcus Antitoxin Globulin Lederle Modified—An antitoxin prepared by immunizing horses against erysipelas toxin and cultures of erysipelas streptococcus through the injection of gradually increasing doses of erysipelas toxin. The product differs from Erysipelas Streptococcus Antitoxin (Lederle) Refined and Concentrated in that it is refined by a different method. The process of refinement is based chiefly on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin. As a result of this process up to 90 per cent of the coagulable protein may be digested; a smaller portion is precipitated and the remainder a pseudoglobulin fraction is purified first by ordinary filtration and then by ultrafiltration and dialysis. The resultant solution is sterilized and subjected to the tests prescribed by the National Institute of Health. While antitoxin processed in this manner is stated to produce fewer reactions than antitoxin processed by the usual salting out method it is still a protein solution and all customary precautions should be taken to avoid or care for serum reactions.

Erysipelas streptococcus antitoxin globulin Lederle-Modified is administered in early cases of moderate severity in one basic dose (the entire content of one syringe as marketed) intramuscularly repeated if necessary at intervals of twenty-four hours until the erysipelatosus blush disappears in late and severely toxic cases larger dosage with a shorter interval between doses may be used. It is marketed in packages of one syringe containing one basic dose.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

RAYMOND HERTWIG Secretary

HAWAIIAN FINEST QUALITY PINEAPPLE

- 1 COLONIAL SLICED (VACUUM PACKED)
- 2 DAISEE CRUSHED, FANCY CRUSHED, FANCY SLICED (VACUUM PACKED), TIDBITS (VACUUM PACKED)
- 3 FFOG BRAND CRUSHED AND SLICED
- 4 FISHER BRAND BROKEN SLICES
- 5 HOPPER BRAND GRATED
- 6 LEHMANN'S DELUXE TIDBITS
- 7 PALLAS BRAND CRUSHED AND SLICED
- 8 PUNCH BRAND CRUSHED AND SLICED
- 9 SOUTHERN MANOR SLICED (VACUUM PACKED) AND CRUSHED

Distributors—1 and 9 National Food Products Corporation, New York 2 The Herrman Company, Paterson, N J 3, 4, 5, 7 and 8 Ridenour-Baker Grocery Company, Kansas City, Mo 6 The Lehmann Higginson Grocer Company, Wichita, Kan

Packer—Hawaiian Pineapple Company, Ltd San Francisco

Description—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p 1106, and April 29, 1933, p 1338)

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors—

Olmstead & Son, Coldwater, Mich

Kalamazoo Creamery Co, Kalamazoo, Mich

Licensor—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko and standard advertising under definite contract conditions

Description—Pasteurized chocolate flavored sweetened milk, contains milk, sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar, flavored with vanilla, vanillin and coumarin See Krim-Ko Chocolate Flavored Drink (THE JOURNAL, June 30, 1934, p 2187)

ANTHONY'S PASTEURIZED HOMOGENIZED MILK

Distributor—Anthony Pure Milk Company, Inc., Nashville, Tenn

Description—Bottled, pasteurized, homogenized milk.

Preparation—Milk obtained from producers under supervision of the Tennessee State Department of Health and the City of Nashville Department of Health is tested for milk fat, sediment and its reaction to methylene blue Milk passing these tests is pasteurized by the holding method (63 C for thirty minutes), homogenized at 3,000 pounds pressure per square inch, cooled and filled in bottles by the usual procedure (THE JOURNAL, Sept 1, 1934, p 681)

Analysis—Standardized to contain not less than 42 per cent of milk fat

Calories—0.7 per gram 20 per ounce

Claims of Manufacturer—The cream does not separate The curd formed in the stomach is softer than that from unhomogenized milk.

CELLU ROYAL ANNE CHERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Eugene Fruit Growers Association, Eugene, Ore.

Description—Canned cooked Royal Anne Cherries packed in water without added sugar or salt.

Manufacture—The method of manufacture is essentially the same as for Cellu Juice-Pak Royal Anne Cherries (THE JOURNAL, Aug 25, 1934, page 564) with the exception that the fruit is packed in water

Analysis (submitted by distributor) —

	per cent
Pits of cherries	10.7
Pits of cherries and liquid	6.7
	Edible portion
Moisture	89.3
Total solids	10.7
Ash	0.3
Fat (ether extract)	0.5
Protein (N X 6.25)	0.6
Reducing sugars as invert sugar	7.8
Sucrose	0.1
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference)	9.2

Calories—0.4 per gram 11 per ounce.

Claims of Distributor—For diets in which sweetened fruit is proscribed

DROMEDARY GINGERBREAD MIX

Manufacturer—The Hills Brothers Company, New York.

Description—Gingerbread mix requiring only the addition of water for baking, contains flour, sucrose, hydrogenated cottonseed oil, spray dried molasses and eggs, spices, baking powder (monocalcium acid phosphate, sodium acid pyrophosphate, sodium bicarbonate and corn starch), powdered skim milk, salt and soda

Manufacture—The nonfat ingredients are thoroughly mixed the shortening is cut in forming a smooth mass The mix is weighed in glassine paper bags, packed in cartons and wrapped in cellophane

Analysis (submitted by manufacturer) —

	per cent
Moisture	4.5
Ash	2.5
Fat (ether extract)	27.4
Protein (N X 6.25)	5.0
Reducing sugars as invert sugar	4.4
Sucrose	38.6
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	60.4

Calories—5.1 per gram 145 per ounce

OLD ANTIQUE PALE DRY GINGER ALE

Manufacturer—Blue Seal Extract Company, Cambridge.

Description—Ginger ale, a carbonated beverage prepared from water, sucrose, citric acid, extracts of ginger root, grape and apple, oils of lime and orange and caramel color

Manufacture—Ginger root extract is prepared by steeping macerated ginger root in boiling water An equal volume of ethyl alcohol and infusorial earth is added to precipitate out gums and resins, and the extract solution is decanted and filtered The citrus oils and fruit extracts are added to the clear filtrate. The other ingredients in definite proportions are added to the flavoring solution. The final mixture is filtered, filled into bottles, cooled, five volumes of carbon dioxide are introduced under 70 pounds pressure and the bottles are sealed City water treated with ultraviolet rays is used.

Analysis (submitted by manufacturer) —

	per cent
Moisture	92.6
Total solids	7.4
Ash	0.02
Fat (ether extract)	0.0
Protein (N X 6.25)	0.4
Reducing sugars as invert sugar	2.7
Sucrose	4.6
Carbohydrates (by difference)	6.9
Titrateable acidity as citric acid	0.06

Calories—0.3 per gram 9 per ounce

Claims of Manufacturer—Complies with the United States Department of Agriculture definition for ginger ale.

SUNSHINE BRAND PIMIENTOS

Manufacturer—Pomona Products Company, Griffin, Ga

Description—Canned cooked pimiento (sweet red) peppers. No added water or salt

Manufacture—Pimiento peppers, grown under contract conditions, are inspected, fire roasted to loosen the skins, thoroughly washed to remove skins, again inspected, hand packed in cans and processed at 100 C. No water, salt or other material is added

<i>Analysis</i> (submitted by manufacturer) —		per cent
Moisture	92.1	
Ash	0.4	
Fat (ether extract)	0.7	
Protein (N \times 6.25)	1.0	
Reducing sugars as invert sugar	4.2	
Crude fiber	0.5	
Carbohydrates other than crude fiber (by difference)	5.1	

Calories—0.3 per gram 8.7 per ounce

Vitamins—Vitamin A Approximately 500 Sherman units per gram.

Vitamin C. Biologic assay shows that canned pimiento pepper approximates fresh grapefruit in vitamin C, and therefore is an excellent source

BANNER EVAPORATED MILK

Distributor—Challenge Cream and Butter Association, Los Angeles

Packer—The Milk Producers Association of Central California, Modesto, Calif

Description—Sterilized, unsweetened, evaporated milk

Manufacture—Milk deliveries are tested for odor by company inspectors immediately on delivery, and for bacterial content once weekly by a state examiner, only milk of the highest grade is used. The milk is preheated to 82-88 C, partially evaporated under vacuum, homogenized, standardized to 78 per cent milk fat and 26 per cent total solids content chilled to 40 C, held at this temperature for six to eight hours, canned and sterilized at 119 C for sixty minutes according to standard procedures

<i>Analysis</i> (submitted by distributor) —		per cent
Moisture	73.7	
Total solids	26.3	
Ash	1.4	
Fat	7.9	
Protein (N \times 6.38)	7.3	
Lactose (by difference)	9.8	

Calories—1.4 per gram, 40 per ounce

Claims of Distributor—See announcement on the advertising of the Evaporated Milk Association (THE JOURNAL, Dec 19, 1931 p 1890)

KISMET PATENT FLOUR

Manufacturer—Noblesville Milling Company, Noblesville, Ind.

Description—Patent flour prepared from soft winter wheat bleached. The same as Diadem Patent Flour (THE JOURNAL, July 6, 1935, page 33)

KRIM-KOS FIVE-O CHOCOLATE FLAVORED SWEETENED DILUTED SKIM MILK

Bottlers and Distributors—

Daum Dairies, Inc., Connerville, Ind

Edwardsville Creamery Company, Edwardsville, Ill

Quincy Cooperative Dairy, Quincy, Ill

Superior Dairy, Canton, Ohio

Licensor—Krim-Ko Company, Chicago manufactures the Five O Chocolate Flavored Drink Base and licenses its use the name Five O and standard advertising under definite contract conditions

Description—Sterilized chocolate flavored sweetened diluted skim milk containing skim milk, water, sucrose chocolate and cocoa, tapioca flour, salt and a trace of agar flavored with vanilla, vanillin and coumarin. See Krim Kos Five O Chocolate Flavored Sweetened Diluted Skim Milk (THE JOURNAL, June 23 1934 p 2105)

- 1 ARROWHEAD COOKING CHOCOLATE
- 2 NESSCO PREMIUM CHOCOLATE
- 3 ROYAL CLUB PREMIUM BAKING CHOCOLATE
- 4 WADHAMS PREMIUM BAKING CHOCOLATE

Distributor—1 Arrowhead Stores Corporation, Buffalo 2 New England Stores Service Corporation, Boston, Worcester and Springfield, Mass 3 Mason Ehrman & Company, Portland Ore. 4 Wadhams & Company, Inc., Portland Ore.

Packer—Moffat, Inc., South Boston, Mass

Description—Ground cacao nibs or "chocolate liquor" in cake form. Same as Moffat Cooking Chocolate, Unsweetened (THE JOURNAL, Jan 20 1934, p 213)

Claims of Manufacturer—Conforms to the United States Department of Agriculture definition and standard

CELLU RED PITTED CHERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Reynolds Preserving Company, Sturgeon Bay, Wis

Description—Canned cooked red Wisconsin cherries packed in water without added sugar or salt.

Manufacture—The method of manufacture is essentially the same as for Cellu Juice-Pak Royal Anne Cherries (THE JOURNAL, Aug 25, 1934, page 564) with the exception that the fruit is pitted and packed in water

<i>Analysis</i> (submitted by distributor) —		per cent
Moisture	88.0	
Total solids	12.0	
Ash	0.4	
Fat (ether extract)	0.5	
Protein (N \times 6.25)	0.6	
Reducing sugars as invert sugar	8.5	
Sucrose	0.0	
Crude fiber	0.1	
Carbohydrates other than crude fiber (by difference)	10.4	

Calories—0.5 per gram 14 per ounce

Claims of Distributor—For diets in which sweetened fruit is proscribed

VEE VO

Manufacturer—Titman Food Products Incorporated, New York

Description—Mixture of cane sugar, breakfast cocoa, malted milk, dried egg yolk (1 per cent) whole milk powder, malt extract, vanillin and salt

Manufacture—The ingredients in formula proportions are mechanically mixed and automatically filled into cans, which are vacuumized and sealed in an atmosphere containing 85 per cent of carbon dioxide

<i>Analysis</i> (submitted by manufacturer) —		per cent
Moisture	1.8	
Ash	1.7	
Fat (ether extract)	7.2	
Protein (noncaffeine and nontheobromine N \times 6.25)	7.1	
Reducing sugars as lactose	9.4	
Sucrose	61.4	
Crude fiber	1.5	
Carbohydrates other than crude fiber (by difference)	80.7	
Lipoid phosphoric acid (as P_2O_5)	0.027	
Iron (Fe)	0.001	
Calcium (Ca)	0.18	
Phosphorus (P)	0.23	

Calories—4.2 per gram 119 per ounce

Claims of Manufacturer—For flavoring milk

AUNT MARY'S BREAD (SLICED)

Distributor—The H A Marr Grocery Company, Denver

Manufacturer—The Kilpatrick Baking Company, Denver

Description—White bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p 817), prepared from patent flour water, sweetened condensed skim milk, sugar, lard, salt dry whole milk yeast, malt extract syrup, and a yeast food containing calcium sulphate ammonium chloride, sodium chloride and potassium bromate

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 14, 1935

NOISE AND HEALTH

The furor and the clangor of modern life sound a note far different from the tones heard by the people of previous centuries. We think of ancient man as living in an atmosphere of quietude with only the songs of the birds, the hum of the bee, the murmur of the brook and the occasional vocalization of wild animals impinging on his tympanum. Yet no doubt in the middle ages, when men strutted about in mail armor and beat on shields with their swords, the apparatus of hearing must have had some alarming sensations. Nowadays the shrieking of train and steamboat whistles, the rumble of the wheels of street cars, the sirens of police motorcycles, fire apparatus and street car, gas and electric repair trucks, the tooting and fluting of motor horns and the programs emanating from innumerable radio devices tend to produce a concatenation of sounds beyond anything that may have disturbed people fifty years ago.

In Great Britain they are taking their noise situation quite seriously. In June an exhibit was held by the Anti-Noise League at which Mr. H. G. Wells presided and at which Lord Horder spoke on the relation of noise to health.¹ Mr. H. G. Wells began by pointing out that there was a great deal to be said for noise. Indeed, if he had to choose between a silent world and the world as it is today, he would reluctantly choose the latter. He ventured the interesting observation that he could not work in absolute silence, preferring an undercurrent of noise. If he could not hear a distant piano or the subdued sounds from the street he was understimulated. Several American writers have pointed out that they like to listen to the radio while writing or working, apparently being able to focus their attention fully on the task in hand while subconsciously listening to the sounds coming from the radio horn. Perhaps satirically, Mr. Wells said that the noises of towns were not to be compared with the dreadful noises which pursued one in the country. No one who had not heard it could imagine how exasperating the nightingale

could be when heard all night long, followed at dawn by the twitterings of birds. "What humanity needs," said Mr. Wells, "is not to banish noise but to control it." Yet he felt that people ought to be able to achieve an auditory isolation exactly as they are able to detach themselves visually from others and that some method of sound-proofing our lives is required.

From the scientific point of view, Lord Horder pointed out that, of course, every one recognizes the relationship of noise to the loss of sleep or to the disturbance of sleep. Nature has arranged to protect us against many of the incidents of life. If light is too sudden or glaring, the rapid action of the eyelid saves the delicate curtain of the retina from harm. A crash in our vicinity causes us to shrink back from danger. There does not appear, however, to be any good reflex mechanism for the protection of the human ear, at least not thus far developed in the evolution of the human being. Perhaps nature never realized that human beings would produce machines as vast and powerful as those we now have. Sudden noise is certainly a disturbance affecting nerve integrity. Some individuals are much more susceptible to noise than are others. Civilized man is more sensitive to noise than uncivilized man, and the child is less sensitive to it than the adult. Various noises affect different people in different ways. A man who may not object to a two hour session with the radio will find the whining of a child or the whimpering of a puppy acutely annoying. Motor horns are a necessity, but certainly there is no need for such horns as one sometimes sees advertised with the claim that the sound can be heard three miles away. Neither is there a necessity for the raucous, shrieking, ear-splitting devices with which some motorists equip themselves.

The abatement of noise is another example of the social control necessary in a changing civilization. As man is becoming more and more closely crowded, as the machine is introduced into human life, as every one of the special senses of mankind is subjected to new stresses and strains, organized civilization must pay attention to these new factors for the benefit of mankind as a whole. Mr. H. G. Wells expressed a doubt as to whether life was more exacting now than in bygone times. He said the trouble was that people tried to get much more out of life than they had ever attempted before. Men of 60 or 70 nowadays are trying to play the part which men of 30 or 40 played in the past. Yet Mr. Wells failed to take into account that modern medicine has made it possible for more human beings to live to the age of 60 or 70 and to live useful lives to advanced years. Of this, Mr. Wells is himself an example. The civilized world of a century or two centuries ago was dominated by young men because there were few old persons available to carry on the work of the world. Today the majority of people live to the age of 60 and the experienced brain has advantage over that of youth. Yet continued gains

¹ Noise Abatement. Brit. M. J. 2:19 (July 6) 1935.

can be made only by protecting the brains and the senses of man against such hazards as are easily preventable and of little significance for human advancement. Of these, noise is certainly one with which we may most easily dispense.

ACTION OF DIURETICS

The clinical use of diuretics has fortunately been accompanied by careful studies of their mode of action. Exact agreement is not yet in evidence, but enough is now known to increase materially confidence in therapeutic administration.

Two groups of diuretics—the xanthine derivatives and the mercurials—have received most clinical and experimental attention. The physiologist is interested primarily in the place and mechanism of action, the clinician in the indications and contraindications for the use of diuretics. Schmitz¹ in 1932, after reviewing the work done on this subject up to that time, concluded that Rehberg's method of calculating the amount of filtration occurring in the glomeruli and the amount of reabsorption taking place in the tubules was satisfactory for comparing the diuretic action of theophylline ethylenediamine and salyrgan in the dog. During theophylline ethylenediamine diuresis the calculated amount of glomerular filtration was consistently increased, while tubular reabsorption showed no constant changes. Clinically, the xanthine diuretics seem to be chiefly of value in hastening the elimination of cardiac edema after digitalis and rest in bed have improved the circulation. With improvement, salt and water previously stored in the tissue spaces are brought to the kidneys for excretion. Under these conditions the increase in filtration produced by the purine derivatives is effective because reabsorption takes place to a lesser degree than normal. In other types of edema (hepatic and renal) the xanthine diuretics are of little help.

Blumgart and his co-workers² reported that there were several features in common between the xanthine and the mercurial diuretics when administered to three normal men. Their data indicate that (1) the output of water, sodium, chloride, potassium and calcium is increased after the diuretics, (2) the increases in water and in the bases—sodium, potassium and calcium—bear a constant relation to one another, (3) there is no significant change in the phosphate, sulphate ammonia or total nitrogen metabolism, (4) the increases in the excretion of water and fixed base in the urine following the various diuretics represent the loss of equivalent volumes of body fluids with their basic constituents, (5) the water and salts lost from the body of these subjects with normal water balances during the diuresis

are regained by a compensatory retention, (6) there is no significant change in the insensible loss of water or in the water or salt content of the stools, (7) in the instances reported, no significant changes were observed when repeated analyses of the blood serum for sodium chloride and specific gravity were made at intervals before, during the height of and after diuresis, and (8) measurements of the rate of glomerular filtration and tubular reabsorption according to the method of Rehberg, somewhat modified, indicate that the increased excretion of water and salts is accomplished by a relative decrease in tubular reabsorption, the rate of glomerular filtration remaining unaffected. These observers conclude, therefore, that the effect of the diuretics studied (two of each group) is qualitatively the same, the essential difference being in magnitude and duration of effect.

Salyrgan diuresis, according to Schnitz, is characterized by a considerable decrease in the percentage of fluid reabsorbed in the tubules. The amount of filtration is seldom increased significantly. The effectiveness of the mercurials in cardiac edema is therefore readily understandable. The explanation for the removal of accumulations of fluid resulting from portal obstruction and from depletion of the plasma proteins is, however, still largely speculative. In a subsequent paper, Schmitz³ reported the results of a study of the effect of salyrgan on the water content of the plasma by means of the refractometer. Evidence did not indicate that salyrgan diuresis is preceded by a mobilization of fluid from the tissue spaces. This, he believes, points strongly to a primary direct action of salyrgan on the kidney with a secondary inflow of fluid from the tissue spaces to prevent excessive dehydration of the plasma. Blumgart and his co-workers tend to corroborate this view as a result of their studies on normal individuals. In their subjects neither the mercurial nor the xanthine diuretics had an effect on the rate of glomerular filtration, but all caused an increase in the amount of urine and its constituents by a relative decrease in tubular reabsorption.

Recently Bryan and his co-workers⁴ have studied the changes in the plasma protein content after giving salyrgan, as reflected in the specific gravity, the total nitrogen content and the colloid osmotic pressure of the plasma. On edematous dogs, salyrgan produced a prolonged diuresis. Significant changes were not observed in the specific gravity, the total nitrogen content or the colloid osmotic pressure of the plasma before the onset of diuresis. Coincident with the diuresis, however, a sustained rise in all these values occurred.

The consensus therefore seems to be that both groups of diuretics exert their main action on the kidneys.

¹ Schmitz, H. L. Studies on the Action of Diuretics I. *J. Clin. Investigation* 11:1075 (Nov.) 1932.

² Blumgart, H. L., Gilligan, Dorothy R., Levey, R. C., Brown, M. G., and Volk, Marie C. Action of Diuretic Drugs. *Arch. Int. Med.* 54:40 (July) 1934.

³ Schmitz, H. L. Studies on the Action of Diuretics II. *J. Clin. Investigation* 12:741 (Sept.) 1933.

⁴ Bryan, A. H., Evans, W. A., Fulton, M. N., and Stead, E. A. Diuresis Following the Administration of Salyrgan. *Arch. Int. Med.* 55:735 (Nov.) 1935.

directly, the xanthine derivatives increasing glomerular filtration and the mercurials retarding tubular reabsorption. Physicians may well bear these conclusions in mind in the prescription of these remedies, either singly or in combination.

WHAT IS OSTEOPATHY?

The osteopathic practice act of Iowa, approved March 29, 1921, defined "osteopathy" as "the name of that system of healing art which places the chief emphasis on the structural integrity of the body mechanism as being the most important factor for maintaining the organism in health." That definition, rather widely adopted, seems to have the approval of many osteopaths. Presumably on the initiative of the osteopaths of Iowa, however, the general assembly of that state has now elaborated the definition. The laws of Iowa¹ now provide that

(a) Osteopathy is that school of Healing Art which teaches and practices scientific methods and modalities used in the prevention and treatment of human diseases, but whose basic concept, in contrast with all other schools, places paramount emphasis upon the normality of blood circulation and all other body functions as a necessary prerequisite to health and holds that such normality is more certain of achievement by and through manual stimulation or inhibition of the nerve mechanism controlling such functions, or by the correction of anatomical maladjustments.

(b) Osteopathic practice is that method of rehabilitating, restoring and maintaining body functions by and through manual stimulation or inhibition of nerve mechanism controlling such body functions, or by the correction of anatomical maladjustment, and/or by other therapeutic agents, methods and modalities used supplementary thereof, but such supplementary agents, methods or modalities shall be used only preliminary to, preparatory to and/or in conjunction with such manual treatment. Such osteopathic practice is hereby declared not to be the practice of medicine within the meaning of chapter 116, and is not subject to the provisions of said chapter.

Apparently the Iowa osteopaths have noticed the recent failure of the osteopaths of England to show any scientific basis for the dogma on which the osteopathic cult is founded. Presumably they are alarmed for the future of their healing cult in this country. In their new definition they have tried to show a distinction, based on scientific facts and principles, between osteopathy and other methods of healing. The result is an implication that no school or method of healing other than osteopathy "places paramount emphasis upon the normality of blood circulation and all other body functions as a necessary prerequisite to health." This is either ignorance or an attempt to fool the public and particularly the legislature and the courts.

The new Iowa osteopathic practice act admits the necessity for "therapeutic agencies, methods and modalities" other than massage and manipulation. The limitation of the use of such agencies, methods and modalities to use in conjunction with manual treatment should deceive no one. In every case in which an osteopath prescribes drugs or any form of physical therapy,

he must at some time during its course merely rub or knead the patient to an extent sufficient to constitute a compliance with the law. At the same time, incidentally he leads the patient to believe that the alleviation and cure of the disease or injury is due to the osteopathic rubbing or kneading instead of to the drugs or to physical therapy. Any competent physician would no doubt have employed these or other drugs and methods in the same case equally well or even better. Moreover, the basic education of the physician would have been greater warrant to the patient that the use of the method was for good and not for harm.

Current Comment

THE UNITED MEDICAL SERVICE, THE CIVIC MEDICAL CENTER, AND ANOTHER COMMERCIAL MEDICAL RACKET

Our readers are of course familiar with the attempt to practice medicine initiated by the corporation known as the United Medical Service, Incorporated. This organization, headed by Dr. Joseph Berkowitz, is a stock company employing physicians on salaries and marketing their wares by means of advertisements in newspapers offering medical care for various conditions at fixed prices. Some time ago a disagreement apparently arose between members of the medical staff and the corporation directorate, which resulted in both physical and mental anguish for the parties to the disagreement. As a result Chicago is now blessed or cursed with two organizations—the United Medical Service, Incorporated, which endeavors to persist at the old address, and the Civic Medical Center, which has opened up in a neighboring headquarters. The latter organization is presumably dominated by physicians but continues to exploit their services by the same type of advertisements as are used by the parent organization. Yet between parent and child there is little sympathy except for the methods of exploitation, and there seems to be but little chance that the prodigal son will ever go marching home. How well the Civic Medical Center physicians have learned the tricks of unethical practice is apparent from a recent attempt to exploit the services of one of their members by an unusual route. Not long ago newspapers in Chicago began to carry items relative to the formation of a so-called Chicago Hay Fever Club, formed, it seems, for the purpose of eliminating ragweed and making regular daily pollen counts. The treasurer of the Chicago Hay Fever Club is one Frederick B. Bassett Jr., who is at the same time advertising representative for the Civic Medical Center. The medical adviser of the Chicago Hay Fever Club, it develops, is one Dr. M. J. Steinberg, formerly a member of the staff of the United Medical Service, Incorporated, and now a member of the staff of the Civic Medical Center. The president of the Chicago Hay Fever Club is William R. Harshe, who is also publicity representative for the Civic Medical Center. Evidently the purpose of the Chicago Hay Fever Club

is to enlist the interest of the public in hay fever and to obtain a list of hay fever sufferers. Hay fever sufferers who applied to the club were promptly referred to Dr M J Stenberg, the medical adviser, without question as to whether or not they had consulted other physicians. Once physicians embark on a commercial career, such tricks and chicanery inevitably appear as concomitants of the services they render and menace the proper care of the public whose interest is elicited by their promotional devices.

DIPHTHERIA IMMUNIZATION

When diphtheria appeared recently in five widely separated sections of Washington County, Md, the county medical society appointed a committee to supervise a diphtheria prevention campaign. Practically all members of the county society participated. The committee assigned physicians in alphabetical order to city and certain county schools to work in cooperation with the county health department. The parent-teachers associations were active in securing the support of parents. After consent had been received from parents, preliminary Schick tests were given, and children having positive tests were referred to their family physicians for immunization. Those who could not afford to pay were immunized without charge. The number of Schick tests given was 9,992, and the number of doses of alum precipitated toxoid administered was 5,179. Severe reactions were rare. Two hypersensitive children developed urticaria and some edema, which disappeared within twenty-four hours. Pseudoreactions were observed in about 5 per cent of children tested in the city of Hagerstown and in about 3 per cent of children living in the rural areas. No cases of diphtheria developed among 1,998 Schick negative children, and yet three children living in the same locality who apparently had been immunized to the extent of a negative Schick test contracted clinical diphtheria after the final test was reported negative. Since the same lot of toxoid was used in giving the Schick test to all three, it seems probable that the product may have been below standard. It is also possible that the tests may have been read incorrectly. Moreover, too definite promises in regard to the amount of protection that may be expected should not be given, if diphtheria bacilli enter the body in overwhelming numbers the immunity obtained by the accepted methods may be insufficient to prevent the development of clinical diphtheria. During the year, thirty-eight cases of diphtheria developed in persons in Washington County who had had no previous immunization. Among 1,446 children between the ages of 5 and 14 whose records are complete, immunity was produced by one dose of alum precipitated toxoid in 79.8 per cent, in periods varying from eighty-six to 217 days. More than 20 per cent of children between these ages were still susceptible after one dose of toxoid. The results of this diphtheria immunization work emphasize, among other things, the importance of giving a preliminary Schick test, the necessity for giving a final Schick test in all cases, and the use of a control with each test to clarify the readings of pseudo-reactions.

Association News

RADIO BROADCASTS

The American Medical Association will broadcast over the Blue network of the National Broadcasting Company at 5 p m eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) October 1 and each Tuesday thereafter, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program will be *Your Health*. The program will be recognizable by a musical salutation through which the voice of the announcer will offer a toast "Ladies and Gentlemen, Your Health!" The theme of the program will be repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The October schedule is as follows:

October 1	Burns, Morris Fishbein, M.D.
October 8	Hazards from Foreign Shores, W. W. Bauer, M.D.
October 15	Unconsciousness, Morris Fishbein, M.D.
October 22	Asphyxiation, W. W. Bauer, M.D.
October 29	Poisonous Plants and Insects, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

A Mobile X-Ray Unit—A mobile x-ray unit was installed in Lee County recently for use in a special study of the incidence of tuberculosis in a restricted representative rural area, newspapers report. A gasoline motor-generator set on a two-wheeled trailer provides adequate 110-volt current to operate the machine. The truck, a one and one-half ton model, was specially designed and equipped to provide a complete x-ray and clinic set up, it was stated. A dark-room is built in the left front corner of the closed truck body. Portable x-ray and clinic equipment, transformer stand, cassette holder, folding tables and other equipment may be removed to allow full use of the built-in seats for twelve persons. The tuberculosis study has been in progress since May 1, 1932 and has been made possible by the Rockefeller Foundation through the state department of health.

ARIZONA

British Physicians Visit Grand Canyon—Officers of the Arizona State Medical Association and several members met the group of British physicians who recently visited the United States en route to Australia, Sunday, August 11, at the Grand Canyon. Some of the party went down Bright Angel Trail into the canyon while the remainder took a drive along the west rim. Dr Ernest Kaye Le Fleming, chairman of the council of the British Medical Association, presided at a luncheon at which the guests were greeted by Drs Charles R. K. Swetnam, Prescott president, Delamere F. Harbridge, Phoenix, secretary, and Clarence E. Yount, Prescott, treasurer of the Arizona state association. Copper letter openers bearing the seal of the society were presented to the men of the party and Indian bracelets to the women as mementoes of Arizona. In the afternoon the party was taken along the east rim of the canyon to Desert View.

ARKANSAS

Personal—Dr Andrew J. Hamilton has been appointed health officer of Rison.—Col William Lloyd Sheep has been made commanding officer of the Army-Navy General Hospital, Hot Springs National Park.

Society News—At a meeting of the Lawrence County Medical Society at Black Rock, June 11, speakers were Drs John L. Jelks, Memphis, Tenn., on "Operation for Rectal Stricture",

Joshua Harlev Harris, Memphis, "Infected Sinuses in Children and Adults," and Gus R. McClure, Paragould, "Focal Infection of Tonsils."—The Southeast Medical Society was addressed at Monticello, July 19, by Dr. Sidney C. Barrow, Shreveport, on "Radiologic Treatment in Pelvic Disorders" and "Technic for Measuring Roentgen Rays."

CONNECTICUT

List of Quarantinable Diseases Extended—The sanitary code was revised at a meeting of the Public Health Council of the Connecticut State Department of Health, July 16, to effect certain changes in the procedure dealing with communicable diseases. Under the revised code meningococcus meningitis, formerly termed cerebrospinal meningitis, epidemic encephalitis and psittacosis, will be quarantinable. Children in families in which chickenpox and mumps occur need not stay away from school until they show symptoms of the disease. This change was made because it was doubted whether the former restrictive measures have been effective in preventing these diseases. Similar modifications were made for measles and whooping cough. Septic sore throat will in the future be designated streptococcus sore throat and amebic dysentery as amebiasis. These are a part of the changes reported by the health department in its weekly bulletin.

DISTRICT OF COLUMBIA

Ophthalmologic Society Organized—The Washington Ophthalmological Society was recently organized with Drs. James N. Greear Jr. president, George Victor Simpson vice president, and Ernest Sheppard secretary. The society will hold meetings the first Monday in November, January, March and May at the Episcopal Eye, Ear and Throat Hospital. In addition to case reports, papers will be presented by out-of-town speakers and local physicians. Dr. James W. White, New York, will address the society, January 6, on eye muscles. Drs. Louis S. Greene and William Thornwall Davis, March 2, on "Treatment of Retinitis Pigmentosa" and "Treatment of Chronic Glaucoma Simplex," respectively, and May 4, Dr. Robert H. Courtney, Richmond, Va., "Uveitis with Secondary Glaucoma Accompanying Spontaneous Absorption of the Lens."

GEORGIA

Personal—The twentieth anniversary of Dr. Joseph H. Bradfield, Atlanta, as superintendent of the Battle Hill Sanatorium was observed, July 5, at an "open house."—Dr. William S. Prather, Americus, was selected as the most valuable citizen of Americus and Sumter County in a poll of citizens by the Kiwanis Club, the poll showed that Dr. Prather was favored by more than twice as many persons as any one else.—Dr. Lysander P. Holmes has been named acting superintendent of the University Hospital, Augusta, succeeding Dr. John H. Snoke, resigned.

ILLINOIS

Society News—The Henry County Medical Society was addressed by Drs. Samuel M. Feinberg and Geza De Takáts, Chicago at Geneseo, July 31, on allergy and treatment of varicose veins, respectively.—Dr. Leon Unger, Chicago, discussed hay fever before the Kiwanis Club of Harvey, July 23.

Personal—Dr. Joseph L. Bryan, Xenia, has been appointed health officer of the district including Clay, Effingham, Jasper and Crawford counties.—Dr. Hugh A. Beam, Moline, has been appointed medical director of the Rock Island County Tuberculosis Sanatorium, succeeding the late Dr. Arthur T. Leopold, effective August 1.

IOWA

Personal—Dr. Harry H. Penquite held a reception to observe his completion of twenty-five years of practice in Massena, June 15.—Dr. George Mogridge has resigned as superintendent of the State Institution for Feeble-minded Children at Glenwood, and Dr. Harold B. Dye, assistant superintendent for a number of years, has been appointed to succeed him.

Graduate Courses—Graduate instruction sponsored by the speakers bureau of the Iowa State Medical Society will be offered by districts this year, according to the state journal. The State University of Iowa College of Medicine, Iowa City, will present two of the courses and assist with the others. Thus far courses have been announced for Scott and Jasper counties. General therapeutics will be reviewed for the Scott County Medical Society, beginning about September 15 in Davenport, while the Jasper County Medical Society will have a course on cancer, beginning about the same time in Newton.

KENTUCKY

Society News—Dr. Daniel C. Elkin, Atlanta, will address the Jefferson County Medical Society, Louisville, September 16, on "Treatment of Burns."—Dr. Morris Flexner, Louisville, will address the Louisville Medico-Chirurgical Society, September 27, on "Pulmonary Moniliasis."—Dr. Fred W. Rankin, Lexington, will present a paper on "Hyperparathyroidism" before the Louisville Obstetrical and Gynecological Society, September 16.

MAINE

Personal—Dr. John A. McDonald, East Machias, has been appointed district health officer, effective June 1.—Dr. Joseph R. Ridlon, medical director of the U. S. Marine Hospital at Portland, has been transferred to the Marine Hospital at Galveston, Texas.

Society News—Speakers before the Androscoggin County Medical Society, recently, were Drs. Frank E. Barton and George Levene, Boston, on "Prevention of Intravenous Glucose Reaction" and "Value of X-Ray in the Diagnosis of Heart Disease," respectively.—At a meeting of the Hancock County Medical Society, July 25, Dr. Frederick C. Holden, New York, read a paper on "Vaginal Discharges, Their Diagnosis and Treatment."

MARYLAND

Personal—Knight Dunlap, Ph.D., professor of experimental psychology, Johns Hopkins University, Baltimore, has resigned to accept a similar position with the University of California at Los Angeles. Dr. Dunlap has been associated with Johns Hopkins since 1906, during the war he was in charge of the psychology section of the Medical Research Laboratory of the air service.

Society News—Dr. Preston A. McLendon addressed the Montgomery County Medical Society, July 16, on "Problems in the Physical and Mental Management of Infants and Children," and Drs. Herbert H. Schoenfeld and Claude Moore discussed the neurosurgical and radiologic aspects, respectively, of the diagnosis of brain conditions. All speakers are from Washington, D. C.

MASSACHUSETTS

Health Survey—The share of Massachusetts in the \$3,450,000 appropriation for a nation-wide public health survey will be \$162,000. A house to house canvass will be made to determine the prevalence of chronic diseases. Sample groups of certain income levels will be studied in this national survey, sponsored by the U. S. Public Health Service and carried out by the Works Progress Administration. Medical facilities for the care of the sick will be studied.

Personal—Dr. Charles F. McKhann, assistant professor of pediatrics and communicable diseases, Harvard Medical School, Boston has gone to China, where he will be visiting professor of pediatrics at Peiping Union Medical College during the first half of the school year 1935-1936. He will return to Boston early in March 1936.—Dr. James W. Manary has been appointed director of the Boston City Hospital to succeed the late Dr. John J. Dowling. Dr. Manary has been a member of the staff for many years.—Dr. Lawrence K. Kelley, Peabody, has been appointed superintendent of the Tewksbury State Infirmary, Tewksbury.—Dr. Joseph P. Leone, Providence, R. I., has been appointed superintendent of the Quincy City Hospital.—Dr. Albert D. Foster, medical director of the U. S. Marine Hospital, Chelsea, has been appointed to the corresponding position at the Marine Hospital at Portland, Maine.

MICHIGAN

Upper Peninsula Meeting—The Upper Peninsula Medical Society held its annual meeting at Iron Mountain, August 15-16, under the presidency of Dr. Frank G. H. Maloney, Ironwood. The following physicians participated in the program:

Fred J. Hodges, Ann Arbor, Differential Diagnosis of Lesions of the Alimentary Tract from the Standpoint of X-Ray.
Norman F. Miller, Ann Arbor, Conduct of First and Second Stages of Labor with Special Reference to Analgesia and Anesthesia.
Reginald H. Jackson, Madison, Wis., Sacro-Iliac Strain.
Grant H. Laing, Chicago, Medicinal Treatment of Peptic Ulcer.
Albert C. Furstenberg, Ann Arbor, Acute Infections of Mouth, Throat, Nose and Neck.
Howard P. Douth, Detroit, Fever Therapy.
James D. Bruce, Ann Arbor, Medical Legislation.
William H. Alexander, Iron Mountain, Injection Treatment of Hernia.
Clyde I. Allen, Detroit, Toxemia of Burns.
Gershom J. Thompson, Rochester, Minn., Diseases of the Prostate.
Fred W. Gaarde, Rochester, Minn., Allergic Disease.

Newly elected officers of the society are Drs. Edward M. Libby, Iron River, president, and Vivian H. Vandeverter, Ishpeming, vice president. The physician chosen secretary of

the Marquette County Medical Society at its annual meeting will be secretary of the peninsula medical society. The next annual meeting will be in Ishpeming.

MISSOURI

State Society Sponsors Lectures—The postgraduate committee of the Missouri State Medical Association sponsored an address before the Randolph Monroe County Medical Society at Moberly, August 13, by Dr. Edward Lee Dorscott, St. Louis, on "Internal Podalic Version." The committee also sponsored a talk by Dr. Samuel H. Snider, Kansas City, at a public meeting in Sedalia, August 15, under the auspices of the woman's auxiliary of the Pettis County Medical Society.

District Meeting—The Boone County Medical Society will be host to the Ninth Councilor District Medical Society during its annual meeting in Columbia, September 17. The meeting has been planned as "Southern Medical Association Day" in central Missouri, and the following speakers active in that association will appear on the program:

- Dr. Frank K. Boland, Atlanta, Ga., Surgical Treatment of Pulmonary Tuberculosis
- Dr. Seale Harris, Birmingham, Ala., Diagnosis and Treatment of Hyperinsulinism
- Dr. Quitman U. Newell, St. Louis, Importance of the Recognition of Early Uterine Carcinoma
- Mr. C. P. Loran, Birmingham, Some Aims of the Southern Medical Association and a Preview of the St. Louis Meeting, November 19-22

NEBRASKA

Health Service Created—The Omaha-Douglas County Central Health Service was incorporated, August 1. The new organization aims to enable persons of low income to obtain medical service at a cost within their financial means, establish a friendly doctor-patient relationship, and the physician in the collection of fees and prevent those persons from receiving free clinic care who can afford to pay for medical service. The incorporators of the new service are Dr. Frederick O. Beck, E. H. Bruening, D.D.S., and Dr. John Jay Keegan, all of Omaha. With headquarters in Omaha, the affairs of the corporation are to be conducted by a board of trustees made up of three members of the Omaha-Douglas County Medical Society, two of the Omaha District Dental Society, one member of the Omaha Hospital Council, one nurse of district 2 Nebraska State Nurses Association, and one pharmacist member of the Omaha Retail Druggists Association. Members of these organizations will also be members of the Omaha Douglas County Central Health Service.

NEVADA

Society News—Dr. Emile F. Holman, San Francisco, addressed a recent meeting of the Washoe County Medical Society on "Present Status of Surgery in the Treatment of Pulmonary Tuberculosis, Bronchiectasis and Neoplasm of the Lung."

NEW YORK

Food Poisoning in Buffalo—Eighteen cases of gastroenteritis, with two deaths, were reported to the state department of health in July. *Bacillus paratyphosus B* was isolated from specimens from one of the fatal cases and four others. The outbreak was attributed to coconut cream pie which appeared to be the only food eaten by all the persons affected but none of the food was available for analysis.

Personal—Dr. Donald W. Cohen, for seven years assistant child guidance psychiatrist of the state department of mental hygiene of the Buffalo district, has been promoted to chief child guidance psychiatrist of the department, effective August 15. He succeeds Dr. James L. Tower, Albany, who has resigned. Dr. Vernon C. Branham, Albany, deputy state commissioner of correction, has been appointed superintendent of Woodbourne Institution for Defective Delinquents, Woodbourne.

Graduate Lectures in Buffalo—The University of Buffalo School of Medicine is presenting a group of lectures for physicians during September, with the object of making available current advances in diagnosis and treatment of common diseases. The speakers are as follows:

- Col. Calvin H. Goddard, Washington, D. C., Scientific Crime Detection
- Dr. Charles R. Austrian, Baltimore, Diagnosis and Treatment of Early Tuberculosis
- Dr. Walter A. Bastedo, New York, Treatment of Constipation—Important Points in the Physiology of the Intestines and the Action of Various Drugs and Foods upon It
- Dr. Frederick F. Tisdall, Toronto, The Present Status of the Vitamins in Medicine: Their Uses and Abuses

New York City

Personal—Dr. Leslie T. Webster of the staff of the Rockefeller Institute for Medical Research has recently received a prize of 1,000 Swiss francs awarded by the Medical Faculty of the University of Berne, Switzerland, in recognition of his work on encephalitis. Dr. Webster graduated from Johns Hopkins University School of Medicine, Baltimore, in 1919 and has been with Rockefeller Institute since 1920.

Marihuana Grown on Vacant Lots—During June and July, 260 lots were cleared of 170 tons of *Cannabis sativa* plants, variously known as marihuana, hashish, bhang and loco weed in a concerted drive by the police and health departments. Samples of the plant were sent by the narcotics division of the police department to various precincts to familiarize patrolmen and detectives with its appearance. These men were instructed to report any areas in which plants resembling marihuana were found and the narcotics division then notified the department of health, which had the plants torn up by the roots by relief labor. In addition to New York City, marihuana has been found growing in the state as far north as the St. Lawrence River and as far west as Erie County, according to *Health News*.

OHIO

New Graduate Courses—The Frank E. Bunts Educational Institute, recently founded in Cleveland by relatives, friends and the Cleveland Clinic Foundation as a memorial to the late Dr. Bunts has announced its first graduate review course to be given November 11-13, on "Diagnosis and Treatment of Diseases of the Glands of Internal Secretion." The course is open to all licensed physicians and surgeons after acceptance by the registrar, only fifty applications can be accepted. Members of the staff of the Cleveland Clinic Foundation and invited guests will conduct the course. The institute was chartered last January to give graduate instruction in all branches of medicine and surgery to physicians who have graduated from approved medical schools. Application blanks and an outline of the course may be obtained from Dr. Albert D. Ruedemann, Cleveland Clinic, Cleveland. The Academy of Medicine of Lima and Allen County will offer a graduate course, September 23-27. Lecturers will be Drs. Robert F. Ridpath, Philadelphia, who will speak on otolaryngologic subjects, and Morris Edward Davis, Chicago, on obstetrics.

State Medical Meeting in Cincinnati—The eighty-ninth annual meeting of the Ohio State Medical Association will be held in Cincinnati, October 2-4, at the Netherland Plaza Hotel. Guest speakers for general sessions and section meetings will include:

- Dr. James B. Herrick, Chicago, Some Problems of Medical Diagnosis
- Dr. Frank H. Lahey, Boston, Newer Advances in Hyperthyroidism and Hyperparathyroidism
- Dr. Morris Fishbein, Chicago, Medicine and the Changing World
- Dr. Palmer Findley, Omaha, Cancer of the Cervix
- Dr. Henry F. Helmholz, Rochester, Minn., Chronic Ulcerative Colitis in Childhood
- Dr. William E. Sauer, St. Louis, Headache of Nasal Origin
- Dr. Sanford R. Gifford, Chicago, Practical Use of Bacteriology by the Ophthalmologist
- Dr. William G. Workman, U. S. Public Health Service, Washington, D. C., Status of Serums and Vaccines for the General Practitioner

Among Ohio physicians who will participate are:

- Drs. Thomas L. Ramsey and Reynold A. Tank, Toledo, Acute Monocytic (Histocytic) Leukemia
- Dr. Richard W. Finley, Cleveland, Causes for Failure in Treatment of Diabetes
- Dr. William James Gardner, Cleveland, Surgical Management of Intracranial Meningiomas
- Dr. Claude S. Beck, Cleveland, Establishment of a New Blood Supply to the Heart by Operation
- Dr. Sidney B. Conger, Akron, Laparotrachelotomies: A Clinical Appraisal
- Drs. Joseph D. Herman and Jean M. Stevenson, Cincinnati, Treatment of Abortions
- Dr. Wallace B. Taggart, Dayton, Fusospirochetal Infection of the Lung in Children
- Dr. Henry J. John, Cleveland, Relation of the Insulin Requirement to the Growth and Weight Increase in the Diabetic Child
- Dr. Carl H. Bayha, Toledo, Neurologic Complications of Acute and Chronic Mastoiditis
- Dr. Frederick F. Piercy, Youngstown, Blood Stream Infections in Otolaryngology
- Dr. Carl W. Sawyer, Marion, Menopausal Syndrome
- Dr. Frank M. Wisley, Findlay, Relation of the Practitioner to the Public Health Department
- Dr. Alfred Friedlander, Cincinnati, Professional Education in Relation to Modern Public Health

Special features of the meeting include a scientific exhibit, a golf tournament Tuesday, October 1, at the Maketewah Country Club, medical and surgical clinics at various hospitals Wednesday morning, October 2, the annual dinner, October 3, sponsored by the Cincinnati Academy of Medicine, and the organization luncheon for officers of the association and of county societies.

PENNSYLVANIA

Encephalitis at Windber—About 100 cases of "meningo-encephalitis" were reported from the town of Windber between July 21 and August 5. The cases were said to be generally mild there was one death. Dr. James P. Leake of the U. S. Public Health Service made an investigation.

State Medical Meeting at Harrisburg—The eighty-fifth annual session of the Medical Society of the State of Pennsylvania will be held in Harrisburg, September 30-October 3. Guest speakers will be

- Dr. Max Thorek, Chicago, The Rationale of Electrosurgical Obliteration of the Gallbladder
- Dr. Allen Graham, Cleveland, Cancer of the Breast
- Dr. Frederick F. Tisdall, Toronto, Prevention of Dental Caries and the Improvement of Health by Dietary Means
- Dr. Harold M. Marvin, New Haven, Conn., Anginal Heart Failure: Its Causes and Treatment
- Dr. James Alexander Miller, New York, Thoracic Surgery in the Treatment of Pulmonary Tuberculosis from the Standpoint of the Internist
- Dr. Allen O. Whipple, New York, Recent Advances in Surgery of the Pancreas
- Dr. Walter E. Dandy, Baltimore, Treatment of Injuries of the Head
- Dr. James Watson White, New York, The Screen Test and Its Modifications
- Dr. Arthur W. Proetz, St. Louis, Treatment of Sinus Disease
- Elmer V. McCollum, Ph.D., Baltimore, Recent Advances in Nutrition
- Dr. Wingate Todd, Cleveland, Clinical Significance of Skeletal Roentgen Ray Assessment in Children
- Dr. Earl D. Osborne, Buffalo, Industrial Dermatoses
- Dr. Henry G. Bugbee, New York, Cancer of the Prostate.

At the opening general meeting Tuesday morning, October 1, Dr. Alexander H. Colwell, Pittsburgh, will be installed as president and deliver his official address. Dr. Moses Behrend, Philadelphia, is the retiring president. The section on pediatrics will sponsor a dinner Tuesday evening in honor of Dr. J. P. Crozer Griffith, Philadelphia, who will discuss the history of pediatrics in Pennsylvania. The annual golf tournament will be played at the Harrisburg Country Club, Monday, September 30.

TEXAS

Personal—Dr. Philip S. Joseph, Alice, has been appointed health officer of Jim Wells County to succeed the late Dr. John S. Strickland.—Dr. Melvin L. Hutcheson, Denton, has been appointed health officer of Denton County, succeeding Dr. James H. Hicks.—Dr. Elbert W. Wright, Bowie, was recently elected chairman of the state board of health, succeeding Dr. Charles M. Rosser, Dallas.

Society News—Dr. Howard R. Dudgeon, Waco, among others, addressed the Bell County Medical Society in June on "Role of Fibrous Tissue in Disease."—Drs. Walter G. Stuck and Earl B. Ritchie, San Antonio, addressed the Cameron-Willacy Counties Medical Society, Harlingen, June 20, on "Treatment of Spinal Fractures" and "Arsphenamine Reactions," respectively.—Drs. George A. Schenewerk and Ben R. Buford, Dallas, addressed the Childress-Collingsworth-Donley-Hall Counties Medical Society, Memphis, June 22, on "Peritoneal Drainage" and "Treatment of Cardiac Edema," respectively.—At a meeting of the Wilbarger County Medical Society, June 17, Dr. Alex. B. Garland, Vernon, reported a case of rabies.—Drs. Marshall T. Knox, Jay W. Pickens and Charlie C. Jowell, Cleburne, presented a paper on obstetrics at a meeting of the Johnson County Medical Society, Cleburne, June 18.

VIRGINIA

Health at Richmond—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a population of 37 million for the week ended August 31 indicate that the highest mortality rate (168) appeared for Richmond and that the rate for the group of cities as a whole was 9.3. The mortality rate for Richmond for the corresponding week of 1934 was 15.9 and that for the group of cities was the same as this year. The annual rate for the eighty-six cities for the thirty-five weeks of 1935 was 11.6, the same rate as for the corresponding period of last year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits and that Negro death rates are usually high tends to increase the death rate.

WYOMING

State Medical Election—Dr. Josef F. Replogle, Lander, was chosen president-elect of the Wyoming State Medical Society at the annual meeting in Lander in August, and Dr. Joseph L. Wicks, Evanston, was installed as president. Dr. Edwin Earl Whedon, Sheridan, was reelected secretary, and Frederick L. Beck, Cheyenne, elected treasurer. Next year's meeting will be held in Cody.

GENERAL

Prevalence of Infantile Paralysis—The number of cases of infantile paralysis in New York City reached 1,366 for the year, September 6. The number reported for the six days preceding that date was 255, compared with 358 for the previous week. In view of the decline, it was announced that schools were to open September 9. Newspapers recently announced that a laboratory was being prepared at New York University Medical College for preparation of antipoliomyelitis serum under the direction of Drs. William H. Park and Maurice Brodie of the New York City Department of Health, funds were provided by the Warm Springs Foundation. Westchester County, New York, had 110 cases, September 6.—Ten towns in New Jersey have closed their schools to prevent spread of the disease: twenty-four children were excluded from Jersey City schools because of exposure to infantile paralysis in a camp. The state health department received reports of twenty-six new cases September 5, compared with fourteen the preceding day.—Opening of public and parochial schools in Boston has been delayed until October 1, according to the *New York Times*. Massachusetts reported 408 cases during August. Boston had 204 cases from July 13 to September 3, Fall River had seventy-eight August 29.—North Carolina's health department reported only three cases for the week ended September 1, compared with eleven the previous week.

American Roentgen Ray Society—The thirty-sixth annual meeting of the American Roentgen Ray Society will be held in Atlantic City, September 24-27, with headquarters at Haddon Hall. Among speakers listed on the program are

- Dr. George E. Pfahler, Philadelphia, Malignant Lymphangitis of the Skin Mistaken for Radiodermatitis
- Dr. Charles L. Martin, Dallas, Texas, Relation of the Endocrine System to Malignancy
- Dr. Barton R. Young, Philadelphia, Liver Extract as a Specific Remedy for Roentgen Sickness
- Dr. Kenneth S. Davis, Los Angeles, Blood Vessel Markings in the Dorsal Vertebrae Simulating Fracture
- Dr. Ralph K. Chormley, Rochester, Minn., Study of the Synovial Membranes in Various Types of Arthritis by Differential Stains
- Dr. Henri Coutard, Paris, Present Additional Treatment with Roentgen Rays in Carcinoma of the Cervix and Protracted Roentgen Therapy of the Pelvis
- Drs. Elizabeth K. Rose, Ardmore, Pa., and David Stewart Polk, Rosemont, Pa., Late Effects of Thymus Irradiation
- Dr. Sherwood Moore, St. Louis, Roentgenographic Studies of a New Metabolic Disease
- Dr. Coleman B. Rubin, New York, Roentgen Criteria for the Operability of Lung Tumors
- Dr. Fred J. Hodges, Ann Arbor, Mich., Value of Oral Examinations and the Correlation of Variation in Density with Actual Pathology as Revealed by Operative Tissue Material in 2,000 Gallbladder Cases

There will be symposiums on lymphoblastoma and on research work on the small intestine, and Dr. John Shelton Horsley, Richmond, Va., will deliver the Caldwell lecture.

Meeting of Academy of Ophthalmology and Otolaryngology—The fortieth annual session of the American Academy of Ophthalmology and Otolaryngology will be held in Cincinnati, September 15-20, under the presidency of Dr. Wells P. Eagleton, Newark, N. J. The meeting will open with a joint session of the sections at which Dr. Hans Brunner, Vienna, Austria, will deliver an address on brain tumor and the ear, and a symposium on headache will be presented by Drs. Harris H. Vail and Alphonse R. Vonderahe, Cincinnati, and William H. Crisp, Denver. Separate section meetings will be held in the afternoons with the following speakers, among others:

- Dr. Algernon B. Reese, New York, Massive Retinal Fibrosis in Children
- Dr. Harry W. Woodruff, Joliet, Ill., Management of Complications in Surgery of Senile Cataract
- Dr. Warren T. Vaughan, Richmond, Va., Allergy in the Rhinologist's Waiting Room
- Dr. Lyman H. Helne, Boston, Effect of Radiation on Ciliated Epithelium
- Drs. Samuel Salinger and Samuel J. Pearlman, Chicago, Malignancies of the Epipharynx
- Dr. Wendell L. Hughes, Hempstead, L. I., N. Y., Aniseikonia: Some Clinical Applications
- Louis A. Julianelle, Ph.D., and Roland W. Harrison, Ph.D., St. Louis, Studies on the Infectivity of Trachoma
- Dr. Dean M. Lierle, Iowa City, Focal Infection in Arthritis
- Dr. Moses H. Lurie, Boston, Animal Experimentation on Hearing—Its Clues to the Prevention of Deafness
- Dr. Gabriel Tucker, Philadelphia, Chronic Inflammatory Lesions of the True Vocal Cords

Tuesday, Wednesday and Thursday mornings will be devoted to instructional courses. Friday morning members of the academy will be guests of the Cincinnati General Hospital at clinics and demonstrations and Friday afternoon a golf tournament will be held at the Cincinnati Country Club. Thursday evening there will be a special meeting devoted to discussion of medical economics, with Dr. Rosco G. Leland, director of the Bureau of Medical Economics of the American Medical Association, Chicago, as the speaker. At the annual banquet

Wednesday evening, Dr Max A Goldstein, St Louis, oldest living past president of the academy, will review the history of the organization and Dr Frank E Burch, St Paul, will be installed as president

Government Services

Public Health Surveys

Nine cities and nineteen states have been selected by the U S Public Health Service for its survey of health conditions with special reference to chronic diseases and physical impairments. The cities announced were Birmingham, Chicago, Baltimore, Detroit, St. Louis, Trenton, New York, Dallas and Richmond, and the states Massachusetts, New York, New Jersey, Maryland, Virginia, Pennsylvania, Ohio, Georgia, Alabama, Louisiana, Texas, Minnesota, Michigan, Illinois, Missouri, Utah, California, Washington and Oregon. About 6000 men and women now on relief rolls will be employed for the survey of 750,000 families. Financed by a fund of \$3,450,000, work on the project will commence about October 15 (THE JOURNAL, July 13, p 129)

Annual Training Course for Medical Reserves

The seventh annual training course for medical department reserves of the U S Army and Navy will be held at the Mayo Clinic, Rochester, Minn., October 6-20. Morning hours will be devoted to professional work in special clinics, and study groups and the afternoons and evenings will be given over to medicomilitary subjects. Officers in attendance may select the course they wish to follow from the wide variety of presentations offered. The staff and faculty of the Mayo Clinic will present the professional training, while the medicomilitary program will be under the direction of the surgeon of the seventh corps area (army) and the surgeon of the ninth naval district (navy), to whom all applications should be submitted. Enrollment, which is limited to 200, is open to all army and navy reservists of medical departments in good standing.

Health of the Army in 1934

A preliminary report on the health of the army in 1934, compiled from weekly statistical reports, shows that the death rate for the whole army was 378 per thousand of strength. Of 511 deaths, 265 were caused by diseases and 246 by injuries. The general admission rate was 624 per thousand, which is comparatively low, it was said. Respiratory diseases accounted for more admissions than any other group, a rate of 136. The highest rate occurred in Panama, 208. The pneumonia rate was highest in Hawaii, 3 per thousand, almost twice as high as that for troops in the United States. The highest rate for influenza was reported from troops stationed in China. In the entire army there were 9 cases of meningitis, 12 diphtheria, 649 measles, 245 mumps and 43 scarlet fever. The incidence of malaria was 66 per thousand, and nearly half these occurred in Panama. The venereal disease rate was 29, the lowest on record. In the Civilian Conservation Corps the general admission rate for the year was 1,256, 974 for diseases and 282 for injuries. There were 871 deaths, 445 caused by disease and 426 by injuries, the death rate was 284.

Committee to Coordinate Health Activities of Government

The creation of an interdepartmental committee to coordinate health and related welfare activities of the federal government was announced by President Roosevelt, August 15. In a statement to the press, the President said:

In view of the passage and signing of the Social Security Bill there is increasing necessity for better coordination of the health activities of the Federal Government. I am therefore creating at this time an interdepartmental committee to give attention to this subject. As members of this committee I have appointed the following government officials: Josephine Roche, Assistant Secretary of the Treasury; Chairman Oscar Chapman, Assistant Secretary of the Interior; M. L. Wilson, Assistant Secretary of Agriculture; and A. J. Altmeyer, Second Assistant Secretary of Labor.

I am directing this Committee to include within the scope of its work not only health activities but closely related welfare activities as well. As its immediate task I am instructing this Committee to assume responsibility for the appointment of special committees to be composed of physicians and other technically trained persons within the government service to study and make recommendations concerning specific aspects of the government's health activities. I am confident that this procedure will facilitate the consummation of a series of appropriate cooperative agreements between the various departments of the government. I am also hopeful that in this way we can eventually bring about a complete coordination of the government's activities in the health field.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 17, 1935

A Veterinary Centenarian and Discoverer

Dr Griffith Evans of Bangor, North Wales, attained his hundredth birthday, August 7. While in the army veterinary corps in India he discovered the trypanosome of surra, a disease of horses, camels and cattle. In 1885 this protozoon was named *Trypanosoma Evansi*. He thus laid the foundation of protozoon pathology, in which the next discoverer was Bruce, who in 1894 found that tsetse fly disease of animals was due to another trypanosome (*Trypanosoma Brucei*). In 1903 he and Nabarro found that the tsetse fly also was the carrier of trypanosomiasis. In a letter to the *Times*, Dr Ivor J Davies of Cardiff recalls a visit of Osler to that town. He asked, "Where does Griffith Evans live?" A reply not having been forthcoming he said "What! Don't you know the man who first saw a pathogenic trypanosome?" On his birthday Dr Evans received in his bedroom a telegram of congratulation from the king and queen at the moment when Sir Frederick Hobday, principal of the Royal Veterinary College, presented a scroll stating that it is proposed to set up in the college a plaque recording the fact that Dr Evans, the father of the veterinary profession, consented to lead the endowment movement. Dr Evans replied from his bed, to which he is confined by an accident, in a voice that could be heard outside the house. He discoursed for half an hour on scientific problems and mentioned that in his college days no microscopes were provided for students.

Women Orderlies in the London County Council Hospitals

The London County Council controls the greatest hospital system in the world, consisting of 30,000 beds. The proposals of the Hospitals and Medical Services Committee for twelve of the general hospitals for acute diseases are of much interest. These hospitals are recognized as training schools for nurses. The committee holds that the employment of women orderlies in addition to or in substitution for a proportion of the probationer or assistant nurses is desirable. The results of the council's nursing examinations show that the training of the probationers needs to be strengthened on the practical side. During their first year of training they are so occupied in routine cleaning duties that they are unable to give the requisite time and concentration to the elementary nursing duties. When the council recently took over hospitals which were until then under the control of the local authorities they found that in two, twenty-five female orderlies were employed. Experience with their work indicates that their employment at other hospitals would be an advantage.

These proposals emanate from the socialist party now controlling the council. It was opposed by Dr Barrie Lambert, a woman physician who was chairman of the committee before the socialists came into power. She said that many of the duties to be entrusted to the orderlies are highly important to the training of a nurse. To employ untrained women on work that should be done by a probationer, under the supervision of or in company with a nurse, would lower the standard. One of the proposals is that the orderlies should assist in blanket-bathing, dressing, moving or making the bed of a patient, for which two persons are required simultaneously. These are patients gravely ill who require the attention of trained workers and in the care of whom valuable instruction should be given to probationers by the seniors. Also the proposal would unnecessarily increase the staff employed at the

twelve hospitals from 2,348 to 2,634 and involve an extra expenditure of \$410,000 annually. The latter consideration had no weight with the socialist majority of the council and the proposals were adopted.

Handbooks on Air Raid Precautions

An official handbook on precautions against gas attacks in air raids has been issued by the government. It is intended primarily for the assistance of ambulance and other workers serving the civil population, but it also contains much advice for the public, which is told that casualties will be reduced by observing the following rules: 1 If caught in the open during an air raid, seek the nearest available cover and do not leave until the "all clear" signal is given. 2 Select a suitable room in your own home and another in your place of business and have these rooms gas protected. 3 If you have a respirator, make sure that it is in a readily accessible place. Among the precautions to be taken when it is necessary to enter a gas contaminated area is the following: "Whenever gas can be detected by the sense of smell or by the effect on the eyes or throat, and whenever it is necessary to pass down-wind of craters which have been marked as dangerous from gas, the respirator must always be worn and not be removed until the wearer has assured himself that no gas is present by inserting the fingers between the face piece and the cheek and sniffing gently." On the subject of selecting a room for gas protection, the following recommendations are made: 1 A cellar or basement is the best. ("If there is no basement, choose a first floor room if there is another room above it, but in a two story house choose the ground floor.") 3 The windows of the room should be small and if possible not in an exposed position. The glass will be liable to be broken by high-explosive bombs, even at a distance, and some other covering will have to be fastened on the window frame. 4 Where possible the room should be on the side of the house least exposed to the prevailing wind. 5 The entry of gas into a house is always assisted by draughts so shut all doors and windows before retiring to the gas protected room.

CONTAMINATED CLOTHING

For those who have to work in gas-filled streets, special oil-skin clothing is recommended, with rubber boots and respirator, but for those caught in an attack of mustard gas the contaminated garments should be removed as quickly as possible and a bath taken. If this is done within twenty minutes serious injury may be avoided. The risk will be reduced if contaminated outer garments are removed immediately. In the majority of cases contaminated persons cannot return to their homes within twenty minutes, and therefore public decontamination centers will be required. Where ordinary clothing has been subject only to contamination with vapor, it may be sufficient to hang the outer clothing in the air for twenty-four hours and to wash light dresses and underclothing in soap and water for at least fifteen minutes. Liquid contamination of outer clothing must be treated in a steam disinfectant and underclothing boiled for at least an hour.

Five other handbooks on air raid precautions are being prepared.

The Museum of the Royal College of Surgeons

The annual report of the conservator of the Museum of the Royal College of Surgeons announces a policy which, it is hoped, will render the collections more attractive and instructive. For some years the growth of the Anatomical Series has been tardy and not commensurate with its practical importance. Arrangements have been made for a more liberal and constant supply of material, and as this becomes available new regional and systematic dissections will be made. An extension of the surgical anatomy is proposed so as to illustrate by actual dissections the several surgical approaches to different regions

and structures. But so ambitious a scheme, with its enormous demands on time, skill and material, is at present impracticable. It will require the cooperation of surgeons familiar with the difficulties and details of the several operative measures.

In regard to pathologic specimens the rule has been laid down that in future no specimen will find its way to the shelves unless it illustrates satisfactorily a clinical condition; i. e., the exhibit must be a first class pathologic specimen with complete record of the clinical history. Too many of the present specimens lack a clinical history and in consequence must be regarded only as pathologic curiosities. The catalogue will contain not only a brief description of the specimen and its clinical history but also a brief outline of its characteristics on microscopic examination. When necessary, photographs of the patient and small reproductions of roentgenograms will be included.

PARIS

(From Our Regular Correspondent)

Aug. 1, 1935

Apropos of Social Insurance, Where Are We Going?

Massart, in the July 28 issue of the *Concours médical*, states that the question Apropos of social insurance, where are we going? is one to which every French physician concerned about his future has been giving earnest consideration during the past ten years. No matter how optimistic one may be, it is difficult to see the future for the profession except as a dark picture in which medicine will be a state affair, with the tacit consent perhaps of many who only aspire to have a sure income as state officials. There is an astonishing lack of interest in fighting the battle against state medicine. "Whither are our social laws leading us?" Toward free medicine. The French medical profession is a divided house split into several parties and this condition becomes worse every day. The state is profiting by this internal strife and only awaits the day when the profession will be the victims. The profession in France is organized into unions called "syndicats" and there is constant friction between the societies. During the early years of the social insurance law there was loyal cooperation between the profession represented by the "syndicats," and the primary collecting and disbursing agencies (caisses) of the social insurance organization. The profession made all sorts of sacrifices in order to adapt its traditions to the law's requirements. In certain departments of France the law has been modified, with the consent of both parties, in order to render its application practicable.

When one keeps in mind the difference between city and country practice, it is not surprising to find that some physicians are favored and hence contented while others are disgruntled. But the favorites of today will be tomorrow's victims, as one can observe, now that the law is in force, because the "caisses" have less money at their disposal and some are threatened with insolvency and hence try to cut down the costs of medical care to the minimum.

The social insurance authorities find that it costs too much to have an insured worker cared for in a hospital that has not made an arrangement for such care, and hence the authorities are trying to force the assured to make up the difference if they choose to enter a hospital that does not have special rates for the insured. The law as originally conceived did not take this extra expense into consideration. It was assumed that hospital care would not cost more than care at home. The question now presents itself as to who will pay the difference between the two types of care.

The social insurance law has made so many demands on the medical profession since 1930 that the latter has become the servant of those who administer the law. This cannot end otherwise, according to Massart, than to make government officials of all medical men. They will then be sure of an

adequate income and of a pension on retirement. On the other hand, the profession must become more strongly organized than it is at present and will then, like similar organizations of government officials, be able to look after its interests better than it can at present.

Celebration of Fifty Years of Antirabic Vaccination

The first vaccination against rabies was administered by Pasteur in 1885. In commemoration of this important date, a meeting took place July 6 at the Pasteur Institute of Paris. A number of representatives of the institute, university and ministry of public health and education were present, including Pasteur Vallery-Radot, the grandson of Pasteur. Louis Martin, director of the institute, reviewed the career of Pasteur from the time when he began the treatment of anthrax to that of the vaccination against rabies. The communication made by Pasteur on the latter before the Academy of Sciences was read by Pasteur Vallery-Radot. Pierre Lepine reported the number of cases treated during the past half century. An honorary medal was given by the minister of public health to Jules Vialat, the oldest research worker at the institute and to Joseph Meister, who was the first person vaccinated by Pasteur and is still a janitor at the institute. Wreaths were placed on the tomb of Prof. Emile Roux at the close of the ceremony and the crypt in which Pasteur is buried was visited.

Professional Secrecy and Social Insurance

A question has arisen as to whether a physician treating an insured worker is obliged to divulge the nature of a malady. The subdirector of the Caisse, or pay office, for two large departments, Seine, in which Paris is situated, and Seine et Oise, adjacent to it issued an order according to which medical inspectors could require certificates to be issued at the residence of the insured sick person showing the diagnosis and nature of the treatment given by the attending physician. An appeal was taken from this ruling and a committee of the Academy of Medicine asked to give its opinion. This committee finds that the insured have the right to ask for professional secrecy regarding their ailments. Information regarding the character of the disease and the treatment given can be given only in professional secrecy to the medical inspectors of the social insurance offices.

First Aid Stations on Highways

The International League of Red Cross Societies has its headquarters in Paris. The general secretary, Mr. Ernest Swift, is making every effort to encourage the establishment of first aid stations on all automobile routes. In England, France and Hungary, considerable progress has been made in this direction. The movement in France began in 1926 and became nation wide under the direction of the French touring club three years later. The creation of an international permanent commission for first aid on highways was decided on in 1930. Plans have been prepared toward the standardization of this work all over the world.

The fifteenth International Red Cross Conference held in Tokyo in 1934, passed a resolution expressing the hope that each national Red Cross Society will give special attention to the development of effective and uniform facilities for rendering first aid on highways, in close cooperation with national touring associations and automobile clubs. A conference was held in May 1935 at Budapest, at which reports of the organization of first aid on highways was made by representatives of the Red Cross of eighteen countries. One of the speakers advocated the preparation of a film that would demonstrate the ten rules to prevent accidents and also the broadcasting of these rules at intervals. Representatives of the Netherlands, Sweden, Hungary, Great Britain and France cited the progress made in their respective countries in organizing this first aid

Assistance to Abnormal Children

In one of the recent issues of the *Revue médico-sociale de l'enfance*, Dr. G. Heuyer stated that twenty years ago it was difficult to interest public opinion in France in abnormal children. Now it is realized that on the amount of attention given to abnormal children depends the prevention of crime and mental disease in the adult.

Many private institutions have sprung up, organized by persons quite unfit to take charge of and educate the abnormal child institutions not under any control of the state, in which children have suffered from neglect.

In the discovery and treatment of abnormal children there is not sufficient cooperation between the physician and the instructor, only if these two work together can good results be obtained.

There is no proper classification of cases, and in every institution one will find together all degrees of mental deficiency, from the undeveloped child to the incorrigible delinquent and the incorrigible pervers. It is necessary now to organize these institutions so that each establishment may receive a special type of abnormal children.

For the discovery of abnormal children there should be infantile neuropsychiatric clinics in every large city, where the school directors, medical inspectors and social workers cooperate.

The law of 1909 provides for medicopedagogic commissions but these are still nonexistent. The abnormal children from each school should be brought before these commissions and it is for them to decide to which center of special treatment and teaching each child should be sent.

The children would be divided into several classes.

A The undeveloped, who are divided again into the backward children susceptible of some education and those not susceptible of being educated but still capable of some manual labor.

B The unstable, the very unbalanced and vicious.

1 The unstable turbulent children, runaways, tramps and thieves in embryo, are often intelligent and need treatment and discipline. They should be educated and taught a profession.

2 The highly unbalanced and vicious should be sent to isolated institutions of reeducation or those annexed to psychopathic hospitals.

C There should be special centers for the epileptic and the encephalitic, organized along the same lines as the Franklin school at Philadelphia.

Briefly, each individual as discovered should be directed to an institution especially suited to the mental and bodily condition of the child. A law should be passed that when he becomes an adult he should still be under guardianship.

Death of Prof. Robert Proust

One of the leading surgeons of Paris, Prof. Robert Proust, aged 62, died in June of a cardiac ailment. He had just been appointed to the chair of gynecology in the Faculté de médecine. Proust was the assistant to Pozzi for ten years and after successive promotions became chief of the surgical service in the large public hospitals of Paris. He was elected secretary-general in 1930 of the Société de chirurgie and took an active part in the meetings of this important organization as well as in those of the International Surgical Society of which he was a delegate for France.

He was one of the first in France to study the technic of hypophysectomy. Early in his career he wrote a number of papers on urologic subjects, especially perineal prostatectomy. Later he became interested in cancer of the cervix uteri, plastic operation for prolapse and other gynecologic subjects. During his service at the Laennec Hospital, in association with Maurer, Leon Bernard and Rist, he developed the surgical treatment of pulmonary tuberculosis.

Aside from his skill as a surgeon, his knowledge of general literature was admired by those with whom he came in contact. The two brothers, Marcel Proust the author and Robert Proust the surgeon, were prominent figures in modern French literary and medical circles.

BERLIN

(From Our Regular Correspondent)

July 15, 1935

Epidemics in Germany in the Past Century

Dr. Dornedden, "regierungsrat" in the federal bureau of health, has prepared a summary of the history of epidemics in Germany during the past century, which reveals the progress that has been made during that period in the combating of epidemics. The tabulation shows the deaths per thousand during, for the most part, five and ten year periods since 1850.

1851-1860	26	1901-1910	19
1861-1870	27	1911-1913	16
1871-1880	27	1921-1925	13
1881-1890	25	1926-1930	12
1891-1900	22	1931-1933	11

The tremendous decline in the mortality rate is due in part to a shifting in the structure of the population but chiefly to the great progress that has been made in the methods of combating epidemics. Evidence of this progress lies in the fact that around 1875 the average span of life was thirty-seven years but by 1925 had risen to about fifty-seven years and is now more than sixty years. It has become possible practically to exclude plague, yellow fever, cholera, typhus, leprosy and smallpox.

During the period 1816-1874, cholera (which first appeared in Prussia in 1831) and smallpox caused 379,582 and 165,997 deaths, respectively. Of these deaths, 149,370 resulted from cholera and 100,350 from smallpox during the period 1861-1874. In 1866 the mortality from cholera rose to 59 per 10,000 of population, while in 1872 the mortality from smallpox reached 264. For the sake of comparison, it may be stated that the last great epidemic in Germany (that of influenza in 1918) caused 293 deaths per 10,000 of population. Since cholera in 1892 claimed about 9,000 victims in Germany, epidemic diseases (aside from about 2,000 cholera, 2,700 typhus and 1,700 smallpox deaths during the recent war and early postwar period) have appeared only in small areas. During the last ten years (1925-1934) there have been no cases of cholera, yellow fever or plague, while there have been only twenty-one cases of typhus, twenty-eight of leprosy and forty-four of smallpox, which resulted in sixteen deaths from these three diseases. As a result of constant contacts at the frontiers, sporadic cases of these three diseases occurring in Germany have shown that they constitute a continuous menace that the government must take account of, for it is due only to the progress of bacteriologic knowledge that they have been so successfully combated.

The crusade against puerperal fever has likewise been strikingly successful. During the period 1816-1874, 314,579 deaths from this disease were recorded in Prussia, or 842 deaths per 10,000 confinements, and for the period 1871-1874 there were 88 deaths per 10,000 confinements. During the short period from 1874 to 1892, the mortality was brought down to 185 and by 1902 to 147. The fact that afterward, by 1922, the mortality had risen to 275 and in 1923 to 288, and by 1932 had been reduced only to 247, was due to the increase in the number of abortions, in which of course the necessary precautions were not always observed.

The deaths from children's diseases, such as measles, scarlet fever, whooping cough and diphtheria, also show a marked decrease. This was due in part to the decline in the birth rate and the resulting reduction in the percentage of children in the population. It may be stated, however, that the decrease in mortality was observable much earlier than the decline in the birth rate. Also the fluctuations, which are observable in many

epidemics without any apparent cause, play a considerable part in the infectious diseases of childhood, particularly in diphtheria and scarlet fever. Almost 14 per cent of all deaths in Prussia in 1886 were caused by these children's diseases, whereas in 1932 only 1.2 per cent of the deaths in the German reich were due to these causes.

The circumstances that helped to reduce the incidence of children's diseases have had no influence on the marked decline in tuberculosis mortality. In 1876 the tuberculosis mortality in Prussia was 318 per 10,000 of population. In 1886 incomplete statistics placed the mortality at 311, while in 1892 the mortality had dropped to 250 in Prussia and to 259 in the German reich, where in 1912 a further decline to 15.3 and in 1932 to 7.6 was recorded. It may be seen, therefore, that the present mortality from tuberculosis in Germany is only 29.3 per cent of that recorded for 1892. In 1876 the deaths from tuberculosis constituted more than 12 per cent of the deaths from all causes, whereas in 1932 the percentage had been reduced to less than 7.

Typhoid and dysentery as causes of death have been successfully combated. In 1876 the mortality from typhoid and dysentery in Prussia was 81 per 10,000 of population, whereas by 1892 the mortality rate had steadily declined to 24 for Prussia and to 18 for the German reich, where it dropped to 01 for the year 1932.

Fifty years ago, more than a fourth of all deaths were due to the epidemics mentioned, whereas in 1932 less than 9 per cent of the total number of deaths were due to these causes.

Certain animal diseases that are seldom transmitted to man, such as rabies, anthrax, glanders and trichinosis, caused thirty-six deaths in Germany in 1892, thirty-nine in 1902, forty-eight in 1912, forty-eight in 1922 and nine in 1932. It is evident that the number of victims did not decline until during the postwar period. At present, of the epidemic diseases, tuberculosis deserves the greatest attention, next come influenza and diphtheria. Of the transmissible diseases that are less frequently fatal, the venereal diseases are the most important.

Children in German Families

For the first time the general census of 1933 collected information in regard to the fertility of the German family by recording the number of children belonging to married couples living in wedlock. The important factor of the duration of the recorded marriages was omitted.

It was found that 18.9 per cent of the existing marriages were childless, 23.2 per cent had produced one child, 19.8 per cent two children, and barely 40 per cent three or more children. The fertility of the marriages in the principal social groups varied greatly. To what extent, however, this can be explained by the average length of the married life, and how great the differentiation in the willingness to have children may be are not yet fully established. The largest number of children was found among peasants, agriculturists and agricultural laborers, the lowest number among employees in industry, trade and public services, including civil functionaries.

Responsibility in the Management of Private Hospitals

The relations of the owners of German private hospitals to their directing physicians have been fixed by an agreement entered into by the chief of police of Berlin, the "chamber of physicians," and the federal league of the private hospitals. The following points covered by the agreement may be emphasized. All the equipment of the institution, to the extent that it concerns medicine and hygiene, is under the supervision of the directing physician. The latter is responsible to the board of trustees for the observance of all regulations. The engagement and the dismissal of assistant physicians and interns must be left entirely to him. The employment and dismissal of the care-taking personnel also rest with the medical superintendent. He can demand also the dismissal of aids and other personnel.

in case there are important reasons for such action. In medical matters he has also the supervision of the physicians and the personnel, but not in economic matters. He is entitled to an annual vacation of four weeks without deductions from his salary. The owner of the institution must engage the *locum tenens* and pay all the incidental expenses. The superintendent must accept the *locum tenens* engaged by the owner of the institution. The same rule applies in the event that a *locum tenens* must be appointed by reason of the illness of the superintendent. After the lapse of six weeks, the superintendent's salary may be used, in whole or in part, in compensation of the *locum tenens*. Unsettled controversies must be left to arbitration. The Berlin "chamber of physicians" makes the conclusion of such contracts compulsory for all physicians serving as medical superintendents in private hospitals. Before such contracts are signed they must be submitted to the "contract committee" of the chamber of physicians for approval.

ITALY

(From Our Regular Correspondent)

June 15 1935

Discussion of Coronary Lesions

The first Italian Cardiologic Congress was held recently in Milan. Professor Cesaris of Demel discussed the relations between the anatomic changes in the coronary arteries and the cardiac syndromes. The changes that affect the coronary arteries are usually of a degenerative or inflammatory nature. He discussed particularly the atherosclerotic process which may affect the coronaries throughout or may be localized at the outset in the first portion of the aorta, where it originates and then extend farther. Obstruction or occlusion of the small terminal branches may follow. The influence on the state of nutrition of the myocardium is variable according to the location of the anastomoses and the different degree of involvement of these vessels. The ischemic area, however, is always less than the distribution area of the vessel; the resistance of the myocardium depends also on the conditions preceding the ischemia. Syphilitic lesions are localized in the first part of the aorta, whence they spread to the coronaries. The tropism of syphilitic infection for the aorta is shown by the histologic examination of cases of syphilitic mesarteritis. Around the vasa vasorum of the aorta appear infiltrates that are lacking about the vasa vasorum of the pulmonary artery, although these are located close to the former and although irrigated by the same blood charged with spirochetes. In syphilis there is an endarteritis that leads to occlusion. Occasionally emboli are observed, resulting in obstruction of the large branches of the coronaries. These phenomena are always grave, owing to the rapidity with which the blood circulation is interrupted. In case of rapid occlusion of the coronaries there is an extensive myocardial infarct, with characteristic electrocardiographic symptoms.

Senator Pende and the Accademia Mediterranea

Prof Nicola Pende, senator medical clinician of the University of Genoa, has been appointed an honorary member of the Accademia Mediterranea, the headquarters of which are in the principality of Monaco. In presenting him to the academy, Dr Faure recalled the researches of Professor Pende on the racial types still distinguishable in Liguria, which in their profiles (Liguroid and Cro Magnoid) bear a resemblance to the founders of the first Mediterranean civilization. In his reply, Senator Pende pointed out that his studies led him to believe there is a close relation between the racial characteristics of man and the deeper psychology which is quite different from the social psychology of the individual. The study of Professor Pende on the racial types occurring among the Mediterranean peoples reveals that the three brown races—Mediterranean

Adriatic and Alpine—make up, in varying proportions, each of the peoples that have lived during the past thousands of years in the Mediterranean basin, and that there is a marked biologic and psychologic affinity between them.

A New Department in the Institute of Public Health

A special department of epidemiology and prophylaxis has been opened in the Istituto di sanità pubblica and has taken over the study and control of the sanitary conditions and the demographic changes taking place in the country, especially as regards the causes of epidemics. To stimulate the collection of sanitary data of interest to the public health service, the minister of the interior has sent a circular letter to the prefects of the realm, in which certain norms and standard forms are established. The notification of infectious diseases, long since compulsory, has been made more stringent, particularly as regards poliomyelitis and epidemic encephalitis. The notification should contain details of every single case. The attending physician should send his report to the "provincial physician," who, after examination and adjustment, will send it on to the epidemiologic department of the Istituto di sanità. To this body will be sent weekly and monthly bulletins concerning the sanitary condition of the communes with regard to infectious diseases, individual bulletins on venereal disease and annual reports on the functioning of the ambulatoriums established to combat trachoma and venereal diseases, including syphilis. Compilations must be made also of smallpox vaccinations and revaccinations performed in the various communes, and data must be furnished pertaining to the demographic changes occurring each month in the chief towns of the provinces and in the more important communes, and with regard to the activities and the mortality in the *gouttes de lait*.

Defense of Ophthalmologic Practice

The ophthalmologists of Milan, following the example of their colleagues in Rome and Palermo, met recently to decide on what defensive measures they should take to prevent encroachments on the practice of their specialty. It was reaffirmed that the testing of vision is an act essentially medical and that opticians may manufacture and sell lenses and spectacles only on medical prescription. The presence of certain so-called specialists in the shops of opticians is offensive to the dignity of the medical profession and such practice should be prohibited, just as physicians are prohibited from acting as pharmacists. It was proposed that the present laws pertaining to the auxiliary trades of the medical profession be modified in the sense stated.

Marriages

FRANCIS M. THIGPEN JR., Philadelphia, to Miss Nancy Burgoyne Stack of Alexandria, La., July 25

EDWARD CANIPELLI, Macon, Ga. to Miss Dorris Violet Ott of Sandusky, Ohio at Cincinnati, August 10

RICHARD BASCOMB WARRINER JR., Atlanta, Ga. to Miss Ellen Lowry Hayes in Decatur, June 24

FRANKLIN HAYWARD GRAUER, New York, to Miss Katherine Hartley Craycroft of Baltimore, July 5

WILLIAM E. NEFF JR., Waterbury, Conn. to Miss Philomena Sylvia of New Bedford, Mass. July 27

WALTER ROBERT WEGNER to Miss Margaret Irene Clarke, both of Boston, June 29

ABRAHAM GOLDFARB, Rutherford, N. J., to Miss Ruth Rinzler of Passaic, August 18

WALTER PRUSAIT, Chicago, to Miss Leona Schupmann of St. Louis, July 25

BEVERLEY C. COMPTON, Baltimore, to Miss Cynthia Wilson of Chicago, recently

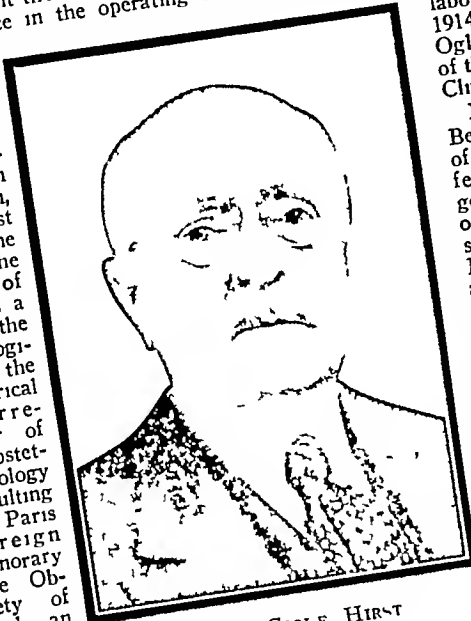
DEATHS

Deaths

Barton Cooke Hirst * professor of obstetrics at the University of Pennsylvania Graduate School of Medicine, and since 1927 emeritus professor of obstetrics at the University of Pennsylvania School of Medicine, died, September 2, at his home in Philadelphia. Dr Hirst was born in Philadelphia, July 20, 1861. He received his doctor of medicine degree from the University of Pennsylvania Department of Medicine, Philadelphia, in 1883, and then studied at the universities of Heidelberg, Vienna and Berlin, later serving an internship at the Royal University Hospital in Munich. In 1889 he became professor of obstetrics at his alma mater and served in that capacity for thirty-eight years. He built a three bed hospital at the university to enable his students to supplement their knowledge gained from lectures with practical experience in the operating room. In 1908 he founded a dispensary for clinical demonstrations. He was chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, 1932-1933. Dr Hirst was a fellow and one of the founders of the American College of Surgeons. He was a former president of the American Gynecological Society and the American Obstetrical Society, a corresponding member of the Society of Obstetrics and Gynecology of Paris a consulting surgeon of the Paris Society of Foreign Surgeons, an honorary member of the Obstetrical Society of Edinburgh and an honorary foreign member of the Belgian Gynecological and Obstetrical Society. At various times he was on the staffs of the Philadelphia Orthopedic Hospital and Infirmary, Philadelphia Hospital, Philadelphia Lying-in Charity Hospital and the Preston Retreat Hospital, Pottstown (Pa.) Hospital and the Newport (R. I.) Hospital. Dr Hirst received the honorary degree of doctor of laws from the University of Pittsburgh and that of doctor of science from the University of Pennsylvania. He was the editor of "A System of Obstetrics," and author of "A Textbook of Obstetrics," "Atlas of Operative Gynecology" and other textbooks on obstetrics and diseases of women.

John William Keefe, Providence R. I., University of City of New York Medical Department, 1884, in 1914 member of the House of Delegates of the American Medical Association, member and president, 1913-1914, of the Rhode Island Medical Society, president of the American Association of Obstetricians and Abdominal Surgeons, 1916-1917, member and president, 1924-1925, of the New England Surgical Society, member of the New England Obstetrical and Gynecological Society and the American College of Surgeons, served during the World War, at various times on the staffs of the John W. Keefe Surgery, the Rhode Island Hospital, St. Joseph's Hospital, Providence City Hospital and the Lyng-in Hospital, Providence, the Memorial Hospital, Pawtucket, and the South (R. I.) Hospital, the Westerly (R. I.) Hospital, died suddenly August 4, at his summer home at Narragansett Pier.

Ernest Sydney Lewis * New Orleans, University of Louisiana Medical Department, 1861, chairman of the Section on Obstetrics and Diseases of Women and Children of the American Medical Association, 1878-1880, professor of materia medica, therapeutics and clinical medicine 1873-1876, of materia medica and diseases of women, 1876-1911 and professor of obstetrics and clinical medicine 1873-1876, since 1911 professor of obstetrics and gynecology, emeritus, Tulane University of Louisiana School of Medicine, Civil War veteran, fellow of the American College of Surgeons, past president of the Southern Surgical Association in 1867 state



BARTON COOKE HIRST
1861-1935

health officer, for many years on the staff of the Charity Hospital and the Hotel Dieu Hospital, aged 94, died, August 12, in the Touro Infirmary, of bronchopneumonia.

Calvin C. Rush * Johnstown, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1907, member of the American Academy of Ophthalmology and Oto Laryngology and the American Ophthalmological Society, fellow of the American College of Surgeons, at one time assistant demonstrator of neuro-anatomy, Jefferson Medical College, Philadelphia, member of the school board and formerly health officer of Southmont, on the staffs of hospitals in Canton, China and Tokyo, Japan, 1918-1919, on the staff of the Conemaugh Valley Memorial Hospital, aged 59, died, July 19, of subacute bacterial endocarditis following sinus infection.

Gustav Ferdinand Ruediger * Pasadena, Calif., Rush Medical College, Chicago, 1903, member of the American Association of Pathologists and Bacteriologists, professor of bacteriology and pathology, and director of the state public health laboratories, University of North Dakota, Grand Forks, 1907-1914, director of the hygienic institute of La Salle, Peru and Oglesby, Ill., 1914-1917, director of the state hygienic laboratory of the University of Nevada, 1917-1921, director of the Pasadena Clinical Laboratory, aged 59, died, July 5, of heart disease.

Harry Belleville Eisberg * New York, University and Bellevue Hospital Medical College, New York, 1913, member of the Associated Anesthetists of the United States and Canada, fellow of the American College of Surgeons, instructor in surgery at his alma mater, aged 42, at various times on the staffs of the United States Marine Hospital, Staten Island, the Riverside Hospital, Harlem Hospital, Sydenham Hospital and the Manhattan General Hospital, where he died, August 10, of acute appendicitis and coronary heart disease.

Henry Lincoln Wolfner * St. Louis, Missouri Medical College, St. Louis, 1881, at one time professor of clinical ophthalmology, Washington University School of Medicine, for nine years a member, and at one time president, of the board of education, aged 74 on the staffs of the Bethesda Hospital and the Jewish Hospital, where he died, July 11, of chronic myocarditis.

James Ross Allen * Olean, N. Y., Queen's University Faculty of Medicine, Kingston, Ont., Canada 1894, fellow of the American College of Surgeons, past president of the Cataraugus County Medical Society, on the staff of the Olean General Hospital, aged 65, died, August 11, in the Buffalo General Hospital, of heart disease.

Justus Lee Cooke * Fredericksburg, Va., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893, past president of the Fredericksburg Medical Society, health officer of Fredericksburg, on the staff of the Mary Washington Hospital, aged 62 died suddenly, August 6, of cerebral hemorrhage.

Clarence Joseph D'Alton * New York, Medical College of Virginia, Richmond, 1910, member of the American Psychiatric Association and the Association for Research in Nervous and Mental Disease, on the staff of the Neurological Institute, aged 45, died, July 12, in the Hartford (Conn.) Retreat, of cerebral edema.

Chester Edson Gates, Anoka, Minn., University of Minnesota Medical School, Minneapolis, 1904, member of the Minnesota State Medical Association, president of the board of education, medical director and owner of a hospital bearing his name, aged 56, died June 24, in the Swedish Hospital, Minneapolis.

Jonas Edward Bacon, Brockton, Mass., Harvard University Medical School, Boston, 1878, member of the Massachusetts Medical Society, member of the exemption board during the World War, on the staff of the Brockton Hospital, aged 81, died, July 31, of chronic myocarditis and arteriosclerosis.

George A. Rohrer, Spokane, Wash., Julius-Maximilians Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1902, member of the staff of the Sacred Heart Hospital, aged 60, on the staff of heart disease.

Joseph Jefferson Asch * New York, Columbia University College of Physicians and Surgeons, New York, 1902, member of the American Urological Association and the American Association of Surgeons, on the staff of the Lenox Hill Hospital, aged 55, died, August 15.

Caleb Noble Athey, Baltimore, University of Maryland School of Medicine, Baltimore, 1894, member of the Medical and Chirurgical Faculty of Maryland, at one time member of the city health department, and police surgeon, aged 66, died August 11, of paralysis agitans.

Kelley Charles Fitzgerald, New Harmony, Ind., Kentucky School of Medicine, Louisville, 1906, member of the Indiana State Medical Association, past president of the Posey County Medical Society, served during the World War, aged 51, died, July 31, of coronary occlusion

Harry Hartsock Thompson, Philipsburg, Pa., Jefferson Medical College of Philadelphia, 1889, member of the Medical Society of the State of Pennsylvania, served during the World War, on the staff of the Philipsburg State Hospital, aged 68, died, July 3, of nephritis

Arthur Preston Clark, New Hartford, N. Y., Albany (N. Y.) Medical College, 1905, for many years health officer of New Hartford, formerly county coroner and school physician on the staff of the Faxon Hospital, Utica, aged 54, died, June 22, of lymphosarcoma

James Armitage Emery, Chevy Chase, Md., George Washington University School of Medicine, Washington, D. C., 1907, acting chief of the biochemic division of the bureau of animal industry, U. S. Department of Agriculture, aged 68, died, July 28, of heart disease

Marion Dorset, Washington, D. C., Columbian University Medical Department, Washington, 1896, also a chemist, since 1904 chief of the biochemic division, bureau of animal industry, U. S. Department of Agriculture, aged 63, died, July 14, of coronary occlusion

Tuite Howe Hanson, Donaldsonville, La., Tulane University of Louisiana Medical Department, New Orleans, 1895, past president of the Ascension Parish Medical Society and the Lafourche Parish Medical Society, aged 66, died, August 11, of heart disease

Marie Eloise Perez, Brooklyn, University of Michigan Medical School, Ann Arbor 1934, aged 25, intern at the Norwegian Lutheran Deaconesses' Home and Hospital, where she died August 5, of rheumatic heart disease and bronchopneumonia

Loyal Dexter Rogers, Chicago, Hahnemann Medical College and Hospital, Chicago, 1884, Rush Medical College, Chicago, 1896, aged 78, died, July 25, in St. Luke's Hospital of prostatitis, pyelonephritis, chronic myocarditis and hypertension

Henry Thomson Cummings, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, on the staff of the Jackson Park Hospital, aged 54, was found dead, July 30, of chronic myocarditis

Frederick Bryant, Worcester, Mass., Harvard University Medical School, Boston, 1900, member of the Massachusetts Medical Society, aged 63, died, July 29, at his summer home in Hull of cerebral hemorrhage and chronic myocarditis

John Joseph Dowling, Boston, Harvard University Medical School, Boston, 1894, served during the World War, medical director and superintendent of the Boston City Hospital, aged 65, died, July 10, of cerebral thrombosis

Marion Wollaston Ueberroth, Tiffin, Ohio, College of Physicians and Surgeons, Baltimore, 1893, past president of the Seneca County Medical Society, on the staff of the Mercy Hospital, aged 63, died, July 7, of heart disease

Francis Joseph Hanley, Whitman, Mass., Jefferson Medical College of Philadelphia, 1893, past president of the Plymouth District Medical Society, served during the World War, aged 66, died suddenly, August 2

Chester B. Nuckolls, Hillsville, Va., Baltimore Medical College, 1893, University College of Medicine, Richmond, 1894, member of the Medical Society of Virginia, aged 68, died, June 28, in the Lakeside Hospital, Cleveland

Clifford Leslie Kaucher, Reading, Pa., Medico Chirurgical College of Philadelphia, 1902, served during the World War, for many years on the staff of St. Joseph's Hospital, aged 54, died, July 2, of cirrhosis of the liver

William Thomas Clemes, Blissfield, Mich., Trinity Medical College, Toronto Ont., Canada, 1895, at one time member of the school board and village health officer, aged 67, died, July 30, of cerebral hemorrhage

Leon Irving Sass, Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1935, aged 24, died, July 12, in the Mount Sinai Hospital, New York of a skull fracture received in a fall

Edgar C. Freas, Memphis, Tenn., Vanderbilt University School of Medicine, Nashville, 1883, aged 75, died, July 25, in the Baptist Hospital of pneumonia, following a fracture of the hip received in a fall

Calvin Graham Dold, Buena Vista, Va., University of Maryland School of Medicine, Baltimore, 1891, member of the Medical Society of Virginia, aged 65, died, June 22, of carbuncle of the neck

Gordon Berge McNicol, Dixon III, Northwestern University Medical School, Chicago, 1935, aged 26, died, June 26, in the Cleveland (Ohio) City Hospital, of subacute bacterial endocarditis

George Clinton Ballard, Little Rock, Ark., University of the South Medical Department, Sewanee, Tenn., 1898, served during the World War, aged 65, was found dead in bed July 29

Mary Thayer Ritter, Angola, Ind., Medical College of Indiana, Indianapolis, 1903, secretary of the Steuben County Medical Society, aged 65, died, July 19, of carcinoma of the cecum

David Mathew Butler, Boston, Tufts College Medical School, Boston, 1915, aged 45, died, August 1, in the Cambridge (Mass.) Hospital, of injuries received in an automobile accident

John A. Henry Helfrich, Allentown, Pa., Hahnemann Medical College of Philadelphia, 1875, aged 81, died, recently, in the Allentown Hospital of hypertrophy of the prostate

Walter James Donovan, Pacific Beach, Calif., Tufts College Medical School, Boston, 1910, served during the World War, aged 52, died, July 24, of uremia and nephritis

John Wesley Quinlan, Syracuse, N. Y., Albany (N. Y.) Medical College, 1888, aged 70, died, July 11, in the Onondaga General Hospital of hemorrhage due to gastric ulcer

Wallace Marcell Pierce, Burlington, Vt., University of Vermont College of Medicine, Burlington, 1898, aged 63, died suddenly, June 3, of coronary thrombosis

Emma Catherine Hackett, Dubuque, Iowa, Northwestern University Woman's Medical School, Chicago, 1900, aged 64, died, July 6, of cerebral hemorrhage

Edward McLoughlin, Chicago, Rush Medical College, Chicago, 1890, aged 83, died, July 1, in the Evangelical Hospital, of carcinoma of the intestine

John H. Stephens, New Hartford, N. Y., Albany (N. Y.) Medical College, 1883, aged 76, died, June 27, of chronic nephritis and chronic myocarditis

George W. Wilkes, Fort Worth, Texas, University of Nashville (Tenn.) Medical Department, 1874, aged 84, died, July 10, of cerebral hemorrhage

John C. Webber, Adair, Okla., College of Physicians and Surgeons, Keokuk, Iowa, 1889, aged 78, was found dead in bed June 20, of organic heart lesion

Robert E. Cuffe, Olga, N. D., University of London Faculty of Medicine, London, England, 1874, aged 81, died, June 28, of chronic myocarditis

Hugh B. Kincaid, Knoxville, Tenn., University of Louisville (Ky.) Medical Department, 1890, aged 68, died, June 29, of cardiovascular renal disease

John Standish McCullough, Orillia, Ont., Canada, Trinity Medical College, Toronto, 1881, L.R.C.P., Edinburgh, 1884, aged 80, died, July 25

Samuel Hurst Stewart, Hobbs, N. M., Chicago College of Medicine and Surgery, 1914, aged 44, died recently in Carlsbad, of heart disease

John P. Eisenberger, Cherry Creek, N. Y., University of Buffalo School of Medicine, 1919, aged 45, died, July 5, of chronic encephalitis

Ward A. Johnson, Monroe, Ind., Toledo (Ohio) Medical College, 1889, aged 75, died recently of angina pectoris and chronic myocarditis

Prince Oliver Wailes, Mansfield, La., Meharry Medical College, Nashville, Tenn., 1909, aged 70, was found dead in his office recently

William James Derby, Westboro, Ont., Canada, McGill University Faculty of Medicine, Montreal, Que., 1882, aged 80, died recently

Henry E. Rakestraw, Chanute, Kan., Homeopathic Medical College of Missouri, St. Louis, 1874, aged 84, died, June 24, of senility

Guy Darwin Small, Palestine, Texas, Baltimore University School of Medicine, 1902, aged 61, died recently of brain tumor

Herbert H. Frazier, Hanover, Mich., Baltimore Medical College, 1893, aged 66, died, July 26, of pernicious anemia

Stella M. Clarke, Los Angeles, Homeopathic Hospital College, Cleveland 1888, aged 75, died, July 12

Bureau of Investigation

CURTIS HOWE SPRINGER

A Quack and His Nostrums

Curtis Howe Springer first came to the attention of the Bureau of Investigation through a display advertisement published in the Davenport (Iowa) *Times* Oct. 2, 1929. This carried a picture of Springer who was described as "Dean of Greer College." The advertisement read in part as follows:

Money For You Develop Your Powers Be Healthy, Happy, Successful A series of Free Lectures Is offered to the public under the auspices of the Extension Department of Greer College.

Thousands have paid to hear these lectures, but you can hear them free through the courtesy of the Davenport Psychology Class.

President Hoover said the complete abolition of poverty is now a possibility for us.

Analyze Yourself Know Your Hidden Powers

Greer College, according to the Chicago Better Business Bureau, was a concern teaching automobile mechanics and went into bankruptcy with an unfavorable record of students untrained and loss to creditors. Later, according to the Better Business Bureau, the concern was reorganized. In answer to a letter written to Greer College July 24, 1935, by the Bureau of Investigation Mr. E. Greer stated that Springer's connection with that institution was terminated 'about five years ago.'

In August 1930 the Scranton (Pa.) Better Business Bureau wrote that Springer had been giving a course of 'lectures' at the local Y M C A which he is said to have claimed were presented through the courtesy of the 'Extension Department of the National Academy.' What this Academy is or was if, which seems doubtful, it ever has been, we have been unable to learn. Neither have we been able to learn anything about the "Springer School of Humanism" that was also mentioned. The Better Business Bureau reported, further, that Springer's 'lectures' were entitled "How to Banish Disease and Know the Joy of Living." Springer was said not to have charged any admission, but to have taken up a collection and also to have sold so-called private courses in psychoanalysis at \$25 a course.

In connection with the latter, the Scranton Better Business Bureau stated further that a local woman who had contracted and paid for a "course" charged Springer with obtaining money under false pretenses. When the case came up for trial, the woman is said to have testified that for the money paid, Springer had agreed to give her twelve "readings" or "sittings," two a week for six weeks, but that at the end of two weeks Springer left the city and she received no further notice from him. The Scranton Better Business Bureau reported that prosecution was dropped when Springer refunded the woman's money.

In December 1930 Springer put out what purported to be the first issue of a magazine entitled "Symposium Creative Psychologic," a name that is as meaningless as some of the titles that Springer has annexed. This sheet was devoted mainly to advertising Springer and his activities, especially his "Doc Springer Temple of Health." In it Springer published an "explanation" of why he had had to cease broadcasting over WBRE.

At this point it may be interpolated that investigation seems to show that Springer came originally from Birmingham, Ala., where his record, not being of a medical or quasi-medical character, need not be gone into at this time, he left there to come to Chicago, he organized the "Temple of Health" in Wilkes-Barre, Pa., he sold "Springer's Health Bread" at Johnstown, Pa., he exploited a similar scheme in Cumberland, Md., he made payments on some land at Mount Davis, near Salisbury, Pa., with the idea of starting a "health resort", he incorporated Basic Foods, Inc., with an authorized capital of fifty shares, of which Springer and another man were said to hold one share each and Springer's wife to hold the other forty-eight shares, he published in not-too-particular papers alleged health columns with his picture accompanying the reading matter.

During the past few years Curtis Howe Springer, in advertising himself, has placed after his name the letters 'M.D., N.D., D.O., Ph.D.,' sometimes with the statement beneath the

"degrees" that they were "Honorarily conferred." A most thorough search fails to show that Springer was ever graduated by any reputable college or university, medical or otherwise.

In May 1933 a physician in Cumberland, Md., wrote to the Bureau of Investigation, stating that when Springer had appeared in his locality the local state's attorney demanded that Springer produce a certificate showing that he had the right to use the title M.D. This, of course, Springer was unable to do. Then, according to our correspondent, Springer was charged with practicing medicine without a license, but, being at liberty without bail, he left Cumberland and could not be apprehended for trial. Later it was reported that he was broadcasting at Philadelphia and still later at Pittsburgh.

SPRINGER COMES TO CHICAGO

In the latter part of December 1933 the broadcasting station WGN, operated by the Chicago *Tribune*, called up the Bureau of Investigation of the American Medical Association and asked for, and received, such information as was then available on

SYMPOSIUM
CREATIVE
PSYCHOLOGIC

VOL. 1 DECEMBER, 1930 NO. 1

SUCCESS
A Challenge to Honest Thinkers

PICKING A HUSBAND
for "Keeps"

WHY NOT BE
HEALTHY,
HAPPY
SUCCESSFUL?
A Magazine for Thinkers Who Think

Curtis Howe Springer

Photographic reproduction (greatly reduced) of the cover of an alleged magazine put out by Springer as an advertising asset. At that time Springer affected long hair, since then he has had it cut. In this "magazine" Springer had an explanation of why he had to cease broadcasting over WBRE.

Curtis Howe Springer. It appeared that Springer wanted to buy time on the air over WGN, but the contract he offered was rejected. A few days later (Jan. 4, 1934) Springer himself, with the effrontery of his kind, came to the headquarters of the American Medical Association and asked to see the Director of the Bureau of Investigation. He told the Director that he had called to correct what he described as certain misconceptions that the Bureau of Investigation was said to have regarding him.

Springer was asked where he had obtained and by what right he used the degree M.D. He stated that the degree had been bestowed by one Frederick W. Collins, a chiropractor of New Jersey, who runs the egregious "First National University of Naturopathy" and apparently several other high-sounding institutions of dubious educational character. Needless to say, the Collins outfit is not a recognized medical college. It has no scientific standing and of course, has no legal authority.

whatever to grant the degree of Doctor of Medicine Springer further admitted during the interview that his alleged degrees were granted without attendance and upon the payment of either \$200 or \$300 (he said he could not remember which) and the answering of certain questions!

Springer was told that interviews were unsatisfactory, as they left the problems discussed a matter of recollection on the part of two individuals. For that reason he was requested to send the Bureau of Investigation a letter setting forth the various facts regarding himself and correcting any alleged inaccuracies of which the Bureau of Investigation had been accused. At the time, Springer stated that he would go right back to his hotel (one of the most expensive in Chicago) and write such a letter.

Within five minutes of the termination of the interview the Director of the Bureau of Investigation wrote a letter to Springer at his address in the hotel in Chicago, setting forth exactly the claims that he had just made. He was asked to confirm by letter his verbal claim that he had paid \$200 or \$300 for his M D "degree" granted by chiropractor Collins who had no right to grant such a degree, he was asked from what institutions and on what dates he had received his "degrees" of N D, D O and Ph D, he was asked whether the Greer College, of which he had been advertised as Dean, was the same concern that had been the subject of a cease and desist order from the Federal Trade Commission, he was asked, also to furnish, as he had promised verbally, written evidence to indicate that he had some knowledge of nutrition and dietetics and he was also asked to send any information he cared to regarding 'Doc. Springer's Temple of Health' at Wilkes-Barre, Pa. Needless to say, Springer was much too shrewd to fulfil his verbal promise to write a letter or to put in black and white answers to any of the questions that were put to him.

Although unsuccessful in buying time on the air over WGN it was not long before Springer was broadcasting twice daily over WCFL, another radio station operating in the Chicago area. In this connection, we cannot do better than quote from the Chicago Better Business Bureau's report on Springer's Chicago radio activities:

"These talks were along sensational lines tending to vilify those who disagreed with the New Deal and President Roosevelt's program. Appeals for money for his activities were made and, according to information received, many sent him funds. In the early summer of 1934 Springer brought out a newspaper called the *New Deal* which was labeled 'Official Organ of Legion of Honor'. The style 'Legion of Honor' was another creation of Springer's, the stated purpose of which was to federate honest, patriotic and loyal merchants into an organization known as 'Federation of New Dealers' that will afford the opportunity to enlighten the working man, the forgotten man and others seeking truth. Springer likewise carried on attacks against business establishments in Chicago, charging them with exploiting the public. Soon complaints started to come to the Better Business Bureau and a number of warrants were taken out for Springer in Chicago, charging him with slander, etc."

About the middle of July 1934 Springer is said to have come to the office of the Chicago Better Business Bureau for the purpose of giving information regarding certain complaints which existed against him. While he was there, he was asked some questions by the officials of the Better Business Bureau. Quoting again from that Bureau's report:

"When asked about his qualifications as a medical doctor Springer said that he took his degree of M D from the American College of Doctors and Surgeons in Washington, D. C. [There is no such institution.—Ed.] He took his degree of osteopathy at Meyersdale, Pa., where he maintained a residence. [There never has been an osteopathic college there.—Ed.] He states that he attended the Westlake West Virginia College for one year. [There is no such college and never has been.—Ed.] and further, that he took his degree of Ph D from a New Jersey school of osteopathy. When it was called to his attention that a school of osteopathy did not confer such a degree as Ph D., Springer did not answer the question.

'He advised that he had made \$76,000 in 1933 in the sale of his food products including Antediluvian Tea,

INTERVIEW DIVISION

Re-Hib, an anti-acid product, and the so-called Basic Food. Springer met the various complaints against him with counter-charges designed to discredit the complaints. About the middle of July he ceased broadcasting on radio station WCFL, following which complaints were received from business establishments alleging unsatisfied obligations left by Springer."

One incidental point, as showing Springer's character, is worth bringing out. While Springer was broadcasting in Chicago over radio station WCFL, he was defaming certain Chicago stores which were picketed because of strikes. At the same time Springer was staying at one of the most expensive hotels in Chicago which was also, both at that time and later, the subject of picketing!

Springer's statement to the Chicago Better Business Bureau that he had made \$76,000 in 1933 in the sale of his "patent

The Body Beautiful

By
CURTIS HOWE SPRINGER
M D N D D O Ph D
Honorarily Conferred

Author of

'FOODS A HEALTHY BODY REQUIRES'
'SUCCESS THRU SELF-MASTERY,'
'CHARACTER ANALYSIS'
'THE LAYMAN'S HANDBOOK OF LIFE'
'LOVE MARRIAGE AND THE WHY
OF DIVORCE,'
'BUILDING A LIFE'

Editor of

"SYMPOSIUM MAGAZINE"

Formerly Dean of Greer College Founder of the
Springer Schools of Humanism Honorary
President of the National Academy

THE NATIONAL ACADEMY
1933

Photographic reproduction of the title page of a Springer booklet advertising his patent medicine Antediluvian Tea a mixture of chopped up herbs

medicines" Re-Hib, Antediluvian Tea etc., might be of interest to that portion of the Treasury Department that looks into income tax returns.

Since Springer wore out his welcome in Chicago, he has apparently been lying comparatively low—at least, the number of inquiries that have come in regarding him has been few. One did come in in April 1935 from the Philadelphia County Medical Society, which telegraphed the Bureau of Investigation of the American Medical Association, stating that a Philadelphia radio station was requesting advice on Springer's Re-Hib and Antediluvian Tea. The Philadelphia County Medical Society was told that Springer was not a physician and that the Bureau of Investigation considered him a blatant faker, that his Re-Hib was apparently mainly baking soda, while the Antediluvian Tea was evidently nothing more than a crude mixture of laxative herbs. The Bureau was later advised by the Philadelphia County Medical Society that the radio station had refused Springer's contract for broadcasting.

Because of the number of inquiries regarding Springer's "patent medicine" Re-Hib, the Bureau of Investigation asked the A M A Chemical Laboratory to make an analysis of the nostrum. The Laboratory report follows:

LABORATORY REPORT

"An original specimen of 'Dr' Springer's Re-Hib (Haven of Rest, Somerset County, Pa.), price 75 cents, was submitted to the A. M. A. Chemical Laboratory for examination. The only statement on the trade package that gave any information regarding composition read as follows: 'Re Hib is a blending of Magnesium Carbonate—Sodium Carbonate—Bismuth Subcarbonate—Milk Sugar—Papain—Malt Diastase and Oil of Peppermint. Sodium Bicarbonate Added'.

"The jar contained 137.8 Gm (4.4 oz approximately) of a white powder possessing an odor of oil of peppermint. Qualitative tests indicated the presence of bismuth, calcium, magnesium, sodium, bicarbonate, carbonate, lactose, and traces of chlorides, sulphates and oil of peppermint. Phosphates, nitrates, boric acid and borates were not found. Pharmacognostic examination indicated the absence of starch and cellular animal or vegetable tissue. Under a rotatory microscope the following substances appeared to be present: Sodium bicarbonate, sodium carbonate, lactose, bismuth subcarbonate and magnesium carbonate. Quantitative determinations yielded the following:

	per cent
Loss on drying (100 C)	26.9
Loss in weight in vacuum over sulphuric acid	0.06
Ash	57.0
Bismuth (Bi+++)	2.05
Calcium (Ca++)	2.2
Magnesium (Mg++)	2.65
Sodium (Na+)	20.85
Carbon dioxide (CO ₂)	45.30
Lactose	5.2

"Based on the foregoing, it may be calculated that Springer's Re-Hib contains essentially the following:

	per cent
Sodium bicarbonate (baking soda)	72.3
Magnesium carbonate (magnesia)	10.9
Calcium carbonate (chalk)	5.6
Lactose (milk sugar)	5.2
Sodium carbonate (washing soda)	2.8
Bismuth subcarbonate	2.5
Difference (moisture, oil of peppermint, etc.)	0.7

"The product appears, therefore, to be approximately three-fourths baking soda, to which has been added some magnesium carbonate (magnesia), bismuth subcarbonate, and calcium carbonate (chalk).

From the label, which states, after naming the alleged ingredients, that sodium bicarbonate (baking soda) has been "added" to Re-Hib, one would naturally assume that this substance was but a minor ingredient or an afterthought. Yet from the chemists' report, it is obvious that baking soda comprises nearly three-fourths of Springer's "patent medicine."

Summed up, it may be said that Springer is but one more example of what to the thoughtful citizen must appear as one of the most dangerous social phenomena of American city life. The person with an ignorance of the human body and its processes that is wide and deep, who by virtue of an unblushing effrontery combined with a flair for garrulity dupes an ignorant public. Loquacious fakers, faddists and quacks have for some years past made an easy living by their wits through the facility with which they could hire halls and announce so-called free lectures on subjects on which the ignorance of the audience was only exceeded by that of the speaker. The advent of the radio has multiplied the opportunities for dispensing misinformation at the public's expense.

The Caliber of the Fallopian Tube—The caliber of the tube is very small, especially at its inner end, where the canal is only large enough to admit a very fine bristle. It can thus be seen that the slightest obstruction, as by even a mild degree of the inflammations which are so common in women, may block the channel so that eggs cannot reach the womb. This is one of the most common causes of childlessness in women, and it is this point which the gynecologist tries to clear up by means of blowing carbon dioxide gas through the tube in the now well known Rubin test.—Novak, Emil. *The Woman Asks the Doctor*, Baltimore, Williams and Wilkins Company, 1935.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

COPPER IN COOKING UTENSILS AND IN FOOD

To the Editor—I have a refrigerating basket that I use when I go fishing. A tinner told me that it would not be advisable to replace the tin lining with copper, as it would poison the fish. A candy manufacturer advises that he does all his cooking in copper utensils but that he never allows any of the products to cool in such containers. Please advise whether copper is harmful as a lining for such a basket and if so just what the cause is.

M D Mississippi

ANSWER—The flesh of some fish in many waters, and particularly some shellfish, regularly contains more copper than would arise from contact with a copper fish basket. Water has a slight capacity for dissolving copper, one gallon dissolving approximately one-fifth grain. If all this should be taken up by fish, subsequent consumption of the fish probably would not lead to disaster. A great deal of food is prepared in copper vessels. It is a common experience of many housewives to cook up fruit in copper utensils. Much home made molasses is prepared in copper pans. In many industries presumably using tin-lined copper vessels, the tinning becomes worn off so that cooking actually takes place in copper vessels. In some countries, copper vessels are regularly used. None of these uses lead to copper poisoning of any severity. The housewife knows that such foods as preserves prepared in copper vessels must not be permitted to stand indefinitely. Long standing leads to marked green discoloration of the syrup around the edges. Such a quantity of copper would either prove to be unnoticed at the time of consumption or at most would cause a gastro enteritis. None of these statements imply that the copper ion is not toxic. Preferably copper utensils used in connection with food should be tinned, the tin being even less toxic than the copper. Copper compounds have led to a number of deaths both accidentally and as a result of use for suicide. The quantity necessary to produce death or other serious consequences is quite high. As much as one half ounce of copper sulphate has been ingested by a young child without fatal results. Long continued exposure to traces of copper is not proved to lead to any chronic copper poisoning. Industrial workers exposed to copper in various forms ordinarily suffer no severe consequences. The use of copper for coloring foods has been the subject of much contention and controversy. Different conclusions have been reached by various nations. At one time in this country it was concluded that from 10 to 12 mg of copper (representing the upper limit of the small quantity that might be utilized in the artificial "greening" of a day's ration of vegetables and continuously taken into the body) might bring about a prejudicial effect on health. When acute poisoning does follow the ingestion of copper compounds, chief manifestations are nausea, vomiting accompanied by thirst, abdominal pain, marked diarrhea and acute nephritis, followed in profound cases by convulsions, delirium and collapse. However, it is the intent of this discussion to deny the likelihood of harm from the use of copper as a material for making refrigerated fish baskets.

SCHILLER'S TEST—DARANYI REACTION—HIRSCHFELD'S CANCER REACTION

To the Editor—Please describe for me the technique of (1) Schiller's test (2) the Daranyi reaction and (3) Hirschfeld's cancer reaction.

MARIO D BEJASA M D Philippine Islands.

ANSWER—1 Schiller's test for the detection of early carcinoma of the cervix is based on a discovery by Lahm that the upper layers of the normal epithelium of the portio and the vagina contain rich masses of glycogen, which disappear when the epithelium becomes cornified or changed by cancer. In the normal living tissue the glycogen of the upper layers of cells is stained in a few seconds a deep mahogany brown by compound solution of iodine. A superficial area of early cancer, being devoid of glycogen, does not receive the stain and stands out startlingly white or pink against the deeply colored almost black background of the normal tissue. Schiller (*Am J Surg* 26:269 [Nov] 1934) said that he used preferably Gram's solution, consisting of one part of iodine to two parts of potassium iodide and 300 parts of water, as it gives sharper differentiations than the more rapidly acting but much more diffusely staining compound solution of iodine of high concentration. The portio should first be cleansed of mucus

or discharges with the aid of cotton. Then from 20 to 30 cc. of Gram's solution is poured on the portio from a glass vessel having a sharply pointed lip and is carefully distributed with a cotton pledget, so that no part shall remain unmoistened. After thirty or forty seconds the Gram's solution is absorbed with a pledget of dry cotton, the portio is wiped off superficially and is then carefully examined for staining.

2. The Daranyi test is said to be an aid in the diagnosis of tuberculosis when some other tests give doubtful results. According to Montank (*Journal-Lancet* 45 62 [Feb 1] 1925) the test is made with 0.2 cc. of the serum added to 1.1 cc. of 96 per cent alcohol diluted with 2 per cent sodium chloride solution (4.1 cc. of the saline solution to each cubic centimeter of the alcohol). The mixture is well shaken and heated in the water bath at 60 C. for twenty minutes. The tubes are then kept slanted at room temperature against a dark background and are inspected without disturbing. When flocculation occurs at the half or first hour, this is a four plus reaction. The negative reaction is recorded at the end of twenty-four hours if no flocculation has occurred. It is important to titrate the alcohol dilution each time with control serums.

3. Hirschfeld's cancer reaction, according to A. I. Lipkin (*Giornale di batteriologia e immunologia* 9 605 [Oct] 1932) is carried out as follows. The carcinomatous tissue is cut into small pieces and is placed in a 96 per cent alcoholic solution in a ratio of 1 to 10 and kept for nine days in a thermostat the mixture being shaken vigorously from time to time and then filtered through paper. The filtrate represents the extract. For the preparation of antigen 1, 0.35 cc. of this alcoholic extract is added to 0.15 cc. of a 1 per cent alcoholic solution of cholesterol, for the preparation of antigens 2 and 3, 0.3 cc. and 0.2 cc. are added, respectively. To each 0.5 cc. of the mixture, 3 cc. of physiologic solution of sodium chloride is added. The antigens give a positive reaction with the serum of healthy persons in amounts of 0.3 cc. of antigen 1, in amounts of 0.4 cc. of antigen 2 and in amounts of 0.5 cc. of antigen 3. For the titer, 0.25 cc. is used for antigen 1, 0.35 cc. for antigen 2 and 0.45 cc. for antigen 3. To perform the test, the required amount of the antigen is poured into each test tube (depending on the titer) and the volume is brought up to 0.5 cc. with physiologic solution of sodium chloride, then 0.5 cc. of the serum to be examined is inactivated and diluted five times with physiologic solution of sodium chloride and 0.5 cc. of complement (fresh blood serum of guinea-pigs diluted to the right titer with physiologic solution of sodium chloride) is added. The test tubes are placed in a thermostat for an hour and then 1 cc. of the hemolytic system is added. The tubes are again placed in a thermostat for an hour, and then the results of the test are read. Hirschfeld and his associates consider that with especially selected and sensitive antigens it is possible with the complement fixation reaction to detect in cancer patients antibodies for cancer lipids.

POISONING WITH CYANOGAS

To the Editor.—A patient came to me recently who had been rendered dizzy and sick from the inhalation of cyanogas. He states that to clear the mouth of the can he put it to his lips and blew through it. Now from two to three weeks later he has still considerable fullness in both ears the mucous membranes of the nose and throat are swollen and there are pains along the jaws in front of the ear. Could you tell me how this gas would cause trouble in tissues of the head and the respiratory tract? Would there be any late effects on the blood or kidneys or lungs?

M.D. Rhode Island

ANSWER.—In defense of the manufacturer of this product it is pointed out that the printed descriptive literature carries many warning statements such as "Do not inhale with mouth or nose close to open container." One of the paradoxes of the industrial use of cyanides is the almost entire absence of clinical cases even when cyanides are manipulated in large quantities occasioning visible clouds of cyanide dust. Possibly this apparent lack of toxicity is due to some form of tolerance built up by long exposed industrial workers. In the case described Cyanogas is stated by its manufacturers to be calcium cyanide $\text{Ca}(\text{CN})_2$, but the marked local manifestations mentioned in the query suggest the action of calcium cyanamide, CaCN_2 . These two substances are chemically closely related although by no means identical. The cyanamide produces intense inflammation of the mucous membranes with conjunctivitis, rhinitis, gingivitis and in fact, inflammation along the entire respiratory tract. Further, the cyanamide may lead to typical skin lesions, which are deep red or bluish and in some instances similar to the scarlatiniform rash of scarlet fever. Although systemic disease may arise from the cyanamide, it is less characteristic than from the cyanide. In subacute poisoning by the latter the following symptoms may arise: dyspnea, profound weakness, pains in the

head and in the region of the kidneys, redness of the skin, accelerated pulse, which is usually feeble, difficult and irregular breathing, marked vomiting, and spasm of the diaphragm and of the abdominal muscles. This type of manifestation may continue with some severity for two or three weeks. However, for six or eight months the patient suffering from cyanide poisoning may exhibit a distinct anemia, marked fatigability, abnormal gait and posture, involvement of the small muscles about the face, and difficulty in moving the jaw. In answer to the specific question as to late effects, it may be stated with certainty that long after the period of exposure to cyanides the victim of cyanide poisoning may suffer from damage to the blood and kidneys' action on the lungs and respiratory tract is not well established for cyanides but is associated with cyanamide poisoning.

RHEUMATIC FEVER

To the Editor.—I should like your advice regarding a girl who is now 13 years of age and who had severe rheumatic fever at the age of 10. In December 1931 she had joint pains and high fever. Previous to this her history had been negative for rheumatic fever, colds or tonsillitis, although a soft systolic blow on exercise had been noticed on examination two months previously. From December until the end of February the girl exhibited practically all the textbook signs of rheumatic fever, namely nosebleeds, nodules pain in the breasts, petechiae and purpuric spots as well as various signs of carditis, joint pains and fever. Feb. 27, 1932, she was taken to Bermuda by stretcher to the boat having been kept flat on her back at all times during her illness. In Bermuda she did not pick up rapidly until July when the physician there felt that she was well enough for tonsillectomy. This he did and it seemed as though from this moment her recovery set in. She returned to this country in August 1933. Her heart at this time appeared to be normal in size. The sounds were of fair quality with extrasystoles every five to fifteen beats unaffected by exercise; no murmur was heard at this time. She was allowed to lead a normal life with the exclusion of strenuous games. March 12, 1934, an electrocardiogram showed no definite evidence of active myocardial involvement. In lead 4 the P wave was inverted, T inverted and QRS diphasic. White blood cells numbered 9,100; there was a normal sedimentation rate. She has continued in excellent health since her return from Bermuda and apparently has had no recurrence of rheumatic activity. At present she has no cardiac symptoms, does not get out of breath more easily than other girls, plays baseball and takes walks but does not play basketball, she would like to play tennis. She is a fine strong looking girl, weighs 108 pounds (49 Kg.) and is 63 inches (160 cm.) in height. The hemoglobin is 97 per cent. The heart is normal in size on palpation and to percussion. The rate is about 84 and very irregular there being very frequent extrasystoles coming mostly in pairs. On exercise running downstairs around a room and up again the pulse goes to 135 and is perfectly regular. In one minute it is still regular and down to 100. In two minutes it is back to 80 with extrasystoles recurring. No murmurs are heard. The problems in which I should like help are these: What is the significance of the extrasystoles? I have talked to many doctors about this and there seems to be no definite knowledge about them. The general feeling is that in youth anyway they are not of grave import. How much can the girl be permitted to do? Should she be allowed to play any game that she wants to?

G. L. Johnson M.D. Englewood N. J.

ANSWER.—Extrasystoles of ventricular origin are not of any definite significance. In this case they may mean nothing at all or only that the previous infection has left some place in the ventricular muscle that is more irritable than normal. That also is of no consequence. If the extrasystoles are of auricular origin, they are of some significance and should be watched.

The only real danger is that of a recurrence of the rheumatic fever or that it is not entirely quiescent. This should be checked by careful reexamination at frequent intervals, the temperature being watched and repeated sedimentation tests being made.

SUBARACHNOID BLOCK

To the Editor.—Would it be safe to repeat a subarachnoid block with an anesthetic within ten days? If not, how much time should lapse before it would? Please omit name.

M.D. South Carolina

ANSWER.—It is considered safe to repeat subarachnoid block with a spinal anesthetic within ten days (Sullivan, W. M., Jr. Observations on a Patient to Whom Spinal Anesthesia was Administered Five Times Within Thirty-Eight Hours, *THE JOURNAL*, Sept. 17, 1932, p. 993) provided lumbar puncture headache has not developed from the first block, provided other untoward symptoms that might be referable to the first injection have not appeared or provided the patient tolerated the first block well at the time of operation. It would not be considered safe to repeat the block in the interval named if the patient became markedly debilitated in the period following the first operation and anesthesia. It is commonly understood that general debility is usually the principal contraindication to the use of spinal anesthesia.

For the uncomplicated case, such as one in which colostomy is to be followed later by partial resection of the bowel, a second and even a third spinal anesthetic for, say, closure of the colonic stoma, is commonly administered without special regard to the length of time between operations

PLASTIC INDURATION OF PENIS

To the Editor—I have a patient aged 48 years who is a strong robust farmer. About ten years ago the man was herding cattle and was thrown from his horse into a patch of poison ivy. This affected the penis and scrotum the perineal region and both thighs and in spite of the medical care which he received this condition persisted for over nine months when he changed physicians and was cured. Ever since this time he has had some pruritus of the penis. About five years later while breaking a bronco he was thrown rather hard against the saddlehorn with considerable hematoma resulting in the penis but which seemingly cleared up without any consequences. About two years after this injury he noticed that the urethra was becoming a hard pipelike affair at about the middle of the penis. Last winter while performing nature's duties outside in the cold he allowed the penis and testicles to become well frost bitten and ever since that time he has noticed that this hardened area in the penis has been increasing both in circumference and in length. Physical examination reveals that it is really two separate places. They feel like calcification around the urethra. The Wassermann reaction is negative. Examination of the urine is negative. Blood counts are normal and there is nothing in the general physical condition of the patient that deviates from the normal. As he is still active sexually this condition is a distinct aggravation and is a source of much pain while he has an erection. Urethroscopic examination is negative except for a slight constriction in the lumen of the urethra at the aforementioned places. Suggestions as to diagnosis and possibilities in treatment would be appreciated.

M D South Dakota

ANSWER.—From the description of this case it would appear that one is justified in making a diagnosis of so-called Peyronie's disease, sometimes called plastic induration of the penis, chronic cavernositis, circumscribed fibrosis, or primary indurative cavernositis, the etiology of which is unknown. (Of course there is a possibility that the patient may have a traumatic stricture.)

Various forms of treatment are recommended for this condition, hence it is evident at once that there is no specific form of treatment. Most urologists, however, agree on the following: 1. The patient should soak the penis in a pitcher of hot water morning and evening. 2. After the evening soaking the patient should massage with a 2 per cent iodine ointment made with vanishing cream as a base. 3. Internally, 1 Gm (15 grains) of potassium iodide should be administered three times a day.

If the patient has foci of infection elsewhere in the body that might play a part in this condition, they should be cleared up. The use of radium has not accomplished much. Diathermy occasionally helps. In a few instances, deep intramuscular injections of 1 cc. of thiosinamine in a 1 per cent solution every five days has proved helpful.

Surgical excision of these plaques has been recommended, but in a great many instances the condition has been aggravated by surgical operation; hence surgery is rarely, if ever employed. In a few instances the response to treatment is good—that is, the condition shows improvement, and in rare instances it clears up to a marked degree, but this favorable outcome is the exception rather than the rule. In the majority of cases the condition is resistant to treatment and shows but little improvement.

SENSITIVITY TO PITUITARY EXTRACT

To the Editor—I am expecting to attend a maternity case a duo decimpara aged 41 who after an injection of 0.5 cc of solution of pituitary in her last two labors developed allergic phenomena such as dyspnea and urticaria which slowly yielded to 0.5 mg of epinephrine and lasted twenty-four hours. Her mother had inveterate asthma and died of nephritis at 65. Will desensitization by injecting 0.05 cc of solution of pituitary with 0.5 cc of solution of pituitary with 0.5 Gm of epinephrine some fifteen minutes before injecting 0.5 cc. of solution of pituitary not nullify the oxytocic action of the solution of pituitary? Kindly suggest a procedure to avoid allergy for in this particular case solution of pituitary proved helpful. Please omit name.

M D San Pablo Philippines

ANSWER.—The query does not indicate that there has been a determination made as to the particular specific factor in the solution of pituitary that was responsible for the allergic reaction. The patient may be sensitive to the protein of the animal species from which the extract was derived. Thus she may react to the pituitary extract from the hog and not to that derived from the cow. This would indicate a species specificity, and allergic tests might indicate that a particular brand could be used safely. It is also possible that the patient may be sensitive to some fractions of the extract and not to others. Thus F. A. Simon (THE JOURNAL, March 23, p. 996) report-

ing an instance of hypersensitiveness to posterior pituitary extract, demonstrated on his patient a positive skin test with pituitary extract (obstetrical) and pitressin (vasoconstrictor principle) but a negative reaction to pitocin (oxytocic principle). If this could also be found in the inquirer's patient, the remedy would be evident.

Except from a scientific standpoint to determine what could be done in such an instance, it is doubtful whether the object to be gained would justify efforts at desensitization procedures, premature labor might well be induced in the process. Normal labor can, of course, be carried to termination without the aid of solution of pituitary.

In addition to the article cited, the following references are worthy of note:

Hasson James. Anaphylaxis Following Injection of Pituitary Extract.

Brit. M. J. 1, 242 (Feb. 8) 1930.

Wang P. W. and Maxwell J. P. Protein Shock After the Administration of Pituitrin. Chinese M. J. 47:66 (Jan.) 1933.

ULCERATIONS IN MOUTH DURING MENSTRUATION

To the Editor—A white woman aged 35 unmarried 5 feet 7 inches (170 cm) high a brunette weighing 121 pounds (55 Kg) had the usual childhood diseases except measles which she had when 17 away at school. Several months later she had trouble with her eyes diplopia finally developed which was corrected by glasses. She began to menstruate at 11 years (twenty-eight day cycle from four to six days duration, with some slight dysmenorrhea). For the past three to five years she has menstruated irregularly from twenty-one to twenty-three days, with a duration of two or three days and very scant flow with no pain. As far back as she can remember she has suffered constantly with ulcers on the tongue and buccal surfaces. This condition is aggravated just before menstruation as a rule. They are from 2 to 5 mm in diameter round and somewhat depressed and covered with a grayish membrane which somewhat resembles thrush or a stomatitis. Removal of the membrane leaves a bleeding surface. Smears show pus cells but no definite organisms. There is a questionable enlargement of the thyroid. The basal metabolism has not been determined and a gastric analysis has not been made. She is not nervous and has no fever. The pulse at rest is 70 a minute after exercise 92 and after two minutes rest 80. On moderate exertion there is some shortness of breath and palpitation of the heart. There is no evidence of any pathologic condition of the heart or lungs. She has gained 20 pounds (9 Kg) in the last year. Her mother suffered with the same complaint until she was about 40 years old. The patient's sister has had no trouble like this nor has any of her four brothers. She catches cold easily and has catarrh and indigestion. Urinalysis is negative. Blood examination reveals 4,000,000 red cells and 80 per cent hemoglobin (Dare). She suffers with constipation as does most of the family. She lives in a malarial district. The family explains that the malaria is caused by a sluggish river. The patient has had fever and chills though not recently. In the last seven years she has been to as many doctors. None have given her any permanent relief. Many diagnoses have been made such as hyperacidity (increased pH of the blood), intestinal intoxication, nervousness and endocrine dysfunction. Each doctor has specified different diets all to no avail. Please outline treatment and medication. Would either emetine hydrochloride or small doses of neosarsphenamine help the local condition? Would solution of anterior pituitary and ovarian extract plus thyroid help her general condition? Please omit name.

M D South Carolina.

ANSWER.—The most distinctive symptom presented by this patient, and apparently the one concerning which advice is sought, is the appearance of small ulcerations on the mouth surfaces, especially at or near the time of menstruation. This should at once suggest the possibility of a chronic relapsing form of agranulocytic angina, in which just such ulcerations are associated with a periodic sharp drop in the polymorphonuclears. The correspondent reports the erythrocyte count but not that of the white cells. If not already done, this point should be cleared up by frequent white cell counts. For a discussion of this subject the correspondent is referred to

Jackson Henry Jr and Merrill Dudley. Agranulocytic Angina Associated with the Menstrual Cycle. New England J. Med. 210:175 (Jan.) 1934.

Thompson W. P. Observations on the Possible Relation Between Agranulocytosis and Menstruation with Further Studies on a Case of Cyclic Neutropenia. New England J. Med. 210:176 (Jan.) 1934.

Studies of the hormone output, according to the method followed by Thompson in his case, would be of interest if practicable. In the event of a periodic leukopenia being demonstrated, the employment of pentnucleotide, in daily intramuscular doses of 10 cc. for a week or ten days before menstruation and of gonadotropic factor of pregnancy urine (antuitrin S or follutin) in daily intramuscular doses of 2 cc. at the same time in relation to the periods, may prove beneficial (Jackson and Merrill).

Other than this suggestion as to specific possibilities, it would seem advisable to have a basal metabolism determination. If the rate is low or even if it is normal, desiccated thyroid in a daily dose of perhaps 0.065 or 0.01 Gm (1 or 1½ grains) may prove of benefit.

ICTERUS IN SYPHILIS

To the Editor—A man aged 25 has syphilis. The initial lesion occurred Dec 2 1934. Dark field examination was positive. December 4 Treatment was started the same day, iodobismutol being injected intramuscularly every fifth day. Neosarsphenamine was begun with an initial dose of 0.4 Gm the dose being increased to 0.6 Gm weekly intravenously. Four days after the seventh dose of neosarsphenamine an icterus developed. The patient was very ill for about two weeks. He received the usual treatment and was in a hospital. At the end of the third week the skin was fairly clear. He was put on mercury rubs for six weeks. Iodobismutol was resumed. The patient has gained weight rapidly during the past month. He has been serum negative from the start. Would you advise me to resume neosarsphenamine or to keep him on iodobismutol and mercury? I am positive that this was a case of arsenical hepatitis. What is the status of Parke Davis's mapharsen regarding its toxicity and would it be safe to use in a case of this kind? By the usual treatment I mean the usual one for arsenical poisoning. For three weeks he received no syphilitic treatment at all. Please omit name.

M D Illinois

ANSWER.—Icterus occurring in the early stages of syphilis during treatment with arsphenamine has been variously interpreted. A small percentage of these cases have been considered to be instances of early hepatic syphilis with jaundice. Another explanation is that it is a catarrhal jaundice of an infectious type.

French writers, particularly Milian, look on these cases as instances of a hepatorecurrence due to incomplete destruction of spirochetes stored in the liver. The majority of clinicians believe that the icterus is directly due to the toxic effect of the arsphenamine on the liver. The early resumption of neosarsphenamine treatment in this case is not advisable. The possibility of the development of an acute yellow atrophy of the liver should be borne in mind. The van den Bergh reaction is a useful guide to the resumption of treatment in patients who have been jaundiced. Mapharsen is a recently introduced arsenical that is still under clinical trial, it does not yet stand accepted by the Council on Pharmacy and Chemistry.

IRRITATION OF THIGHS IN RIDER

To the Editor—A man has been getting a papular eruption on the posterior and inner surfaces of both thighs. A few lesions are present on the flexor surfaces of both forearms. The papules are about 10 mm in diameter slightly infiltrated and not itchy. A few are raised at the margins and have centers slightly wrinkled. Roentgen treatment appears to flatten the lesions but others continue to appear. Whitfield's ointment and permanganate soaks have no effect. The patient goes horseback riding every morning. The lesions on the thigh are where the saddle comes in close contact. The lesions on the forearms are where the reins touch occasionally. I believe that the condition is dermatitis from leather. A patch test with leather is negative. Please let me know whether any similar cases have been reported and whether there is any way to protect this man from the leather if that is the cause as he does not want to give up riding.

M D Ohio

ANSWER.—From the meager description of the essential lesion it is difficult to draw any definite diagnostic conclusions concerning the eruption in question. The presence of papules on the flexor surfaces of both forearms with raised margins and slightly wrinkled centers (Wickham's striae?) suggest the possibility of the eruption being lichen planus. In this condition however, one would expect itching to be present.

The possibility of the eruption being a part of a lichen simplex chronicus has to be borne in mind also, and the contributory role of friction taking place in the course of horseback riding must be considered. The possibility of a fixed drug eruption must also be ruled out, and any history of the ingestion of drugs taken as cathartics or for analgesic purposes must be gone into.

In the case of "dermatitis from leather," in this instance there is probably no direct leather contact to the thighs but there is such contact to the forearms. In the case of the forearms, the wearing of long sleeves would protect these areas from the friction of the reins.

ORTHODONTIA

To the Editor—In the case of a boy aged 16 years with a receding lower jaw and malocclusion and some teeth with bad alignment, is he still young enough to expect any help from orthodontic treatments? Will braces be likely to cause a loosening of the teeth and eventually necessitate extraction?

EUGENE C LOWE, M D Miami Fla

ANSWER.—The condition described can be treated, and normal relation of the teeth established at 16 or even later, although the correction can be made more easily before the eruption of the second permanent molars, the so-called twelve-year molars. The earlier the correction is made, the longer the time during

which the jaws and the face can develop under normal conditions, and the better will be the esthetic result. Great improvement can be made, however, even after maturity has been reached.

The teeth will undoubtedly be retained longer if normal occlusion is established than they will if the condition is not corrected. There is no danger of loosening or losing the teeth if orthodontic treatment is properly conducted, although treatment by the inadequately prepared may bring about these undesirable results.

The treatment of such cases requires special knowledge and training not expected of the general practitioner of dentistry.

LIQUID WOOD SMOKE

To the Editor—In the August 10 issue of THE JOURNAL, under Queries and Minor Notes in answer to a Kentucky physician's inquiry, you referred to tests (allergic) including wood smoke. Will you kindly outline in detail for me the complete method of manufacturing an extract of smoke? I have often recognized the need of this extract among the others that I use but have not seen an account of its use or preparation. I follow Coca's methods of extraction, so if other solutions are used will you kindly give formulas? M A ENGLISH, M D Bainbridge, Ga

ANSWER.—The process of obtaining liquid wood smoke by distillation or burning wood is too difficult for the average laboratory. It is best to purchase liquid wood smoke, which is available everywhere on the open market and is usually produced from hickory wood for the purpose of curing meats.

DYSTROPHY OF THE NAILS

To the Editor—I have a case under my care in which there is alopecia and soft finger nails with a tendency to splinter. Under thyroid and calcium there is an improvement at intervals. Is there a relationship between the alopecia and the soft finger nails and, secondly, between them and the hypothyroidism, since this patient has a basal metabolic rate of -18? Does the temporary improvement depend on the change in dosage? Kindly omit name.

M D Pennsylvania

ANSWER.—The association of alopecia areata with coincident dystrophy of the nails has been reported by many writers. The etiologic basis for the two conditions may be quite variable and in some instances are related. In the case mentioned it is quite possible that there is an endocrine relationship, especially since improvement is noted on thyroid therapy. It is advisable to continue thyroid medication, with careful observation for any toxic evidence of excessive dosage. Calcium and viosterol may also be given, because of the nail involvement, along with the thyroid or in the intervals between the thyroid administration.

SCARLET FEVER STREPTOCOCCI

To the Editor—How many strains of streptococci have been known to cause scarlet fever? Does the commercial scarlet fever toxin protect against all these strains? J H A PECK M D St Francis Kan

ANSWER.—Two cultural and agglutinative types of hemolytic streptococci are known to have produced experimental scarlet fever in human volunteers.

The commercial scarlet fever toxin protects against all known strains of scarlet fever streptococci.

SCARLET FEVER IMMUNIZATION

To the Editor—In Queries and Minor Notes in THE JOURNAL July 20 page 222 Dr H A Wildman of Sterling Ill made the following inquiry:

I would appreciate information concerning the frequency, severity and duration of reactions to scarlatina immunization injections. Has there been any recent modification of toxin or the technic to reduce these reactions?

In your answer you stated that reactions occur in about 10 per cent following active immunization and that there has been no recent modification of the toxin or the technic. In this connection reference may be made to the following article: Melnick, Theodore. Prevention of Scarlet Fever. Methods to Minimize Reactions. Following Inoculations of the Dick Scarlet Fever Toxin (Arch Pediat 50 158 [March] 1933). In this investigation it was possible to reduce the frequency severity and duration of reactions.

At a meeting of the Section on Pediatrics at the Atlantic City session Dr J Norman Henry of Philadelphia in his presentation reported 38 per cent of reactions following scarlet fever active immunization treatments. This fact alone is of sufficient moment to cause physicians to be reluctant in the use of the toxin and therefore to seek methods to alleviate these obstacles.

THEODORE MELNICK M D Philadelphia

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada Dec. 7. Applications must be filed not later than Nov. 1. Sec, Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis Nov. 18. Sec, Dr William H. Wilder 122 S. Michigan Ave. Chicago

AMERICAN BOARD OF ORTHOPAEDIC SURGERY St. Louis, Jan. Sec. Dr. Fremont A. Chandler 180 N. Michigan Ave. Chicago

AMERICAN BOARD OF PEDIATRICS Philadelphia, Oct. 10 and St. Louis Nov. 20. Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF RADIOLOGY Detroit, Dec. 12. Sec, Dr. Byrl R. Kirklin Mayo Clinic Rochester Minn.

ARIZONA Basic Science Tucson Sept. 17. Sec. Dr. Robert L. Nugent Science Hall University of Arizona Tucson. **Medical** Phoenix, Oct. 12. Sec. Dr. J. H. Patterson 826 Security Bldg.

CALIFORNIA Sacramento Oct. 21-24. Sec. Dr. Charles B. Pinkham 420 State Office Bldg. Sacramento

COLORADO Denver Oct. 1. Sec., Dr. Harvey W. Snyder 422 State Office Bldg. Denver

CONNECTICUT Basic Science New Haven Oct. 12. *Prerequisite to license examination* Address: State Board of Healing Arts 1895 Yale Station New Haven

GEORGIA Atlanta Oct. 8-9. Joint Secretary State Examining Boards Mr. R. C. Coleman, 111 State Capitol Atlanta

IDAHO Boise Oct. 1. Commissioner of Law Enforcement Hon. Emmett Pfost, 205 State House Boise

ILLINOIS Chicago Oct. 22-24. Act. Supt. of Regis. Dept. of Regis. and Edu. Mr. Clinton P. Bliss Springfield

MICHIGAN Lansing, Oct. 8. Sec. Board of Registration in Medicine Dr. J. Earl McIntyre 202-3-4 Hollister Bldg. Lansing

MINNESOTA Basic Science Minneapolis Oct. 12. Sec. Dr. J. C. McKinley 126 Millard Hall University of Minnesota. **Minnesota Medical** Minneapolis Oct. 15-17. Sec., Dr. Julian F. Du Bois 350 St. Peter St., St. Paul

MONTANA Helena Oct. 1. Sec. Dr. S. A. Cooney 7 W. 6th Ave. Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination Sept. 16-18. Ex. Sec. Mr. Everett S. Elwood 225 S. 15th St. Philadelphia

NEW JERSEY Trenton Oct. 15-16. Sec. Dr. Arthur W. Belting 28 W. State St. Trenton

NEW MEXICO Santa Fe Oct. 14. Sec. Dr. Le Grand Ward Sena Plaza Santa Fe

NEW YORK Albany Buffalo New York and Syracuse Sept. 16-19. Chief Professional Examinations Bureau Mr. Herbert J. Hamilton 315 Education Bldg. Albany

RHODE ISLAND Providence Oct. 3-4. Dir., Department of Public Health Dr. Edward A. McLaughlin 319 State Office Bldg. Providence.

WEST VIRGINIA Huntington Oct. 28. State Health Commissioner Dr. Arthur E. McClue, Charleston

WISCONSIN Basic Science Madison Sept. 21. Sec. Professor Robert N. Bauer 3414 W. Wisconsin Ave. Milwaukee

WYOMING Cheyenne Oct. 7. Sec. Dr. G. M. Anderson Capitol Bldg., Cheyenne

District of Columbia July Examination

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held by the Board of Examiners in Medicine and Osteopathy at Washington, July 8-9, 1935. The examination covered 9 subjects and included 60 questions. An average of 75 per cent was required to pass. Thirty candidates were examined, 29 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine (1934) 77 8 78 6 80 8 81 1 82 3 82 4 83 7 84 9 85 7 86 1 86 6		(1933)	85
Georgetown University School of Medicine (1934) 80 4 84, 84 9 87 88 1		(1932)	79 6
Howard University College of Medicine (1929)		(1934)	77 7
Johns Hopkins University School of Medicine (1931) 83 5 86 9		(1929)	88 9
Harvard University Medical School (1932)		(1928)	83
Duke University School of Medicine (1934)		(1932)	79 4
Temple University School of Medicine (1928)		(1934)	84 8
Vanderbilt University School of Medicine (1934)		(1928)	89 8
Medical College of Virginia (1928)		(1934)	81 1
University of Virginia Department of Medicine (1934) 84 1		(1928)	81 5
School	FAILED	Year Grad	Per Cent
Georgetown University School of Medicine		(1932)	72 2

Twenty-one physicians were licensed by reciprocity from January 1 through August 9. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine (1929)		(1929)	Arkansas
Georgetown University School of Medicine (1930)		(1932)	Maryland 2 Virginia
Howard University College of Medicine (1930)		(1929)	Kansas Missouri

Emory University School of Medicine (1929)	Georgia
University of Maryland School of Medicine and College of Physicians and Surgeons (1932)	Maryland
University of Michigan Medical School (1931)	Michigan
University of Minnesota Medical School (1920)	Minnesota
Columbia Univ. College of Physicians and Surgeons (1930)	Connecticut
(1930) (1931) New Jersey	
Fordham University School of Medicine (1915)	New York
Long Island College Hospital (1891)	New York
Leonard Medical School North Carolina (1904)	N Carolina
University of Pennsylvania School of Medicine (1929)	Penna.
Woman's Medical College of Pennsylvania (1923)	Penna.
Medical College of Virginia (1930)	Virginia
University of Virginia Department of Medicine (1896)	Virginia
Second Moscow Medical Institute (1921)	Maryland

North Dakota July Report

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held in Grand Forks, July 2-5, 1935. Twelve candidates were examined, all of whom passed. Four physicians were licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Number Passed
Northwestern University Medical School (1934), (1935) 2		(1934)	3
Indiana University School of Medicine (1934)		(1934)	1
State University of Iowa College of Medicine (1932)		(1932)	1
University of Minnesota Medical School (1924), (1927)		(1924)	2
Washington University School of Medicine (1934)		(1934)	1
University of Nebraska College of Medicine (1934)		(1934)	1
University of Oregon Medical School (1932)		(1932)	1
University of Pennsylvania School of Medicine (1932)		(1932)	1
Medizinische Fakultät der Universität Wien (1934)*		(1934)*	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School (1931)		(1931)	Illinois
University of Illinois College of Medicine (1916)		(1916)	Illinois
State Univ. of Iowa Col. of Homeopathic Medicine (1918)		(1918)	Iowa
Creighton University School of Medicine (1928)		(1928)	Montana

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Northwestern University Medical School (1932) N B M Ex.		(1932) N B M Ex.	
Rush Medical College (1935) N B M Ex.		(1935) N B M Ex.	

* Verification of graduation in process

Arizona July Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix, July 2-3, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Four candidates were examined, 3 of whom passed and 1 failed. Three physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists (1934) 75.9, (1935)		(1934)	75.5
Northwestern University Medical School (1935)		(1935)	85 6
School	FAILED	Year Grad.	Per Cent
College of Medical Evangelists (1935)		(1935)	74 1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Columbia Univ. College of Physicians and Surgeons (1923)		(1923)	California
University of Buffalo School of Medicine (1915)		(1915)	New York
Jefferson Medical College of Philadelphia (1921)		(1921)	Penna.
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists (1927) N B M Ex.		(1927) N B M Ex.	

Maine July Examination

Dr. Adam P. Leighton Jr., secretary, Maine Board of Registration of Medicine, reports the written examination held in Augusta, July 2-3, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-two candidates were examined, all of whom passed. Four physicians were licensed by reciprocity and 4 physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Yale University School of Medicine (1934)		(1934)	82
Johns Hopkins University School of Medicine (1906)		(1906)	78
Boston University School of Medicine (1933)		(1933)	87
Harvard University Medical School (1930)		(1930)	87,
(1933) 84 (1935) 82 84, 85		(1911)	78
Tufts College Medical School (1934) 83 85 (1935) 86 86		(1911)	80
Columbia Univ. College of Physicians and Surgeons (1921)		(1921)	80

Syracuse University College of Medicine
Jefferson Medical College of Philadelphia
University of Vermont College of Medicine
University of Wisconsin Medical School
McGill University Faculty of Medicine
(1934) 86 (1935) 89

(1914) 85
(1934) 84, 84
(1935) 89
(1933) 83
(1923) 82

School LICENSED BY RECIPROCITY
Johns Hopkins University School of Medicine
St. Louis University School of Medicine
Western Reserve University Medical Department
University of Pennsylvania School of Medicine

Year Reciprocity
Grad with
(1912) Indiana
(1927) Missouri
(1912) Ohio
(1930) Ohio

School LICENSED BY ENDORSEMENT
Tufts College Medical School
Cornell University Medical College
McGill University Faculty of Medicine

Year Endorsement
Grad of
(1933) N B M E
(1933) N B M E
(1933) N B M E

Book Notices

Diseases of the Mouth and Their Treatment. A Text Book for Practitioners and Students of Medicine and Dentistry. By Hermann Prinz A.M. DDS M.D. Professor of Materia Medica and Therapeutica the Thomas W. Evans Museum and Dental Institute School of Dentistry University of Pennsylvania Philadelphia and Sigmund S. Greenbaum B.S. M.D. Associate Professor of Dermatology and Syphilology in the Graduate School of Medicine of the University of Pennsylvania. Cloth Price \$9 Pp. 602 with 298 illustrations Philadelphia Lea & Febiger 1935

Dr Prinz has been a leading figure in his field, and generations of students and practitioners have profited from his practical and stimulating instruction in the border zones between medicine and dentistry. This book is an adequate presentation of the fruits of his experience enhanced by collaboration with a competent dermatologist. The subject covered is generally inclusive for the diseases of the soft tissues of the oral cavity. Diseases of the bone and teeth are not discussed. In this respect this book is unique among textbooks published in the English language. The two chapters on the significance of the teeth with respect to digestive processes and on therapeutic suggestions contain material that is generally not available. In spite of the average excellence of the book, certain minor defects should be noted. There seems to be little excuse for the first two chapters on embryology and the anatomy and physiology of the oral cavity, as the treatment is necessarily brief and superficial. Many of the black and white illustrations are unsatisfactory either because of defects in reproduction or because of the poor quality of the originals. The same may be said of six of the full page colored plates. The book is highly recommended to students and practitioners of both medicine and dentistry.

La protéinémie et la pression osmotique des protéides. Recherches expérimentales et applications cliniques. Par Aniolne Codoune professeur agrégé à la Faculté de médecine d'Athènes. Préface du Professeur Ch. Achard. Clinique médicale de l'Hôpital Cochin et Institut de Biologie Clinique de l'Université de Paris. Paper. Price 38 francs Pp. 212 Paris Masson & Cie 1934

This monograph briefly discusses the literature on the origin and quantities of different proteins in the blood serum and changes in their concentrations and ratios in experimental and clinical studies. The author prefers the alcohol precipitation of proteins and their estimation by weighing to the refractometer method because the latter method gives too high results in the presence of increased lipins. Furthermore the alcohol method also enables one to estimate total lipins. In addition to total protein, a quantitative estimation of globulins was made. Thus the albumin globulin ratio was determined in each case. The author stresses the importance of this information concerning the differences in the amounts and ratios in different species and the same species in various diseases. The first half of the monograph describes his experiments on dogs and rabbits. From these studies he concludes that the most probable site of formation of serum proteins is the liver, that the thyroid may affect the blood serum-protein concentration through metabolic influences and that the stomach may assume an intermediary role. He shows that croton oil causes a rise in blood serum-protein concentration, that thirsting for days causes the reverse and that immunization also may cause some changes. In the second half, the clinical studies are reported. Although many observations are recorded with tremendous fluctuations in normal as well as in sick individuals, the author nevertheless considers many of the fluctuations in the pathologic cases as

of possible significance. Among the more clearly established cases of disturbed protein equilibrium in blood serum, one should mention the differences in the maternal and fetal blood, the hyperproteinemia in pneumonia, the irregular results in typhoid and paratyphoid, the normal results in meningeal tuberculosis, the possible significance of a change in the protein ratio in the prognosis of pulmonary tuberculosis, the hypoproteinemia (almost limited to the albumin) in nephritis not associated with lipoiduria, the fall in blood serum albumin in cirrhosis of the liver the rise in catarrhal jaundice, the hyperproteinemia in chronic arthritis of the nongouty type and the frequent change in the serum-protein ratio in various neoplasms, usually a marked fall in serum albumin in the advanced cases. Although gastric ulcers are not necessarily associated with a regular change in serum-protein content, nevertheless the injection of pepsin is followed by a rise in blood proteins and especially in the globulin fraction. Changes in lipin content, in albumin-lipin ratio, and in osmotic properties of the blood proteins are also considered in some cases as of possible importance in health and disease.

Names of Surgical Operations. Compiled and arranged by the Western Surgical Association through its Special Committee. Edited by Carl E. Black A.M. M.D. Cloth Price \$3 Pp. 102 St. Paul Minnesota Bruce Publishing Company, 1935

The result of the careful work of an able committee of surgeons with Dr Carl E. Black as editor, this list might be expected to justify the glowing tributes of the galaxy of surgeons who wrote the forewords. The book is at once a monument to the national medical cooperation that made it possible and an example of how far short of perfect first attempts of this kind are. It may be examined first in the light of its "basic principles" as set out in one of the forewords. The terms are to be "philologically correct" but "need lay no claim to description." Even granting that the two aims are compatible and that the sage remark in the introduction, "Words are the instruments for the communication of ideas," was meant for the reader and not the authors, the book will establish only superficial uniformity if the terms carry no exact accepted meaning.

The text may be examined also in the light of its usefulness. It goes even further than is necessary according to the "firm conviction" of one of its sponsors instead of being "as simple as possible" it is so simple that it cannot possibly serve as a guide to the useful record of operations. It is not to be supposed that records of operations are kept merely to comply with regulations, they are supposed to be used by surgeons for a definite purpose, namely, to measure the result of operative treatment and particularly to compare different surgical treatments of the same disease. The skin grafters have a decided advantage over the orthopedic and gastro-intestinal surgeons in this regard, just as the chiropodist is one of the few who can remove a specific type of diseased tissue, in contrast to the surgeon who, while he can excise a gastric ulcer, cannot do anything very specific with a neoplasm of the brain or even remove a wen. It is a needlessly sad commentary on the difficulties of brain surgery to permit the surgeon to look but scarcely to meddle. True, the "Meckel" may be excised ("philologically correctly") but not the "Gasserius." So far as can be discovered, any amputation but "interpelviabdominal" and "interscapulothoracic" will have to go unrecorded, although it would appear from the confusing format that not all permissible terms are printed in these arresting capitals.

Nor is the list "as practical as possible," for the record librarian will have difficulty deciding which pneumopexies to list under lung and which under pleura, and which decompressions fall under brain and which under skull, and "antrotomy" will have to be subdivided into "antrotomy, page 22," and "antrotomy, page 37." Indeed, half titles, such as "fistulectomy" (except 'recto-urethral,' singled out for special attention), "separation of adhesions," "decortication," "resection" and "skin flaps" are too 'simple' altogether for practical use either by the surgeon or by the record librarian. The only way to prevent ambiguity and misfiling is to phrase operative terminology in the most exact terms that the surgeon will use, not to rely on short cuts too vague even for those surgeons who have no thought for records.

The incoherence of the lists begins with the design. Even the profession that terms need have no exact meaning scarcely excuses the inclusion of fatty tissue or even ribs as "organs of locomotion." If it stopped even at the inclusion of the lymphatics under the glandular system, no harm would be done, but the listing of "clavicotomy," "costotomy" and "oblique (incision)" parallel to "osteotomy" makes recording difficult. Then there might well be instructions for combined procedures, and some explanation of the use of "laparotomy" and "craniotomy." These are only a few of the problems which the record librarian will face.

Although one cannot imagine that useful and instructive records can be kept in any hospital if the surgeon confines himself to these scanty and often ambiguous terms, there is no occasion to despair of this work. If the authors approach its revision with a clearer appreciation of the purpose of the record room and the educational value of exact and discriminative medical records, and with a better understanding of the modern technic of filing records and of the handicaps of untrained or partially trained record librarians in small hospitals, they will follow this edition with another which will bear to it something of the relation a motor car bears to the old-fashioned, high-wheeled, precarious—but simple—bicycle.

A Practical Manual of Diseases of the Chest. By Maurice Davidson M.A. M.D. F.R.C.P. Physician to the Brompton Hospital for Consumption and Diseases of the Chest. Cloth. Price \$14. Pp. 528 with 200 illustrations. New York and London: Oxford University Press, 1935.

This is a manual of diseases of the chest, not including the heart. It is intended for physicians, not medical students, who are interested in diseases of the lungs, pleura and mediastinum. Each chapter, followed by a bibliography of source material, is a good presentation of a single topic, according to the modern, largely English, conception of diseases of the chest. Covering the entire field of respiratory diseases as it does in one volume, it must treat individual diseases of the chest far too superficially to satisfy the requirements of a specialist in pulmonary diseases, only thirty pages being devoted to the entire subject of the pneumonias and but fifteen to the anatomy and physiology of the respiratory mechanism. The chief criticism of the book, therefore, is that it covers far too much ground and treats the subject matter too superficially to be of great value to those intending to take up diseases of the chest as a specialty. The book is well written and profusely illustrated by means of drawings and roentgenograms. It is purely clinical, many interesting and illustrative case reports are interspersed throughout the text, and considerable space is devoted to methods of management. Drug therapy occupies an undue prominence according to American standards. Three pages are given over to a discussion of drugs in the treatment of pneumonia and but four lines to the use of oxygen. As might be anticipated, the chapters on pulmonary tuberculosis, industrial respiratory diseases, bronchiectasis, diseases of the pleura, intrathoracic new growths and intrathoracic suppuration occupy the major portion of the work and, for the stated purpose of the book, are adequately and informingly handled.

Human Anatomy Double Dissection Method. By Dudley J. Morton, Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University. First Dissection, Second Dissection. In Two Volumes. Cloth. Price \$6 per set. Pp. 550 with illustrations. New York: Columbia University Press, 1934.

This is a practical manual for dissection combined with a notebook. It reports the result of a pedagogic experiment continued now for a period of six years. The time allotted to dissection in most medical colleges has been reduced to about half of that formerly available. Nevertheless the fundamental necessity of a good knowledge of gross anatomy remains, as does also the requirement by state boards that each student dissect one lateral half of a human body. Teachers are confronted with a condition in which so much of the time assigned is required by the mechanical work of dissection that too little remains for study of the part. Morton presents in this book a thoroughly worked-out plan by which two students are assigned to each part, one dissects, both study. Two dissections are made: first of muscles, bones, joints, viscera and larger structures, second of nerves, vessels and finer structures. Full directions for dissection and study are given for

each part—the students proceeding all together at equal pace—with which the lectures and the study of minute structure (histology) are coordinated. The book provides also on tables and blank pages a scheme for record of work done and observations made together with appropriate topics for discussion. The functional point of view is encouraged by a few appropriate questions and problems (e. g., muscles concerned in underhand bowling, shot putting, and so on). It is reported that it has worked well, that it is popular with the students, that they become well prepared for upper class work, and that they have done well on national and state board examinations. The idea of providing more time for study after dissections are made seems sound and timely. The experiment suggests the possibility that even more time for study might be secured if the students combined their efforts in one dissection instead of two.

Die Elektrokrdiographie und andere graphische Methoden in der Kreislaufdiagnostik. Von Professor Dr. Arthur Weber, Direktor des balneologischen Universitäts-Instituts Bad Nauheim. Second edition. Paper. Price 15.60 marks. Pp. 183 with 129 illustrations. Berlin: Julius Springer, 1935.

The author has brought the subject down to the present in this edition. The subject matter is simply presented and should be useful for those desiring a brief authoritative presentation of the graphic methods of studying heart action. The description of the principles of recording instruments employed is especially to be recommended as well as the section on the venous pulse. The author avoids polemic material and presents a purely objective account of the prevalent views and his own inclinations. The utility of the book for non-German readers is greatly lessened because the instruments described are limited for the most part to those of German manufacture, which are little used in this country. However, the excellent discussion of principles of these instruments is applicable to all similar apparatus. The author's endeavor to present practical details in using instruments, based on his own experience, is a particularly useful approach. It is unfortunate that the illustrations fall far short of the text and often, particularly in the case of heart sounds and murmurs, fail to illustrate the text. Perhaps the author also overemphasizes the utility of pulse and heart sound records for practical diagnostic problems. Nevertheless the monograph will repay the reader who carefully peruses it, especially if he has had some experience in the field. Throughout he will find hints useful in improving his technic and interpretations.

The 1934 Year Book of Neurology, Psychiatry and Endocrinology. Neurology. Edited by Hans H. Reese, M.D., Professor of Neurology and Psychiatry, University of Wisconsin Medical School. Psychiatry. Edited by Harry A. Paskind, M.D., Assistant Professor of Nervous and Mental Diseases, Northwestern University Medical School. Endocrinology. Edited by Elmer L. Sevringhaus, M.D., Associate Professor of Medicine, University of Wisconsin Medical School. Cloth. Price \$3. Pp. 782 with 60 illustrations. Chicago: The Year Book Publishers, Inc., 1935.

This volume of the Year Book appears for the first time since 1918 without the authorship of Dr. Peter Bassoe. The publishers have written a foreword expressing their appreciation of his great service in editing the Year Book over this long period with the utmost intelligence and conscientiousness. The labors of Dr. Bassoe have over these years saved the neurologist and psychiatrist much effort in keeping up with the important literature of this country and abroad. Dr. Bassoe has had the foresight to include the literature on endocrinology in his previous volumes. This year Dr. Sevringhaus has the editorship of the section on endocrinology and has not alone abstracted the current literature for the year but also given a useful outline of the current ideas of the interrelationships of the glands of internal secretion. This section with its critical selections and wise comments is valuable to any one desiring to keep up with the rapid progress in this field. Dr. Paskind has assumed the editorship of the section on psychiatry, and one finds a great improvement in that portion of the Year Book. The work of the various schools of psychiatry are impartially abstracted. The most valuable contributions of the year are adequately reported. There is, however, some slighting of the field of psychoanalysis, particularly in the work that is closely related to the problems of internal medicine. The section on neurology is edited for the first time by Dr. Hans

Reese, who has thoroughly reviewed the field of organic diseases. The choice of articles and the method of abstraction in this section are commended except perhaps for too uncritical acceptance of William F. Petersen's studies on meteorological, seasonal and geographic correlations with nervous and mental phenomena.

Les névroses tachycardiques. Par L. Gallavardin. médecin des hôpitaux de Lyon et A. Tourniaire. Paper. Price 17 francs. Pp. 120 with 24 illustrations. Paris: Masson & Cie. 1935.

This is an excellent condensed summary of the condition of "irritable heart." It considers the subject in eight divisions: historical, symptomatology, etiology, pathogenesis, clinical forms, diagnosis, prognosis and treatment. The authors not only include a brief and clear outline of the literature but present some of their own work on this subject. There is perhaps too much detail in the section on symptoms, especially in regard to laboratory procedures. The last five sections are especially succinct, and the evidence that the condition is not myocardial in origin and not hyperthyroid disease is well assembled. The authors stress the fact that while the disease persists and may always flare up, it does not lead to the sequelae seen in organic disease. They point out that reeducation by graded exercises of various sorts is especially desirable. There is included an extensive bibliography of the pertinent literature covering almost 300 references. The book is recommended for a quick survey of this interesting field.

Medicolegal

Malpractice Drainage Tube Lost in Patient's Chest, Standard of Skill by Which Physician Is Judged—The defendant, a physician, was in charge of a county tuberculosis hospital in which the plaintiff's husband was a patient. He had been operated on, and, according to the report of the case, "a sinus had formed between the pleural cavity and the outside." To drain this so-called sinus the defendant inserted a catheter between the ribs, but the catheter bothered the patient and on March 16 the defendant replaced it by a tube three or four inches long. He anchored this tube by wrapping adhesive tape around it, with the ends stuck to the chest. The next morning however the tube was missing. A physician summoned by the plaintiff, the patient's wife, at the request of the defendant, agreed with the defendant that a piece of a rib ought to be removed "to permit better drainage." The operation was performed March 19 by the consultant physician, in the defendant's presence. The patient died a few hours later. An autopsy disclosed the lost tube lodged along the spine. The plaintiff, as special administratrix of her husband's estate, sued the physician defendant and from a judgment in her favor he appealed to the Supreme Court of Michigan.

An outstanding element in the plaintiff's complaint was that the defendant was negligent in not using the safety pin method for fastening the short drainage tube when he used it. The defendant testified however that he had always used the method he employed in the present case and never before had lost a tube. Other physicians, testifying for the defense, stated that the method used by the defendant was in accord with proper practice, although most or all of them generally used a safety pin. Medical witnesses for the plaintiff, however, testified that the customary practice of the community and in like communities was to use a safety pin and while some said they had never seen any other method used they did not say that the method employed by the defendant was not recognized as proper practice. A medical witness for the plaintiff was permitted to testify that he had seen the safety pin method used at the Mayo Clinic and the Augustana Hospital but the admission of this evidence said the Supreme Court was error. Defendant was not to be charged with the peculiar skill or methods of practice used in famous institutions nor was his treatment to be judged by the treatment that another physician would have used under the circumstances. The rule is firmly established that the defendant was bound to use the degree of diligence and skill which is ordinarily possessed by the average members of the profession in similar localities. Where there is an oppor-

tunity for choice, a physician is not guilty of negligence in using a method recognized as good practice, even though all his local contemporaries may employ another method.

The plaintiff charged that the operation was unnecessary to the patient's welfare and that its purpose was in fact to recover the tube, that the operation was negligently performed, and that delay and shock to the patient were caused by the surgeons, at the defendant's request, exploring the chest with their fingers to locate the tube. All the medical witnesses agreed, however, that the tube should be removed. None felt that it was immediately dangerous. Some thought no exploration for the recovery of the tube should have been made during the operation and that it should have been left for later treatment. The defendant contended that he was not responsible for negligence in the operation because the operating surgeon was in charge of it. On the plaintiff's theory that the operation was performed for the sole purpose of finding the tube and not by way of proper treatment and was done without the consent of the deceased the defendant, in the judgment of the Supreme Court would be liable for the manner of its performance, because he advised it, participated in a medical way, was present and requested that exploration be made to find the tube.

The defendant complained because the plaintiff was allowed to testify that she did not discover that the operation was to be done or had been done until after it had been completed. Her consent to the operation was not necessary, said the court, because her husband was able to give his own consent. The failure of the defendant to notify her that an operation was to be performed, however, particularly in view of the inconclusive claim that the consent of the deceased had been obtained, was competent evidence in support of the plaintiff's claim that the operation was concealed from the interested parties and was done for the purpose of finding the tube.

For the reasons stated, the judgment of the trial court was reversed and a new trial ordered.—*Rytkonen v. Lojano (Mich.)*, 257 N. W. 703.

Malpractice Liability of Consultant—The physician-defendant Ramsey, a general practitioner, was called to attend the plaintiff who had broken his leg two days previously. The next day he returned with Dr. Dolan, a specialist in surgery, and the two put the leg in a cast. Dr. Dolan never saw the patient again. Apparently, no roentgenogram was made during Dr. Ramsey's attendance, and the cast was still on when he discontinued his services. Then another physician was summoned, a roentgenogram was made, and the patient was removed to a hospital. The outcome of the case was unfavorable. The patient sued both Dr. Ramsey and Dr. Dolan. The jury returned a verdict in favor of Dr. Ramsey, and the trial court directed a verdict in favor of Dr. Dolan. The patient appealed to the Supreme Judicial Court of Massachusetts.

The patient-plaintiff contended that the jury could have found Dr. Dolan, the consulting surgeon, negligent although he saw the plaintiff but once and then in company with the attending physician. Dr. Dolan's liability, if there is any, said the court, must be determined on the basis of his conduct during his one visit.

No evidence was offered to show that Dr. Dolan did not have proper professional skill or use such skill, or that he was negligent in treating the patient at home. There was no evidence on which to base any liability on Dr. Dolan's part for the treatment administered by Dr. Ramsey subsequent to Dr. Dolan's visit except as his giving temporary treatment might impose on him the duty to advise with respect to future treatment. The fact that Dr. Dolan did not advise the patient that the cast that was applied was only temporary and that a later reduction of the fracture would be necessary could not be said to show lack of skill, inasmuch as Dr. Dolan, the consulting physician, was dealing with Dr. Ramsey, the physician in charge of the case, who was present when the temporary treatment was given. Dr. Dolan could reasonably rely on Dr. Ramsey's knowing that the cast was only temporary and that a later reduction of the fracture would be necessary, without his being told and on such knowledge being adequate notice to the plaintiff of future requirements of the case. Nothing in the evidence supported the view that Dr. Dolan did not use proper skill in giving temporary treatment without first having

a roentgenogram made, and the evidence did not show that Dr Dolan failed to use proper skill with respect to advice concerning the making of a roentgenogram and the treatment of the patient in a hospital. The patient's own testimony showed that he knew that both Dr Dolan and Dr Ramsey contemplated that a roentgenogram should be made. Dr Dolan's own testimony that he told Dr Ramsey to get the patient into a hospital and to get x-rays was properly admitted.

Dr Ramsey, the attending physician, was not liable for any act or omission by Dr Dolan, the consultant, in his treatment of the patient. There was no evidence to show that the selection of Dr Dolan was improper or that in treating the patient Dr Dolan acted as the agent or servant of Dr Ramsey or acted under his direction or control.

The patient-plaintiff apparently complained of instructions given the jury concerning the duty of the attending physician to transport his patient to a place where roentgenograms could be made. It was no part of the ordinary duty of Dr Ramsey, as an attending physician, to transport his patient to a place where roentgenograms could be made. If he undertook to do so as an incident of his treatment, he did not fail in his duty as a physician if he withdrew from his undertaking after giving reasonable notice of his proposed withdrawal. Nothing in the evidence disclosed any special contract that imposed on Dr Ramsey any greater duty to transport the plaintiff than was described in the charge to the jury by the trial court. Furthermore, if failure to have a roentgenogram made was due to the patient's conduct after he had been advised of the necessity for a roentgenogram, it was not malpractice for Dr Ramsey to continue to treat the plaintiff without a roentgenogram.

All exceptions taken by the patient-plaintiff to the judgment of the trial court in favor of Dr Ramsey and Dr Dolan were overruled—*Shannon v Ramsey, Some v Dolan (Mass)*, 193 N E 235.

Insurance, Accident "Local or Constitutional Disease" and "Attended by a Physician" Construed—The defendant insurance company promised to pay certain benefits if Rubin's death resulted "directly, independently and exclusively of all other causes from accidental bodily injuries." Rubin was killed by an automobile. The trial court gave judgment against the insurance company, which then appealed to the United States circuit court of appeals, ninth district.

The policy provided that "the falsity of any statement in the application materially affecting either the acceptance of the risk or the hazard assumed hereunder, or made with intent to deceive, shall bar all right of recovery under this policy." In his application, Rubin stated that during the past five years he had not had any "local or constitutional disease" and had not been "attended by any physician." During this period he had been examined by an oculist and found to be suffering from acute astigmatism and nearsightedness, and glasses were prescribed. The insurance company contended that Rubin had thus made false representations as to his physical condition, which barred recovery under the policy. Minor physical defects and ailments, said the circuit court of appeals do not come within the scope of questions and answers such as those found in the application under discussion. In *Poole v Grand Circle, W O W* 18 Calif App 457, 123 P 349 the court said:

Illness as used means a disease or ailment of such a character as to affect the general soundness and healthfulness of the system and not a mere temporary indisposition which does not tend to undermine and weaken the constitution of the insured. A reasonable construction of the question [consulting a physician] implies that it should be interpreted as relating to a consultation as to some disease or illness with which the applicant was or had been afflicted not to some feeling of trivial discomfort or temporary indisposition not affecting the general health.

The circuit court of appeals concluded that nearsightedness and astigmatism, which ordinarily at least do not affect the general health, were not local or constitutional diseases, and that Rubin had not been "attended by a physician" during the period in question. Moreover, continued the court, had the statements in the application been untrue, there was no evidence that they

were made with the intent to deceive the insurer, and the insured's defective vision did not materially affect the hazards assumed by the insurance company under the policy.

The judgment in favor of the beneficiaries was accordingly affirmed—*Ocean Accident & Guaranty Corporation Ltd, v Rubin*, 73 F (2d) 157.

Insurance, Accident Death from Starvation Due to Insanity Following Fall—The defendant insurance company promised to pay certain benefits if Watkins' death resulted "directly and exclusively of all other causes, from bodily injuries sustained solely through external, violent and accidental means." Watkins, a locomotive engineer, fell from his seat in the engine cab, receiving a scalp wound and concussion of the brain. He became insane, refused to eat and died of starvation three months later. The beneficiary obtained a judgment against the insurance company, which appealed to the Court of Appeals of Kentucky. The insurance company contended that a provision of the policy, which provided that it did not cover "injuries, fatal or non-fatal, sustained by the insured which shall result wholly or partly from disease, sickness or medical or surgical treatment therefor," barred recovery, because the original or primary cause of Watkins' injuries was disease. But, said the court, there was no evidence to show that Watkins had any disease prior to his injury, and, conceding that his fall was due to some disease or infirmity, his case falls within the well settled rule that a fall or other act resulting in an injury, though superinduced by disease or bodily infirmities, is nevertheless an accident within the meaning of the policy, if the injury is the direct result of the fall or other act and not a direct result of the disease. *Fidelity & Casualty Co v Cooper*, 137 Ky 544, 126 S W 111 and *Clark v Iowa State Traveling Men's Ass'n*, 156 Iowa 201, 135 N W 1114. The judgment in favor of the beneficiary was accordingly affirmed—*Provident Life & Accident Ins Co v Watkins (Ky)*, 76 S W (2d) 889.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology Cincinnati Sept 14-20 Dr William P Wherry 107 South 17th Street, Omaha, Executive Secretary
American Association of Obstetricians Gynecologists and Abdominal Surgeons Sky Top, Pa Sept 16-18 Dr James R Bloss 418 Eleventh Street Huntington W Va Acting Secretary
American Clinical and Climatological Association, Princeton N J Oct 21-23 Dr Francis M Rackemann 263 Beacon Street Boston, Secretary
American Hospital Association St. Louis Sept 30 Oct 4 Dr Bert W Caldwell 18 East Division Street Chicago Executive Secretary
Indiana State Medical Association Gary Oct 8-10 Mr T A Hendricks 23 East Ohio Street Indianapolis Executive Secretary
Kansas City Southwest Clinical Society Kansas City Mo Oct 7-10 Dr Ralph R Coffey 1103 Grand Avenue, Kansas City Mo Secretary
Kentucky State Medical Association Louisville Sept. 30 Oct 3 Dr A T McCormack 532 West Main Street Louisville Secretary
Michigan State Medical Society Sault Ste Marie, Sept 23-25 Dr Burton R Corbus 313 Metz Building Grand Rapids Acting Secretary
Nevada State Medical Association Elko Oct 25-26 Dr Horace J Brown 120 North Virginia Street Reno Secretary
Ohio State Medical Association Cincinnati, Oct 2-4 Mr C S Nelson Hartman Theatre Building Columbus Executive Secretary
Omaha Mid West Clinical Society Omaha Oct. 28 Nov 1 Dr J D McCarthy 107 South 17th Street Omaha Secretary
Oregon State Medical Society Gearhart Sept 19-21 Dr Blair Holcomb Stevens Building Portland Secretary
Pacific Coast Society of Obstetrics and Gynecology Los Angeles, Nov 6-9 Dr T Floyd Bell 400 29th Street Oakland Calif Secretary
Pennsylvania Medical Society of the State of Harrisburg Sept 30 Oct 3 Dr Walter F Donaldson 500 Penn Avenue Pittsburgh Secretary
Virginia Medical Society of Norfolk Oct 15-17 Miss A V Edwards 1200 East Clay Street Richmond Secretary
Wisconsin State Medical Society of Milwaukee Sept. 17-20 Mr J G Crownhart 119 East Washington Avenue Madison Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

57:1204 (July 15) 1935

- Significance of Lymphoid Nodule. H. E. Jordan. University Va.—p. 1.
Changes in Reproductive Organs of Ewe with Some Data Bearing on Their Control. H. H. Cole and R. F. Miller. Davis Calif.—p. 39.
Studies on Endocrine Glands of Frizzle Fowl. W. Landauer. Storrs Conn., and Sophie D. Aberle. Baltimore.—p. 99.
Inervation of Thyroid Gland. III. Distribution and Termination of Nerve Fibers in the Dog. J. F. Nonidez. Ithaca N. Y.—p. 135.
Development of Palatine Tonsil (Cat). A. J. Ramsay. Ithaca N. Y.—p. 171.

American Journal of Diseases of Children, Chicago

50:1308 (July) 1935

- Trend of Pediatric Education and Practice. President's Address. B. S. Veeder. St. Louis.—p. 1.
Antirachitic Effects of Radiation from Different Sources. Comparative Study. C. I. Reed and A. Bachem. Chicago.—p. 11.
Effect of Iron and Copper Therapy on Hemoglobin Content of Blood of Infants. C. A. Elvehjem, A. Siemers and Dorothy Reed. Mendenhall, Madison Wis.—p. 28.
*Filamented Nonfilamented Cell Count in Appendicitis in Children. S. D. Mills. Rochester Minn.—p. 36.
Absorption of Undigested Proteins in Human Beings. IV. Absorption of Unaltered Egg Protein in Infants and in Children. S. J. Wilson and M. Walzer. Brooklyn.—p. 49.
*Clinical Comparison of Antirachitic Value of Irradiated Yeast and of Cod Liver Oil. E. L. Compere, Thelma E. Porter and Lydia J. Roberts. Chicago.—p. 55.
State of Calcium in Fluids of Body. II. Calcium in Blood in Rickets. E. L. Compere, F. C. McLean and A. B. Hastings. Chicago.—p. 77.
*Hematogenous Tuberculosis in Children. Edith M. Lincoln, New York.—p. 84.
Comparative Values of Cutaneous, Percutaneous and Intracutaneous Tuberculin Tests in Children. Special Reference to Sensitiveness of Plaster Test. G. Anzén. Stockholm Sweden.—p. 104.
Late Infantile Amaurotic Idiocy with Marked Cerebral Atrophy. Clinical and Anatomic Report of Case. R. Richter and A. H. Parmelee, Chicago.—p. 111.
Influence of Viosterol and Parathyroid Extract on Mineral Metabolism in Osteogenesis Imperfecta. A. E. Hansen. Minneapolis.—p. 132.

Appendicitis in Children.—From an analysis of forty-one cases of appendicitis among children Mills places the aids in diagnosis in the order of their reliability (1) an increase in the total leukocyte count, (2) an increase in the number of neutrophils and (3) an increase in the number of nonfilamented neutrophils with a nonfilamented-filamented cell ratio exceeding 1. In the Schilling count the presence of very immature leukocytes in the course of a case of appendicitis is important evidence of the demand being made on the bone marrow. The nonfilamented cell count provides no means of showing how immature the nonfilamented forms may be. The nonfilamented cell count may increase in advance of the rise in total leukocytes or neutrophils. An increase in any or all of these forms should warn one of the possibility of extension of the infection. In acute appendicitis, an initial high nonfilamented cell count means that the outlook is bad. With the total percentage of neutrophils higher than 90 and with less than 10 per cent of these filamented forms the prognosis is grave. A falling nonfilamented cell count or a nonfilamented-filamented cell ratio of less than 1 is a good sign, as are also the reappearance of eosinophils and monocytes and the disappearance of neutrophils of the toxic type from the peripheral circulation. The nonfilamented cell count is of value in the diagnosis of appendicitis, since it parallels the neutrophil count during the course of the infection. The nonfilamented cell count is not reliable alone in a sufficient number of cases to be of the same diagnostic worth as the total leukocyte count and the percentage of neutrophils.

Antirachitic Value of Irradiated Yeast and of Cod Liver Oil.—Compere and his associates found that irradiated dry yeast is an effective therapeutic antirachitic agent when given to children in sufficient quantities. The minimal amount of irradiated dry yeast used in the experiment that seemed to effect a cure was 1.25 Gm daily. This contained 6,755 International or U. S. P. revised units of vitamin D. On the basis of roentgenographic evidence it was necessary to give from 11 to 33 times as many rat units of vitamin D in the form of irradiated yeast as in the form of cod liver oil to bring about a comparable degree of improvement in rickets in children.

Hematogenous Tuberculosis in Children.—Lincoln advances the theory that hematogenous dissemination of tuberculosis follows the establishment of the primary complex in the majority of cases. Clinical, bacteriologic and pathologic proof exists that this may occur. Four groups of cases ranging from instances of the marked forms of protracted disseminated hematogenous tuberculosis to those of occult bacillema are described, and typical clinical cases are presented. She is certain that obvious hematogenous disseminations in the lungs, such as those which occur in the marked protracted cases, may break down and exactly simulate the clinical picture of chronic ulcerative tuberculosis. If these small foci of hematogenous origin prove to be a frequent source of the subapical infiltration of chronic organic phthisis, another link in the chain of knowledge concerning the pathogenesis of pulmonary tuberculosis will be furnished. Exogenous reinfection as a cause of apical tuberculosis cannot be discarded. A recent heavy exposure to tuberculosis is often mentioned in the history of adolescent boys and girls and young adults with subapical infiltrations. But it may be that exogenous reinfection causes an activation of older hematogenous lesions, which subsequently break down and lead to bronchogenic extension.

Mineral Metabolism in Osteogenesis Imperfecta.—Hansen's study of two cases confirms the view that one of the characteristic abnormalities in osteogenesis imperfecta is a deficiency in the retention of calcium and phosphorus under conditions that favor retention in normal persons. The evidence regarding a similar deficiency in magnesium metabolism is suggestive but not conclusive. Except for the tendency to excrete an abnormally large proportion of the calcium and phosphorus ingested, no evidence of hyperfunction of the parathyroids has been obtained. The finding of normal values for these elements in the blood and of essentially normal parathyroid bodies in the one patient who was examined at necropsy suggests at least that this cannot be the chief etiologic factor. The clinical picture, including the changes in the bones shown by roentgen examination, is not that commonly seen in patients with acquired hyperparathyroidism. The deficiency in the phosphatase activity of the periosteal and subperiosteal tissue appears to offer a more satisfactory lead for future investigation. The responses of patients with osteogenesis imperfecta to parathyroid extract and to viosterol in various dosages are apparently not significantly different from those of normal persons. The fact that these agents only aggravate the existing abnormal tendency proves with certainty that hypoparathyroidism is not a feature of the pathogenesis and that the deficiency is in no way similar to that occurring in patients with rickets. The data regarding the protein metabolism and all the features of the mineral exchanges of the body other than those mentioned indicate that the defect in metabolism in patients with osteogenesis imperfecta is confined fairly strictly to the mechanism of osseous growth and development.

Anatomical Record, Philadelphia

62:331-452 (July 25) 1935

- Thyroid Weight and Sex in Newly Hatched Chicks. Sophie D. Aberle, New Haven Conn. and Baltimore and W. Landauer. Storrs, Conn.—p. 331.
Some Factors Influencing Early Development of Mammalian Hypophysis. Margaret Shea Gilbert. Ithaca N. Y.—p. 337.
Effects of Thyrotropic and Adrenotropic Principles on Hypophysectomized Amphibia. W. J. Atwell, Buffalo.—p. 361.
Rabbit Lung After Phrenicotomy and Pneumothorax. C. G. Loosli. Chicago.—p. 381.
Seasonal Sexual Rhythm and Its Experimental Modification in Male of Thirteen Lined Ground Squirrel (*Citellus tridecemlineatus*). L. J. Wells. Chicago.—p. 409.

Annals of Medical History, New York

7:311-408 (July) 1935

- William Bull, M.D. (1710-1791) Lieutenant Governor of South Carolina Under the Royal Government. Eleanor Winthrop Townsend Charleston S.C.—p. 311
- Hugh Williamson M.D. LL.D. (1735-1819) North Carolina Physician Statesman and Historian E. A. Hines Jr., Rochester, Minn.—p. 323
- Medical Writers of Thirteenth Century England J. C. Russell Chapel Hill N.C.—p. 327
- John Locke E. A. Singer Jr. Philadelphia—p. 341
- Disease and History D. A. Stewart Ninette Manitt—p. 351
- Galileo Galilei L. Vaccaro Philadelphia—p. 372
- Robert Koch (1843-1910) An American Tribute Part III L. Brown Saranac Lake, N.Y.—p. 385

Archives of Pathology, Chicago

20:1174 (July) 1935

- Early Incidence of Spontaneous Medial Degeneration (Arteriosclerosis) in Aorta of Rabbit. H. D. Kesten New York—p. 1
- *Possible Functional Significance of Longitudinal Muscle in Adrenal Veins in Man Isolat T. Zeckwer, Philadelphia—p. 9
- *Hormone Origin of Endometrioma Hypothesis J. T. Witherspoon, New Orleans—p. 22
- Transplantation of Skin and Cartilage in Chickens L. Loch and W. J. Siebert St. Louis—p. 28
- *Serpentine Aneurysm of Internal Carotid Artery with Resulting Encephalomalacia and Cerebral Hemorrhage O. Saphir Chicago—p. 36
- Studies on Spontaneous Recovery from Pneumococcal Infection in the Guinea Pig F. J. Rohben G. T. Rich and M. S. Fleisher St. Louis—p. 46

Longitudinal Muscles in Adrenal Veins—Zeckwer proposes a theory to explain the part which the longitudinal muscles in the adrenal vein in man play in controlling the discharge of epinephrine. She suggests that under sympathetic stimulation these muscles relax and widen the lumen and that under parasympathetic stimulation they contract and, by their consequent thickening, occlude the lumen. In the material obtained in a series of necropsies, it was observed that these muscles developed with age. It is suggested that the hypertrophy of these muscles may be a protective phenomenon, checking the discharge of epinephrine in hypertensive patients.

Hormone Origin of Endometrioma—The hypothesis submitted by Witherspoon is that the fundamental igniting cause of endometrioma has its origin in the excessive stimulation of the aberrant tissue by the ovarian follicular hormone. That the action of this hormone is not confined to the uterine endometrium alone, as demonstrated by the endometrial changes during the normal menstrual cycle, but influences the genital tract as a whole is easily proved. When this hormone action on the endometrium is abnormal, however, causing endometrial hyperplasia, it is equally abnormal in its action on ectopic endometrial tissue and causes, by means of cellular metaplasia of the potential serosal cells or by tumor proliferation of an aberrant endometrial implant, the formation of an endometrioma. The morphologic and functional characteristics of an endometrioma and of the uterine endometrium are similar, the integrity and function of the endometrioma are dependent on the presence of active ovarian tissue, since castration causes regression of the tumor, the endometrioma presents decidua reaction during pregnancy, it undergoes the phases of the menstrual cycle, changes dependent on the ovarian hormones, and, as proved by Gleave in rabbits, the presence of the estrogenic principle is essential for the maintenance of the lesion. Since the ovarian follicular hormone is the cause of endometrial hyperplasia and since the histologic structure of the endometrioma and that of the uterine endometrium are similar, it is logical to deduce that the igniting factor of endometrioma, which brings about the cellular metaplasia or the proliferation of the endometrial implant, is the estrogenic principle. That such is the case is all the more firmly established by the fact that in many instances the endometrioma presents hyperplasia which is typical histologically of endometrial hyperplasia and also by the high incidence of the association of endometrioma with uterine endometrial hyperplasia. The frequent finding of all the features of endometrial hyperplasia in an endometrioma, accompanied with similar changes in the uterine mucosa, indicates that the endometrioma can be caused only by the factor which determines the mucosal changes—the ovarian follicular hormone. It seems logical to deduce that the multiple follicular

cysts of the ovaries, in the absence of corpora lutea, which cause, through the action of the estrogenic principle, endometrial, uterine and mammary hyperplasia or hypertrophy, likewise cause endometriomas, uterine fibroids and mammary fibro-adenomas. There are two clinical features—functional uterine hemorrhage and sterility—that are associated with endometrioma, and their occurrence is explainable by the hypothesis stated.

Aneurysm of Internal Carotid Artery—Saphir describes three instances of encephalomalacia and cerebral hemorrhage, the causes of which could not be determined until the internal carotid arteries were completely dissected and severe occluding lesions found in them. These lesions were thought to have been the etiologic factor in the lesions of the brain. He believes that in every instance of encephalomalacia and cerebral hemorrhage the internal carotid and vertebral arteries should be examined throughout their course in order to locate morphologically demonstrable causes of the lesions of the brain. Three procedures should be observed in the explanation of these lesions in the absence of occlusions of the vessels at the base of the brain or of their branches. 1 The internal carotid and vertebral arteries should be examined throughout their course for occluding lesions. 2 The state of the circle of Willis should be studied with particular reference to congenital anomalies that may have caused an interruption of its continuity. 3 Morphologic evidence of cardiac failure should be looked for, such as coronary arteriosclerosis with resultant myocardial fibrosis and chronic passive hyperemia of the various organs. All these anatomic lesions should be searched for and carefully evaluated or eliminated before the pathologist resorts to an explanation based primarily on functional disturbances. In the three instances reported, occlusions of the internal carotid arteries were found in the region of the cavernous sinus and within the carotid canal of the temporal bone. The occlusions were the result of the tortuosity of the arteriosclerotic vessels with inversion of the walls and formation of bends or kinks. If Jores' classification is used, such a lesion of the artery is referred to as serpentine aneurysm.

California and Western Medicine, San Francisco

43:1104 (July) 1935

- Anemias Experimental and Clinical G. H. Whipple Rochester, N.Y.—p. 1
- Acute Diffuse Disorders of Liver T. P. Sprunt Baltimore—p. 5
- *Treatment of Asthma with Especial Reference to Oral Use of Adrenal Hormones and Sodium Chloride F. M. Pottenger Jr., Monrovia R. T. Pottenger Pasadena and F. M. Pottenger Monrovia—p. 10
- Public Health and Medical Coordination in Poliomyelitis Control with Reference to the 1934 Epidemic in Los Angeles County J. L. Pomeroy Los Angeles—p. 13
- Morbidity Incident to Pregnancy E. J. Krahulik Los Angeles—p. 18
- General Paresis Use of Drugs in Its Treatment E. Ziskind Los Angeles—p. 21
- Chronic Paranasal Sinusitis Treatment with Undenatured Bacterial Antigens M. N. Hosmer San Francisco—p. 24
- Intracapsular Fracture of Neck of Femur Its Primary Operative Treatment S. Bunnell San Francisco—p. 27
- The Mentally Defective Child T. B. Cunnane Los Angeles—p. 32
- Pharmacies and Prescriptions of the Sixteenth Century F. Cunha, San Francisco—p. 36

Treatment of Asthma—The Pottengers state that asthma is a condition in which all systems of vegetative control of cellular activity, nervous, endocrine and electrolytic, may be in imbalance. Adrenal extracts have long been used in the treatment of allergic manifestations. One Gm. of raw adrenal is therapeutically equivalent to 100 Gm. of extract. The authors treated fifty asthmatic patients with epinephrine in oral doses of one-sixteenth grain (0.004 Gm.) three times daily. The patients received from 0.5 to 1 cc. of adrenal cortex extract in orange juice two or three times a day after meals. Sodium chloride was given as table salt in doses of from 3 to 6 Gm. in 8 ounces (240 cc.) of water one-half hour before meals. The sodium chloride by mouth produces euphoria, improved intestinal function, the stools containing a larger amount of moisture though formed, some diminution of the frequency of asthmatic attacks and fortification of the effect of the cortical extract. In no case has salt alone controlled asthma, but the combined use of salt and adrenal cortex extract has lessened the amount of extract necessary to relieve the patient. In nineteen children treated in the clinic and in nine adults insti-

tionalized, the asthma was considerably relieved. The asthma was precipitated again in many cases by colds or other acute infections or overexertion. In no case did the recurrence prove refractory to subsequent treatment. Of the cases reported, the results in all but two were satisfactory. These two patients were not able to submit to a program of rest, which is so essential to the relief of their condition, but they experienced a feeling of well being, although neither was completely freed from the attacks.

Delaware State Medical Journal, Wilmington

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- Recent Investigations on Physiology of Gastric Secretion and Relation to Clinica' Medicine L. Martin Baltimore—p 141
Some Recognized Essential Diagnostic Procedures in Gastro-Intestinal Disease R. W. Tomlinson Wilmington—p 145
Certain Aspects of Calcium Therapy A. Cantarow Philadelphia—p 149
The Costs of Prescriptions and Proprietary Drugs G. J. Boines Wilmington—p 154

Georgia Medical Association Journal, Atlanta

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- Laboratory Aids in Diagnosis of Typhoid Fever T. F. Sellers Atlanta—p 239
Iron Deficiency Anemia Report of Case H. D. Allen Jr. Milledgeville—p 242
Prostatic Calculi Case Report R. Bell Thomasville—p 245
Ruptured Aortic Aneurysms H. T. Harper Augusta—p 248
Pathology of Sudden Death Study of One Hundred and Five Cases E. R. Pand Augusta—p 252
Brief Discussion of the Biliary Problem R. L. Rhodes Augusta—p 259
Local Treatment of Vasomotor Rhinitis T. S. Burgess Atlanta—p 263

Journal of Bacteriology, Baltimore

30: 1 116 (July) 1935

- Serologic Study of Hemolytic Streptococci Helen Plummer Toronto—p 5
Inhibition of Growth of *Bacillus Subtilis* on Modified Extract Agar by γ Radiation of Medium I. H. Blank and H. Kersten Cincinnati—p 21
Physiologic Studies on *Rhizobium* III. Respiration and Growth as Influenced by Reaction of Medium. D. W. Thorne and R. H. Walker Ames Iowa—p 33
Studies on Solubility of *Pneumococcus* in Saponin III. Saponin Lysis Reaction as Means of Differentiating *Pneumococcus* and *Streptococcus* S. J. Klein New York—p 43
Tuberculous Bacillæmia and Dementia *Praecox* L. M. Kopeloff N. Kopeloff L. E. Hinsie and J. L. Etebelle New York—p 49
Studies of Freshwater Bacteria II. Stalked Bacteria New Order of *Schizomycetes* A. T. Henrici and Delia E. Johnson Minneapolis—p 61
Study of *Corynebacteria* Associated with Diseases of Domestic Animals I. A. Merchant Ames Iowa—p 95

Tuberculous Bacillæmia and Dementia *Praecox*.—Kopeloff and his collaborators submitted to Loewenstein triplicate samples of blood from patients presenting mental and physical diseases as well as from control subjects, as individual specimens of unknown origin. Among fifty-four controls, five positive macroscopic cultures of *Mycobacterium tuberculosis* were reported, coming from healthy young males in whom there had been no demonstrable tuberculous infection. Macroscopic cultures of *Mycobacterium tuberculosis* did not occur in twenty-five cases of active pulmonary tuberculosis or in twenty-four cases of eye infection, two of which were diagnosed tuberculous retinitis. Twenty-seven positives were reported in ninety-six cases of dementia *praecox* and seven positives in nineteen miscellaneous psychoses and neuroses. These results contradict Loewenstein's previous claims of a high incidence of positive blood cultures of *Mycobacterium tuberculosis* in febrile pulmonary tuberculosis and in dementia *praecox* and a complete absence of positive observations in controls. By rigidly following Loewenstein's technic on 375 blood samples from the same patients the authors were unable in any instance to obtain cultures of *Mycobacterium tuberculosis*. Of eight spinal fluid specimens from suspected cases of tuberculous meningitis, six yielded positive cultures of *Mycobacterium tuberculosis* on Loewenstein medium in sixteen twenty-three, twenty-seven, forty-five, fifty-two and 125 days, respectively. Loewenstein's results and the authors failure to obtain any positive blood cultures indicate that there is no justification for further study of patients with dementia *praecox* by his methods.

Journal of Lab and Clinical Medicine, St. Louis

20 1001 1110 (July) 1935

- Influence of Claude Bernard's Experimental Methods on Medicine J. L. Miller, Chicago—p 1001
Study of Role of Insulin in Metabolism in Nondiabetic Patients I. Transitory Hyperglycemia and Glycosuria Following Discontinuation of Insulin B. B. Clark R. B. Gibson and W. D. Paul Iowa City—p 1008
Studies on Indoluria J. C. Forbes and R. C. Neale, Richmond Va—p 1017
Study of *Corynebacterium Diphtheriae* and Related Organisms in Maryland O. R. Whitley Baltimore—p 1024
Minor Hemagglutinins Study of Single Human Blood Containing Auto-Agglutinins, Hetero-Agglutinins and Hemolysins and Rouleau Forming Substance W. P. Belk Philadelphia—p 1035
*Influenza Vaccine in Treatment of Chronic Encephalitis Results of Study as to Possible Relationship of Pfeiffer Bacillus and Epidemic Encephalitis J. L. Abramson and G. Victor Brooklyn—p 1043
Comments on Analyses of Blood Chemistry of Circa Five Hundred Patients with Common Skin Diseases H. Goodman New York—p 1048
Experimental Studies in So-Called Agranulocytic Angina Effects of Toxic Products of Certain Bacteria Recovered from Stool and Blood of Human Being on Leukocytes of Animals W. H. Harris and H. J. Schattenberg New Orleans—p 1053
*Study of Comparative Value of Lowenstein Method and Direct Culture of Whole Blood in Detecting Tubercle Bacilli in Blood Stream. Lucy Mishulow M. Siegel Bella Singer Mildred Melman and Marie Romano New York—p 1063
Studies on Infections of Human Parasitic Worms Under Institutional Conditions W. H. Headlee Chicago—p 1069
Influence of Certain Lipids on Growth of Rabbit Neoplasm A. R. Barnes New York—p 1077
Experimental Blood Sampling Procedure G. S. Samuelsen Brooklyn—p 1080
New Model of Pipet for Erythrocyte Sedimentation Test G. G. Vilella Rio de Janeiro Brazil—p 1082
New Device for Oxygen Absorption in Gas Analysis Apparatus F. S. Cotton, Boston—p 1084
Generally Applicable Method for Enumeration of Microscopic Objects A. C. Fay Manhattan Kan—p 1088
Determination of Lipid Phosphorus Alcohol Ether Soluble Phosphorus Frances Krasnow A. S. Rosen and Y. Porosowska, New York—p 1090
Vital Staining of Malarial Parasites Preliminary Note. V. P. Sydenstricker and G. P. Vryonis Augusta, Ga—p 1094
Puncture of Internal Jugular Vein for Diagnostic Purposes J. J. Stein Cincinnati—p 1097

Influenza Vaccine in Treatment of Chronic Encephalitis.—Abramson and Victor treated 125 patients presenting chronic encephalitis with injections of the soluble antigen of the Hammett strain of the Pfeiffer bacillus. Treatment in most cases consisted of a series of weekly injections of 0.5 cc. of the antigen. In some cases the lack of any improvement and the hardship suffered by the patient by the withdrawal of all other medication induced the authors to cease using this form of treatment after one or two months, but the majority of the patients continued to receive the antigen for from twelve to eighteen months. Bedridden patients universally failed to receive any benefit from this or from any other form of treatment. At the end of treatment with the antigen over a period of eighteen months, no persistent improvement was observed in any of the patients which could be attributed to this form of treatment. Occasionally some of the patients thought they could walk with less rigidity but soon relapsed into their former state while continuing to receive the antigen. These results are in marked contrast to those obtained by Stewart and Evans, who reported improvement in 78 per cent of the patients treated by the same method. The authors conclude that there is no relationship between chronic encephalitis and the Pfeiffer bacillus. If this bacillus is the etiologic agent of influenza, no direct relationship exists between influenza and epidemic encephalitis.

Detecting Tubercle Bacilli in Blood Stream.—Mishulow and her collaborators studied ninety-eight specimens of blood from sixty-three tuberculous patients and two specimens from a patient with actinomycosis of the jaw to determine whether the hemoglobin in the human blood interferes with the growth of tubercle bacilli, as stated by Loewenstein. The specimens were divided into two equal parts, one part of the blood was cultured on Bordet-Gengou and on congo red egg mediums without any treatment, and the other part was treated according to Loewenstein's method. It was found that the whole blood gave better results than the portion treated by the Loewenstein method. There were three macroscopically positive cultures

on the whole blood and only two on the Löwenstein cultures. In one additional Löwenstein culture, several small clumps of acid-fast bacilli were found microscopically when the surfaces of the tubes were scraped, but subcultures and guinea-pigs that were inoculated with these scrapings gave negative results. Tubercle bacilli were found in only four of the forty-six patients with advanced pulmonary tuberculosis, a large number of whom were critically ill, and two of the four patients who gave positive blood cultures died soon after the last cultures were made. All other cases in this series gave negative results. In two instances, saprophytic acid-fast bacilli were found in the cultures. This shows the need for identifying carefully the cultures obtained, especially if they are nontypical on colony morphology. It appears that the hemoglobin in human blood is not inhibitory to the growth of tubercle bacilli, since cultures of whole citrated blood gave better results than blood that was treated by Löwenstein's method to remove the hemoglobin. Culturing whole blood has the particular advantage over Löwenstein's method of culture in that it requires no preliminary treatment. The use of plates instead of tubes as recommended by Löwenstein has the advantage of a large surface on which the specimen is well distributed, and a slight contamination seldom overgrows the culture.

Journal of Nutrition, Philadelphia

10 1116 (July 10) 1935

- Demonstration of Estrus in Vitamin A Deficient Rat by Supravital Study of Vaginal Smears K E Mason and E T Ellison Nashville Tenn.—p 1
- Effect of Retarded Growth on Sexual Development of Rats S A Asdell and Mary F Crowell Ithaca N Y.—p 13
- Studies of Crystalline Vitamin B IV Injection Method of Assay Marion Ammerman and R E Waterman New York.—p 25
- Id V Effect of Graded Doses on Growing Rats R E Waterman and Marion Ammerman, New York.—p 35
- Factors Affecting Carotene Content of Alfalfa Hay and Meal H R Guilbert, Davis, Calif.—p 45
- Effect of Retarded Growth on Length of Life Span and on Ultimate Body Size C M McCay Mary F Crowell and L A Maynard Ithaca N Y.—p 63
- Variations in Urinary Reducing Substances of Two Normal Dogs Maintained on Bread Diets E P Laug and T P Nash Jr Memphis Tenn.—p 81
- Influence of Chronic Fluorine Toxicosis in Laying Hens on Fluorine Content of Egg and Its Relation to Lipoid Content of Egg Yolk P H Phillips, J G Halpin and E B Hart, Madison Wis.—p 93

Journal of Pharmacology & Exper Therap, Baltimore

54:259-352 (July) 1935

- Action of Ergoclavine and Sensihamine A Vartiainen London England.—p 259
- Action of Certain New Histamine Derivatives A. Vartiainen London England.—p 265
- Methylene Blue, Methemoglobin and Cyanide Poisoning W B Wendel Memphis Tenn.—p 283
- Action and Toxicity of Retrorsine K K Chen A Ling Chen and C L Rose Indianapolis.—p 299
- Reaction of Cervical Portion of Dog's Esophagus to Drugs W J R Camp Chicago.—p 306
- Relation of Hydrogen Ion Concentration and Surface Tension to Activity of Local Anesthetics J H Gardner and J Semh St. Louis.—p 309
- Observations on Dogs Under Continued Influence of Ephedrine E Ogden and A R Teather Berkeley Calif.—p 320
- Contribution to Pharmacology of Trichlorethylene J C Krantz Jr C J Carr, Ruth Musser and W G Harne Baltimore.—p 327
- Investigation into Ratio Between Effective and Lethal Doses of Bulbo capnine in the Cat. R S Amadon and A H Craig Philadelphia.—p 334
- Alleged Occurrence of Acetylcholine and Adrenalin in Cat's Saliva P S Larson Washington D C.—p 341
- Ratio of Toxicity of Acetanilid to Its Antipyretic Activity in Rats P K. Smith and W E Hambourger, New Haven, Conn.—p 346

Maine Medical Journal, Portland

26 109-122 (July) 1935

- *Acute Pancreatitis E H Risley Waterville.—p 110
- Pain H E MacDonald, Portland.—p 116

Acute Pancreatitis—Risley states that acute pancreatitis is not an uncommon disease. Its incidence is estimated to be around 1 per cent of acute abdominal emergencies. Obstruction to and backing up of bile and pancreatic ferments into the pancreatic ducts are the probable etiologic factors producing the condition. The onset is usually sudden, occurring at the height of digestion in subjects previously well. Pain out of all proportion to the physical signs is the predominating symptom. Shock is generally always present and is marked

Prolonged nausea and vomiting with absence of marked abdominal signs at the onset are also common. In addition to these symptoms the author finds acute upper abdominal tenderness, with distention confined to the upper quadrants. Slate blue discolorations of the abdomen and thighs, a rise in pulse, temperature and leukocyte count, glycosuria and a high blood sugar together with high amylase values present the unquestionable picture of fulminating pancreatitis. Operation should never be done in the presence of the initial shock and, if delayed from four to eight days, seems to give the best results. Mortality is high, varying between 50 and 90 per cent. Complications are frequent and convalescence is protracted.

Medicine, Baltimore

14 185-322 (May) 1935

- Present Day Status of Liver Function Tests L J Soffer with assistance of Florence Barclay White, Baltimore.—p 185
- Pathogenesis of Congestive Heart Failure T R Harrison, Nashville, Tenn.—p 255

Michigan State M Society Journal, Grand Rapids

34:417-462 (July) 1935

- Tragedy of Appendicitis C D Brooks Detroit.—p 417
- *Liver Deaths Following Surgery of Gallbladder H W Hewitt, Detroit.—p 421
- Feeding of Premature Infant H B Rothbart Ann Arbor.—p 424
- Questionable Relationship of Diet to Skin Diseases C K. Valade, Detroit.—p 426
- Some Observations on Urethritis L W Hull Detroit.—p 432
- *Interstitial Hernia S K Beigler Detroit.—p 438
- Agranulocytosis with Recovery Following Administration of Concentrated Liver Extract Case O D Hindnutt Plainwell.—p 440
- Pathologic Processes of Fossa Navicularis N E Aronstam, Detroit.—p 440

Liver Deaths Following Surgery of Gallbladder—Hewitt discusses the literature on the subject and presents two case histories. The patients were in good physical condition for the operation, which required a comparatively short time, and no complications arose during the operation. Drainage was done in both cases. There was no hemorrhage, peritonitis or immediate shock after operation. In each case a high temperature developed, with rapid pulse, oliguria, anuria, delirium, coma and death within forty-eight hours. Necropsy was not permitted in either case, and postoperative life was so brief that little time remained for clinical observation or laboratory tests. The author advises in all preoperative cases that the function of the liver be determined by tests already known, that large quantities of dextrose be administered without the use of insulin, and that dehydration be combated by the use of known quantities of fluid. Therapy should be controlled by repeated chemical analyses of the blood. Blood chlorides should also be estimated and, if as low as 250, physiologic solution of sodium chloride should be given intravenously. Anesthetics that produce anesthesia by rectal or colonic administration carry with them the possibility of increased insult to the functioning of the liver. Nitrous oxide gas with the addition of small quantities of ether combined with local anesthesia is the safest type of anesthesia. Blood transfusion and the intravenous administration of calcium chloride are at times valuable in the preparation of patients for operation.

Interstitial Hernia—Beigler states that interstitial hernias are more common than the literature reports but that they are not recognized as such. He refers to a patient operated on for bilateral indirect inguinal hernia. On the left side there was a typical indirect inguinal hernia, but on the right side a double sac was found to be protruding through all the muscular layers as far as the external oblique fascia. The sac was isolated and separated from its adjacent structures. Both hernias were repaired. The patient made an uneventful postoperative recovery. Interstitial hernia may be defined as any hernia which in the course of its development spreads out in the planes of interstices of the abdominal wall. There are three types of interstitial hernias described. The peritoneal type indicates that the sac lies between the peritoneum and the transversalis fascia. The position of the sac most frequently is between the internal inguinal ring and the anterior superior iliac spine. The sac may follow the direction of the inguinal canal into the scrotum or it may go backward to occupy the inner part of the iliac fossa. In the inguinal interstitial type the sac may be

located between the transversalis muscle and the transversalis fascia, between the transversalis muscle and the internal oblique muscle or between the internal and external oblique muscles. In the inguinal superficial type the sac is found between the aponeurosis of the external oblique and the superficial fascia. The sac, regardless of type, is usually bilocular, one sac being located in the inguinal canal or scrotum, the other in any of the locations of interstitial hernia. Undescended testis usually accompanies the hernia. Some form of obstruction is the most common etiologic agent. Early diagnosis is essential because of the increased possibility of strangulation.

Minnesota Medicine, St Paul

18: 421-490 (July) 1935

- *Total Thyroidectomy for Heart Disease E C Cutler Boston—p 421
Cerebral Vascular Crises E M Hammes, St Paul—p 436
Ambulant Treatment of Hernia A F Bratrud, Minneapolis—p 441
Clinical Tuberculosis Among Employees of Local Institutions Caring for Tuberculosis Patients A T Laird, Nopemung—p 452
Treatment of Cardiac Emergencies M H Nathanson Minneapolis—p 455
Papillary Colloid Adenocarcinoma of Extrahepatic Bile Ducts W Walters and P F Olson Rochester—p 460
Intraductal Tumor of Spinal Cord A E Olson Duluth—p 462

Total Thyroidectomy for Heart Disease—Cutler has removed sixty-four normal thyroids, some for diabetes and for peripheral vascular disease in addition to cardiac disorders. Two immediate deaths occurred in elderly men with failing hypertensive heart disease, whose myocardial reserve was insufficient to stand any excess burden and whose hearts steadily failed following the operation. Two immediate deaths in patients having angina pectoris were due to classic attacks of coronary closure on the first and second postoperative day, similar to those which had occurred previously in these patients. Two of the patients died elsewhere during operations for gallstones. There were no particular postoperative complications, though mild signs of parathyroid tetany occurred in five cases and there was injury to the recurrent laryngeal nerve in four. Visualization of the recurrent nerve is the only essential feature of the operation and this can best be done from the side on which it lies. Considering that all cases were of the most serious type, the results are satisfactory. Patients presenting heart failure were all bedfast and unrelieved by modern medical means previous to thyroidectomy, while those with angina pectoris had angina decubitus. Many in the two groups were restored to an active and comfortable life. The author states that total thyroidectomy does not modify the output of epinephrine, but the substance produced is less effective under the conditions imposed by total thyroidectomy. Worry, anxiety and psychic disturbances of any type may produce a large discharge of epinephrine, and this must be considered in the explanation of anginal pain. Thyroidectomy may produce its effect by interfering with the sensitivity of the vasomotor apparatus to epinephrine, as already indicated by the studies of skin temperature following total thyroidectomy, in which greater vasodilator ability is found even in myxedematous people. The author concludes that there is an interrelationship between the adrenal and the thyroid which is of major importance in the symptom complex of angina pectoris.

New England Journal of Medicine, Boston

213: 43-90 (July 11) 1935

- Hemorrhagic Cystitis and Tuberculosis of Prostate Case Report O D Phelps Worcester Mass—p 43
Vesico-Intestinal Fistula H L Leland Lowell Mass—p 44
Congenital Hypertrophy of Vermontanum Case R R Baldridge Providence R I—p 46
Hydronephrosis Report of Case E S Merrill Bangor Maine—p 49
Transurethral Resection of Internal Sphincter in Certain Type of Cord Bladder E L Peirson Jr Salem Mass—p 50
*Recurrence of Benign Obstructing Prostates Years After Prostatectomy R Chute Boston—p 55
Cysts of Testicle R H Jenkins and C L Deming New Haven Conn—p 57
Edwin Klebs Centennial Note Leona Baumgartner New York—p 60
Progress in Psychiatry for 1934 K M Bowman Boston—p 63

Recurrence of Benign Obstructing Prostates After Prostatectomy—Chute refers to two prostatectomized patients in whom recurrence of a benign obstructing prostate occurred

ten and eighteen years respectively after operation. Only those cases should be classed as genuine recurrences in which, after perineal or suprapubic prostatectomy and after an interval of several years during which there is normal urination, the symptoms of prostatic obstruction reappear and a recurrent prostatic hypertrophy is definitely present by rectal examination and cystoscopic inspection or through the opened bladder, and in which there is not the slightest suspicion of malignancy. The hyperplastic growth probably starts in the submucous periurethral groups of prostatic glands situated in the region of the neck of the bladder. As these centrally placed glands of the prostate undergo hypertrophy and grow, they form an expanding adenomatous mass which presses on the outer layer of the prostatic glands, which gradually atrophy and become flattened and form the surgical capsule of the prostate. Ordinary enucleation of the prostate is merely the separation of one part of the prostate from another part of the prostate along an easy plane of cleavage. It is the shelling out of a tumor mass composed of the hyperplastic central glands of the prostate from the capsule, but the capsule may in the course of time take on new life, proliferate and occasionally undergo enough hyperplasia to form another obstructing growth, after the removal of the adenoma of the central glands which had been making pressure on them. After prostatectomy, very small nodules of hyperplastic tissue, often recognizable only under the microscope, can frequently be found in the surgical capsule. These hyperplastic nodules may continue their growth and eventually produce a recurrent obstructing mass.

New Jersey Medical Society Journal, Trenton

32: 397-448 (July) 1935

- Address of Welcome M W Newcomb, Brown's Mills—p 403
The Intern, the New Deal and the Ward Patient R D Anderson Burlington—p 404
Erythroblastic or Mediterranean Anemia H A Vogel Elizabeth—p 406
Study of School Physicians Salaries A G Ireland Trenton—p 408
Routine Wassermann Tests in a Hospital A J Casselman and Anabel Cadwallader Camden—p 411
Fetal Mortality in Breech Presentations Hints in Conducting the Breech Delivery F J Goff Red Bank—p 413
*The Crampton Test and Surgical Shock J H Irwin Englewood—p 416
Chronic Lumbosacral Backache H E. Reading New York—p 419
*Pregnancy in Fibromyomatous Uterus W E Studdiford New York—p 424
Analysis of Three Thousand Three Hundred and Forty Four Operations for Appendicitis with Remarks on Delayed Operation in Delayed Case of Appendicitis W D Haggard Nashville Tenn—p 427
Head Injuries Treatment and Evaluation S B Wortis, New York—p 431

Crampton Test and Surgical Shock—Irwin computed the Crampton value in 345 consecutive operative cases. There were fifteen deaths. Three of these patients were in shock. One of these had shown a zero record, the second a minus 80 record and the third had been too sick to record the Crampton value. The patients showing the two lowest Crampton values in the whole series died in shock. Of three others with low values of 15, 30 and 55, two died in four days with gangrene of the intestine and stone in the ileum and the other died a week after with carcinoma. All these patients were sick before operation and the vasotone was impaired, but not so much impaired as in those who were to die of shock. To sum up, the only recorded deaths of shock, when Crampton values were taken, showed very low values before operation. No patient with a high index before operation died of shock. The author's purpose was not only to see whether shock could be foreseen but also to see whether it could be forestalled and prevented. The methods employed were based on the fact that Crampton stated that digitalis, and sometimes squill, would bring up a low Crampton value. He stated that digitalis would first reduce the systolic pressure difference, next the pulse rate difference and lastly the diastolic difference, all depending on the capacity of the circulation to react. Accordingly, if possible, all patients were given the Crampton test. In all who showed a rating below 65, operation was delayed and digitalis was given until the test rose above 65. Two results were definite. Crampton's statement that digitalis would raise his index was verified. No case of shock resulted and not a patient was lost. Whether or not shock would have ensued without digitalis will not be known but the patients lived.

Pregnancy in Fibromyomatous Uterus—Studdiford reviews the relationship between pregnancy and the fibroid uterus. 1 Fibroids are a large factor in sterility. Certain selected patients may benefit from myomectomy, carrying subsequent pregnancies through to term. 2 Fibroids are a large factor in abortion and premature labor. Certain patients in whom such accidents have repeatedly occurred may be benefited by myomectomy and subsequently carry pregnancy through to term. 3 The chief dangers to patients having fibroids during the antepartum period is that of early interruption of the pregnancy and the onset of acute degenerative changes in the tumor. 4 The necessity for operative intervention because of degenerative changes in fibroids during pregnancy is rare. 5 Patients with small fibroids, if carried to term, often go through a normal labor. 6 Patients harboring large fibroids, usually elderly women are best treated by cesarean section and hysterectomy if carried to term. These patients are fortunate to have reached term and are not likely to carry another pregnancy this far. A living child is therefore more important than in the average woman. The risks of vaginal delivery are great. There is a possibility of acute degenerative changes beginning in the puerperium necessitating operation. They are likely to require surgical treatment for the fibroids within a few years. In a few instances cesarean section and myomectomy may prove practical. 7 Certain patients delivered by the vaginal route may develop acute degenerative changes in the puerperium requiring surgical intervention.

Northwest Medicine, Seattle

34: 235-280 (July) 1935

- Evaluation of Malingering Tests After Ocular Injuries. H. V. Wurde mann. Seattle.—p. 235
 Present Status of Roentgen Interpretation of Pulmonary Tuberculosis in Children. K. D. A. Allen. Denver.—p. 238
 Therapeutic Value of Vaccine in Acute and Chronic Respiratory Diseases. F. L. Wood. Lynden, Wash.—p. 246
 Common Colds: Their Relation to Respiratory Infections and Bacterial Vaccine Immunization. J. E. Preucel. Colfax, Wash.—p. 248
 Horseshoe Kidney and the General Surgeon. Report of Case. R. L. Vaughn. San Francisco.—p. 251
 Fracture of Spinal Needles: Fundamental Laws for Dural Puncture and for Removal of Fragments of Needles Within or Without the Dural Sac. G. R. Vehrs. Salem, Ore.—p. 254
 Alcoholism and Morphism in Private Practice: Rational Regimen for Their Management. A. W. Hackfield. Seattle.—p. 258
 Undulant Fever: Case Treated by Immune Serum. H. H. Kretzler. Edmonds, Wash.—p. 261
 Alaskan Medical History. Notes. D. R. Loree. Seattle.—p. 262
 Alopecia Traumatica. B. L. Dorsey. Los Angeles.—p. 268

Pennsylvania Medical Journal, Harrisburg

38: 769-834 (July) 1935

- Early Diagnosis of Glaucoma. C. N. Spratt. Minneapolis.—p. 769
 Concretion of Lacrimal Canaliculus. W. S. Reese. Philadelphia.—p. 772
 Interpretation of Irregular Genital Bleeding During and After Menopause. F. E. Keene. Philadelphia.—p. 774
 Fractures and Dislocations in Region of Elbow. V. Mooney. Pittsburgh.—p. 778
 Indications for Enterostomy with Especial Reference to Technique. G. W. Hawk. Sayre.—p. 782
 Appendix Vermiformis in Infancy and Childhood. E. L. Bauer. Philadelphia.—p. 787
 Modern Points of View on Problem of Eczema. Charlotte Backus. Jordan, Easton.—p. 791
 Renal and Ureteral Anomalies. P. P. Mayock, Wilkes-Barre.—p. 796
 Fractures of Shaft of Femur. S. P. Mengel, Wilkes-Barre.—p. 799
 Duodenal Ulceration in a Five Year Old Boy. Case Report. N. D. Gannon. Erie.—p. 803
 Mastoidectomy Complicated by Acute Hemorrhagic Nephritis. Case Report. R. K. Rewalt. Williamsport.—p. 805
 Hydronephrosis: Spontaneous Rupture. Case Report. R. P. Beatty. Uniontown.—p. 806

Irregular Genital Bleeding During Menopause—Keene made an analysis of the lesions responsible for bleeding in 2,000 women more than 40 years of age. He found that the lesions which produce bleeding from the genital tract prior to or during the menopause are benign in more than five sixths of the cases. After the menopause, nearly two thirds of the lesions are malignant. The benign lesions that produce premenopausal bleeding are located in the body of the uterus in two thirds of the cases and in the tubes and ovaries in one fourth. Benign cervical and vaginal lesions are comparatively infrequent causes of bleeding at this age. After the menopause, more than one half of the benign lesions are cervical and those of the vagina

rank second in order of frequency. The incidence of benign lesions in the body of the uterus drops to less than 17 per cent. Before the menopause, the malignant lesions of the genital tract are primarily cervical in more than three fourths of the patients. Although carcinoma of the fundus is essentially a disease of more advanced age, its incidence in the younger group is nearly 17 per cent of the total number of malignant lesions. Less than 10 per cent of these lesions are found in the adnexa, vagina or vulva. After the menopause the cervix is less frequently the site of cancer, but in this group more than one half of the malignant lesions developed here. The incidence of fundal cancer shows a marked increase after the menopause, rising to nearly 40 per cent. The remaining 7 per cent of the malignant lesions are equally divided between the cervix, the vagina and the adnexa. Prior to the menopause, benign lesions that cause bleeding are of a neoplastic or functional nature in more than 90 per cent of the patients; the neoplastic predominating. Irrespective of the type of lesion, ovarian dysfunction plays an important part. After the menopause, the majority of the benign lesions that produce bleeding are due directly or indirectly to the physiologic atrophy of the genital organs, incident to cessation of ovarian function. In this category fall the inflammatory and traumatic lesions of the vagina and cervix, and degeneration of uterine myomas. During and after the menopause, lesions of the cervix that cause bleeding are malignant in a high percentage of cases. Of the lesions in the body of the uterus that produce bleeding prior to the menopause, less than 4 per cent are malignant. After the menopause nearly 80 per cent of such lesions are malignant. Postmenopausal bleeding from the uterus may be of endocrine origin, but this is a rare occurrence. Such a diagnosis is warranted only after exhaustive examination has eliminated the presence of organic disease, particularly cancer.

Psychiatric Quarterly, Albany, N. Y.

3: 331-520 (July) 1935

- Psychotherapy in Children. H. W. Potter. New York.—p. 335
 Family Care of Mental Defectives. C. L. Vaux. Newark, N. J.—p. 349
 Hematoporphyrin Treatment in Dementia Praecox and Involution Melancholia. J. Notkin, Viola Huddart and Blanche Dennes. Poughkeepsie, N. Y.—p. 368
 Treatment of Schizophrenia with Prolonged Narcosis. P. Hoch. New York.—p. 386
 Some Determinants of Favorable Results in Psychiatric Patients. O. J. McKendree. Utica, N. Y.—p. 392
 Application of Occupational Therapy in Treatment of Mental Illnesses. H. A. Pooler. Binghamton, N. Y.—p. 400
 Care of Disturbed Female Mental Patients. Katherine G. Brockman. Queens Village, N. Y.—p. 412
 Sensory Acuity of Psychopathic Individuals: Comparison of Auditory Acuity of Psychoneurotic and Dementia Praecox Cases with That of Normal Individuals. Marion R. Bartlett. New York.—p. 422
 Precision of Development of New Children's Unit of Rockland State Hospital. L. P. O'Donnell. Orangeburg, N. Y.—p. 426
 Child Guidance in Schools. F. F. Tallman. Orangeburg, N. Y.—p. 436
 Life Expectancy in General Paresis. I. M. Derby. Brooklyn.—p. 458
 Clinical Data on General Paresis. C. O. Cheney. New York.—p. 467

Radiology, Syracuse, N. Y.

25: 1-130 (July) 1935

- Administration of Artificial Pneumothorax Under Fluoroscopic Guidance. J. Blady and L. Cohen. Philadelphia.—p. 1
 Histogenesis of Basal Cell Epithelioma. H. Montgomery. Rochester, Minn.—p. 8
 Carcinoma of the Mouth with Especial Reference to Treatment. H. L. Albright. Boston.—p. 24
 Adenomyoma of Rectovaginal Septum Treated with Radiologic Methods. H. H. Bowring. Rochester, Minn.—p. 46
 Comparison Photometer and Its Use in Determining Distribution of Radiation in Phantom. M. M. D. Williams. Peiping, China.—p. 55
 Effect of Hard Roentgen Rays and Gamma Rays of Radium. D. den Hoed. Amsterdam, the Netherlands.—p. 57
 Multiple Endotheliomas of Skin with Metastasis. Report of Case. W. W. Robinson. Memphis, Tenn.—p. 82
 Radiologic Study of Development of Spine and Pathologic Changes of Intervertebral Disk. P. H. Malcolmson. Edmonton, Alta.—p. 98

Carcinoma of the Mouth.—Albright points out that more than 90 per cent of malignant tumors of the mouth are epidermoid carcinomas, mostly of the adult resistant type. Of the buccal epithelium, the basement cell alone has the power of reproduction and of invasion. All other cell changes represent stages of degeneration. Epulis, regarded by some as a granu-

loma, is "semimalignant." Leukoplakia is the most important precancerous lesion. All cases of leukoplakia are curable. Enlarged cervical nodes should be regarded as cancerous. Once cancer invades the cervical nodes, the chance for cure is practically lost. Early diagnosis will improve the results more than any other single factor. Radium is the treatment of choice of the primary lesion in all cases that have extended beyond the possibility of easy operative removal. Intratumoral radium must be of epidermicidal intensity, whether over a short or long period, to be reliably effective. In this form it is the best caustic for cancer. The 1934 technic of Radiumhemmet Stockholm, and Institut du radium, Paris, are presented. What cures there are in cancer of the tonsil have come from irradiation, which must be rigorously employed. In the treatment of the cervical lymphatic areas, irradiation is uncertain. It should be used only in combination with surgery which should be early and radical. The penalty of waiting until nodes develop is too great. Grading of tumors is of especial value in determining group prognosis. Better management of the individual case will result from the surgeon and radiologist working together.

Adenomyoma of Rectovaginal Septum—Bowling states that in radiotherapy of adenomyoma of the rectovaginal septum it is necessary to treat ectopic endometrial tissue, which has a histologic structure identical with that of the uterine mucosa. This tissue is influenced by the ovarian hormone. Infiltrating tumors in the wall of the posterior vaginal culdesac or in a corresponding region in the anterior rectal wall should not all be regarded as malignant. When the infiltration is atypical an effort should be made to obtain a satisfactory history, for in the average case the symptoms and signs will be influenced by the menstrual cycle. An effective method of treatment is a therapeutic menopause induced with radiation therapy; this is an indirect attack. In the management of young patients (before the age of 35) who are seen early, the neoplasm may be removed surgically or the patient may be observed for some time. Bimanual pelvic examination should be performed from every four to six months to determine any change in the neoplasm. This delay should not prove serious, as definite malignant degeneration was not proved in any of the cases studied. A trial treatment should be considered to determine possible beneficial effect of a temporary amenorrhea for at least six months to one year. The induction of a permanent therapeutic menopause with radiation should be considered. In the cases in which the lesion is advanced, there is no choice. The induction of a therapeutic menopause with radiation is recommended because it favorably influences this destructive neoplastic process. In the cases in which there is rather severe intestinal obstruction a colostomy may be considered, but it should not be performed until the pelvic infiltration has been reduced by indirect irradiation, because it is possible to overcome this serious complication. Mild catharsis, low enemas and a diet that contains little or no residue should be prescribed for a time following the radiation therapy.

Western J Surg, Obst. & Gynecology, Portland, Ore

43:361-420 (July) 1935

- Diagnosis and Management of Thyroid Conditions F H Lahey Boston—p 361
Review of Management of Fractures of Skull R Brown Santa Barbara Calif—p 371
Experimental Injection of Ethyl Alcohol into Lumbar Subarachnoid Space with Neuropathologic Studies R B Aird and H C Naffziger San Francisco—p 377
Study of Maternal Deaths Occurring in San Francisco Hospitals Group I H A. Stephenson, in collaboration with R K Smith and Florence Fench San Francisco—p 388

Wisconsin Medical Journal, Madison

34:441-516 (July) 1935

- Hydrocele, Its Treatment by Injection Method G H Ewell Madison J C Sargent Milwaukee and C R Marquardt Milwaukee—p 451
Acute Appendicitis A Tormey Madison—p 456
Diagnosis and Treatment of Internal Hemorrhage D H Witte Milwaukee—p 460
Surgical Problems Associated with Cholelithiasis R S Dinsmore Cleveland—p 467
Gastric and Duodenal Ulcers Factors Essential to Their Successful Medical Management G B Eusterman Rochester Minn—p 473

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:148 (July 6) 1935

- Clinical Aspect of Vertigo E D D Davis—p 1
Epidemic Streptococcus Laryngitis H Tilley and D McKenzie—p 3
Puerperal Streptococcal Septicemia Review of Preventive and Curative Measures H F S Lindsay—p 6
Principles of Radiologic Treatment and Their Bearing on Hospital X-Ray Organization Helen Chambers and S Russ—p 9
Fatal Case of Jaundice R M Littledale—p 11
Cephalic Tetanus Occurring in Civil Practice R Shackman—p 12
Treatment of Persistent Auricular Fibrillation and Flutter T East—p 25

2:4998 (July 13) 1935

- *Injection Treatment of Varicose Veins Some Late Results and Question of Recurrence G H Colt, Isobel S W Ramsay and Margaret M M Morrison—p 49
After Results of Psychotherapy in Five Hundred Adult Cases Mary C Luff and Marjorie Garrod—p 54
Atypical Form of Tuberculous Sclerosis Report of Case R M Stewart—p 60
Congenital Malformation of Large Bowel J A Mackenzie—p 61
Some Features of Influenzal Epidemic in the Spring of 1935 D Thomson and R Thomson—p 62
Retrograde (Transgastric) Esophagoscopy for Carcinoma of Esophagus G H Steele—p 63

Injection Treatment of Varicose Veins—Colt and his collaborators found that the injection treatment of varicose veins with salicylate (40 per cent)-saline (10 per cent) solution is safe and satisfactory in patients presenting a single varicosity, generally with a positive Trendelenburg sign, and a more extensive type of varicosity with a positive Trendelenburg sign and with a greater degree of deep reflux. Patients presenting a multiple spongework of small varicosities give poor results when treated in this manner. Although great amelioration takes place, a cure does not follow. It is as yet uncertain from the results published if more than amelioration can be obtained by operation, or by operation combined with injection, in this type of patient. In a small proportion of cases injection alone is not entirely successful, and ligation of the internal saphenous vein below its upper end is indicated as an adjuvant. No evidence sufficiently strong has yet been published to justify primary saphenous ligation in preference to primary injection with salicylate-saline solution. Almost all cases that have failed to react to other solutions can be successfully treated with salicylate-saline solution. The converse is not true, but sodium morrhuate appears to answer well in short lengths of vein when salicylate fails. Longer intervals than those commonly given between injections are evidently necessary if the accepted pathology of sclerosis is to be the guiding principle in treatment. Unna's paste bandage applied in the hydrostatic manner gives much better results than are obtained by the modern elastic-pressure applications.

Glasgow Medical Journal

6:188 (July) 1935

- Some Bone and Joint Conditions in Children M White—p 1
The Zondek Aschheim Reaction in Diagnosis D Smith—p 12
Present Position of Compression Therapy in Treatment of Diseases of Lungs J Crockett—p 19
Atheroma of Pulmonary Artery G A Allan—p 28

Irish Journal of Medical Science, Dublin

No 114:241-288 (June) 1935

- Some Aspects of Glaucoma R. A. Greeves—p 241
Distribution of Atheroma in Aorta J Bell—p 257
*Ligation of Veins with Arteries J Bell—p 262
The O Agglutination Response to Antityphoid Vaccine M II O Connor—p 266
Hematology in General Practice B O'Brien—p 270

Ligation of Veins with Arteries—Bell states that, in ligating the main artery to a limb the risk of gangrene is diminished by the simultaneous ligation of the corresponding vein. This is explained in terms of the equilibrium between the capillaries and the tissues. Ligation of an artery may cause the hydrostatic pressure in the capillaries to fall below the osmotic pressure of the plasma proteins. The circulation of

nutrient fluid to the tissues is thus impaired. Ligation of the vein will raise the capillary hydrostatic pressure and may thus restore the tissue circulation.

Journal of Laryngology and Otology, London

50 493-568 (July) 1935

- Investigation of Part Played by Allergy or Sensitization as Factor in Predisposing Mucous Membrane of Nasal Passages and Paranasal Sinuses to Infection and Its Bearing on Treatment of Disease of These Cavities. J. A. M. Cameron—p. 493
Light Reflex and Permanent Perforation of Tympanic Membrane. Note. N. Asberson—p. 512
Tip of Nose Completely Severed and Sutured Three Hours After Accident. J. N. Roy—p. 518

Journal of Pathology and Bacteriology, Edinburgh

41 1-220 (July) 1935

- Study of Morphology and Life Cycles of Organism of Pleuropneumonia Contagiosa Bovum (*Borrelomyces Peripneumoniae* Nov. Gen.) by Observation in Living State Under Dark Ground Illumination. A. W. Turner—p. 1
Comparison of Normal Estrous Cycle and of Response to Administration of Estrin in Two Strains of Mice Differing Greatly in Incidence of Spontaneous Mammary Cancer. Georgina M. Bonser—p. 33
*Leukocytic Invasion as Accompaniment of Epithelial Metaplasia. H. Burrows—p. 43
Comparative Rate of Tumor Induction by Tar in Mouse at Different Sites in the Skin. J. W. Orr—p. 51
Alterations in Bactericidal Power of Blood Which Occur During Hemolytic Streptococcal Infections in Puerperium. R. Hare—p. 61
The Paracolon Group of Bacteria. B. R. Sandiford—p. 77
Production of Koch's Phenomenon with Various Strains of Tubercle Bacilli. W. Pagel—p. 89
One Hundred and Sixty Six Cases of Diphtheria Correlated with Type of Bacillus Diphtheriae Concerned. J. F. Murray—p. 97
Testing of Scarlet Fever Toxin and Antitoxin by Rabbit Intradermal Method. G. A. H. Battle and A. S. R. Lowdon—p. 107
Golgi Apparatus of Synovial Cells Under Normal and Pathologic Conditions and with Reference to Formation of Synovial Fluid. E. S. J. King—p. 117
Pseudotuberculosis Silicoticum. J. S. Faulds—p. 129
Tests for Innocuity and Antigenic Potency of Staphylococcus Toxoid. C. E. Dolman and J. S. Kitching—p. 137
Production of Pneumonia in Mice by Bacteria and Filtrable Viruses. L. Hoyle—p. 163
Formation of Hematoidin in Vitro from Mammalian Erythrocytes. Janet S. F. Niven—p. 177
Local Formation of Blood Pigments. R. Muir and Janet S. F. Niven—p. 183

Leukocytic Invasion and Epithelial Metaplasia.—

According to Burrows, when an epithelium that does not normally form keratin is converted into a keratinizing epithelium an invasion by polymorphonuclear leukocytes is apt to occur. Leukocytic invasion may be observed in the vagina and uterus of the female mouse in the course of the natural estrous cycle, in the genital organs of the male mouse under continued treatment with estrogenic compounds, and in various structures in rats maintained on a diet deficient in vitamin A. Reasons are given for supposing that the leukocytic invasion in these conditions is a physiologic process and directly attributable neither to the presence of desquamated keratinous material nor to bacterial infection. The observations on which these conclusions are based were made by chance while the cellular changes induced by estrogenic substances were being investigated in an attempt to ascertain whether such changes might be associated in some way with the development of cancer. There was no opportunity to carry out a bacteriologic investigation of the kind required to establish fully the absence of bacterial infection.

Journal of State Medicine, London

43 373-434 (July) 1935

- Housing and Industry. J. J. Jervis—p. 383
General Survey of Tuberculosis Problem. P. Varrier Jones—p. 392
Place of Manipulation in Chronic Arthritis. W. Wilcox—p. 413
*Preliminary Communication Regarding Injection of Tuberculous Patients with Their Own Blood. O. Amrein—p. 426

Injection of Tuberculous Patients with Their Own Blood.—Amrein has the patient lie down, and 2 cc. of blood is removed from the arm vein by a sterile syringe. The blood is immediately injected into the gluteal muscles. The author treated by autohemotherapy fifty patients suffering from tuberculous infection of the elbow, tuberculous otitis, exudative pleurisy, pneumothorax effusions and pulmonary tuberculosis. The patients all responded well to treatment. They showed a

decrease in fever, an increase in appetite, a decrease in sputum and general improvement. The erythrocyte sedimentation test of the blood showed an improvement in a number of cases after one injection. In early cases this treatment creates an auto-immunization which helps the formation of encapsulation and calcification. Injections from every four to six weeks are useful.

Journal of Tropical Medicine and Hygiene, London

38 169-184 (July 15) 1935

- Consideration of Antimony Content in Drugs Used for Destruction of Schistosomes. F. G. Cawston—p. 169
Anthrax in Trinidad Due to Infected Shaving Brush. Case. J. L. Pawon—p. 170
The Ulcer Syndrome in Tropical Africa. A. A. F. Brown—p. 170
Further Observations on a Little Known Type of Chronic Colitis (Chronic Metodysentery). A. Castellani—p. 176

Lancet, London

2: 63-114 (July 13) 1935

- Clinical Study of Headaches. E. Spriggs—p. 63
Further Experiences of Serum in Treatment of Pneumonia. D. Leya—p. 67
Method of Measuring Airway of Nose. L. Hill—p. 70
Aplastic Anemia. Two Fatal Cases Treated by Blood Transfusion and Pentnucleotide. J. M. Holmes—p. 71
Id. Following Neokharsivan. A. H. Imrie—p. 73
*Purpura Haemorrhagica Caused by Gold and Arsenical Compounds. Report of Two Cases. E. H. Hudson—p. 74
Biologic Activity of Derivatives of Male Hormone Androsterone. R. E. Callow and R. Denesly—p. 77

Hemorrhagic Purpura Caused by Gold and Arsenical Compounds.—Hudson reports two cases of hemorrhagic thrombocytopenic purpura caused by administration of gold and arsenical compounds. Other recorded cases are reviewed but no definite reason for this complication is found. An idiosyncrasy or abnormal sensitivity of the patient is the probable cause. The eosinophilic response present in other complications of gold therapy is less obvious in the purpuric cases. In only two recorded cases was it above 4 per cent. No effective prophylactic measures are known, but a history of allergic or other abnormal responses should engender caution. Blood transfusion is the most effective means of treatment. Liver extracts may be given to aid blood regeneration. The leukocyte count is the most reliable guide to prognosis.

2: 115-172 (July 20) 1935

- Chronic Duodenal Ileus in Infancy and Childhood. R. Miller and H. C. Cagge—p. 115
*Cortical Carcinoma of Suprarenal with Cushing's Basophil Pituitary Syndrome. Dorothy C. Hare, Joan M. Ross and A. C. Crooke—p. 118
Ventriculography by Opaque Injection. E. W. Twining and G. F. Rowbotham—p. 122
*Virus Bodies in Pericardial Fluid of Rheumatic Fever and Other Conditions and in Joint Fluid of Rheumatoid Arthritis. A. C. Coles—p. 125
Pyelitis. Its Significance and Treatment. A. Ellis—p. 127
Director for Insertion of Smith Petersen Nail in Collum Femoris Fractures. E. J. Lloyd—p. 129

Cortical Carcinoma of Suprarenal.—Hare and her colleagues report a case clinically indistinguishable from the syndrome attributed to basophil adenoma of the pituitary. A carcinoma of the adrenal cortex was removed at operation and metastatic growth was found at necropsy. In serial sections of the pituitary no basophil adenoma was found. The differential cell count was within normal limits. A hyaline change that occurred in the basophil cells of the anterior lobe is described. This change should be considered an expression of altered physiologic activity and not a degeneration in the sense of a change leading to the death of the cell.

Virus Bodies in Pericardial Fluid of Rheumatic Fever.—Coles discusses his observations in examining microscopically pathologic material for virus bodies. He stresses his observations in a case of rheumatic fever, nine cases of rheumatoid arthritis and fifty cases in which death occurred in old age from various causes in which the pericardial fluid was examined. In the case of rheumatic fever small but very definite round or oval bodies, mostly isolated, a few in pairs, but rarely in chains, were observed in the Giemsa-stained films made directly from the pericardium. They were faintly stained red with Giemsa

and were best seen on the stained fibrin background. They resembled all other virus bodies not only in their difficulty in staining a faint red but also in the fact that they showed minute flagella like appendages which carefully examined under a high power. Of the fifty cases exactly half showed virus bodies closely allied to those found in the endocardium and pericardium of rheumatic fever. Of course, some other bacteria—e.g., diplo cocci streptococci—were also present. In five of the nine cases of rheumatoid arthritis, numerous virus bodies resembling those seen in the pericardial fluid of the patient with rheumatic fever were found. In all these cases films were stained also with Ziehl-Neelsen's method and a prolonged search was made for acid fast bacilli, however, in none of them did the author find any evidence of tubercle or other acid-fast bacilli. His impressions are that probably the virus bodies found in the pericardial fluid of the patient with rheumatic fever and those found in the joint fluids of rheumatoid arthritis may belong to the same species and might well represent the actual causal organism. From a clinical and pathologic aspect he believes that these two diseases are more closely associated with a virus than a bacterial origin.

Medical Journal of Australia, Sydney

1:733 760 (June 15) 1935

Use of Three Hundred Kilovolts in Deep X-Ray Therapy. Some Personal Experiences. A. T. Nisbet.—p. 733

*Fracture of Neck of Femur. J. Hoets.—p. 743

Discharging Ears Treated by Iodine Powder Method. R. H. Bettington.—p. 747

Fracture of Neck of Femur—Hoets describes the curved cast and the Smith-Petersen nail as important aids to accurate reduction and adequate fixation of fracture. The curved cast enables a true lateral roentgenogram to be taken of the femoral neck. This is very difficult by any other method. The importance of this lateral view is that it has shown many a reduction which appears perfect in the ordinary anteroposterior picture to be imperfect. The Smith-Petersen nail is made of stainless steel. Its three flanges being only one thirty-second inch thick, it obtains a powerful grip on the fragments without displacing any appreciable bulk of cortex or spongy bone. A modification after King, by virtue of its central canal allows its placement over a Kirschner wire, the position of which is determined to be correct by roentgen examination in two planes. There are two ways of placing a Smith-Petersen nail with or without open operation. The use of the Smith-Petersen nail without open operation is the method of choice. Fractures through the neck of the femur without comminution are suitable for this operation. A fracture adjacent to the trochanter is suitable, provided the trochanter itself is sound. Both hips are included on the roentgenogram and a piece of metal notched at inch intervals, is placed on the skin of the lateral aspect of the thigh over the great trochanter. On the negative the length of the sound neck is measured against the metal strip and a nail of the correct length is prepared. The patient is anesthetized and placed on the traction apparatus. His feet are fixed to foot pieces. The fracture is reduced. Anteroposterior and lateral roentgenograms are taken to check the position. When the position is satisfactory, the prepared area is uncovered and a Kirschner wire is introduced. Roentgenograms are taken of the wire in position. The skin is swabbed with alcohol and a knife is passed down to bone along the wire. An incision of sufficient length is made and retracted. The starter is slipped over the wire, and the cortex is penetrated. The starter is withdrawn, and the nail is threaded on the wire and driven home. While the nail is being inserted it is necessary from time to time to use the impactor. The distal fragment tends to separate from the proximal as the nail enters the latter and must be driven back into position again. The wire is withdrawn and the wound is closed. After operation the patient is made comfortable with a soft pillow under the knee. This places the hip joint in a position of slight flexion and greatest comfort. The patient may sit up in bed as soon as the effects of the anesthetic have passed. There is slight soreness from the skin wound and some weakness in voluntary hip movements, but the limb may be moved passively without discomfort and without fear of any harm resulting. Massage and active movements to the limbs and unaffected joints may

be instituted at once, and gentle passive movements to the hip. For removal of the nail, local anesthesia is produced, a half-inch incision is made, and the nail is lifted out.

1:761 792 (June 22) 1935

Lister as Physiologist. W. A. Osborne.—p. 761

Prophylaxis of Radionecrosis. Notes. R. K. Scott.—p. 765

Infra Red Irradiation in Treatment of Radionecrotic Ulceration. P. A. Bona and R. K. Scott.—p. 768

The General Practitioner in a National Organization Against Cancer. F. S. Hone.—p. 770

*Parenteral Injection of Foreign Protein in Treatment of Gonococcal Ophthalmia. J. B. Hamilton.—p. 772

Critical Analysis of Diphtheria Immunization in a Provincial City. K. G. Kerr.—p. 775

Foreign Protein in Treatment of Gonococcal Ophthalmia—Hamilton treated two patients presenting adult gonococcal ophthalmia with injections of cow's milk boiled for four minutes and given intramuscularly into the buttocks on alternate days. Commencing with 10 cc., he increased the dose rapidly to 25 cc. Of numerous foreign proteins and serums, milk produces the best uniform rise in body temperature. The one risk of milk injections seems to be anaphylaxis. At the first indication of distress, 10 minims (0.6 cc.) of epinephrine should be given hypodermically. Patients in whom milk injections are definitely contraindicated are those who are weak and debilitated, especially marasmatic children, tuberculous patients, persons with kidney disease and women in the last months of pregnancy. The author's patients responded well to treatment. They show that high pyrexia is a definite aid in the treatment of adult gonococcal ophthalmia. The pyrexia must be continuous and maintained until all discharge ceases. If the patient becomes immune to one foreign protein, another must be substituted. The use of a 2 per cent silver nitrate solution, however useful in other forms of ophthalmia, is strongly contraindicated in the treatment of gonorrheal ophthalmia even in the later stages. In all cases of gonorrheal ophthalmia with corneal ulceration, the whole cornea should be covered with a conjunctival flap at once. A purse-string suture carefully inserted is the only sure method of keeping the conjunctival flap in place for the desired period, namely, ten days or longer. The author concludes that massive doses of foreign protein, given intramuscularly or intravenously on alternate days so that the body temperature is left swinging at a high level are specific for gonococcal conjunctivitis in adults.

Medical Press and Circular, London

190 589-606 (June 26) 1935

*Conditions Associated with Chronic Pulmonary Catarrh in Early Life. W. B. Wood.—p. 592

Treatment of Acute Otitis Media. F. H. Diggle.—p. 595

Hypnotic Drugs. G. S. Haynes.—p. 598

Id. F. B. Parsons.—p. 599

The Catarrhal Child—Wood describes the catarrhal child as one with a sallow complexion and dull eyes. Lymphatic hyperplasia is usually evident in the swelling of adenoid and tonsillar tissues, and malnutrition and underdevelopment are common. The ribs are prominent, owing to the thinness of the chest wall. Deficient expansion of the bases of the lungs causes a retraction of the chest below the level of the nipple. In generalized bronchial catarrh the signs of pulmonary catarrh may be accompanied by wheezing or may be associated with definite asthma. This liability to exudation suggests that some catarrhal manifestations may be due to allergic conditions. The exudative tendency is sometimes extreme and may even have tragic consequences. Nasopharyngeal infection is a usual concomitant of chronic basal catarrh, and contact infection often plays a part in its production. Between the more acute attacks of this disease, moisture lingers and crepitations are heard below the scapular angles. There is usually a history of bronchopneumonia in infancy. Since fibrosis is usually accompanied by bronchiectasis, the two conditions may conveniently be considered together. A massive fibrosis without bronchial dilatation is occasionally, however, a sequel of an interstitial pneumonia. In such cases the prognosis is apparently favorable. The saccular variety of bronchiectasis is relatively rare. Most of the entirely saccular bronchiectases may be due to congenital or developmental defects in early infancy, the arrest in post-uterine development of the lung having caused the persistence of large infantile alveoli to form the sacs. Symptoms may be

few or absent until secondary infection occurs, when acute purulent bronchiectasis may supervene on a dry condition. The cylindric type of bronchiectasis is common and is usually basal in situation. The theory that cylindric bronchiectasis may be the result of a vagal sympathetic imbalance has not yet been proved. Injections of iodized oil indicate that bronchial dilatation and bronchial spasm may occur in neighboring bronchi and that in the individual bronchus proximal dilatation may abruptly give place to distal spasm. Atelectasis involving a lower lobe is represented roentgenologically in the anteroposterior position by a triangular shadow, the apex of which corresponds with the proximal end of the main bronchus supplying the collapsed area. The inner margin of the triangle is obscured by the mediastinal opacity, the base blends with the diaphragmatic shadow and only the external margin is defined. The triangular shadow with its clear cut outer margin suggests a lobar delineation, but a lobular atelectasis may cause a similar appearance in the roentgenogram. Though atelectasis may be a temporary accident, in most cases the triangular opacity implies a permanent condition, the collapsed lobe containing dilated bronchi. Until clearer ideas are obtained on the etiology of the chronic pulmonary catarrhs and the prognosis in atelectasis and bronchiectasis, their treatment will remain unsatisfactory.

South African Medical Journal, Cape Town

8: 365-400 (June 8) 1935

- Empyema. Diagnosis from the General Practitioner's Point of View. A. Agranat—p. 367.
Id. Diagnosis from the Specialist's Point of View. W. M. Suzman—p. 370.
*Id. Surgery of Acute Empyema. A. L. McGregor—p. 373.
Some Remarks on Infant Feeding. S. Heymann—p. 377.
Heart Disease Treated by Thyroidectomy. F. D. D. van Zyl—p. 381.

8: 401-440 (June 22) 1935

- Pulmonary Pressure Control in Intrathoracic Surgery. H. J. Besselaar—p. 403.
Modern Contraceptive Methods. Hope Trant—p. 407.
Differentiation of Functional from Organic Conditions. F. du Toit—p. 415.
Prophylactic Quinine in Malaria in Nyasaland. R. Drummond—p. 417.

Surgery of Acute Empyema.—In operating for acute empyema, McGregor advocates resection of the eighth rib posteriorly or the sixth or seventh laterally. The time to discontinue drainage is when the cavity holds not more than 30 cc of fluid and when the pus has almost ceased to run. Heliotherapy, attention to diet and massage of the limbs may assist recovery. All empyema cavities should be irrigated with surgical solution of chlorinated soda, which assists expansion by thinning the thick resistant visceral pleura. The author refers to a method of closed suction drainage through a catheter introduced by trocar and cannula. The value of the method lies in the fact that drainage can be instituted in bed if necessary by a painless method, which does not put a further drain on the patient's resources and causes no shock. The patient is not disturbed after the catheter is inserted. There are no painful dressings and there is no risk of secondary infection. It is the only method that should be used in infants. The extended use of suction drainage in the treatment of empyema must not exclude rib resection from the therapeutics of this condition. Rib resection is a safe and valuable measure in adult patients in whom the mediastinum is firmly anchored. In infants, young children and those who are very ill rib resection should never be used. Here suction drainage finds its main application.

Japanese Journal of Obstetrics & Gynecology, Kyoto

18: 87-184 (April) 1935

- Effect of Colloidal Heavy Metals on Growth of Transplanted Tumors and Their Radiosensitivity. T. Kikuchi—p. 88.
Artificial Shifting of Menstrual Cycle by Means of Follicular Hormone Preparation Pelanin. S. Okamoto, Y. Yamamoto, H. Yagi and J. Kosaké—p. 105.
Investigation of Ferments in Uterine Cancer. Part VI. Ereptase in Uterine Cancer. K. Nakahori—p. 120.
Suprarenal Function and Malignant Tumors. T. Tanura—p. 130.
Spontaneous Healing of Tuhai Pregnancy. K. Taketomi—p. 139.
Blood Vessels of Uterine Tumors. G. Kawamishi—p. 141.
Biologic Study of Action of X Rays on Malignant Tumors Especially on Attitude of Stromal Tissues of Malignant Tumors to X Rays. H. Kawakami—p. 152.

Paris Medical

1: 577-592 (June 22) 1935

- Gold Salts. J. Forestier and A. Certonciny—p. 577.
*Treatment of Anal Fistulas by Complete Excision and Partial Suture. G. Cabanie—p. 587.
Respiratory Education of Respiratory Insufficiencies. G. Rosenthal—p. 589.

Treatment of Anal Fistulas.—Cabanie describes an operative technic for extrasphincter fistula which he considers superior to previous methods. After anesthesia the anus is dilated to three fourths of the maximum. The cutaneous orifice is encircled by an elongated incision, the axis of which is directed toward the anus. The external orifice thus freed is grasped with a hook. The fistula is dissected like a benign tumor. After excision, the rectum is sutured with catgut at rather close intervals. The anal mucosa is sutured but the cutaneous portion, properly speaking, is left free. The ischio-rectal fat, in which is exposed the external face of the sutured sphincter, must be allowed free drainage. This point is of major importance. An intra-anal drain surrounded by compresses extending into the ischio-rectal cavity completes the operation. The drain is removed on the fifth day.

Presse Medicale, Paris

43: 1057-1080 (July 3) 1935

- Arteriography in Anaphylactic Shock of Rabbit. Pastenr, Vallery Radot, J. Edoux, Lehard, J. Hamburger, Mme. A. Hugo and G. Calderon—p. 1057.
Treatment of Recent Fractures of Neck of Femur. M. Boppe—p. 1061.
*Arterial Pulmonary Syndrome in Sinistocardia. J. G  n  vier and H. Descomps—p. 1065.
Pleural Inflammations. G. Derscheid and P. Toussaint—p. 1069.

Arterial Pulmonary Syndrome in Sinistocardia.—G  n  vier and Descomps discuss the syndrome of extravascular stenosis of the pulmonary artery, which is found with more or less accentuated displacement of the heart toward the left. The functional disorders that accompany this syndrome are inconstant and not characteristic. Inspection usually reveals generalized atrophy of the precordial musculature with visible arterial pulsation. Percussion allows easy determination of the border of the right side of the heart, while that of the left is difficult to outline. Palpation made with the tips of the fingers in the second or third interspaces reveals a systolic thrill and an accentuated diastolic impulse. A variable murmur is heard in auscultation, but it is constant in that it is of unquestionable vascular origin. It is usually systolic, more or less prolonged and sometimes infringing on diastole. The pathogenesis of the syndrome is disclosed by careful roentgenograms. They establish a perfect agreement between the appearance of the deformities and the clinical signs, which are not produced except when the displacement is accompanied by a deformation of the artery or its infundibulum. Three types of deformation are considered: deviation of the heart to the left, torsion of the heart around a vertical axis, and compression of the pedicle. It is interesting to note that the pulmonary artery syndrome thus produced is usually well tolerated. Decompensation when it occurs, is usually more dependent on the pulmonary parenchymal sclerosis and the obliterative arteritis than on the deformation of the arterial trunk. The prognosis therefore rests on the anatomic-pathologic condition of the lung.

Policlinico, Rome

42: 1431-1478 (July 22) Practical Section

- *Fecal Amylase and Its Behavior in Colitis. G. Amalfitano—p. 1431.
Atrophy of Testicle Following Torsion of Spermatic Cord. Torsion of Spermatic Cord of Other Side. A. Casini—p. 1439.
Typhoid. Old and New Questions. A. Filippini—p. 1442.

Fecal Amylase and Its Behavior in Colitis.—Amalfitano studied the feces of twenty-four patients, of whom eighteen presented inflammatory intestinal disorders and six intestinal disorders concomitant with lesions of other organs. He determined the amylase content of the feces by means of the Wohlgemuth test. In patients having intestinal disorders without inflammation, the amylase content was normal. The amylase content was high in all cases of chronic intestinal inflammation and low in all acute intestinal inflammations. The deviation from normal was in relation to the state of inflammation of the intestinal mucosa. The author believes that the increase of

amylase in slight and chronic inflammations is due to a greater production of the ferment by the inflamed intestinal wall, to greater pancreatic production through the inflammatory stimulus, to lesser use of the ferment in the processes of digestion or to a combination of these causes. The diminution of the amylase content in cases of serious intestinal lesions is probably due to the decreased production of the ferment by a nondynamic, inactive and hypofunctioning organism.

Prensa Medica Argentina, Buenos Aires

22:1317 1362 (July 10) 1935

- Necrosis of Semilunar Bone or Kienboch's Disease M J Fitte—p 1317
Anomalies of First Phase (QRS) of Ventricular Complex R Lopez Ramirez, J E. Israel and A Nanciaris—p 1335
*Exophthalmic Goiter Treated with Milk of Thyroidectomized Goats Six Cases C Pasquini Lopez—p 1340
Sarcoma of Spermatic Cord Case A E Baila R de Surra Canard and J M Lascano Gonzalez—p 1343
Responsibilities of Medicine S Mazza—p 1348

Exophthalmic Goiter Treated with Milk of Thyroidectomized Goats—Pasquini Lopez found that the treatment of exophthalmic goiter by ingestion of varied amounts of the milk of thyroidectomized goats is superior in many cases to other medical treatments, even the ingestion of compound solution of iodine. All the author's cases responded well to this treatment. In grave cases the treatment ameliorates the patient's condition as much as surgical intervention and has none of the risks of operation. It has a favorable effect on the tachycardia, loss of weight and other secondary symptoms of the disease and produces prolonged improvement and sometimes complete disappearance of the symptoms. The author found no contraindications to the treatment.

Semana Medica, Buenos Aires

42:73 148 (July 11) 1935

- Anatomical and Roentgenologic Study of Accessory Lower Pulmonary Lobe. R F Vaccarezza and R Ferretti—p 73
False and True Progress in Neuropsychiatry O Fontecilla—p 98
Contribution to Study of Fourth Lead in Electrocardiogram J Espejo Solá—p 103
*Volkmann's Subluxation and Tuberculous Arthritis of Knee V Di Franco—p 109
Rheumatic Pneumopathy A M Zelasco and A Kohn—p 114
Effect of Ergotamine Tartrate Salve (Gynergen) in Anovular Pruritus J C Gonzalez Podestá and A Tordera—p 122
Cutaneous Horn Rare Case S Rosner—p 124
Bacillus Acidophilus and Its Related Species J Lahertino—p 125

Volkmann's Subluxation and Tuberculous Arthritis of Knee—According to Di Franco, Volkmann's subluxation is a type of tuberculous arthritis characterized by flexion contracture of the knee, external rotation of the leg, valgus position of the knee and frequently a bending of the upper third of the tibia. This type of tuberculous arthritis has been divided by Marconi into three roentgenologic groups corresponding to Volkmann's three types of flexion contracture of the knee: distention of the ligaments and alteration of the capsule, destruction of the femoral epiphysis and, finally, deformity of the femoral and tibial epiphysis. In all cases the flexion contracture is due to a local inflammatory process. In the frequently observed distention type, subluxation is due to alterations of the capsule and weakening of the ligaments, whereas in the deforming type it is due to defective development of the femoral epiphysis. The external rotation of the leg is due to the position of the knee in flexion of from 40 to 60 degrees, the weakening of the ligaments and sometimes the destruction of the bones. The valgus position is explained by the action of the biceps. The bending of the upper third of the tibia is due to the lack of resistance of the atrophied segment of the tibia to the contracture of the flexor muscles. The author refers to a patient treated by simple extension followed by immobilization of the pelvis and of the involved leg. The deformity recurred. He suggests as treatment for children aged from 3 to 5, upward and forward traction with the knee in flexion of 90 degrees for about twenty days to correct subluxation followed by extension to correct flexion. In cases complicated by rigidity of the joint or ankylosis of the knee in children aged from 8 to 10 he prefers arthrotomy and, in cases of great deformity of the knee with mobility of the joint, supracondylar osteotomy.

Deutsche medizinische Wochenschrift, Leipzig

61 1185 1224 (July 26) 1935 Partial Index

- Early and Erroneous Diagnoses of Chronic Gastritis H E Büttner—p 1185
New Methods of Treatment of Female Sterility Caused by Hypofunction of Genitalia Biologic Methods as Substitute for Operation C Clauber—p 1189
*Action of Ultrashort Waves on Bacteria E Hasché and H Leunig—p 1193
Internal Injury of Knee Joint Caused by Foreign Body D Hachenburg—p 1196
Treatment of Meningitis by Roentgen Rays G D Koehler—p 1197

Action of Ultrashort Waves on Bacteria—Hasché and Leunig state that in previous reports they demonstrated that wavelengths of from 8 to 16 meters do not influence bacterial growth in vitro. In this paper they report their observations on the action of ultrashort waves of 35 meters and call attention to certain peculiarities of the short wave field. They stress the nonhomogeneity of the condenser field of short wave or ultrashort wave apparatus as one of the most important factors and show how it can be demonstrated. They investigated the effect of the 35 meter wave on staphylococci and Bacillus coli in distilled water or in bouillon and on water that contained micro-organisms. They found that the ultrashort waves do not inhibit the growth of these micro-organisms in vitro. Since it has been proved that the short waves or the ultrashort waves are effective in suppurative infectious processes, the aforementioned experiments prove again that the behavior of substances in the test tube is no indicator of their behavior in the human organism. However, the authors' chief aim was to find an object that would react to short waves and could then be used to investigate the action mechanism, the problem of dosage and the indications for the ultrashort waves. This object was not realized and the results seem to indicate that the action of the ultrashort waves in the human organism is produced secondarily.

Treatment of Meningitis by Roentgen Rays—Koehler followed the suggestion of Hippe and Likint and employed roentgen irradiation in the treatment of meningitis. In a patient with serous meningitis who six months previously had sustained a skull fracture, several irradiations with roentgen rays counteracted the severe headaches and the epileptiform convulsions. In another case of meningitis the bacteriologic examination demonstrated the presence of meningococci. The case was febrile and subacute, but severe involvement of the brain was absent. Small doses of roentgen rays were applied to the spinal cord, in fields of 6 by 8 or 10 by 12 cm. Six or seven fields were successively irradiated, from below upward. The focus distance from the skin was 30 cm and the filter consisted of 0.5 mm of copper and 15 mm of aluminum. The individual doses amounted to 20 per cent of the unit skin dose. The second irradiation of the lowest field had the most noticeable effect, for the fever ceased after it had been applied and it is assumed that the meningitic process was localized chiefly in the lower portion of the spinal column. The author maintains that the twenty-one lumbar punctures that were made in the course of the treatment had only a symptomatic effect and reduced the pressure, to be sure, the meningococcus serum sterilized the cerebrospinal fluid and an antipyretic preparation reduced the septic temperatures, however, reduction of the secretion of the meninges and complete cure were not effected until after the systematic roentgen irradiation.

Jahrbuch für Kinderheilkunde, Berlin

145:1 60 (July) 1935

- *Hereditary Diabetes Insipidus Cornelia de Lange—p 1
Influence of Washed Irradiated and Intravenously Injected Erythrocytes on Calcium Content of Rabbit Serum H J Hartenstein—p 15
Electrocardiographic Observations in Diphtheria G W Parade and U Petersen—p 22
Symptomatology of Enteritis Breslau Epidemiologic Bacteriologic and Clinical Peculiarities of a Hospital Epidemic of Enteritis Breslau L Seitz—p 31

Hereditary Diabetes Insipidus—De Lange reports the histories of two children with diabetes mellitus in whom, on investigating their history, she found that the diabetes insipidus had been passed on through four generations. Most cases were

mild. In the two children who were under clinical observation the diabetes insipidus was of the normochloremic-hyperchloruric type, the term hyperchloruria indicating that, although the sodium chloride concentration was low, it was not as low as in the other types. The author thinks it advisable to rehospitalize the two children from time to time to determine whether or not the further development of the disorder is along the same lines. In reviewing the literature, the author found that the manifestations as a rule do not develop until the children are several years old, that is, when the water exchange is transferred from the skin and the gastro-intestinal tract to the kidneys. However, a number of reports mention that great thirst was already observed during the nursing age. The symptoms are most severe between the ages of 20 and 30 years. After the age of 50 there is a lessening of the symptoms. Pregnancy seems to intensify them. Some reports mention mental deficiency in cases in which the disease is hereditary, and occasionally the green color of the urine is mentioned. The capacity of the bladder is increased in the majority of the cases. In the milder cases the concentration capacity, although reduced, is not entirely abolished. There are as yet no pathologic anatomic data on the hereditary form of diabetes insipidus. The patients may reach an advanced age. The disease seems to be more frequent in men than in women. The author thinks that the improvements supposedly obtained in some cases with iron and valerian preparations are the result of psychic effects.

Klinische Wochenschrift, Berlin

14:1 1057 1088 (July 27) 1935 Partial Index

Metabolism and Circulation in Cardiac Decompensation D. Jahn — p 1061

Physiologic Action of Artificial Male Sex Hormone E. Tschopp — p 1064

*Antagonistic Influence of Thyroid Hormone on Corpus Luteum and of Estrogenic Hormone on Pseudopregnant Uterus E. Engelhart — p 1068

*Vitamin A Metabolism and Liver in Experimental Phosphorus Intoxication F. Lasch — p 1070

Do Customary Liver Preparations Contain Vitamin C? F. Diehl, H. Moll and H. Schröder — p 1073

Experimental Studies on Arspenamine Allergy P. Kallós and Lise Lotte Kallós Deffner — p 1074

Antagonistic Influence of Thyroid Hormone on Corpus Luteum and of Estrogenic Hormone on Pseudopregnant Uterus — With the thyroid hormone Engelhart produced pseudopregnancy in female rabbits by mating them with sterile males. In order to be positive that pseudopregnancy existed, an exploratory laparotomy was made and the ovaries were examined for the presence of ruptured follicles. Beginning with the second or third day of the pseudopregnancy, the animals were fed daily with thyroid substance. In the course of this treatment the typical symptoms of hyperthyroidism developed. The animals were killed after the pseudopregnancy had existed for eleven, twelve, thirteen, fourteen, fifteen or sixteen days and the ovaries and uterus were removed. It was found that the corpora lutea became atrophied under the influence of the artificially produced hyperthyroidism and that their influence on the uterus ceased, for beginning with the thirteenth day the uterus was again capable of reacting to solution of pituitary and the decidual mucosa of the uterus commenced to disappear. The author calls attention to the importance of the corpus luteum hormone for the undisturbed course of pregnancy, pointing out that the removal of the corpora lutea almost regularly produces abortion. He further studied the action of estrogenic substance on pseudopregnancy. The experiments he carried out in this connection proved that estrogenic substance does not, like thyroid, influence the corpora lutea as such (their appearance and function remain unaltered) but only inhibits the action of the corpus luteum hormone on the uterus.

Vitamin A Metabolism and Liver — Lasch mentions a number of investigators whose studies have seemed to establish definitely the dominating influence of the liver in the vitamin A metabolism. However, he considered it advisable to investigate this problem also in animals with impaired function of the liver. He reasoned that impairment of the liver could be produced by thyrotropic hormone or by phosphorus poisoning. Since other investigators had taken up the connection between

thyrotropic liver impairment and vitamin A metabolism, the author decided to give his attention chiefly to phosphorus poisoning. In experiments on rats and rabbits he found that fatal phosphorus poisoning does not influence the vitamin A content of the liver. He observed also that, if parenteral administration of vitamin A was combined with the phosphorus intoxication, the severely damaged liver of poisoned rabbits stored the same quantity of vitamin A as did the liver of normal animals. He thinks that this is due to the vitamin A metabolism effected by the reticulo-endothelial system, by Kupffer's stellate cells, which evidently are independent of the hepatic parenchyma and retain their storage capacity for vitamin A after the parenchymal cells have become greatly impaired.

Medizinische Klinik, Berlin

31 965 996 (July 26) 1935 Partial Index

*Therapy of Insect Stings F. Flury — p 972

*Differential Diagnosis of Aneurysms of Hepatic Artery O. Rimpler — p 974

Insulin Anaphylaxis F. Lasch — p 975

Influence of Digitalis on Work Electrocardiogram L. Zwillinger — p 977

Paracolon Bacillus as Contaminator of Foods O. Schubert and E. David — p 979

Therapy of Insect Stings — Flury, in discussing treatment, points out that the mechanical removal of the venom by suction is impossible in the case of insect stings. Surgical procedures are rarely necessary, except in case of edema of the glottis. In the case of bee stings the removal of the sting is important. Another therapeutic measure is the neutralization of the toxin. This measure is based on the erroneous belief that formic acid is involved in the action of insect venom, but, in spite of this, the frequently employed ammonia is not entirely ineffective. Other substances that formerly were thought to be neutralizing agents, such as sodium bicarbonate, lime water, magnesium oxide and magnesia magma, are sometimes beneficial because they counteract the tension. Some measures are employed to make the venom insoluble. In this connection the author mentions one of the oldest remedies, namely, sodium chloride, which is dampened and applied or rubbed in. Other substances belonging to this group are magnesium sulphate, ammonium sulphate, some alcoholic preparations, tannic acid, plant juices that contain tannin and certain heavy metals. The author thinks that the use of heat likewise produces coagulation of the venom. He points out that frequently attempts are made to "burn out" insect stings. Tincture of iodine, compound solution of iodine, chlorine water, surgical solution of chlorinated soda and similar preparations aim at a chemical destruction of the venom. Potassium permanganate likewise is used much. To counteract the pain, local anesthetics may be employed and the itching may be counteracted by anti-inflammatory agents, such as the phenols and the volatile oils. As a prophylactic measure it is advisable to disinfect the wound with iodine, formaldehyde or a phenol preparation. The author thinks that most fatalities which occur in connection with insect stings are the result of bacterial infections rather than of the insect venom. The general treatment varies in the different cases. Stings into the blood vessels may produce severe symptoms that resemble anaphylactic shock. To counteract allergic conditions, epinephrine and intravenous calcium therapy have been recommended.

Diagnosis of Aneurysms of Hepatic Artery — Rimpler reports a clinical history in which the typical symptoms existed of aneurysm of the hepatic artery. There were recurrent attacks of pain in the right epigastric region, these pains were of the type that is indicative of a colic of the biliary tract and they were followed by melenas. The author points out that these symptoms might exist in a combination of gallstone colic with bleeding duodenal ulcer but that these two conditions could be excluded on the basis of the roentgenologic aspects. A second possibility was the existence of carcinoma of the duodenal papilla, but icterus was absent. The third disorder considered possible was an aneurysm of the hepatic artery. Since there were no indications of syphilis or a trauma, a mycotic aneurysm of the hepatic artery with perhaps a slow sepsis was thought of. The patient's general condition seemed to point in this direction. However, the further course did not

corroborate the existence of a slow sepsis. The fourth possibility considered by the author was the existence of a pulsating bleeding, colic producing metastasis of a hepatic carcinoma. In view of the progressive cachexia and of the change of the pulsating nodule into a hard nodule, carcinoma seemed likely and this was corroborated by the necropsy, which disclosed a scirrhous carcinoma of the caudal portion of the pancreas with metastases in the liver. The hepatic metastases had produced compression of the vessels and thus the pulsating nodule.

Zeitschrift für Krebsforschung, Berlin

42: 163-250 (July 19) 1935 Partial Index

Manifestations of Immunity and Resistance in Transplantation of Tumors G Domagk and C Jackmann—p 192

*Iron Content of Malignant Tumors and Its Significance for Ray Therapy S Loewenthal and H Probst—p 222

Further Experiences with Fuchs Reaction V Kafka Jr—p 241

*Lead Therapy of Cancer and Influence of Some Colloidal Metals on Growth of Inoculated Tumors of Rats S von Pastinszky and Berta Ottenstein—p 245

Iron Content of Malignant Tumors—Loewenthal and Probst think that the difference between the atomic weight of iron and that of the other tissue constituents is a decisive factor in ray therapy. They point out that hemoglobin, the iron bearing principle, has a high adsorption capacity for roentgen rays, and they think that this explains the sensitization of the skin by an excess of blood and the preservation of the skin in case it is anemic during roentgen irradiation. They further discuss the relationship between the hardness of the rays and the penetrating power of the secondary electrons and then report their studies on the iron content of tumors. They made studies on 176 malignant tumors from human subjects and on a number of carcinomas and sarcomas from rats. The iron content was determined by histochemical methods and in some cases also by chemical analytic procedure. Iron was found more often and in larger quantities in the primary tumors than in the metastases. This may explain the lesser ray sensitivity of the metastases. Comparative tests on irradiated and non irradiated tumors disclosed that the irradiated tumors have a higher average iron content. However, the author hesitates to draw definite conclusions from this. Irradiation seemed to produce no noticeable changes in the iron content of metastases.

Influence of Lead on Tumors—Von Pastinszky and Ottenstein introduced the so-called Ehrlich Putnoky rat blastoma strain into rats and then treated the animals with solutions of a colloidal compound of lead oxide and titanium trichloride. After large doses they observed a slight anemia and an exacerbation of the growth of the tumors, whereas the administration of small doses had no effect at all. The lead that had been injected into the tumors could be demonstrated in the subsequent histologic studies but only traces of the subcutaneously administered lead could be found. There were no indications of a specific tumor affinity for the lead even in the incinerated sections. In order to determine whether lead had a prophylactic action against tumors, it was administered to rabbits that were subjected to tar applications. The lead did not inhibit the development of the precancerous conditions elicited by tar. Since the lead preparations used by the authors contained also tannic acid, they decided to study the action of colloidal tannic acid and found that it slightly inhibits the growth of tumors. This inhibiting action could be further increased by the addition of colloidal copper to the tannic acid. Colloidal tellurium was tolerated in large quantities, but it did not cause the tumors to disappear and it produced a tendency to necrosis.

Zeitschrift für Tuberkulose, Leipzig

73: 241-320 (July) 1935 Partial Index

Postnatal Development of Tubular Bones and Its Significance for Pathologic Anatomy of Knee Joint. W H Stefkó—p 243

*Technic of Thoracocautery G Krauel—p 259

*Elimination of Potassium and Sodium in Sputum of Tuberculous Patients O Zorn—p 270

Hydrocarbons in Stimulation Therapy of Tuberculosis J Kairiukstis—p 277

Potassium and Sodium in Sputum of Tuberculous Patients—In studies on the sodium chloride content of the sputum Zorn observed a number of elimination anomalies

particularly in patients with tuberculosis, which could not be explained entirely by a retention of chlorides. For this reason he determined the potassium and sodium content of 120 patients with various forms of tuberculosis and compared these values with the chloride values. The elimination in the urine was given consideration only in some of the patients. The author found that the elimination of sodium and potassium was not the same in all forms of tuberculosis. In the cirrhotic and productive cases there were no anomalies in the elimination. The patients with febrile tuberculosis, the exudative cases, the patients with early cavities and the cases in which the process had newly flared up always exhibited a noticeable increase in the potassium values and a reduction in the sodium values. These results indicate that the determination of the potassium and sodium values is helpful in deciding whether the tuberculous process is active or not. After having found that the potassium elimination is increased in exudative tuberculosis the author studied the effect of the salt-free diet on the potassium elimination and found that the diet inhibits potassium elimination. This indicates that the mineral economy of the organism is altered by such a diet. Further studies will be necessary to determine whether or not this change is beneficial to the organism.

Hydrocarbons in Stimulation Therapy of Tuberculosis—Kairiukstis uses mixtures of benzene-like aliphatic hydrocarbons to produce focal reactions. He shows that they are the manifestation of increased activity of the hematopoietic and the reticulo endothelial systems. In experiments on animals the repeated injection of aliphatic hydrocarbons resulted in a stimulation and increased functional activity of the two systems, for there were myeloid transformation of the bone marrow, hyperplasia of the spleen nodules, proliferation of the activated reticular cells and other changes in the internal organs. The author shows that the aliphatic hydrocarbons have an especially strong action on the reticulo-endothelial system. In the mixture of the aliphatic hydrocarbons used by him, heptane was the most important constituent and he says that this corroborated his assumption that among the aliphatic hydrocarbons heptane has the strongest therapeutic action. He concludes from this that the preparations consisting of mixtures of pure aliphatic hydrocarbons cannot be replaced by ordinary benzene solutions. The aim of the administration of hydrocarbons is to produce mild focal reactions, which can be done with doses of less than 0.1 cc. In a patient whose history is described in this report, the author gave every three weeks an intramuscular injection of 0.08 cc. of a preparation consisting of pure aliphatic hydrocarbons. After ten weeks, that is, after three injections, the large submaxillary nodules had practically disappeared at least as far as they could be seen from the outside. Only palpation revealed a few small nodules. The author warns against rapid increase in the doses in patients with tuberculosis. If the reactions become more severe at later injection, the doses should be slightly reduced. He expects that those who know the value of focal reactions in the treatment of tuberculosis and of other inflammatory processes will try the aliphatic hydrocarbons.

Zentralblatt für Chirurgie, Leipzig

62: 1681-1744 (July 20) 1935 Partial Index

*Venesection in Case of Postoperative Reaction Following Surgical Treatment of Exophthalmic Goiter C Lang—p 1682

Tumors of Appendix H Bosc—p 1689

Technic of Conservative Treatment of Ganglions W Thomsen—p 1692

*So-Called Gas Peritonitis and Its Relation to Pneumatoxis Cystoides Intestinalis K Michejda—p 1695

*So-Called Intrafascicular Urethral Stenosis and Description of a Case O Reisch—p 1696

Venesection Following Operation for Exophthalmic Goiter—Lang reports a case in which a woman aged 25, with typical symptoms of exophthalmic goiter, submitted to an operation following preliminary Plummer treatment with iodine. The course of the operation was uneventful. Toward the evening of the day of the operation the patient became restless, the pulse increased, the respiration became more rapid and she had a livid appearance. Several hours later the signs of severe

postoperative intoxication were present. The patient was cyanotic and the respiration became slower and deeper. Her condition was grave. Since sedatives had been without effect, venesection was resorted to. After the withdrawal of 30 cc of blood from the bend of the elbow, improvement was noticeable. In all, 150 cc was withdrawn. The threatening symptoms disappeared and a restful sleep followed. The author thinks that several factors contribute to the efficacy of venesection. He thinks that the unburdening of the lesser circulation and the consequent improvement in the gas exchange within the pulmonary capillaries constitute the chief factor. It is possible also that the removal of toxic substances from the blood stream plays a part.

Gas Peritonitis—Michejda says that later observations in a case which he had reported as a spontaneous gas peritonitis make it appear probable that the gas peritonitis was not spontaneous but was the result of the escape of gas from a gastric ulcer. He calls attention to heretofore disregarded connections that exist between so-called gas peritonitis and pneumatosis cystoides intestinalis. He points out that the latter condition is found chiefly in patients with chronic gastric ulcer. He thinks that in this or similar conditions it is caused partly by the pressure of free gas into the open lymph clefts of the abdominal cavity and partly by the deficient resorption of the excessive gas, with subsequent encapsulation of the nonresorbed gas. Thus it appears that in some cases gas peritonitis may be a transitional form between ulcer perforation and pneumatosis cystoides intestinalis.

Infracollicular Urethral Stenosis—Raisch calls attention to a deformity in the urinary tract, namely, to valve formations in the region of the posterior urethra. These valves originate distad from the colliculus seminalis, take a forward course and are attached to the upper or lateral urethral wall. They are two pouch-like formations resembling somewhat the semilunar valves. They are open toward the bladder and thus obstruct the discharge of the urine and lead to a dilatation of the prostatic part of the urethra and gradually to an enlargement of the bladder and a dilatation of the ureters and of the renal pelvis. Catheterization becomes necessary and a secondary infection is likely. In case of unilateral valve formation the clinical symptoms may develop late, but if the deformity is bilateral the patient generally succumbs during the first years of life, unless there is a wide opening between the valves. In the diagnosis of this disorder the following factors play a part: 1. Since the valves open toward the bladder, a catheter can be introduced quite readily. 2. The spontaneous discharge of the urine is difficult. 3. In the advanced stage of urinary stasis, dribbling of urine is often observed. 4. If infection develops, the primary symptoms may be completely masked and the patient may die of septic or uremic symptoms. The author says that the prognosis is largely dependent on early diagnosis. It is important that the patient receive proper treatment before secondary infection develops. In nurslings and small children the valvular obstructions should be corrected by a transvesical intervention, while urethroscopic methods may be tried first in older children.

62 1745 1808 (July 27) 1935

Surgical Treatment of Incomplete Fistulas of Ischio-rectal Fossa. A. Lawen—p. 1746

Elevation of Perineum. New Method for Facilitation of Pulling Through Procedure After Operations for Cancer of Rectum. F. Mandl—p. 1749

*Plasma Transfusion as Method of Choice in Treatment of Hemolytic Shock. S. W. Heinatz and N. I. Sokolow—p. 1753

*Treatment of Old Fractures and Pseudarthroses of Neck of Femur. L. Böhler—p. 1756

Congenital Closure of Small Intestine. H. Bromberg—p. 1768

Aspects of Isolated Fracture of First Rib. P. Huber—p. 1773

Technic of Surgical Sterilization in Men. F. Krauss—p. 1775

Plasma Transfusion in Hemolytic Shock—Heinatz and Sokolow show that recent research has given a better insight into the pathogenesis of hemolytic shock. It has been found that the arterial pressure decreases rapidly and that there is a continuous spasm of the vessels in the splanchnic region, chiefly in the kidneys. The ischemia of the kidney produces degenerative changes, which impair its secretory action (oliguria, anuria) and may cause a fatal outcome. Experimental

studies disclosed also that the vascular spasms of the splanchnic region are independent of the central and peripheral nervous system and are produced directly by the action of the hemolytic plasma on the vascular wall. Hesse and Filatow found that hemolytic shock can be successfully treated by the transfusion of large quantities of conserved blood, for this intervention counteracts the spasm and increases the blood pressure. Hesse's method proved effective in seven out of ten cases of hemolytic shock. The authors made experimental and clinical studies on the use of conserved plasma and found that it may be kept for three months and effectively employed in severe forms of operative shock and in cases in which considerable amounts of blood have been lost. After a discussion of the reasons why plasma therapy may be used instead of blood transfusion and of its advantages over blood transfusion, the authors describe a case that illustrates the beneficial effects of conserved plasma in the treatment of hemolytic shock. They think that plasma therapy is the method of choice in the treatment of acute hemolysis and stress that it involves fewer dangers and that it can be employed more quickly than blood transfusion, the latter factor being highly important in cases of this nature. They think that conserved plasma of the AB group, which may be used in all patients, should be kept on hand in all hospitals in which blood transfusions are made.

Old Fractures and Pseudarthroses of Neck of Femur—Böhler says that for years he has employed surgical methods in the treatment of the fractures of the neck of the femur. Since he became acquainted with the extra-articular nailing of Sven Johansson, he has used this method. He decided to employ it also in old fractures and in pseudarthroses of the neck of the femur. The extra-articular nailing is possible only if the fractured ends are in the correct position. Since, however, in most pseudarthroses of the neck of the femur displacements have taken place, these have to be overcome before the extra-articular nailing can be done. The author explains how this is accomplished and refers to a former report for an exact description of the operation. After the operation the leg is placed on a Braun splint and the foot is suspended on the crossbar. The drain is removed after twenty-four hours and the sutures after a week. After that, the patient commences with exercises on the knee-bending frame. When the patient sits up in bed, he makes movements in the hip joint. Knee, instep and toes are usually movable after two weeks. If complications are absent, a plaster-of-paris cast may be applied after two weeks. Whereas, in the case of new fractures of the neck of the femur the cast is left on for ten or twelve weeks in the case of pseudarthroses it has to be left on for six months or longer. In order that the ends of the fractures may be pressed together again and again, the patient is urged to walk and to stand on the injured leg. In this manner osseous healing is produced even in old fractures and in pseudarthroses. The author reaches the conclusion that, because of its simplicity and its reliability, extra-articular nailing is superior to all former methods, to subtrochanteric osteotomy, to riveting with a bone splint and to implantation of the neck of the femur into the acetabulum.

Ugeskrift for Læger, Copenhagen

67 725 746 (July 11) 1935

*Continued Investigations on Presence of Antianemic Factor in Preparations of Dried Stomach Substance from Cardia Fundus and Pylorus Portions Respectively and from Duodenum. V. Preparations from Duodenum (Preliminary Report). E. Meulengracht—p. 725

Vasomotor Rhinitis with Especial Reference to the Value of Cutaneous Allergic Reaction. J. Kragh—p. 728

Naso-Ocular Reflex Illustrated by Case with Partial Loss of Reflex. T. Dalsgaard Nielsen—p. 734

Is Holger Nielsen's Method of Resuscitation Trying? E. von Holstein Rathlou—p. 736

Antianemic Factor in Dried Preparations from Duodenum—Meulengracht finds that the duodenum of swine, like the pylorus portion, possesses a marked antianemic activity. He believes that the antianemic factor in the duodenum depends on Brunner's glands and assumes that they are identical with pylorus glands and belong to the pylorus gland system, or using the proposed term to the pylorus gland organ.

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SECONDARY TUMORS OF THE URETER

A CONSIDERATION OF THE VARIOUS TYPES,
WITH A REPORT OF TWO CASES

CHAIRMAN'S ADDRESS

STANLEY R WOODRUFF, M.D.
JERSEY CITY, N J

In the twelve years since the publication of a case report by Giordano and Bumpus¹ progressively increasing interest has been shown in secondary tumors of the ureters. The rarity of true metastasis to the ureter from adjacent pelvic organs, so often the seat of malignant disease, is difficult to explain when one remembers the frequency of occurrence of carcinoma of the bladder and the fact that the lymphatic vessels of the two organs communicate, unless one agrees with Robinson² that the lymphatic drainage of the lower portion of the ureters is downward. This is also true of other pelvic organs in both the male and the female. Even as rare a condition as primary carcinoma of the ureter appears to be, I am inclined to believe with Glas³ that true metastases are even rarer, and it appears that the histologic structure of the ureter is somewhat immune to malignant invasion. Surely one must be impressed by the fact that a large number of the cases of true metastasis reported come from such rather remote organs as the breast stomach and lung. My observations would force me to believe also that there are many metastases to the ureter that are entirely missed because of their small size and the lack of symptoms. The most frequent metastatic growths of the ureter are really inoculation or implantation metastases from an original papillary carcinoma of the renal pelvis.

CLASSIFICATION

In order to clarify these conditions I have endeavored to formulate a classification of secondary tumors of the ureter based on pathogenic principles.

- I. Involvement of the ureters by the urogenic route
 - (a) In the direction of the urinary flow (from the kidney or pelvis)
 - (b) Retrograde (from the bladder)
- II. Involvement of the ureter by direct extension from a neighboring viscus
 - (a) Encircling the ureter without infiltration of the ureteral wall

(b) With infiltration of the ureter

- 1 Without encroachment on the lumen
- 2 With encroachment on the lumen
- 3 With subsequent rupture into the ureteral lumen
 - (a) Further dissemination by the urogenic route (as in group I)
- 4 With subsequent invasion of the blood or lymph channels (acting as a supplementary focus for further dissemination)

III. Involvement of the ureter by the blood or lymph channels (genuine metastases)

IV. Combination form (combination of any of the former)

V. Involvement of the ureter by lesions that may be of multicentric origin

(a) Diseases of the hematopoietic system

- 1 Hodgkin's disease
- 2 Lymphosarcoma
- 3 Leukemia
- 4 Reticulosis

GROUP I. Involvement of the Ureter by the Urogenic Route—(a) Clinicians are fully cognizant of the tumors that arise in the renal pelvis and metastasize down the ureter by way of the urinary stream. Such implantation may continue onward into the bladder, where papillary tumors grow with great facility. This condition has been demonstrated to be so common that urologists now feel it necessary to make a thorough study of the ureter and renal pelvis by the usual methods in every patient showing papillary growths in the bladder. Albarran⁴ first brought attention to the ease with which papillary tumors of the renal pelvis can become implanted in the mucosa of the bladder. Hunt⁵ in 1927 reported fifteen cases of papillary epithelioma of the renal pelvis, which series was later covered by Kimball and Ferris⁶ in their recent (1934) review of the literature in connection with such tumors. They collected reports of seventy-four cases, in fifty of which metastases appeared in the ureter and bladder. In only one of these cases does it appear that the ureter alone was the subject of metastatic implantation, but in twenty-four cases or 48 per cent, the ureteral orifices were involved while in eighteen cases, or 36 per cent, both the ureteral orifice and the bladder showed papillary tumors. Cabot and Allen⁷ in 1933 reported forty-five cases nineteen of which were also included in the data of Kimball and Ferris. In the remaining twenty-six cases there were seven metastatic implantations in the ureter. The accepted procedure in operating on a patient suffering from papillary carcinoma of the renal pelvis now includes total extirpation of the ureter along with a portion of the vesical wall, even in those patients

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¹ Giordano A. S. and Bumpus H. C. J. Urol. 8: 445 (Nov.) 1923.

² Robinson A., cited by Cunningham D. J. Textbook of Anatomy, 1923, p. 1076.

³ Glas Richard. Wein. klin. Wchnschr. 39: 1145 (Sept. 30) 1926.

⁴ Albarran J. Ann. d. mal. d. org. génito-urin. 18: 701 1900.

⁵ Hunt V. C. J. Urol. 18: 225 (Sept.) 1927.

⁶ Kimball F. V. and Ferris H. W. J. Urol. 31: 257 (March) 1934.

⁷ Cabot Hugh and Allen R. B. Lancet 2: 1301 (Dec. 9) 1933.

in whom no secondary growth of the ureter or bladder can be demonstrated. Metastasis of the ureter from the renal pelvis appears to take place by the actual adherence of tumor cells to the mucosa, with subsequent implantation on it as they float down in the stream of urine, and not by lymphatic or adjacent growth



Fig 1—Pyelogram with the catheters in place

(b) Retrograde dissemination of neoplasms upward was mentioned by Ewing.⁸ He described several papillary tumors of the bladder which extended into the lumen of the ureter. Boeger's⁹ patient died two years after resection of the sigmoid flexure for carcinoma. At necropsy a tumor was found in the left ureter, with dilatation of the ureter and pelvis above it. There was carcinomatous involvement of the medulla of the kidney and pelvis. In this case the author believed that the patient had metastases at the bifurcation of the aorta at the time of operation, and that these tumors grew into the adjacent tissues, invaded the ureter, broke into the lumen and then gave rise to renal and pelvic implants by the retrograde urogenic route. The ureter above and below the constriction was found to be uninvolved in the tumor process.

GROUP II Involvement of the Ureter by Direct Extension from a Neighboring Viscus—(a) That the ureters may be embedded in adjacent extra-ureteral tumors without actual invasion by them was shown in Martin's¹⁰ case of primary carcinoma of the cervix with metastasis to the vagina. The ureter in this instance was completely encircled by tumor tissue for a distance of 2 cm. In spite of this the ureter could be easily freed from the tumor, the latter being removed at operation. The ureteral wall was found to be free of invading tumor tissue.

The literature is full of reports in which pressure on the ureter by an adjacent tumor has been the cause

of marked changes in the ureter, the result of stricture of the ureter usually being ureterectasis and pyelectasis, which is commonly followed by infection resulting in pyonephrosis and destruction of the kidney. Herger and Schreiner¹¹ reported twenty-one such cases in a series of autopsies on thirty-two patients who died of carcinoma of the cervix.

(b) 1 More aggressive tumors adjacent to the ureter may, however, infiltrate its wall with or without interference with the lumen. In Maruyama's¹² first case the lumen was not obliterated even though the wall was infiltrated.

2 In Myers' ¹³ patient anuria developed thirty days before death about four months after hysterectomy for carcinoma of the cervix. At necropsy both ureters were found to be incarcerated in a pelvic mass which had already infiltrated the ureteral walls and occluded the lumens.

3 After the tumor has invaded the ureteral wall, it may rupture into the lumen and then spread by the urogenic route to other portions of the ureter, to the bladder or retrograde to the pelvis and kidney (as in Boeger's case described in group I).

4 After the tumor has invaded the ureteral wall, this secondary tumor may act as a supplementary depot for further dissemination by way of the lymph or the blood stream. In Maruyama's ¹² first case there was a large mass in the pelvis extending from a carcinoma of the cervix. The left ureter was invaded and embedded in this mass, but its lumen was not obliterated. The lymphatic vessels extending up to the ureter were infiltrated by tumor tissue. In this instance it is difficult to decide whether the lymphatic extension was from the pelvic mass or from the involved ureter. The second source, however, is more likely.



Fig 2—Uterus, cervix and vagina showing an ulcerated lesion of the cervix extending into the vagina and encroaching on the cervix.

GROUP III Involvement of the Ureter by the Blood or Lymph Channels (Genuine Metastases)—The first to stress invasion of the blood stream by tumor cells

8 Ewing James. Neoplastic Diseases. Philadelphia W. B. Saunders Company 1922.

9 Boeger Alfred. Beitr. z. path. Anat. u. z. allg. Path. 80: 640 (Oct. 5) 1928.

10 Martin J. F. Lyon méd. 117: 535 1911.

11 Herger C. C. and Schreiner B. F. Surg. Gynec. & Obst. 43: 740 (Dec.) 1926.

12 Maruyama Ichiro. Okayama Igakkai Zasshi 40: 1087 1928.

13 Myers W. A. Obstructive Anuria. J. A. M. A. 85: 10 (July 4) 1925.

were Giordano and Bumpus in 1922¹. They reported a case in which there was a carcinoma of the prostate with metastasis to the left ureter. In 1924 Thomas and Regnier¹⁴ reported a case of carcinoma of the bladder with metastases to the right ureter. They made no mention of perivascular lymphatic vessels, merely stat-

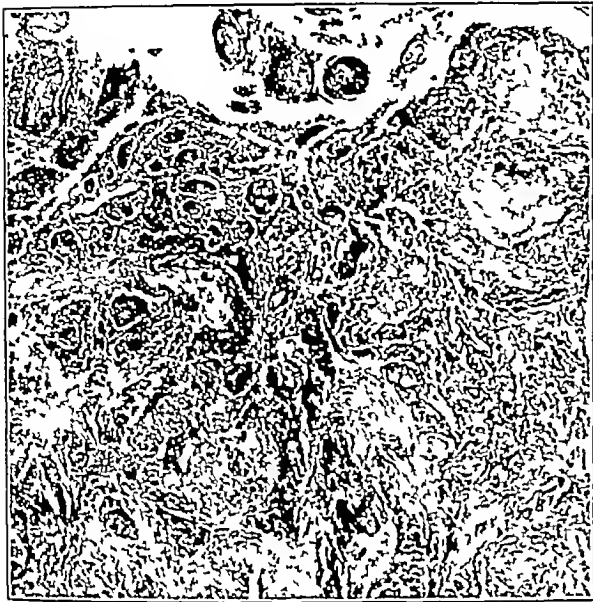


Fig 3—Section under low power showing ulcerated lesion with invasion of deeper tissues by nests of tumor cells

ing that the cervical, inguinal and mesenteric lymph nodes were involved. Carson¹⁵ in 1925 stressed invasion of the lymphatic vessels reporting three cases, one from the bladder, another from the prostate and a third from the cervix. In 1927 Carson¹⁶ described two additional cases that fall into this group, both from the prostate.

Rathbun¹⁷ in 1929 reported a case in a male occurring three years after mastectomy for carcinoma. Urinary symptoms developed at that time and a urologic examination established the diagnosis of renal tumor, probably carcinoma. Excision of the left kidney and partial ureterectomy were performed and a tumor nodule, having the characteristics of the original breast tumor, was found in the wall of the ureter. The author made no mention of lymphatic extension, but that was undoubtedly a case of true metastasis.

Kirshbaum¹⁸ reported five cases of involvement of the ureters, the first subsequent to mastectomy for carcinoma, the third secondary to bronchial carcinoma and the fourth and fifth originating in prostatic carcinomas. His second case was one of Hodgkin's disease, which will be included in a special group.

In considering the cases of true metastasis to the ureter, one must not be overcautious and include only those instances in which tumor is present within the lymph or blood channels. In the first place it is not uncommon to find a lymph node involved in a tumor process without demonstration of neoplastic tissue within the afferent or efferent channels. Indeed, one

would be compelled to make serial sections, and even then the cells would not necessarily be demonstrated. This is particularly so in those cases of infrequent sporadic invasion in which the cells are immediately propelled through the lymph vessels without involving either intermediate lymphatic gland or the very channel through which it traveled to its new nidus. Furthermore, in those cases in which the lymphatic vessels are found to be actually involved it might well be an efferent vessel as in Maruyama's first case, since one cannot differentiate an afferent from an efferent lymphatic channel. Again, supposing these could be differentiated, the possibility of retrograde involvement must necessarily be considered.

Therefore, all cases in which the ureteral involvement is not in direct continuity with the primary or adjacent tumor, even though actual invasion cannot be demonstrated, should be considered as possibly falling into this group.

In Grenel's¹⁹ case of carcinoma of the lesser curvature, both ureters were dilated at the pelvic brim, where they were found to be infiltrated by carcinomatous tissue. The corresponding nodes at the points of obstruction were found to be involved in the tumor process, but they did not compress the ureter in those areas. This case evidently falls into the group of cases emphasized in this paper, even though the tumor cells were not found within the lumen of the lymphatic channels, otherwise one could not explain the migration of neoplasm from the ureter to the corresponding lymph node, or vice versa.

There are numerous other cases which in all likelihood border on or belong in this group, although no direct mention of this is made in the presentation.

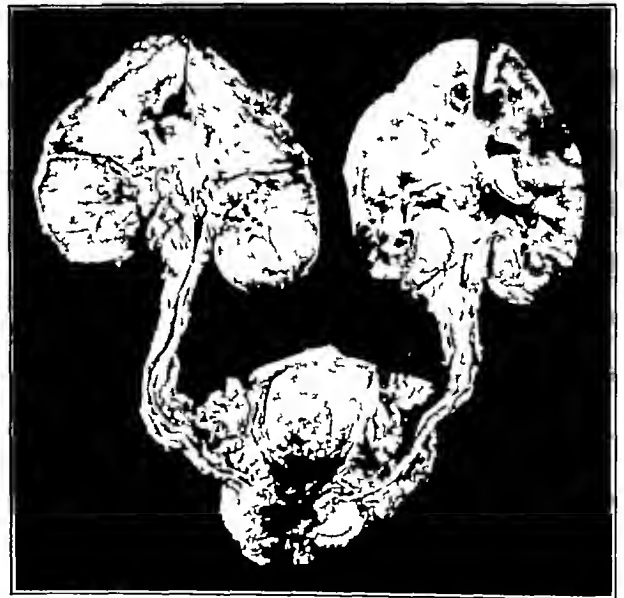


Fig 4—Kidneys, ureters and bladder. The ureters are thickened and infiltrated.

Zinner²⁰ reported a case in which hysterectomy was performed for columnar cell carcinoma of the uterus two and one-half years before the patient's death. At necropsy, tumor nodules were found in the right ureter 5 cm below the ureteropelvic junction and in

14 Thomas, G. J. and Regnier, E. A. *J. Urol.* 11: 205 (March) 1924

15 Carson, W. J. *Ann. Surg.* 82: 142 (July) 1925

16 Carson, W. J. *Ann. Surg.* 86: 549 (Oct.) 1927

17 Rathbun, A. P. *J. Urol.* 21: 507 (April) 1929

18 Kirshbaum, J. D. *J. Urol.* 30: 665 (Dec.) 1933

19 Grenel, Walter. *Ztschr. f. Urol.* 14: 393 1920

20 Zinner, A. *Ztschr. f. urol. Chir.* 17: 369 1925

the left ureter 4 cm above the orifice. Those nodules were apparently metastatic and not in connection with the remnants of primary tumor tissue.

Bauer²¹ in discussing this case mentioned one of his own cases, that of a man, aged 50, with carcinoma of the stomach and metastasis to the left ureter.

Case 3 in Glas's³ series is a more complete report of Bauer's case. Glas's second case was one of carcinoma of the prostate in a man, aged 74, with involvement of the lymph nodes and lower third of both ureters. An isolated node in the left ureter, together with involvement of the regional lymph nodes, was found. In his fourth case, a woman, aged 50, had one breast amputated for carcinoma fifteen years before death and an ovarian carcinoma removed two years before death. At necropsy, metastatic carcinoma of the

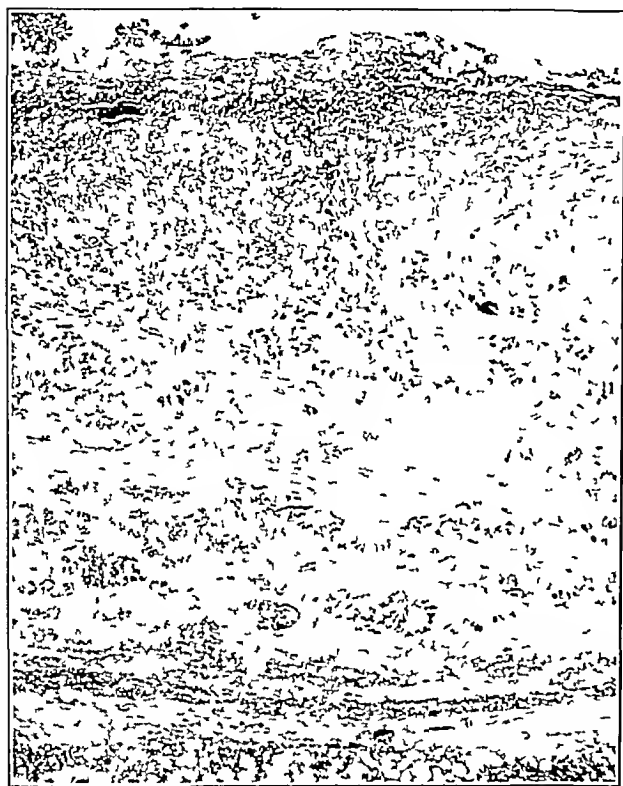


Fig. 5.—Section of the ureteral wall under low power showing intact but inflamed mucosa and the infiltration of the muscular coat and perimuscular areas by tumor tissue. Note the increase in connective tissue about the neoplastic areas.

inguinal and retroperitoneal lymph nodes with infiltration of both ureters was found.

Eisner²² reported the case of a 45 year old man with pulmonary tuberculosis, pernicious anemia and carcinoma of the stomach. In the perirenal tissues there were tumor masses which encroached on the ureters. He mentioned the possibility of lymphatic spread but did not specifically state that his case belonged to that group. His second case of carcinoma of the stomach, in which there were metastases to the peritoneum, ovaries, bladder and right ureter, may also fall into this group.

MacKenzie and Ratner²³ reported three cases of true metastases to the ureter. In two cases autopsy was

performed. In one case a diagnosis was made prior to operation and represents practically the only case under this heading in which a preoperative diagnosis has been made. In the first case there was metastasis to the right ureter and ileum from an adenocarcinoma of the stomach. It had caused pyonephrosis of the right kidney. The second case was one of adenocarcinoma of the prostate with metastases to the ureters, lungs and pleurae. The finding of cancer cells in the perivascular lymph spaces definitely proved the true metastatic nature of the growth. Pyonephrosis of the right kidney also was present. The third patient was suffering from carcinoma of the cervix and had been given radium treatment. Examination about a year afterward failed to reveal any recurrence of the growth. However, on admission to the hospital at that time she complained of frequency of urination and pain in the left iliac region, anorexia and loss of weight. This condition had been present for about four months. Urologic examination led to a diagnosis of ureteral obstruction and an infected pyelectasis of the left kidney. Excision of the left kidney and partial ureterectomy were performed. A congenital anomalous kidney was found with a double pelvis and two ureters which anastomosed in the upper third. At their junction was a hard mass the size of a large grape. It was removed along with the kidney and upper portion of the ureters. Pathologic examination showed this mass to be a metastatic carcinoma from the cervix.

GROUP IV. Combination Forms.—It is obvious that any combination of the aforementioned types of metastases may exist, and it is not necessary to give any details of cases.

GROUP V. Involvement of the Ureter by Lesions Which May Be of Multicentric Origin.—(a) It is not infrequent to find ureteral involvement in cases of tumor of the hematopoietic system. These tumors may arise in situ from the resting mesenchyme or from reticular cells.

Kirshbaum's¹⁸ instance of Hodgkin's disease falls into this group. Bond Stow's²⁴ case of fibrolymphosarcoma of both ureters, which he considered secondary to lymphosarcoma of the anterior mediastinum, is most likely one of this variety. He reported that all the lymph nodes were involved. This was in all likelihood a case of lymphosarcoma.

A 14 year old girl with subleukemic myelosarcoma involving the heart, stomach, appendix, ovaries, tubes, ureters, kidneys, bladder, liver and all the lymph nodes with nodes in both ureters which gave rise to obstruction with dilatation of the ureter and pelvis, was admitted to the hospital, because of nodules in the skin and asthenia with progressive anemia. Under observation, new nodules occurred in the skin and in the breasts. The liver became enlarged, as did also the spleen. The patient finally died. Within the ureters were seen numerous nodular infiltrations, varying from 2 to 8 mm in diameter, which in places completely occluded the lumen of the ureter. The pelvis and terminal calices were dilated, and infiltrations were seen between the pelvis proper and the medullary portion of the kidney.

Even though no case has been reported in which reticulosis of the ureters was present, this is a likely possibility and is added for the sake of completeness of the classification.

21. Bauer, T. H. *Ztschr. f. urol. Chir.* 19: 370, 1925.
22. Eisner, Fritz. *Med. Klin.* 24: 1237 (Aug. 10) 1928.
23. MacKenzie, D. W. and Ratner, M. *Canad. M. A. J.* 25: 265 (Sept.) 1931. *Brit. J. Urol.* 4: 27 (March) 1932.

SYMPTOMATOLOGY

It is apparent to the urologist that the symptoms resulting from secondary tumors of the ureter vary according to the amount and type of the invasion. No doubt there are many instances in which no symptoms develop, and it stands to reason that many cases probably remain unnoticed. If there is little or no pressure on the ureteral lumen only slight symptomatology will result, but with the advent of obstruction and probable later infection the complaint will follow the usual course of such conditions. The extent and type of renal involvement will determine the symptoms as they will in all probability relate to the pathologic condition of the kidneys, and the presence of ureteral complication will be difficult to determine. Pain in the back as an early symptom was noted in almost all the cases that have been reported and was present in my own case. Sudden and complete anuria, as occurred in my patient, is extremely rare, but was noted by Schlagintweit.²⁵ He described a case in which this symptom developed and at autopsy bilateral metastatic carcinosis of both ureters from primary carcinoma of the stomach was discovered. Usually the patient shows only the symptoms relative to ureteral obstruction, such as pyelectasis with or without infection.

The case to be presented here belongs in the third group—cases of true metastases. This case is interesting not only from the standpoint of the rare pathologic observations, but also because of the peculiar symptoms, which made diagnosis impossible and thereby caused the treatment to be mostly expectant.

REPORT OF CASE

History—H. C., a white woman, aged 42 on admission to the hospital complained that no urine had been passed for six days. During that time there were two attacks of chills accompanied by fever. She also complained of nausea and vomiting and some lumbosacral backache. Her present illness began about one month previous to admission. While reaching for a telephone she was suddenly seized with a pain in the lower portion of the spine. At first severe it gradually subsided until a rather dull constant ache remained. She received medical attention at that time and was treated by several physicians for lumbago. During that time there were no genito-urinary symptoms. There was no history of any recent infectious disease.

Physical Examination—The temperature was 102 F, the pulse rate 116 and the respiratory rate, 20. The patient appeared to be seriously ill and toxic. Nothing of particular interest was elicited by physical examination except the following. The abdomen was slightly distended but was soft and showed no masses or areas of tenderness. Pelvic examination revealed an ulcerated area in the vagina which was palpated by the finger. In view of the fact that it was not particularly indurated and showed no connection with any underlying organ it was considered to be of no great significance as far as the chief complaint was concerned. The regions of the kidneys showed no particular tenderness or rigidity. The reflexes were not abnormal. There was no edema. The blood pressure was 204 systolic and 120 diastolic.

Laboratory Examinations—Chemical examination of the blood revealed 100 mg of urea nitrogen per hundred cubic centimeters and 8 mg of creatinine. The blood count showed 16,200 leukocytes with 84 per cent polymorphonuclears. The hemoglobin content was 60 per cent.

When the patient entered the hospital catheterization was attempted but no urine was found in the bladder. Roentgen examination of the genito-urinary tract revealed that both kidneys were normal in shape, size, position and density. No evidence of calculous disease could be demonstrated at any point in the urinary tract. Cystoscopic examination showed that there was no urine in the bladder and that all the mucosa

had a normal appearance. A catheter was passed to the pelvis of the right kidney without difficulty and 150 cc. of urine was obtained in a short time. An unsuccessful attempt was made to pass a number 5 catheter up the left ureter, but as the patient's condition became somewhat alarming it was decided not to make a further attempt. The urine from the right kidney contained a few white blood cells, many red blood cells, no casts and 1+ albumin.

Course—During the next twenty-four hours the patient had several chills, the temperature rising to 103 F along with a pulse rate ranging from 120 to 140. The output from the catheter in the pelvis of the right kidney was 2,700 cc. This catheter became blocked during the afternoon and could not be freed. After removal of the catheter, no urine passed into the bladder. Cystoscopy was again performed and the right kidney was catheterized, 150 cc of slightly cloudy urine being obtained from the pelvis. The pelvis of the left kidney was successfully catheterized on this occasion and 75 cc. of clear urine obtained.

Bilateral delineation of the renal pelvis with the aid of a contrast medium was carried out, the result showing that the



Fig. 6—Section under higher power showing tumor cells between muscle bundles and connective tissue fibers as well as within endothelium lined channels.

pelvis of the left kidney was normal, while that of the right kidney was a trifle dilated. Unfortunately, the catheters were not removed from the pelvis when the pyelogram was made, so that delineation of the ureters was not accomplished (the cystoscopist was loath to remove the catheters after having successfully placed them in the renal pelvises). The urine obtained from the two kidneys was practically identical.

The patient had a bad night and complained of nausea and headache. Again the temperature was elevated and the pulse rate was accelerated. On the third day the output from the right kidney by catheter was 1,220 cc. and that from the left, over 540 cc. On that day the catheters again ceased functioning and were removed, fresh catheters being inserted in the afternoon. The urinary output continued as usual.

On the fourth day the blood pressure dropped to 128 systolic and 82 diastolic. The pulse rate was 130, the respiratory rate was 20 and the temperature averaged 102 F. No estimation of the amount of urine passed through the catheters was possible on account of the frequent irrigation, the amount of which was not checked. There seemed to be slight improvement in the patient's condition.

²⁵ Schlagintweit cited by Glas.

On the fifth day the urinary output for the twenty-four hours was 1,600 cc. Chemical examination of the blood revealed 50 mg of urea nitrogen, 1.58 mg of creatinine and a carbon dioxide combining power of 48. Indigo carmine given intravenously appeared on the left side in four minutes, showing a 2+ concentration. On the right side it appeared in twenty minutes with a 1+ concentration. The patient continued to improve from the standpoint of chemical blood analyses, and the total urinary output averaged from 1,400 to 2,000 cc in twenty-four hours, as long as the catheters remained in place.

Indigo carmine was injected intravenously on the sixth day and appeared in ten minutes with a 2+ concentration from each kidney. Urinary cultures showed *B. coli* from each kidney and a nonhemolytic streptococcus from the right kidney. Any attempt to remove the catheters was followed by total failure to pass urine into the bladder, a sharp rise in temperature, severe chills and a general breaking down of the patient's morale.

Despite the patient's poor condition it was decided to institute nephrostomy drainage of the right kidney. This was successfully accomplished on the ninth day without any apparent shock to the patient. At operation the upper portion of the ureter was noted to be much thickened, indurated and inelastic but

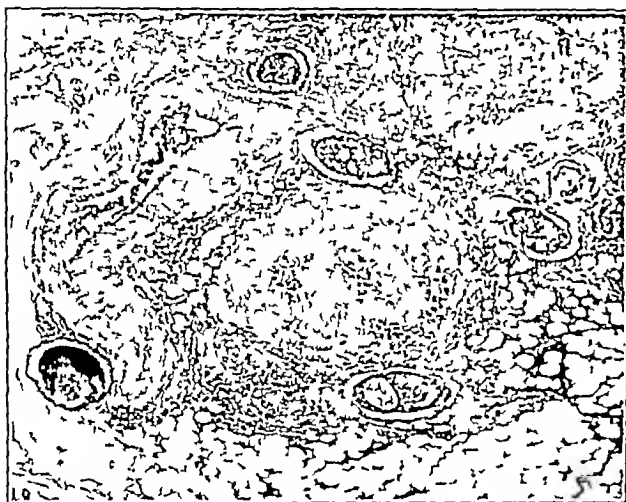


Fig 7—Low power view of perireteral tissues showing nests of tumor cells within the perivascular lymphatic channels. Note the occluded blood vessels with neoplastic tissue within its wall.

did not give the appearance of a malignant condition. The drainage from the nephrostomy was, however, somewhat disappointing, the amount being much less than had been obtained by catheter drainage. The course for the next three days was satisfactory, the temperature remaining around 100 F and no chills intervening.

On the fourteenth day the twenty-four hour output was 900 cc from the nephrostomy tube and 650 cc from the catheter in the left kidney. The blood chemistry values, however, began to rise, showing 81 mg of urea nitrogen, 3.52 mg of creatinine and a carbon dioxide combining power of 44. Indigo carmine again appeared from each side in ten minutes and showed a 1+ concentration.

The patient's condition became progressively worse although the urinary output was within fair limits, owing probably to the large amount of medication given intravenously, subcutaneously and through a duodenal tube. The plan to perform nephrostomy of the left kidney was abandoned because of the patient's poor condition. On the eighteenth day after admission the patient died.

Postmortem Examination—In the anterior portion of the vagina, in the region of the fornix, there was found an area of ulceration which almost completely encircled the cervix. It extended externally on the left side for a distance of about 1 cm and internally on the external os of the cervix. The uterus showed no significant changes on gross examination.

The ovaries were slightly enlarged. In them were seen a few grayish nodules, especially near the ligamentous attachment. The tubes were slightly thickened, but their lumens could be probed. On cut section the thickening was found to be due to grayish cellular tissue, subperitoneally located, which did not communicate with the lumen.

The urethra and trigon were injected.

There was a nephrostomy opening in the right kidney and evidences of a purulent perirenal inflammatory reaction extending to the upper portion of the ureter. The capsule of the right kidney could not be stripped. The cut surface of the kidneys had a grayish appearance, and scattered throughout, most pronounced in the lower portion, were numerous grayish necrotic areas ranging in size from that of a pinpoint to that of a pin head. The lower half of the pelvis of the left kidney was necrotic and gangrenous. The remainder of the pelvis was thickened and had a granular surface. The right kidney also was slightly enlarged but the small, necrotic areas were not as numerous as in the left kidney. The pelvis of the right kidney was markedly hemorrhagic.

The two ureters showed essentially the same changes. The walls of the upper portion of the ureters were thickened. At one point in the right ureter, about 2 cm below the ureteropelvic junction, the wall was firm, inelastic, sclerosed and intimately adherent and fixed to the perireteral tissue. However with moderate difficulty the lumen could be probed. The lower two thirds of the ureters also were slightly thickened and inelastic; the last 2 cm showed no obvious gross change. The left ureter in its second upper centimeter was denuded of epithelium and instead there was an ulceration with necrotic tissue in the base. This was just above the point at which the ureter was fixed to the perireteral tissues. The ureters were not in direct contact with any of the tumor masses in the other organs. Both ovarian veins were surrounded by a type of tissue similar to that surrounding the upper portion of the ureters. This was most marked about the left ovarian vein, in which there was a thrombus extending for a distance of about 10 cm up to its opening into the renal vein.

Microscopic examination of the tissue in the fornix showed an ulcer in the base of which there were epidermoid cells infiltrating in the form of pegs into the deeper layers. There was moderate atypism and irregularity with not infrequent mitotic figures. Immediately beneath this the tumor cells were found to be within the perivascular lymphatic vessels. The deepest tissues of the cervix and vagina showed a minimal involvement by tumor tissue.

Both kidneys showed evidences of pyelonephritis.

The conditions of the two ureters were similar. There was a pronounced invasion of the outer layers of the muscularis and perimuscular region by tumor cells. Mitotic figures were frequent. There was a prominent scirrhous reaction about the nests of tumor tissue. These neoplastic cells were found to be present not only between the individual muscle fibers but also in the perivascular lymphatic channels in the perireteral tissue.

The nodules in the tube and ovary were found to be made up of tumor cells. Sections taken through the ovarian veins showed tumor tissue in the perivascular and perineural lymphatic vessels as well as within the walls of the veins. These cells extended to the intima. Some of the smaller radicles were completely occluded by an organizing thrombus, in the meshes of which some tumor cells were found. The thrombus in the ovarian vein was found to be in apposition with that portion of the wall which was invaded by tumor tissue.

A lymph node removed from the region in which the involvement of the ureter, as well as of the ovarian vessel, was most pronounced, showed no invasion by tumor tissue.

COMMENT

As to the mechanism causing obstruction by tumor nodules within the ureter proper, one must consider various possibilities. Most frequently obstruction is due to an expansive growth of the nodules with encroachment on the lumen. I shall mention only those cases in which the tumor arises in adjacent tissue and

compresses the ureter from without. There are also cases in which a sclerosing reaction to the tumor cells results in stricturing with obstruction. These, however, do not explain the case herewith described. On the left side the ureteral lumen was obstructed and the catheter was passed with difficulty. The predominant factor was the marked fibrosis in the ureteral wall with contracture of the connective tissue, thereby occluding and markedly narrowing the lumen. On the right side however the ureter was patent and yet no urine passed except through an indwelling catheter. The scirrhous infiltration of the wall with some narrowing of the lumen was an appreciable factor but could not entirely explain the failure of passage of urine, nor could the additional factors of lack of peristalsis and nervous involvement completely account for it. The possibility that edema had disappeared before necropsy is plausible and likely. One must however, consider also invagination of the upper ureteral segment into the thickened and scirrhous portion, which is extensively and firmly fixed to the periureteral tissue. A wave of contraction in the superior portion which is not so markedly infiltrated, reaches this fixed position and not being able to pass along, invaginates the upper segment into the sclerosed fixed lower area. Telescoping with resultant intussusception, which is so frequently found in the intestine, cannot take place because of the rigidity of the lower tube and its lack of expansile power. However, the mere dimpling-in of the upper into the lower segment may be sufficient to act as an obstruction to the passage of urine.

ABSTRACT OF DISCUSSION

DR. H. S. JECK, New York. Dr. Woodruff's classification of metastatic tumors is admirable in its simplicity. His interesting case of bilateral metastatic carcinoma falls in the group of true metastases. I agree that one should not be too meticulous in including in this true metastatic group only those tumors that show cancer cells in the lymph channels and the blood stream. At autopsy many of these tumors are doubtless true metastases but it is difficult to prove it. However, the pathologist who performs the autopsy is often convinced of the true metastatic character by the relationship of the gross conditions observed. With reference to the implantation of tumor cells in the ureter from papillary carcinoma of the kidney, it is doubtful that this ever occurs. It would imply a pathologic condition of the ureter of some sort, such as an obstructed ureter or an inflamed ureteral mucosa or a combination of the two. I recently operated on a patient who comes under Dr. Woodruff's group classification II. The upper end of the ureter was considerably dilated, there was an obstruction about 12 cm. down from the ureteropelvic junction and as far down as one could reach one could feel friable, firm tissue surrounding the ureter. Some of this tissue was removed and proved to be carcinomatous. I have a case which I believe belongs to the third group. The pathologist was of the opinion that it was a case of true metastasis. The history obtained in this man of 60 indicated that six months prior to his admission he had had sharp intermittent pains in the left loin followed by polyuria. For a short period he had noticed blood in the stools. An attempt was made to catheterize the ureters but I couldn't find any ureteral orifices. Roentgenograms suggested stones in the region of both kidney pelves. Nephrostomy on one side was decided on and possibly bilateral nephrostomy depending on the condition encountered at operation. During the incision for exploration of the left kidney much fluid poured from the loin wound on account of the edema and when the fascia transversalis was incised a big mass presented itself in the wound. This proved to be the kidney. An opening into the kidney pelvis directly through the parenchyma was made by means of a hemostat. Urine under considerable

pressure gushed from the nephrostomy wound. The kidney pelvis was explored but no stone could be felt. A rubber tube was inserted in the kidney and the loin incision was closed and an incision made in the right loin. The patient was so edematous on this side that I cut down where I thought the kidney was. It happened to be a little below the kidney pelvis and a greatly distended ureter came into view, so I stuck a hole in this sewed a catheter in the ureteral opening and closed the loin incision. The patient lived only about twenty hours after the operation. Autopsy revealed an ulcerating carcinoma of the sigmoid with stenosis with metastases to the peritoneum and retroperitoneal nodes to the liver and both ureters. Both ureters were completely occluded by the metastatic nodules. While comparatively few cases of bilateral metastatic malignant lesions of the ureters have been reported, attention has now been so focused on the condition that one should always bear it in mind as a possibility when bilateral ureteral obstruction is suspected.

DR. A. E. BOTHE, Philadelphia. A patient was first seen on account of hematuria, no other symptoms were associated. A pyelogram showed a filling defect. The kidney was removed, a tumor was found in the pelvis and a diagnosis of benign papilloma was made. About four years after removal of the kidney hematuria occurred again. At that time I found a papillary tumor protruding from the ureteral orifice on the side on which the kidney had been removed. The patient was advised to have irradiation and this was followed by ureterectomy. A photomicrograph showed that the tumor in this particular part was not infiltrating the wall of the ureter. This last removal was about a year and a half ago. He has had postoperative irradiation. Cystoscopy about a week ago gave no evidence of any tumor in the bladder and the patient is perfectly well.

DR. F. C. HERRICK, Cleveland. I readily appreciate involvement of the ureter from above down. The part of especial interest has been ascending growth in the periureteral lymphatics. It does not seem to me that there has been enough emphasis placed on this in the literature. I mentioned it twelve or fourteen years ago, since which time a pathologist called my attention to a prostatic carcinoma in which he had demonstrated metastatic growths in the ureteral wall and periureterally extending up to approximately the upper third of the ureter then leaving that point and going into the cortex of the kidney. That is along the line of the extension of infection as described by Schultz and Eisendrath. Since then I have seen perhaps four or five similar cases in the pathologic departments in Cleveland. The last two were carcinoma of the prostate and carcinoma of the cervix respectively in which periureteral, intramural ureteral extension of the growth was proved at autopsy with the growth implanted into the cortex of the kidney. That, to me, is very strong evidence of the ascending route. Along the line of infection transmission, in the past I had a patient with papillocarcinoma on the left side of the bladder, a small one, which I resected, following which it cleaned up very well. He was home a week when he had violent chills, high fever and a very tender, large left kidney. It was perfectly obvious that he had involvement of the left kidney. The local handling of the bladder had been resection, careful closure and drainage intracystically and in the deep pelvis on that side, the drain was removed in three or four days. There was no evidence of infection locally. He was taken back to the hospital and exposure of the left kidney was made. The fatty capsule in these cases is thick and edematous, it is a thick firm, inflammatory type of fat. Multiple abscesses were evident in the cortex of the kidney. A quick nephrectomy was done from which he recovered very nicely. All the infection and all the abscesses were cortical and just beneath the capsule of the kidney. That, together with the evidence from tumor metastasis, I cannot help but explain by ascending periureteral lymphatic extension.

DR. STANLEY R. WOODRUFF, Jersey City, N. J. I brought up this subject mostly for the reason that it affords another thing to think about in acute anuria. It has been customary to think that anuria is caused always by calculous disease, or possibly toxic nephritis. However, this condition must be thought of

MALIGNANT HYPERPLASIA OF THE LYMPH FOLLICLES OF THE SPLEEN

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In 1925 Brill, Baehr and Rosenthal¹ reported three cases of what they called splenomegalia lymphatica hyperplastica. Their observations and review of the literature led them to believe that there had been reported previously only one other similar case, that of Becker in 1901. Several cases were noted of splenic lymphadenosis in which there was lymphoid hyperplasia confined to the spleen and in which splenectomy had been performed.

In 1927 Dr R D Baker reported a case of splenomegalia with enlargement of the lymph nodes, notably the posterior auricular, occipital and inguinal. Biopsy showed giant lymph follicle hyperplasia. With roentgen treatment the glandular involvement receded, but the red blood cells and the bone marrow were damaged. The man died in 1930 and the case was finally diagnosed as chronic lymphatic leukemia.

It was our good fortune to study and treat a case in 1927 similar in most respects to the cases reported by Brill, Baehr and Rosenthal.

History—Mrs T R aged 28 reported for an examination in April 1927, because of a mass in the abdomen, which had been discovered by her family physician. For two months previously she had noticed a heaviness in the left side of the abdomen and an occasional shooting pain down toward the left pelvis. There had been a tendency to flatulence and constipation. She also had shortness of breath. She had been nursing continuously up until this time a 10 months old baby. Her weight was normal. The menses had been established three months after childbirth and were normal.

In childhood she had had diphtheria and scarlet fever and in 1915 an uncomplicated and moderately severe attack of typhoid. She had been married for five years and had two children, aged 3 years and 10 months, respectively.

The family history was essentially negative.

Examination—The patient was well nourished and slightly pale. She weighed 115 pounds (52 Kg.). The teeth were in good condition, the thyroid was small and the tonsils were submerged and normal. The eyes and ears were normal, the tongue was clean, and superficial lymph nodes were not palpable. The heart was normal, except for a soft systolic blow in the pulmonic area. The pulse was regular with a rate of 80. The blood pressure was 110 systolic 70 diastolic. The vessel walls were not palpable. The lungs were normal.

The abdomen was asymmetrical owing to the presence of a smooth mass in the left flank which had the characteristic contour of the spleen extending from the eighth left intercostal space above to the crest of the ilium below. It was slightly tender and slightly movable, especially from side to side. The right kidney was normal in size palpable and movable to the second degree. The left kidney was not palpable. The liver was of normal size. There was no free fluid demonstrable.

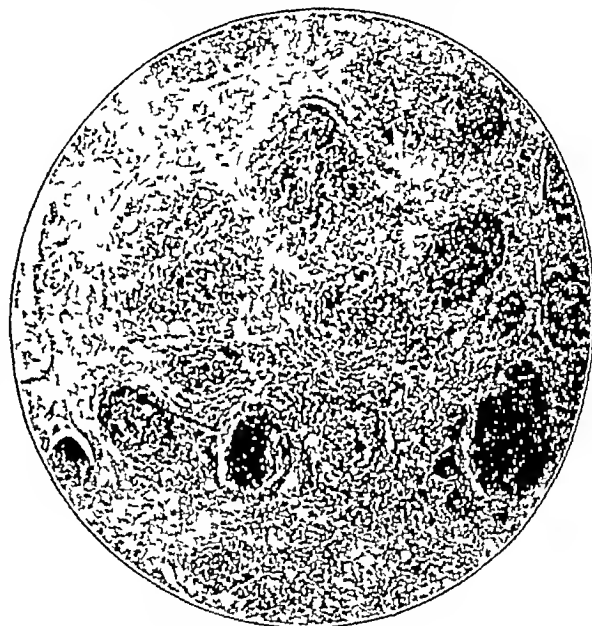
Examination of the blood April 4 showed hemoglobin 88 per cent, red cells 4,100,000, white blood cells 4,500, polymorphonuclear leukocytes 60 per cent, small mononuclears 25 per cent, large mononuclears 15 per cent, blood platelets, 197,000 bleeding time two minutes, coagulation time, six and one-half minutes. The Wassermann reaction was negative. The blood sugar was 90 mg per hundred cubic centimeters and the nonprotein nitrogen, 29 mg.

Urinalysis showed a cloud of albumin with a small number of granular casts, a few red and white cells and debris. This was confirmed in several examinations. Stool examination was negative for blood and ova.

The bladder was normal, a number 5 catheter was passed to both kidneys. Indigo carmine given intravenously appeared on the right side in two minutes, and on the left in three minutes. The urine from the right kidney was normal. Urine from the left kidney contained red blood cells and granular casts. A pyelogram showed both kidney pelvis normal. There was a prolapse of the right kidney.

Roentgen study of the gastro intestinal tract showed that the stomach was atonic, prolapsed and dilated, with a slight six hour residue. The meal reached the rectum in twenty four hours. The splenic flexure of the colon was prolapsed. The mass apparently had no connection with the stomach.

The urinary changes pointed to a lesion of the left kidney, suggesting the possibility of the tumor being an enlarged kidney. The physical and roentgen examinations, however, were quite conclusive of an enlarged spleen. It was impossible from the history and the physical examination to determine its etiology. An exploratory operation was advised and accepted.



Malignant hyperplasia of the lymph follicles of the spleen under low power

Operation—April 13, with nitrous oxide anesthesia and local procaine hydrochloride infiltration of the abdominal wall, an exposure through the left rectus muscle was made. The tumor was a spleen weighing 3½ pounds (1,587 Gm.). The external contour, color and consistency were normal. The peritoneal surface was smooth but marked by innumerable small yellowish white depressions. No peritoneal adhesions were found. There were three arteries and veins in the pedicle. Removal offered no technical difficulties.

The liver was a reddish brown. It was normal in size and appearance. The gallbladder was normal. There were two enlarged lymph glands in the gastrosplenic omentum. The larger, measuring 2 cm in its longest diameter, was removed for examination. No other enlarged lymph glands were seen anywhere. The pancreas was normal. The stomach was outwardly normal and not prolapsed. The small intestine and colon were normal. The appendix was atrophic and nonadherent. The kidneys were normal in size. The right kidney was freely movable. The pelvic viscera were normal.

Postoperative Course—Convalescence was entirely normal and uneventful. The abdominal wound healed by primary intention. The patient left the hospital, May 3 feeling well. Her weight was 110 pounds (50 Kg.). Examination of the blood on that date showed hemoglobin, 98 per cent, red blood cells 4,400,000, white blood cells 11,100, polymorphonuclear leukocytes, 79 per cent, small mononuclears, 15 per cent, large

¹ Brill N E, Baehr George and Rosenthal Nathan. Generalized Giant Lymph Follicle Hyperplasia of the Lymph Nodes and Spleen. J A M A 84 669 (Feb 28) 1925

mononuclears, 6 per cent, blood platelets, 222,000. The bleeding time was two minutes. Coagulation time was three and one-half minutes. Urinalysis subsequent to the operation was normal.

Since leaving the hospital, the patient has been enjoying excellent health. She gave birth to a third child, Sept 18, 1929. There was no development of enlarged lymph nodes. She now weighs 130 pounds (59 Kg).

Pathologic Examination (By Dr H G Little).—The spleen, weighing $3\frac{1}{2}$ pounds, measured 22.5 by 11.3 by 6.5 cm. It was a dark reddish brown, markedly increased in size, and firm, the capsule was smooth, save for a small area of perisplenitis. The surface was a reddish brown and the pulp moderately firm. Scattered throughout the surface were many small grayish nodules resembling miliary tubercles. There were no infarcts in the spleen. The sections showed without the microscope

they alone are involved in the disease process. It is, we feel, of malignant character and at the present time is classified as malignant hyperplasia. It is interesting to note that the patient has had three infectious diseases which usually involve the spleen. The inflammatory reaction seen in the sections may be induced by the tumor growth, as sometimes seen in a lymphoblastoma or by some infection. The prognosis would seem to be poor, because of involvement of a neighboring lymph node, yet tumors of lymphatic tissue respond splendidly at times to x-rays alone or to surgery and x-rays.

Sections of the tumor were sent to Dr G R Callender, Lieutenant Colonel, M C, U S Army, at the Army Medical Museum, for the lymphatic tumor

TABLE 1—Protocols of Cases of Malignant Hyperplasia of the Lymph Follicles of the Spleen

	Case 1 (Dr Baehr)	Case 2 (Dr Baehr)	Case 3 (Dr Baehr)	Case 4 (Herein Reported)
Age	23 years	32 years		23 years
Sex	Female	Female	Female	Female
Family history	Negative	Negative	Negative	Negative
Past history	Negative	Influenza 1 year before	Negative	Diphtheria, typhoid, scarlet fever
Onset	Glandular swelling of neck for $2\frac{1}{2}$ months; dyspnea, cough, increase in size of abdomen	Weakness, increase in size of abdomen and for 2 months heaviness		Heaviness for 2 months; flatulence, constipation, dyspnea
Physical examination	Left pleural effusion			
Lymph nodes	All enlarged, especially cervical—size of pea to walnut; discrete, not tender, movable	Axillary, epitrochlear, left inguinal moderately enlarged	General enlargement	Not enlarged
Spleen	Eighth left rib to anterior superior spine of ilium and 5 cm to right of midline; smooth, not tender	Eighth left costal space to brim of pelvis and within 2 cm of midline; smooth, nontender	Large	From eighth left costal space to crest of ilium; slightly tender and movable
Liver	Not enlarged	Greatly enlarged		Not enlarged
Blood				
Hemoglobin	72%	9%	75%	58%
Red blood cells	4,700,000	4,000,000	3,200,000	4,100,000
White blood cells	6,000	11,000	6,000	4,500
Platelets	160,000	105,000		107,000
Polymorphonuclear leukocytes	71%	42.3%	48%	60%
Large lymphocytes	15%	40.3%	46%	25%
Large mononuclear leukocytes				
Eosinophils	10	7	8	15
Basophils	8	1	2	
Neutrophils	0	0.3	1	
Treatment	Röntgen therapy, x-rays	Splenectomy, x-rays	Splenectomy	Splenectomy
Result	Spleen regained normal size; lymph node diminished; finally disappeared by second course of irradiation; patient well September 24, $1\frac{1}{2}$ years after treatment; died February 1930 with mediastinal infiltration	Followed by lobar pneumonia, subphrenic abscess, typhoid; enlarged lymph nodes disappeared in 3 months; recurred and disappeared with x-rays; patient well January 1932, 20 months after splenectomy	Died after splenectomy	Removal of two glands in gastro-omental; no further lymph node enlargement; patient well July 1935
Pathologic changes	Spleen: huge malpighian bodies roughly size of barley grain; follicles greatly enlarged; little intervening pulp; lymph sinuses obliterated by compression; cells endothelioid looking like lymphoblasts; lymph nodes corresponded grossly and microscopically to splenic changes			Spleen, weight $3\frac{1}{2}$ pounds; innumerable grayish nodules resembling miliary tubercles (microscopically); follicular hyperplasia; lymph node corresponded grossly and microscopically to splenic changes

large hyperplastic follicles. With it the increase in the size of the follicles was seen to be due to a fairly compact cellular growth of the cells in the germinal centers. The cytoplasm of the cells was pale staining and delicate. The nuclei showed a moderate amount of chromatin and some nuclei were clear except for one or possibly two large well defined nucleoli. This cellular hyperplasia was taking place in every follicle in the section and in some areas new foci appeared to be developing. Although the follicles dominated the picture, there was an associated hyperplasia of the lymphoid cells in the reticulum. Occasional mitotic figures were seen. A moderate number of polymorphonuclear leukocytes and an occasional eosinophil were found. There was no evidence of tuberculosis in the sections. The section of the lymph node showed a picture similar to that in the spleen.

The growth was different from the sarcomatous type of lymphoblastoma. Although the extremely large follicles dominated the picture, we do not believe that

registry. He commented that in 1929 it was the only case in the registry that showed a similar picture in both spleen and lymph nodes and that because of this dual involvement the prognosis was very poor. He wrote further: "The classification of such a case was very difficult, and I think hyperplasia, to distinguish it from definite sarcomatous reaction, is justified at present."

In a recent communication he² writes:

Your case has been classified under the nodular type of leukemic lymphocytoma described originally by Symmers as giant follicular hyperplasia with splenomegaly. There are twenty-three cases in the registry now with this diagnosis, fourteen are living, eight are dead, and one has been lost track of.

² Callender, G. R. Personal communication to the authors from Fort Sam Houston, Texas.

Dr Baehr,³ in referring to this disease, has commented as follows

The tumor differs from ordinary lymphosarcoma in that it produces follicles and is multicentric in origin. The clinical picture is also quite different from lymphosarcoma, unilateral exophthalmos due to orbital infiltrations occurring commonly, as well as scattered involvement of the lymph node and lymphatic tissue in various parts of the body. There is no tendency to anemia or cachexia. The importance of differentiating these cases clinically and pathologically from ordinary lymphosarcoma is the fact that they respond so promptly and effectively to radiotherapy. I have seen mediastinal infiltration, which is large enough to choke the patient almost to death, begin to disappear after a few exposures to one fifth of an erythema dose. The oldest case under observation at present has lasted over ten years. Another case which I reported in 1925 died this morning, Feb. 14, 1930, as a result of mediastinal infiltration which had been neglected. The large splenomegaly, which in 1924 had disappeared completely under x-ray therapy, reappeared for the first time several weeks ago. The hydrothorax, which had brought the patient to me in 1923, also had reappeared. There seemed to have been a fulminating relapse, and death occurred before the radiotherapy could accomplish much. The prognosis is far better than with other malignant neoplasms because of the remarkable radiosensitivity. The patient should be constantly under observation so that the first recurrence of lymph node enlargement anywhere in the body should be promptly treated.

Protocols of the cases referred to by Dr Baehr are given in the accompanying table.

With present knowledge it may be said that the etiology of this hyperplasia of the lymph follicles of the spleen is unknown. It seems very definitely to be a neoplastic process, although its kinship to lymphosarcoma, as Dr Baehr says, is far from established.

The symptomatology is concerned with the enlargement of the spleen. If there is mediastinal glandular involvement, or pleural effusion, there may be dyspnea and cough. Enlargement of the spleen comes gradually over several months and causes a heavy feeling but not characteristically any pain. There is no loss of weight and no cachexia. There is apt to be secondary anemia but nothing characteristic in the blood picture.

The diagnosis will be established with certainty only by pathologic examination of the lymph glands or the spleen. It will not be confused with the splenic enlargements of the blood dyscrasias such as leukemia, hemolytic icterus, purpura haemorrhagica and polycythemia vera, in which the blood picture and reactions are characteristic, nor will the enlargements of the specific infections such as syphilis, tuberculosis, typhoid, and malaria be hard to distinguish. The splenomegaly of the so-called splenic anemia will be more difficult to differentiate, particularly in the early stages before gastric hemorrhage and enlargement of the liver or severe anemia develop. The splenic enlargement of Gaucher's disease may likewise cause difficulty. Tumors of the spleen such as benign lymphomas and lymphosarcomas will defy differentiation clinically at the outset.

Individuals with this disease untreated either die rather quickly or, if life is prolonged, develop ultimately fatal sarcomatous changes in the lymph glands and spleen with metastasis. With treatment, life may be prolonged many years, if undertaken early enough and adequately, a cure of the disease may be effected.

TREATMENT

Two courses of treatment are open: roentgen therapy and splenectomy. Both have been successful. Apparently roentgen irradiation will restore the spleen to

normal size and cause lymph node enlargement to disappear. There are no data to show that this primary effect is permanent. On the contrary, it would seem that there is need of repeating at intervals a course of irradiation to the spleen and various groups of lymph glands. Particularly must the mediastinal nodes be watched.

In our case, splenectomy alone served to effect a cure, that is, the patient is living and well at the end of nearly eight years. It was striking in this case that there was no enlargement of the lymph nodes on the exterior of the body, and that intra-abdominally only several immediately adjacent to the spleen were found. This suggests that metastasis to the lymph nodes takes place slowly and only after the primary splenic hyperplasia is well developed. Possibly successful treatment in this case is linked definitely with the fact that at the time of the splenectomy there had not been metastasis or development of the process in the peripheral nodes.

Provided there was no specific contraindication to operation, in another case we should be tempted to do a splenectomy first and then treat the lymphatic system by irradiation as need be. In absence of lymphatic enlargement suitable for biopsy, it will be necessary to examine the spleen itself to establish the diagnosis. Irradiation should be deferred until this is done.

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THE TREATMENT OF MILK ALLERGY AND ITS BASIC PRINCIPLES

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Hypersensitiveness to milk presents a problem of general interest, although it may be of more immediate concern to the pediatrician. Its manifestations are many and include conditions varying from the mildest to the most severe forms of gastro-intestinal disturbances, eczema, urticaria, asthma, mucous colitis, migraine, acne, marasmus and pylorospasm. The foreign literature particularly has been replete with studies by such eminent pediatricians as Schlossmann, Finkelstein, Hutinel, Finizio, Barbier and Weill-Halle, who have stressed the importance of the consideration of milk allergy in the field of infant feeding and who have cited cases which have eventuated either in most severe shock reactions or even acute anaphylactic death from the ingestion of milk. Moro¹ and Bauer² first described cases of marasmus due to milk intolerance and showed that this condition could largely be attributed to immunologic disturbances resulting from the entrance of the milk proteins into the blood stream. Schloss and Worthen, and Anderson and Schloss³ in America amplified this concept. More recently, in the French monograph of Laroche, Richet and St. Girons and in the excellent and more complete textbook on food allergy by Rowe⁴ of California, emphasis was

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¹ Moro E. Kuhmilchpräzipitin im Blute eines 4½ Monate alten Atrophikers. München, med. Wchnschr. 53: 214, 1906.

² Bauer J. Ueber den Nachweis der precipitablen Substanz der Kuhmilch im Blute atrophischer Säuglinge. Berl. klin. Wchnschr. 43: 711, 1906.

³ Anderson A. F. and Schloss O. M. Allergy to Cow's Milk in Infants with Nutritional Disorders. Am. J. Dis. Child. 26: 451 (Nov.) 1923.

⁴ Rowe A. H. Food Allergy. Philadelphia: Lea & Febiger, 1931.

laid on the fact that allergy to milk is encountered more frequently than most physicians are aware of, not only in early infancy but well on into adult life. Space does not permit a fuller presentation of the clearly proved evidences of idiosyncrasy to milk, but suffice it to say that the insidious influence that the ingestion of raw milk proteins must have in human afflictions is great indeed and not often enough recognized or adequately understood.

PATHOGENESIS

Many theories have been advanced to account for the development of allergy, and it would necessitate a wide digression to consider all the factors that have been proposed in explanation. There are in the main two schools of thought, one proposing that it is inherited, the other that it is acquired. My own experience leads me to stand with the latter school. The following discussion of the pathogenesis evolves from factual evidence gathered from clinical observation and laboratory experimentation.

A Congenital Sensitization—1 **Passive Sensitization in Utero** It has been demonstrated by Rosenau and Anderson, Wells and many others⁵ that a fetus can be passively sensitized in utero. In relation to the human infant, such passive sensitization would occur only when the mother was sensitive to milk, the fetus being sensitized by the transfer of milk antibodies through the placenta. This phase I believe plays a minor role.

2 **Active Sensitization in Utero** With the cooperation of Professor Jackson and Miss Gruehl I⁶ published a series of studies showing that a guinea-pig fetus can be actively sensitized in utero, by which I mean that the specific antigen is transferred from the pregnant female to the fetus through the permeable placenta, and antibodies to this antigen develop after birth. This observation laid the groundwork for a clinical study in which I⁷ postulated that a pregnant woman indulging excessively in protein foods during the latter months of pregnancy could actively sensitize the human fetus to the particular food, or foods, consumed to excess. Up to that time there had been no valid explanation for those instances in which infants manifested allergic reactions on taking milk or other protein foods for the first time.

B Sensitization Through the Gastro-Intestinal Tract—Rosenau and Anderson, Richet, Ascoli, Wells and others⁸ showed that proteins administered orally can pass directly through the intact intestinal wall and enter the blood stream. Walzer⁹ demonstrated this in the human adult with fish and egg proteins, and Anderson, Schloss and Myers¹⁰ in the normal infant with milk, egg and almond. More recently Ratner and Gruehl⁵ showed that milk proteins fed to guinea-pigs entered the blood stream with such frequency that they contended that such a passage is a normal phenomenon. Duke and Stofer¹¹ cited the remarkable case of a donor

who drank a considerable amount of milk before his blood was used for a transfusion. The recipient, a woman aged 63 who was allergic to milk, had a violent allergic reaction that may be attributed to the milk proteins circulating in the donor's blood.

In our study we⁸ have indicated that although the intestinal wall is normally permeable to proteins, abnormal conditions may increase its permeability and may account for sensitization in the following circumstances:

3 An occasional feeding of raw milk during the new-born period, when the intestinal wall is naturally more permeable, may give rise to a state of hypersensitiveness which is manifested when the child is later given raw cow's milk either to supplement breast feeding or when it is weaned from the breast.

4 Periods of excessive ingestion of raw cow's milk followed by periods of complete abstinence may also result in sensitization.

5 In persons who are fed raw milk during convalescence from some disease or during and after severe gastro-intestinal disturbances, hypersensitiveness may develop.

C Sensitization from Parenteral Injections of Milk—This is illustrated by the case reported by Lubiner,¹² who described a nearly fatal reaction following the intramuscular injection of 10 cc of milk into a girl eight days after the last of three daily injections. Many other cases have been reported.

IMMUNOCHEMISTRY OF MILK PROTEINS

According to Wells and Osborne¹³ milk contains four distinct proteins, or protein fractions, namely, casein, lactalbumin, lactoglobulin and an alcohol-soluble protein. By immunologic means, particularly the anaphylactic test, it has been shown that these four proteins are immunologically distinct. Of the four proteins only globulin is related to the beef serum, but the lactalbumin and the serum albumin are two distinct proteins. Biologically casein is as distinct from the whey proteins and serum proteins as it is chemically, whereas the biologic reactions of caseins from the different species of animals show close relationships. The albumins, however, differ immunologically in the various animal species. To recapitulate, therefore, casein represents a protein that is common antigenically in the milks of various animal species, lactoglobulin is a counterpart of the serum globulin from the same animal and is species specific, and lactalbumin stands alone as an independent protein, foreign to the blood stream and not related to the casein and is species specific.

One of the fundamental principles relative to the chemistry of proteins is that a protein cannot induce sensitivity or shock reactions in a sensitized human being or animal unless it is at once readily soluble and in a native or unchanged state. It must be soluble in order to pass through living membranes and enter the blood circulation to reach sensitized smooth muscles in the various organs, and it must be native or unchanged because the higher degradation products of the proteins, which result from proteolytic digestion, namely, the polypeptides, proteoses and peptones, and the completely hydrolyzed constituent amino acids, have all been shown to be incapable of serving as sensitizing or shock-producing substances. When milk enters the digestive tract, it undergoes a precipitation or curd formation

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10 Anderson A. F. Schloss O. M. and Myers C. The Intestinal
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11 Duke, W. W. and Stofer D. D. M. Clin North America 7:
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12 Lubiner. Deutsche med Wchnschr 44: 547 1918.

13 Wells H. G. and Osborne, T. B. Anaphylaxis Reactions with
Purified Proteins from Milk. J Infect Dis 29: 200 (Aug.) 1921.

of the casein fraction which results from contact with the rennin and hydrochloric acid present in the stomach. The whey substances—containing the lactalbumin and lactoglobulin fractions with the carbohydrate and mineral constituents—pass unchanged through the pylorus and enter the small intestine. The precipitated casein then gradually leaves the stomach and enters the small intestine, where the digestive enzymes further act on it, there is small likelihood that this precipitated protein is in a sufficiently soluble state to escape through the intestinal wall into the blood stream before it is partially or even completely digested. This is not so with the whey proteins, which are still in a liquid state and highly soluble, it is conceivable that they may escape digestion and thus enter the blood stream before digestion alters their nativity and serve as anaphylactogens.

Other factors that may change the antigenic properties of the milk proteins will now be considered.

A Heated Milks—Wells¹⁴ observed that casein heated to 100 C for twenty-five minutes did not lose any of its anaphylactogenic properties. Cutler¹⁵ using the precipitin and complement fixation methods and anaphylactic test, more recently concluded from a study of raw, pasteurized and evaporated milks that in evaporated milk there is a 50 per cent reduction of the whey protein, and that there is a chemical change in specificity of these proteins. Lewis and Hayden¹⁶ included smaco 303 in their study and employed the complement fixation test. All these investigators agreed that heat does not change the antigenic properties of casein, although Lewis and Hayden found that it begins to show a slight change when the heat reaches 100 C. All these investigators were in agreement on the fact that the whey proteins are specifically changed chemically by the process of heat and evaporation, and the latter indicated that the change occurs when the heat reaches 60 C.

I believe that these investigators have erred in concluding that a chemical change of specificity occurs as a result of the application of heat, which position we¹⁷ have discussed in a recent paper on our study of the influence of the various heat processes on the anaphylactogenic properties of milk. We worked with purified proteins, whereas Cutler, Lewis and Hayden merely crudely separated the whey from the casein fraction. We have shown that unless the milk proteins are most exactly purified they are always contaminated one with another. All the so-called pure caseins that we obtained from reliable sources gave marked reactions when tested against lactalbumin.

Casein is unaffected by the evaporation process and other forms of prolonged application of heat. We found no specific chemical change in any of the protein fractions as a result of the influence of heat, we sensitized animals with milk boiled for several hours, evaporated and superheated milks and shocked them with pure lactalbumin obtained from raw milk. But when we sensitized animals to pure lactalbumin from raw milk, we were unable to shock them with heated milks. We therefore concluded that the only change which

occurs in the heated milks is a physical one, namely, coagulation of the whey proteins, which markedly diminishes the ability of the milks to induce anaphylactic or allergic reactions in human beings or animals sensitized to lactalbumin and lactoglobulin. In those of our experiments in which the antigen was administered orally to animals the diminution of the properties of sensitization and shock of heated milks was strikingly demonstrated.

B Dried Milks—We studied the antigenic changes that result from varying drying processes applied to milks and found that the rapid drying—which is almost instantaneous—did not influence or diminish the antigenic powers of the milk proteins. It is interesting to note that Hart, Steenbock and Ellis¹⁸ showed that vitamin C still remains potent in dried milks. This vitamin is destroyed in evaporated or superheated milks. Since the milk in the drying process is not subjected to heat for a long enough period to affect the highly heat-labile vitamin C, our contention that the drying process does not influence the antigenic powers of the proteins is further supported. Chick and Martin¹⁹ also showed that in order for coagulation to take place the proteins must be in a liquid state and that proteins that are dry resist the influence of heat.

C Acidified Milks—We found that acidification of milk in no way diminished the anaphylactogenic properties and as a matter of fact enhanced them. In our feeding experiments we succeeded most easily in sensitizing the largest percentage of animals with acidified raw milk. An explanation may be that just as in digestion the formation of the curd liberates the whey proteins and makes them more accessible for absorption into the blood stream. This is borne out by the fact that the lactalbumin as it exists in fresh raw milk is in such a condition that only a part passes through a porcelain filter, however, when the milk is acidified the lactalbumin is completely filtrable through the porcelain filter.

Before proceeding to a consideration of the treatment it may be helpful to evaluate the relative importance of the individual milk proteins as causative agents in milk allergy. From Hutinel, Barbier, Weill-Halle and others it is learned that practically every patient with an idiosyncrasy to milk, no matter how severe, can be relieved from further allergic manifestations when taken off cow's milk and given goat's, ass's or human milk. In view of the independence of the lactalbumin and lactoglobulin fractions of the milks of the various animal species and the close relation of the casein fractions, one is forced to the conclusion that most of these persons, if not all, are sensitive to the whey proteins and not to the casein fraction. In those cases that are reported in the literature in which positive reactions to casein are shown one is faced with the difficulty, into which we have gone at such length, that the investigator may not have been using a truly purified casein, in this category must be placed such a publication as that of Anderson, Schloss and Stuart²⁰. It must again be emphasized that the casein fraction is curdled by contact with the gastric juices and thus impeded from entering the intestinal tract in a soluble form. This is

14 Wells H G. Studies on the Chemistry of Anaphylaxis. *J Infect Dis* 9: 147, 1911.

15 Cutler, O I. Antigenic Properties of Evaporated Milk. *J A M A* 92: 964 (March 23) 1929.

16 Lewis J H and Hayden H C. Effect of Heat on the Antigenic Properties of Milk. *Am J Dis Child* 44: 1211 (Dec) 1932.

17 Ratner Bret and Gruehl Helen L. Anaphylactogenic Properties of Milk. *Immunology of the Purified Proteins and Antigenic Changes Resulting from Heat and Acidification*. *Am J Dis Child* 49: 287 (Feb) 1935.

18 Hart, E B, Steenbock Harry and Ellis N R. *J Biol Chem* 42: 383 (July) 1920.

19 Chick Harriet and Martin C J. On the Heat Coagulation of Proteins. *J Physiol* 40: 404, 1910.

20 Anderson A F, Schloss O M and Stuart H C. The Biologic Relationship Between Cow's Goats and Human Caseins. *Am J Dis Child* 44: 1178 (Dec) 1932.

not true of the whey proteins. From such reasoning it should follow that persons are more readily sensitized to the latter proteins. An interesting speculation is that in infants who have been breast fed a tolerance for the casein fraction develops which is antigenically related both in human and in cow's milk. From this brief summary it becomes apparent then that the treatment of intolerance for milk must be focused on the sensitivity to the soluble whey fractions. The points made here are interestingly illustrated in the following case. We believe that this case is unique in that purified proteins were used for testing purposes.

REPORT OF CASE

A boy who was 9 years old when I first saw him had been sensitive to cow's milk from early infancy. He was breast fed for eighteen months because when first given cow's milk he had a severe allergic reaction with vomiting and urticaria. When milk was subsequently given he had severe attacks of asthma even after taking only a few drops. The physician who studied this case for several years attempted to build up a tolerance for milk by giving drop doses yet when the child was finally given one teaspoonful of milk he had a severe asthmatic attack with cyanosis, milk that was used in the preparation of foods provoked a reaction. The child was brought to me two years ago and the father was so insistent that milk was toxic for the child that he would not permit me to make a clinical trial with even a drop of milk. Tested by the scratch method, the child showed a moderate reaction to lactalbumin and to whole cow's milk. He was tested intracutaneously with the purified lactalbumin and casein (used in our experiments) in doses of 0.02 cc. of a 1 per cent solution of lactalbumin and with a similar dose (0.02 cc. of a 28 per cent solution) of casein. There was absolutely no reaction to the casein, but within a few minutes after the test with lactalbumin there developed a severe asthmatic attack with marked cyanosis and moderate dilatation of the right heart, and the child appeared to be going into anaphylactic shock. Restorative measures were applied, and epinephrine and oxygen administered. The boy remained in shock for several hours. The asthmatic phase continued for four days.

Serum taken from this patient and transferred to five guinea-pigs induced passive anaphylaxis in two of the animals. His serum was also transferred by the Prausnitz-Küstner method to the skin of several normal children and the presence of lactalbumin antibodies was demonstrated. One normal girl of 12 years, whose skin was locally sensitized, abstained from milk for forty-eight hours and was then given a glass to drink, a strongly positive local cutaneous reaction developed twenty minutes after ingestion. All these cases of passive local transfers were shown to be due to lactalbumin antibodies in the blood and not to casein. It may be noted that although raw milk in the smallest quantity provoked asthmatic attacks, and a minute amount of lactalbumin injected intracutaneously induced anaphylactic shock, this child was able to take reheated evaporated milk in normal amounts without the slightest reaction.

BASIC TREATMENT

In a case of milk allergy the first necessity is to eliminate all forms of whey proteins including raw milk as a beverage, milk used in the preparation of foods such as bread cake cream sauces, desserts, ice cream and cream of rice, and butter, dried milks, acidified raw milks, rare beef and beef serum.

The next problem is the substitution of some other form of milk. It has been stated that neither dry, acidified nor pasteurized milk nor milk boiled for a few minutes is of any true value in the treatment of patients with milk allergy. There is no uniform and perfectly standardized nonallergic milk. The only form that is valuable for substitution at the present time is that suggested by Kerley, who stated that milk boiled for

from three to six hours is well tolerated. However, this is an irksome procedure and the commercial equivalent—evaporated milk—can readily and reasonably be purchased. However, it must be warned that evaporated milks are not standardized and that not all kinds are subjected to an adequate amount of heat. When evaporated milk is used in a severe case of milk allergy, it should be boiled vigorously for several minutes just prior to use. It is rather interesting at this point to note that Marriott, who originally advocated the use of acidified whole raw milk in infancy—which we have shown to be highly anaphylactogenic—later advocated the use of acidified evaporated milk. Denatured heated milk may be given to the milk intolerant infant in amounts adequate for nutrition, and to it may be added the proper carbohydrate requirement in the form of dextrinmaltose or corn syrup, which we²¹ have shown are nonanaphylactogenic.

In the early investigations goat's, ass's or human milk was suggested as a substitute for cow's milk, but these are not necessary if evaporated milk is used. It has also been recommended that the child who is acutely sensitive to milk should be given no milk, but broths, cereals and vegetables. More recently Hill and Stuart²² advocated the substitution of a soy bean preparation. It is evident from this work and that of Tso²³ that soy bean can replace milk and that it fulfils the nutritional requirements of the child. However, while relief is obtained by such substitution, a tolerance for milk proteins is not built up. The child remains just as sensitive to the milk during and after the period of substitution by these foods as he was before their use. Since milk enters so largely into the diet of the adult as well as the child, I believe that an attempt should be made to build up a tolerance to milk proteins and that there should be no delay in attempting the ultimate cure of the intolerance for milk.

In view of the fact that we have shown that thoroughly heated milks are merely changed physically and that the chemical structure of the whey proteins still remain unchanged, such heated milks may be used indefinitely provided an adequate amount of vitamin C—which is the only factor destroyed—is added to the diet. It is believed by many pediatricians, among them Kerley and Brennemann, that heated milks have greater nutritive value because they are more readily digested and assimilated. With the use of heated milk and the complete elimination of all milk-containing foods one is ready to proceed with immunization by giving drop doses—or even a fraction of a drop—of raw cow's milk each day orally as Schloss,²⁴ Park²⁵ and I²⁶ have advocated. The quantity is very slowly and gradually increased, depending on the tolerance of the patient, and after a period of from six to nine months a normal amount of raw milk can generally be taken. From then on, as has been emphasized by French investigators, milk must be given continuously throughout the rest of the person's life in moderate amounts, either as a beverage or in foods.

21 Ratner Bret and Gruehl Helen L. Anaphylactogenic Properties of Malted Sugars and Corn Syrup. *Am J Dis Child* 49:307 (Feb.) 1935.

22 Hill L. W. and Stuart H. C. Soy Bean Food Preparation for Feeding Infants with Milk Idiosyncrasy. *J A M A* 93:985 (Sept. 28) 1929.

23 Tso Ernest. A Comparison of the Nutritive Properties of Soy Bean Milk and Cow's Milk. *Chinese J Physiol* 3:353 (Oct.) 1929.

24 Schloss O. M. Allergy in Infants and Children. *Am J Dis Child* 19:433 (June) 1920.

25 Park, E. A. A Case of Hypersensitivity to Cow's Milk. *Am J Dis Child* 19:46 (Jan.) 1920.

26 Ratner Bret. Eczema in Infancy Due to Protein Sensitization. *M Clin North America* 9:817 (Nov.) 1925.

Summarizing, the treatment of milk allergy consists in

- 1 The elimination of all raw milk from the diet, including milk used in the preparation of foods
- 2 The substitution of a milk subjected to intense and prolonged heat in a liquid state
- 3 The gradual immunization of the patient by the oral administration of minute amounts of raw milk, with the continued use of the denatured milk throughout the entire period
- 4 The final substitution of adequate amounts of raw milk, which must be taken from then on continuously in moderate amounts

THE PREVENTION OF MILK ALLERGY

As important as it is to understand and treat patients with milk allergy properly, it is even more important to attempt to prevent the onset of the condition. I believe that this can be accomplished

- 1 By advocating the taking of moderate amounts of milk during the period of pregnancy and the careful curbing of excessive indulgence in raw milk during the latter months of gestation so as to avoid the possibility of inducing congenital sensitization. If milk is desired in more than moderate amounts, part of the consumption should be in the form of denatured milk.
- 2 By avoiding isolated feedings of raw cow's milk to the breast fed infant during the new-born period
- 3 By giving no raw cow's milk during convalescence from disease and during and after gastro-intestinal disturbances
- 4 By refraining from the use of excessive and exclusive milk diets
- 5 By elimination of the use of injections of milk for non-specific therapy

SUMMARY

Hypersensitiveness or allergy to milk is of more frequent occurrence than is generally realized and not only causes mild symptoms but may even result in acute anaphylactic death. It occurs in adult life as well as in infancy and childhood. The soluble whey proteins of raw cow's milk, lactalbumin and lactoglobulin, are most often responsible for this condition, casein plays a negligible role. The pathogenesis, which is accounted for on the basis of acquisition and not of inheritance, suggests preventive measures. The treatment consists in the elimination of raw milk from the diet, replacement of it by denatured milk, and the establishment of tolerance by the slow and gradual introduction of raw milk.

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ABSTRACT OF DISCUSSION

DR. CHARLES G. KERLEY, New York. I am convinced that inheritance is a great factor in many of the cases and I have observed it repeatedly when it had been acquired congenitally through the use of foods by the mother. I believe that the allergic state constitutes a condition of systemic inferiority, a familial disorder due to an endocrine imbalance. The wide variety and the combination of allergic manifestations may be explained only through a common physiologic deficiency constituting an entity. I will give one instance out of many for my conclusion that there is a preallergic state. A mother reacts to milk. By a milk reactor I mean an individual who is made acutely or chronically ill by the use of raw milk. I have known milk reactors through four generations: mother, daughter, grand-daughter and great grandson. In infants and children it is through the nervous system that the most urgent evidence and signs are produced. I divide my allergic responses into four groups. First is the shock group. In one of my alarming cases, shock was by contact. I placed seven drops of milk on the tongue of a baby, aged 3 months. In a few seconds shock was extreme: slow respiration, extreme pallor and heart sounds were absent. It was with the greatest effort

that she was resuscitated. I have seen one case of death from shock in a baby of 10 months. It came time to wean the baby and 2 ounces of milk was forced on it. The child immediately went into collapse and when I came on the scene the child was pulseless, unconscious and in extreme shock. It died in spite of every effort. The lesser divisions were those of allergic response because the milk, disagreeing with the child, produces gastro-intestinal disorders, colic and reactions other than those related to the gastro-intestinal tract, notably eczema. In giving up cow's milk it is either a matter of goat's milk or human milk in the shock cases, and of heating of milk in the ordinary gastro-intestinal type and the eczema. A greater degree of desensitization is produced in eczemas and in cases of milder reactions of a gastro-intestinal nature by prolonged heating. Better results are obtained from two or three or four hours oftentimes than from one.

DR. SAMUEL GOLDBERG, Philadelphia. Because of the increased amount of knowledge of the body response to the various food proteins, particularly those found in milk, we as clinicians are probably often baffled as to how to apply it to our daily pediatric practice. One has only to glance through that excellent critical review by Francis Scott Smith in a recent issue of the *Journal of Pediatrics* to see how varied are the studies of animal experimentation and how different the observations and results obtained. Pirquet and Schick probably pioneered our idea of allergy, but in the last few decades there has been a general awakening to its importance and to the part it plays in our knowledge of disease and bodily response. I feel that there probably exists too great a gap between the students of allergy and the pediatrician or internist. I feel that there must be a closer bond between fundamental studies made by such enthusiastic workers as Dr. Ratner and the clinical interpretation given to it by clinicians at the bedside. Dr. Ratner, by his case report of the 9 year old boy, has shown that the skin reaction to the various proteins, on which so much stress is laid, is definitely inadequate to serve as a guide in this complex problem. He has shown that this boy, who was negative in his skin reaction to casein and only moderately active to lactalbumin by the intradermal test, was so acutely sensitive to lactalbumin as to have symptoms of collapse and shock. Here this minute amount of protein produced only a faint reaction in the skin and yet was sufficient to produce a shock reaction in the lungs. There is a tendency to regard these cases as allergic and too often one steps aside from them and refers them to other men, who are studying them from the standpoint of protein sensitivity alone. The importance of most detailed history and clinical study is perhaps being overlooked. If this were done, it would lead to a better understanding of familial strains, environmental influences, neurogenic factors and the part that internal glandular secretions play in regulating the blood mechanism and peculiarities. I make this plea for more careful pediatric study of these cases not to minimize the work of Dr. Ratner and similar observers but to incorporate it into everyday clinical bedside study, so that it may not be lost.

DR. ALBERT H. ROWE, Oakland, Calif. Dr. Ratner's conclusion that apparent casein allergy is usually due to traces of soluble milk proteins will need clinical consideration. In my work, those patients markedly sensitive to milk have not been able to tolerate even evaporated milk without mild or severe symptoms. Emphasis on beef elimination is necessary in certain patients, and also butter at first. In such cases a soy bean substitute, almond milk or goat's milk has been used in children, and in adults prolonged and complete elimination has been the rule. My experience assures me that milk sensitization is especially common in infancy and childhood and occurs in unappreciated frequency throughout life. In adults it may persist in a potential form. Its original manifestation, be it gastro-intestinal, cutaneous or bronchial allergy, often disappears or diminishes to reappear in later years in similar or different manifestations, such as migraine or toxemia. As with allergy to any food, that to milk may also establish itself in middle life or even in old age from causes such as overindulgence in the food, intermittent ingestion or its consumption during digestive upsets. Especially important of realization is

the frequency of negative skin tests to milk and other food proteins. Thus, of course, emphasizes the necessity of trial or elimination diets in many patients suspected of such allergy. The frequency of concomitant allergies to other foods and the possible development of inhaled allergies as months and years advance must be remembered. However, the tendency to develop either food or inhaled allergy may persist alone throughout life and seems to be intensified by inheritance. Likewise the tendency to develop specific manifestations, such as eczema, migraine or gastro-intestinal, nasal or bronchial symptoms, tends to run in families.

DR. GEORGE PINESS, Los Angeles. The question of heredity as discussed by Dr Ratner this morning does not disprove the theory of the heredity factor in allergy even though he is able to sensitize individuals to milk. The inability to disprove heredity as a factor in the allergic individual is due to the individual's lack of knowledge of his family history. This is particularly true in the clinic cases and not uncommon in private practice. Therefore one should not be too prone to question the theory of heredity. The question of boiling, evaporating and altering milk has proved to be a real problem to all of us who do allergy, in that we find that results can be obtained in some cases with every type of alteration of milk, whether by boiling or by evaporating. The question of milk sensitivity has attracted my interest particularly in eczema in children in whom there was a seasonal incidence of symptoms. I am now investigating the possibility of some relation to the fodder of the cattle from which the milk is derived. Milk sensitivities that clear up spontaneously have been most difficult to explain in that despite any method of treatment they will clear up but later show some other type of allergy. I believe that most spontaneous cures are the result of self desensitization due to the patient refusing that particular substance or food in his diet which causes these reactions.

DR. FRANKLIN P. GENGENBACH, Denver. Finkelstein, more than twenty five years ago, showed that infants tolerated a combination of cow's milk casein combined with breast milk whey better than they did breast milk casein combined with cow's milk whey. Also, he was able to cure temporarily the skin manifestations of eczema in bottle fed infants by taking out the whey from the cow's milk. It might be interesting to learn from Dr Ratner, in making his skin tests for milk sensitivity, the percentage of positive reactions that he gets to whole milk, casein and lactalbumin, and also whether there is any marked difference in the reactions between his scratch tests and intradermal tests, realizing, of course, that, in cases which show marked reaction to the scratch test, he probably would omit the intradermal test.

DR. BRET RATNER, New York. Dr Kerley's cases of transmission from mother to daughter seem to bear out clinically my experimental observation that this transmission has gone through the placenta and not through the germ plasma of the male, so that I would regard those apparent cases of inheritance as actually congenital that is, acquired in utero. The remarks of Dr Piness about inheritance, I think, are consonant with mine. The one fact I am certain of is that inheritance has not been proved scientifically to be a factor. So far as allergy can be acquired, I am sure that the inheritance factor may be placed in the background. It must be realized that these conditions are due to the entrance of antigens and that measures are at hand for their prevention. With reference to the cow's fodder, I think that it is of interest and that if a child does become sensitive to cottonseed or corn in this manner, boiling of that particular milk will certainly rid it not only of the anaphylactogenic lactalbumin but also of these extraneous substances. I have nothing to add to Dr Goldberg's remarks. With reference to the discussion of Dr Gengenbach, I was most interested in looking up the old literature of the Viennese and French pediatricians, and I was astonished to see how much further advanced they were in an understanding of milk allergy than are the pediatricians of today. Anaphylaxis was discovered about 1902 and probably the subject was fresh in their minds in the years 1905, 1910, 1912 and 1914. I believe that my experimental observations bear out the clinical observations they made.

TREATMENT OF ACUTE AND CHRONIC BRUCELLOSIS (UNDULANT FEVER)

PERSONAL OBSERVATION OF ONE HUNDRED CASES
OVER A PERIOD OF SEVEN YEARS

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In 1859 Marston¹ described a disease syndrome which he named Mediterranean or gastric fever. In 1886 Bruce² isolated an organism, which he called *Micrococcus melitensis*, from the spleen of a patient who was a victim of this disease. In 1897 Bang³ isolated the organism which is the recognized cause of contagious abortion in cows. This organism is now called *Brucella abortus*. In 1914 Traum⁴ isolated an organism which is now called *Brucella suis*, from the fetus of an aborting sow. Thus, three strains of *Brucella* now have been recognized. In 1918 Evans⁵ suggested that these organisms were very closely related, both serologically and bacteriologically, and that *Brucella abortus* in all probability could infect man. In 1924 Keefer⁶ isolated *Brucella suis* from a so-called case of Malta fever, and in 1925 Duncan⁷ first isolated *Brucella abortus* from man. It would be impossible to state the actual number of persons infected with the various strains of *Brucella* occurring in the United States. It is, however, a statistical fact that 9,965 cases were reported up to Jan. 1, 1935, and that the disease is increasing.

CLINICAL SYMPTOMATOLOGY

Five clinical types have been commonly recognized: intermittent, ambulatory, undulatory, malignant and subclinical. However, I find considerable difficulty in classifying under these headings the 100 cases that I have observed. In many of these cases the symptomatology is so varied that any grouping is most difficult. Two general types may be recognized: (a) an acute type, arbitrarily defined to include those cases which run their full course, with or without treatment, within three or four months, and (b) a chronic form, in which symptoms persist for a longer period. Acute *Brucella* infection is characterized by fever, weakness, sweating, chilliness, occasional rigor and some form of pain, such as headache, backache and arthritic or abdominal pains.

These symptoms associated with anorexia, constipation, nervousness and occasional cough would suggest the diagnosis of brucellosis. If the disease is prolonged, there is also associated loss of weight and evidence of neurologic toxemia.

In chronic brucellosis, a part or all of these symptoms are present, but the neurologic symptoms become more manifest, and in my experience the majority of complications occur in this group. Evans⁸ has recently pointed out the importance of the neurologic manifestations of this disease and that, before the diagnosis

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1 Marston J. A. Report on Fever (Malta) Army M. Rep. 3, 486, 1861.

2 Bruce David. Notes on the Discovery of a Micro-Organism in Malta Fever. Practitioner 39, 161, 1887.

3 Bang Bernhard. The Etiology of Contagious Abortion. Ztschr. f. Tiermedizin 1, 241, 1897.

4 Traum J. Annual report of the Chief Bureau of Animal Industry, U. S. Department of Agriculture, 1914, p. 30.

5 Evans Alice C. Further Studies on Bacterium Abortus and Related Bacteria. J. Infect. Dis. 22, 580 (June), 1918.

6 Keefer C. S. Report of a Case of Malta Fever Originating in Baltimore Md., Bull. Johns Hopkins Hosp. 36, 6 (Jan.) 1924.

7 Duncan J. T. Contagious Abortion and Undulant Fever, Brit. M. J. 1, 554 (March 21), 1925.

8 Evans Alice C. Chronic Brucellosis. J. A. M. A. 103, 665 (Sept. 1), 1934.

of chronic neurasthenia or psychasthenia is made, the possibility of chronic brucellosis should be considered.

Brucella has been recovered in pure cultures from a large variety of suppurative lesions, such as meningitis, salpingitis, purulent orchitis, empyema, purulent cholecystitis, acute spondylitis with abscess formation, and acute mastitis. Cultures taken from these lesions in the average clinical laboratory will give negative results because of the difficulty in growing *Brucella*. This organism in all probability has been a hidden causative agent in many so-called sterile abscesses.

LABORATORY DIAGNOSTIC AIDS

Laboratory data are invaluable as aids for diagnosis and prognosis in brucellosis. Early in my study I believed that agglutination in a dilution of 1 to 80 was necessary to confirm a diagnosis. But I know now that, even when the agglutination titer is low or absent, the patient may be a victim of this disease. Since 1932 I have employed a skin test as a confirmatory aid in diagnosis when there was very strong clinical evidence in the absence of agglutination. This is performed by the injection of from 0.02 to 0.04 cc of *Brucella* antigen intradermally, another patient or the laboratory assistant being used as a control. Any vaccine on the market is a suitable antigen for the performance of this allergic reaction. I have been able to recognize six cases included in this group by this method. Simpson⁹ states that the agglutinins are absent in the blood stream in 5 per cent of the cases.

Blood cultures for the isolation of strains of *Brucella*, as performed in the average laboratory, are unsatisfactory because of the difficulty in securing proper mediums and equipment. Diagnosis by culture is delayed because it is recognized that cultures should not be reported negative until incubated for a period of thirty days. A leukopenia is usually present. Eighty-five per cent of this group of patients presented a white blood count of less than 6,500. In the differential smears, 90 per cent of this group presented a relative lymphocytosis and 65 per cent showed a definite increase in mononuclear leukocytes. Some degree of secondary anemia was shown in 87 per cent. Huddleston¹⁰ suggested the additional laboratory test of opsonocytophagic power of the blood. I believe that this test is quite reliable, but I doubt its practicability. I should think that it would have its greatest value in those cases in which there is difficulty in determining whether or not the patient has recovered. It should not be forgotten that approximately 15 per cent of the patients suffering from tularemia show a cross-agglutination reaction with the abortus organisms. Differentiation between the two conditions can be made, however, by agglutination absorption tests.

TREATMENT

Many attempts at specific treatment of this disease have been made. Favorable results have been reported for the intravenous use of mercurochrome,¹¹ metaphen¹² and acriflavine hydrochloride.¹³ Cazalas,¹⁴ Auric-

chio,¹⁵ Cumston,¹⁶ DeFinis,¹⁷ Giuffrè,¹⁸ Khaled,¹⁹ Prausnitz,²⁰ Schilling,²¹ Simpson⁹ and Harris²² have all reported favorable results with specific vaccine therapy.

Early in 1928 I became particularly interested in the use of vaccine and in 1929²³ I reported ten cases that were cured by this method of therapy. I early enlisted the cooperation of a large veterinary laboratory of the Middle West for securing pathogenic strains of *Brucella*. These cultures, after being thoroughly tested for virulence, were incorporated into a vaccine, 50 per cent *Brucella abortus* bovine and 50 per cent *Brucella abortus* swine being used. This was standardized to nephelometer number three, which is approximately six billion organisms per cubic centimeter. This particular preparation was submitted to the Council on Pharmacy and Chemistry in 1929, and in its report of 1930²⁴ acceptance was withheld until further clinical data were available. In 1932²⁵ it was fully accepted.

Arbitrarily 0.25 cc was chosen as the initial dose given intramuscularly. This dosage was increased 0.25 cc every second or third day, depending on the clinical reaction of the patient. A maximum dosage of 1 cc was never exceeded in the cases that I have treated. I found early that the subcutaneous method of inoculation was too frequently associated with local abscesses, I therefore changed to the intramuscular route of injection, which gives faster absorption and has been in my experience rarely so complicated. I have usually employed the deltoid muscle as the favored site for inoculation. I think it advisable that not more than seven inoculations should be given during a single course of therapy and that the dosage should not exceed 1 cc. The average number of inoculations in the 100 cases was 5.4.

In one case a spectacular result with intravenous vaccine was obtained. After treatment over a long period of time with subcutaneous injections of vaccine, without appreciable benefit, this patient was given one injection of 0.1 cc intravenously, resulting in a prompt cure. The reaction was so severe, however, that since then I have never used the vaccine intravenously. The reactions observed are specific and occur only in individuals who have been sensitized through actual infection with *Brucella*. If there is no elevation of temperature or no accentuation of the patient's symptoms during the course of vaccine therapy, the diagnosis should be carefully checked, for it is doubtful whether the patient has brucellosis. In control cases I have found the vaccine to be a very poor nonspecific protein. There is also an associated definite specific local reaction, characterized by soreness, induration and redness.

I believe that so long as the agglutinins persist in the blood stream, or the patient has active fever, this

⁹ Simpson, W. M. Undulant Fever (Brucellosis). *J. Indiana M. A.* 27: 564-570 (Dec.) 1934.

¹⁰ Huddleston, J. F. *Brucella Infections in Animals and Man*. New York: Commonwealth Fund, Oxford University Press, 1934.

¹¹ Todd, M. L. Two Cases of Malta Fever Treated with Mercurochrome. *Mil. Surgeon* 91: 34-35 (July) 1927.

¹² Portney, A. C. Undulant Fever Treated with Metaphen. *Minnesota Med.* 16: 335 (May) 1933.

¹³ Thurber, D. S. The Results of the Use of Acriflavine Hydrochloride in the Treatment of Undulant Fever. *Canad. M. A. J.* 23: 665-668 (Nov.) 1930.

¹⁴ Cazalas, Xavier. Undulant Fever. *Paris méd.* 2: 16 (Aug. 25) 1928.

¹⁵ Auricchio, L. cited by Evans. Alice C. Studies on *Brucella* (Alkaligenes) *Melitensis*. *Bull.* 143 Hyg. Lab. U. S. P. H. S. p. J.

¹⁶ Cumston, C. G. The Treatment of Malta Fever. *M. J. & Rec.* 121: 219-220 (Feb. 18) 1925.

¹⁷ DeFinis, G. L'immunoterapia del tifo dei paratifi e della febbre mediterranea con i vaccini liofilizzati di Cristina e Caronia. *Pediatrics* 31: 11-23 (Jan. 1) 1923.

¹⁸ Giuffrè, M. Osservazioni sulla vaccinoterapia nella febbre mediterranea. *Pediatrics* 35: 345-358 (April 1) 1927.

¹⁹ Khaled, Z. cited by Evans.

²⁰ Prausnitz, C. Infektionen des Menschen durch das Bacterium *Abortus*. *Bang. Med. Klin.* 25: 135-137 (Jan. 25) 1929.

²¹ Schilling, G. S. Magee, C. F. and Leitch, F. M. Treatment of Undulant Fever with an Autogenous Antigen. *J. A. M. A.* 86: 1945-1948 (June 6) 1931.

²² Harris, H. J. Undulant Fever. Difficulties in Diagnosis and Treatment. *New York State J. Med.* 34: 1017-1021 (Dec. 1) 1934.

²³ Angle, F. E. The Treatment of Undulant Fever with Vaccine. *J. Kansas M. Soc.* 30: 323 (Oct.) 1929.

²⁴ Report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 94: 1304 (April 26) 1930.

²⁵ Report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 99: 1262 (Oct. 8) 1932.

fever can be accentuated by the use of vaccine. This is the result of an allergic systemic reaction. Consequently, fever can be prolonged unnecessarily by too long continued treatment. If the subjective symptoms of the patient have definitely subsided, injections of vaccine may be discontinued even in the presence of a low residual temperature. There follows a gradual disappearance of the clinical symptoms, including the fever. There is also a gradual return to a normal blood picture. I have had numerous letters stating that the vaccine yielded poor results and that as soon as its administration was stopped the patient got well. I feel that the continued fever in such cases is due to over-treatment.

There are certain contraindications to vaccine therapy. Particularly is the elderly individual a poor subject. His general physical condition is usually such that any form of "shock treatment" is contraindicated. A myocardium which shows the degenerative changes of senility makes that individual a particularly poor risk. I have also advised against the use of vaccine in two cases in which subacute bacterial endocarditis existed as a complication. In one of these cases injections of vaccine had been given prior to my observation and this had had no effect on the condition.

In cases in which satisfactory clinical results have not been obtained early in the course of vaccine therapy, a thorough investigation may reveal the presence of some complication, such as suppurative disease in the gallbladder, sinuses and tonsils. It has been pointed out by Harris²² that a thorough x-ray study of the teeth should be made for the existence of periapical infection.

During the course of active treatment with vaccine, the patients in this series received no other medication. They were usually kept under observation two or three days until a definite base line could be drawn as to their exact condition. In addition to vaccine therapy, all patients received a high caloric diet, with feedings between meals. This is very important in the handling of patients with prolonged fever. After the patient shows clinical signs of improvement, a tonic mixture particularly rich in vitamins was prescribed. A large number of such proprietary mixtures are on the market and I have no particular preference. Patients showing a blood picture of secondary anemia were given adequate amounts of iron, usually in the form of pills of ferrous carbonate, 45 grains (3 Gm.) daily.

RESULTS

The interpretation of the end results of any method of treatment applied to either acute or chronic brucellosis is difficult. The question often presents itself in a case in which there is apparent recovery "Is the patient well?" or "What are the criteria by which one can establish that the patient is cured?" In answer to these questions it may be stated that as the patient recovers from brucellosis

- 1 There is a definite disappearance of his subjective symptoms
- 2 There is an increase in weight
- 3 There is a gradual disappearance of fever
- 4 The agglutination titer of the blood diminishes
- 5 The blood picture returns to normal
- 6 The neurologic symptoms subside

In the 100 cases reported none are included that have been under observation less than one year. Two deaths have occurred from a complicating subacute bacterial endocarditis in which *Brucella* was shown to

be the etiologic organism. Short relapses have occurred in 11 per cent. These cases have required an additional course of vaccine therapy. One case remains unimproved after a period of one year, owing to a complicating chronic cholecystitis and also multiple periapical infections of the teeth. Five cases were recorded as quiescent at the time of my observation and no vaccine was recommended. Eighty-four cases were observed and treated in the hospital. The average hospital stay was twenty-two days. Readmission was necessary in eight cases for an additional course of vaccine therapy or treatment of known complications.

COMMENT

In view of the fact that all students of this disease have emphasized that there is a large number of cases unrecognized and untreated in the United States, I would urge that, in each laboratory where blood is taken for the Wassermann reaction, the rapid agglutination test be made on the same serums. Suitable antigen can be obtained from any veterinary supply company, and the test is performed by the addition of one drop of serum to a drop of antigen and, after mixing, a macroscopic agglutination occurs if the serum is positive. This test can be performed in any physician's office and offers a very practical and easy way of increasing the percentage of diagnosed cases in the United States. In 2,000 consecutive blood Wassermann serums observed at my laboratory, 26 per cent have shown positive agglutination with *Brucella*. Of course, some of these are quiescent cases. Sixteen of my active cases were recognized in this manner.

CONCLUSIONS

- 1 Brucellosis is on the increase in the United States
- 2 Vaccine therapy offers the best available method of treatment of both acute and chronic brucellosis
- 3 The rapid method of agglutination test should be done on all Wassermann serums
- 4 Brucellosis should be considered as a possible etiologic factor in many cases of so-called neurasthenia
- 5 *Brucella* may be found to be the etiologic organism in many so-called sterile abscesses, if proper investigation is made

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ABSTRACT OF DISCUSSION

DR HAROLD J HARRIS, Westport, N. Y. Within two and one-half years I have observed seventy-five cases of *Brucella* abortus infection. Only nineteen could be classified as acute, the remainder running a chronic course with little or no febrile reaction and never enough illness to require bed rest. One chronically ill woman aborted three times, from her uterine discharge *Brucella* abortus was isolated. Pallor is often striking, with or without anemia. Anemia may be profound. There is apt to be a marked tendency to alveolar abscess. One patient having had twenty-eight abscessed teeth. Too much confidence has been placed in the blood agglutination test for the diagnosis of undulant fever, acute or chronic. Physicians have been led to believe that an agglutination titer under 1:80 is of little or no clinical significance. No clinician familiar with undulant fever is misled by this idea. In eleven of my seventy-five cases of chronic undulant fever the agglutination test was entirely negative on repeated tests. These cases were diagnosed on positive skin tests and clinical evidence. Much harm has been done by the habit of laboratories of labeling as characteristic only agglutinations in 1:80 or higher dilutions. Regarding treatment, my experience coincides with that of Dr. Angle, vaccine having been the only method of proved value. A small percentage of my patients with chronic brucellosis treated a year or more ago, have suffered mild relapses in

spite of what I considered adequate vaccine therapy. It occurs to me now that these patients might not have relapsed if their antibodies had been maintained at a high level for longer periods of time. With this in mind, I am now watching their agglutination titers more carefully during their vaccine therapy and giving any dose necessary to secure and maintain a higher titer and, when necessary, I give small doses of the vaccine intravenously with apparently satisfactory results. Severe reactions may follow the use of this route, but extremely small doses may be used with safety in those whose agglutinins will not increase with the subcutaneous or intramuscular route. This route was used with success in a woman of 83 with marked weakness of the heart muscle. One dose of 50,000,000 killed organisms was given. It seems probable that undulant fever is a relapsing or recurrent disease only because the presence of large amounts of antibodies in the blood is so fleeting, therefore the problem is to keep antibodies present for a period sufficient to outlive the infecting organisms. I agree with Dr. Angle's statement that a patient who does not show the typical reaction to vaccine during treatment probably does not have brucellosis. I believe that the vaccine may be used as a therapeutic test with full assurance that the patient who is not suffering from brucellosis will not react in any degree.

LYMPHOCYTIC, MYELOCYTIC AND MONOCYTIC NEOPLASMS

ROENTGEN DIAGNOSIS AND TREATMENT

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AND

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DETROIT

Since the establishment of the Lymphatic Tumor Registry by the American Association of Pathologists and Bacteriologists, eight years ago, much progress has been made in assembling, correlating and extending the knowledge of neoplastic conditions of lymphatic, hematopoietic and reticulo-endothelial tissues as evidenced by the recent publication of the registrar, Dr. G. R. Callender.¹ With these advances in the clinical, hematologic and pathologic aspects of this difficult group of neoplastic diseases there has been little attempt to collect and correlate the x-ray studies, although many reports of cases and groups of cases are found in the current literature.

This paper represents an attempt to gather and correlate some of these x-ray studies through a report of some of our own cases and the review of others from the literature furnishing typical examples in the various classifications discussed by Callender.¹ In a further effort to clarify the subject, the group of sympathetic neuroblastomas, which metastasize widely to lymph nodes, bones and bone marrow, are contrasted with the group under consideration. Callender's classification tracing the various diseases back to the stem cell of the lymphocyte, polymorphonuclear leukocyte and monocyte is used throughout.

LYMPHATIC LEUKEMIA

In lymphatic leukemia there is involvement of the lymph glands and structures throughout the body with an enormous increase in the lymphocytes. The lymph gland involvement is usually generalized and in many instances the liver and spleen are enlarged. In the

lymph nodes there is a great proliferation of the lymphocytes so that there is obliteration of the node structure. The malpighian nodules of the spleen become enlarged to a considerable degree. The bone marrow may become more or less transformed into lymphoid tissue. Profound anemia usually is present from replacement of the normal bone marrow.

Roentgen examination is indicated in all cases of pain or swelling over the bones and joints. Craver and Copeland² report bone changes in six of eighty-six cases of lymphatic leukemia. They feel that bone changes are of more frequent occurrence in low grade lymphatic leukemia than in cases with a high white count. The incidence of bone changes was, in order of frequency, femur, humerus, pelvis, metacarpals, ulna and vertebrae.

There may be elevation of the periosteum due to infiltration beneath the periosteum, and this is sometimes followed by osteosclerosis from proliferation of new bone. Extensive generalized osteoporosis may sometimes be present without localized areas of destruction. Snelling and Brown³ report bone changes at some stage of disease in eight of twelve children with lymphatic leukemia. Their most constant change was a rarefied area near the end of the bone adjacent to the epiphyseal line together with elevation of the periosteum. Poynton and Lightwood⁴ and Taylor⁵ report extensive periosteal changes in these cases. The former report elongated localized leukemic deposits in the ends of the bones, with absorption of the bony cortex about these deposits.

Occasionally in this disease masses are found in other organs, such as the gastro-intestinal tract. Mead⁶ has recently reported a case with tumor masses throughout the stomach almost like diffuse polyposis, also masses in the small bowel and colon.

Mediastinal tumors in connection with lymphatic leukemia have frequently been reported. This has been called leukosarcoma by Sternberg,⁷ who thought it was a true neoplastic tumor. Other authors believe it to be a part of the general leukemic process. Cooke⁸ has reported nine cases of acute leukemia with large mediastinal masses. In these cases roentgen therapy promptly removed the masses, but in a short time the blood changes returned acutely. After this the roentgen therapy was of no avail and the patients died.

A number of cases of lymphatic leukemia associated with lymphosarcoma have been reported. These cases apparently begin as lymphosarcoma and later develop leukemic manifestations, often of the acute type. Evans and Leucutia⁹ reported three cases of lymphosarcoma, which were treated by roentgen therapy with marked improvement. The patients later developed lymphatic leukemia and died. The authors believe that lymphosarcoma is transformed into lymphatic leukemia as soon as the bone marrow becomes involved by foci of lymphosarcoma.

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Read before the Section on Radiology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

¹ Callender, G. R. Tumors and Tumor-like Conditions of the Lymphocyte, the Myelocyte, the Erythrocyte and the Reticulum Cell. *Am. J. Path.* 10: 443-465 (July) 1934.

² Craver, L. F. and Copeland, M. M. Changes of the Bones in the Leukemias. *Arch. Surg.* 30: 639-646 (April) 1935.

³ Snelling, C. E. and Brown, Alan. Bone Changes in Leukemia. *Clinical and Roentgenological Arch. Dis. Childhood* 9: 315-318 (Oct.) 1934.

⁴ Poynton, F. J. and Lightwood, R. C. Lymphatic Leukemia with Infiltration of Periosteum Simulating Acute Rheumatism. *Lancet* 1: 1192-1194 (June 4) 1932.

⁵ Taylor, H. K. Periosteal Changes in a Case of Lymphatic Leukemia. *Radiology* 6: 523-525 (June) 1926.

⁶ Mead, C. H. Chronic Lymphatic Leukemia Involving the Gastro-Intestinal Tract. *Radiology* 21: 351-365 (Oct.) 1933.

⁷ Sternberg, C. Leukosarkomatose und Myeloblastenleukämie. *Beitr. z. path. Anat. u. z. allg. Path.* 61: 75 (1916).

⁸ Cooke, J. V. Mediastinal Tumor in Acute Leukemia. *A Clinical and Roentgenologic Study.* *Am. J. Dis. Child.* 44: 1153 (Dec.) 1932.

⁹ Evans, W. A. and Leucutia, Traian. The Neoplastic Nature of Lymphatic Leukemia and Its Relation to Lymphosarcoma. *Am. J. Roent. genol.* 15: 497-513 (June) 1926.

CASE 1—L. P., 37 years, aged 35, admitted, Feb 23, 1935, complained of weakness and substernal pain. The onset had occurred with insomnia and "cold in the chest," and cough but no sputum or hemoptysis. There was progressive weakness and dyspnea on exertion. Substernal pain developed, with coughing.

On physical examination the left side of the chest was more voluminous than the right, with restriction of movement on the left. There was impaired percussion with absent breath sounds on the left below the angle of the scapula. The abdomen was distended. The spleen was not felt. No lymph gland enlargement was present.

Laboratory examinations revealed the following. The Wassermann reaction was negative. Blood studies showed hemoglobin, 82 per cent, red blood cells, 4,900,000, white blood cells, 9,200, differential count polymorphonuclear neutrophils, 66 per cent, polymorphonuclear eosinophils, 8 per cent, metamyelocytes, 2 per cent, lymphocytes, 22 per cent, monocytes, 2 per cent.

Roentgen examination of the chest revealed a large collection of fluid in the left pleural cavity, with displacement of the mediastinum. After 1,200 cc of fluid was removed, progress films showed widening of the mediastinum.

High voltage roentgen therapy was administered over the mediastinum and lumbar area, which resulted in disappearance of the mediastinal mass. Some fluid continued to form in the left pleural cavity. The patient improved and went home, March 16, but was readmitted several days later with exacerbation of the coughing, oozing of blood from the gums, paralysis of the left side of the face, and palpable glands in the cervical, axillary and inguinal areas.

Examination of the blood showed red blood cells, 5,120,000, white blood cells, 101,000, hemoglobin, 80 per cent, polymorphonuclear neutrophils, 8 per cent, lymphocytes, 12 per cent, blast forms 80 per cent. On succeeding days the white count increased steadily to 253,000, and slowly fell to 6,200 and then rose to 18,400 over a period of two weeks. The stools showed a positive guaiac test. During all this time the patient was treated with repeated blood transfusions.

A postauricular lymph node was removed for study. The normal follicular structure was entirely replaced by masses of lymphocytic type cells with abundant mitotic figures.

The patient continued to grow worse and died April 7. He suffered a pulmonary hemorrhage as a terminal event.

At necropsy the spleen and liver were somewhat enlarged. Multiple small discrete petechial hemorrhages were found both in the skin and in many of the internal organs. There was an area of hemorrhagic pneumonia involving the upper lobe of the right lung. The spleen showed replacement of the lymphoid follicles by masses of small, deeply staining lymphocytes. The kidneys contained areas of lymphocytic infiltration. There was infiltration of the mediastinal, mesenteric, retroperitoneal and inguinal lymph nodes. Sections of blue marrow were taken from the lumbar vertebrae, sternum and ribs. The marrow was hypertrophic, with enlargement of the marrow cavity and of the cortex. There was considerable replacement of the normal medullary elements by small deeply staining lymphocytes. The changes were indicative of acute lymphatic leukemia.

This would appear to be a case of lymphosarcoma which after roentgen therapy developed an acute lymphatic leukemia. It is difficult, however, to be sure that this was not a case of lymphatic leukemia in an aleukemic stage when first seen and which passed into the leukemic stage after roentgen therapy. Webster¹⁰ reported a case (case 3) which was very similar in its history and pathologic manifestations to those of case 1 reported here. He places it in the leukosarcoma group. He believes it probable that leukosarcoma, lymphosarcoma and lymphatic leukemia are different manifestations of the same disease.

The prognosis in lymphatic leukemia is uniformly bad but, in the chronic type, roentgen therapy may

prolong life for a considerable period of time. The acute form is a rapidly progressive form of the disease resulting in death in from a few days to a few weeks. We believe that roentgen therapy is not indicated in these cases and may even hasten the time of death. The chronic cases are more amenable to roentgen therapy and these patients survive for from a few months to four or five years. We do not consider that roentgen therapy is as effective in lymphatic leukemia as it is in myelogenous leukemia.

MYELOGENOUS LEUKEMIA

There is a definite elevation of the white blood cells with a large proportion of myelocytes. Both the total count and the differential count are capable of wide variation. Extensive changes are found in the bone marrow with hyperplasia of the granular leukocytic elements and decrease of the red marrow. Myeloid transformation is present in the spleen and liver particularly and may occasionally be seen in other organs. Bone destruction is uncommon.

Cone¹¹ states that myelogenous leukemia resembles sarcoma in a fluid medium. He believes that the clinical and pathologic manifestations indicate it to be of a sarcomatous nature. Piney¹² also believes it to be a neoplastic process and to be more rapid in its course when composed of immature cells.

Roentgen examination of the bones reveals very few changes. Craver and Copeland² in a report of eighty-two cases found bone changes in only one case. There was mottling of the upper portions of the femurs, with central punched-out lesions. There may also be osteosclerosis. Early lesions may be missed by roentgen examination. At autopsy they found various stages of absorption of the spongy trabeculae and some erosion of the cortex. Erosions of medullary bone were found in stages that could not be demonstrated roentgenologically. These authors conclude, therefore, that changes shown by the roentgen examinations are late changes.

Roentgen therapy is, and has been for many years, the chief therapeutic agent for the control of this disease. In spite of brilliant temporary remissions, the course of the disease proceeds uniformly to a fatal termination. Irradiation is usually applied over the long bones, vertebrae, ribs and sternum in order to destroy the radiosensitive myeloid hyperplasia. Irradiation of the spleen is also indicated for reduction of its size and destruction of the pathologic blood cells. In certain instances in which it is enlarged by leukemic infiltration, the liver also should be treated. After each recurrence the response to irradiation is less than formerly, and finally a stage arrives in which all treatment is ineffectual.

CHLOROMA

Chloroma, or chloroleukemia, may be said to be a tumor-like hyperplasia of the parent cells of the leukocytes, primary in the bone marrow. It is more common in young males but cases in the fifth and sixth decades have been reported. Dock and Warthin¹³ in 1904 definitely established the relationship of chloroma and leukemia. Some writers divide the disease into myeloid and lymphoid groups, but the consensus at present is that the lymphoid group is extremely rare or non-existent. Swanson¹⁴ and others have reported cases

11 Cone S. M. Leukemia—A Sarcoma. Bone Evidence. Arch Surg. 14: 542-533 (Feb.) 1927.

12 Piney A. The Neoplastic Nature of the Leukemic Process. Am J. Sc. 169: 691-696 (May) 1925.

13 Dock George and Warthin A. S. A New Case of Chloroma with Leukemia with a Study of Cases Reported Since 1893. M. News 85: 971, 1904.

14 Swanson L. A. Aleukemic Myelogenous Chloroma. Am J. Dis Child. 44: 140-145 (July) 1932.

10 Webster L. T. Lymphosarcoma and Allied Conditions. Johns Hopkins Hosp. Rep. 20: 251-314, 1921.

showing an aleukemic form of the disease. Some writers, however, state that these are only aleukemic stages and not aleukemic types of the disease.

Postmortem examinations have usually revealed widespread, green colored growths with a marked predilection for the periosteum, the dura and the ligamentous structures. Involvement of the cranial bones, ribs, sternum and long bones is frequently found. The bone marrow often has a greenish cast. Exophthalmos with hemorrhage into the eyelids is a characteristic picture and is usually caused by retrobulbar masses of leukoblastic tissue. Pleural involvement with effusion is common. The cells are large, undifferentiated, mononuclear cells designated as myeloblasts or large lymphocytes. A moderate degree of anemia is usually present.

Roentgen changes in chloroma are quite variable. In some reported cases rather marked destruction was seen in the long bones and occasionally bone proliferation was present. In one case there was a large area of destruction in the vault of the skull underlying a soft tissue tumor. Extensive periosteal changes are usually present over the long bones. This periosteal change may consist of elevation of the periosteum parallel to the shaft of the bone, or there may be striae perpendicular to the bone similar to the changes seen in osteogenic sarcoma. The bone changes are often seen near the ends of the diaphyses of the long bones. In some cases, widening of the mediastinum was present.

Washburn¹⁵ reported a case of chloroma in a boy, aged 20 months, who was given roentgen therapy. This resulted in an apparent complete recovery. The child was still living and well at the time of the report two and one-half years after the administration of roentgen therapy. In case 2 we administered high voltage roentgen therapy, which lowered the white blood count but had little appreciable effect on the progressive course of the disease.

CASE 2—M. F. DeC., a white youth, aged 17, admitted, March 19, 1931, complained of swollen, stiff joints and lumps on the head. The condition had begun seven weeks before with gradual swelling of the ankle joints and pain on motion. The joints were warm but not hot or red and not sore to the touch. Later the knees, then the elbows became involved. Three weeks later the mandibular joints became involved so that the mouth could not be closed. At that time several teeth were extracted, with rather copious hemorrhage following the extraction. During the fourth week of illness, tumors developed over the head, which gradually enlarged. The eyes had been protruding for the past ten days, and there was marked edema of the lids. Loss of weight amounted to 25 pounds (11.3 Kg.) in seven weeks.

The history was otherwise negative, with the exception of an attack of rheumatism three years before.

On physical examination the patient presented a striking appearance, with marked exophthalmos and edema of the upper lids, and the presence of large, nodular, circumscribed, hard masses distributed over the skull, particularly in the parietal and occipital areas on both sides. There was a softer swelling over the zygomatic area, which increased the breadth of the face. The eyeballs were definitely protruded. Some nasal obstruction was present. The mouth was wedge shaped and there was swelling over the temporomandibular articulations and the maxilla.

There was general lymphatic adenopathy. The liver and spleen were easily palpable. There was a globular enlargement over the lower end of the left humerus.

The physical examination was not of interest otherwise, except for a few vague changes in the chest. The blood pressure was 130 systolic 50 diastolic.

Laboratory examinations showed red blood cells, 3,350,000, hemoglobin, 48 per cent, white blood cells, 24,200, polymorphonuclears, 4 per cent, small lymphocytes, 7 per cent, large mononuclear leukocytes, 4 per cent, myeloblasts, 83 per cent. The myeloblasts varied from 8 to 20 microns in diameter. The nucleus was unusually large, the cytoplasm being represented by a rim of darker staining granular material. The nucleus stained lightly with Wright's stain and often appeared polymorphous or definitely lobulated. With the oxydase stain, the majority of the myeloblasts showed blue-staining granules in the cytoplasm.

The Wassermann reaction was negative. The phenolsulphonphthalein test showed a return of 27 per cent in two hours.

Roentgen examination disclosed the following changes. In the skull there were multiple pinhead sized radiolucent areas through the vault, and an irregular fuzzy type of decalcification of the facial bones. There was a collection of fluid in the right pleural cavity. The right lung showed extensive infiltration. Practically all the bones showed evidence of an infiltrative lesion with an osteoporosis having a granular appearance. There were areas of bone destruction in the shafts of the humeri near the upper epiphyseal lines. Periosteal reaction was seen over many of the long bones. Around the left elbow there were raylike striae perpendicular to the bone, and similar but less marked changes were seen around the knees. We felt that the whole picture was that of a blood dyscrasia of an undetermined type.

The patient's general condition continued to decline in spite of blood transfusions and general medical care. The temperature ranged from 99.5 to 103 F.

The blood calcium was 11.5 and the blood sugar 91 mg per hundred cubic centimeters. The urine was negative for Bence Jones bodies.

A gland was removed for examination. It was definitely green. Microscopically it showed loss of the normal lymph gland architecture. The tissue was composed of cells of the myelogenous type, which were usually large and had pink staining and round or oval bilobed and polymorphous nuclei. Mitosis was quite marked. A diagnosis of chloroma was made.

March 31, roentgen therapy was started and one-half erythema dose was given over the head, cervical areas, shoulders, elbows, inguinal areas and one area over the spleen, 0.5 mm. of copper plus 1 mm. of aluminum filtration with 185 kilovolts at 50 cm. distance was used.

During this treatment period the patient's general condition improved to a marked degree, and on the last day of treatment the white blood count was 20,500. Two days later the count dropped rapidly and declined to as low as 1,500, but under repeated small transfusions gradually came up to 2,800. At this time an area of gangrene developed with ulceration at the gingivobuccal fold of the left lower mandible. This progressed in spite of medical care and eventually sloughed through the cheek.

The patient seemed to improve temporarily and the fluid in the chest cleared up. After a short time the condition became worse and the patient died one month after the high voltage roentgen therapy. At that time the white count was 24,500. Autopsy was not permitted.

It is apparent that this was a tumor closely connected with leukemia and may be properly considered as a subvariety or form of myelogenous leukemia. Practically all the well studied cases reported during the past twenty years have been of myelogenous origin.

These cases, in addition to the blood picture, are characterized by green tumors in almost every part of the body and in many cases they cause exophthalmos by tumors behind the eyeballs. Bone involvement and periosteal reaction, sometimes perpendicular to the bone as in osteogenic sarcoma, are found on roentgenographic examination. General glandular enlargement is found, together with enlargement of the spleen and liver.

Practically all cases reported in the literature ended fatally, with the exception of one patient who was living

15 Washburn, A. H. Chloroma. Report of a Case with Recovery Following Roentgenotherapy. *Am. J. Dis. Child.* 39: 330-343 (Feb) 1930.

and well two and one-half years following roentgen therapy. Case 2 showed some improvement with clearing up of the pleural effusion, following roentgen therapy.

ALEUKEMIC MYELOSIS

There are certain atypical cases of generalized myeloid hyperplasia of the bone marrow and viscera in which the white blood count and differential count are practically normal. If immature forms are present in the blood stream, they occur at such irregular intervals or in such low numbers that they are of no diagnostic value. There is usually a definite anemia present. Aleukemic and leukemic myelosis are in many instances indistinguishable by histologic examination.

Baldrige and Fowler¹⁶ state that 5 per cent of their patients with diffuse myelosis were permanently aleukemic. They believe that the aleukemic form of myelosis may be more rapidly fatal and may have a greater degree of associated anemia and more likelihood of secondary hemorrhagic purpura than the leukemic form. Splenomegaly is a striking clinical finding.

The roentgen changes are of considerable importance in the differential diagnosis. The bone changes may be either osteolytic or osteosclerotic. The osteolytic type may easily be mistaken for multiple myeloma, as in case 3, or it may suggest metastatic carcinoma. Baldrige and Fowler's¹⁶ case 4 showed only a single area of osteolysis in the mandible. In their case 5 there were multiple areas of bone absorption together with subperiosteal proliferation parallel to the shaft of the bone. There were also perpendicular striae found near the muscle and tendon attachments of numerous bones. In the spine, the lesions were osteoblastic in type. In the cranial bones there were multiple pinpoint areas of decalcification. Their case 6 showed evidence of rarefaction round the distal ends of the long bones, with a generalized osteoporosis. Stephens and Bredeck¹⁷ reported two cases presenting generalized osteosclerosis which were indistinguishable from metastatic carcinoma of the osteoblastic type.

Therapy in this group of cases is of no avail. Jaffe¹⁸ quotes various authors to the effect that splenectomy always seems to be fatal, the patients dying during the operation or soon after. He also states that irradiation of the spleen seems to be of no avail. In one case reported by Baldrige and Fowler¹⁶ irradiation was applied to a nodule on the forearm with about 75 per cent reduction in size in seventy-two hours.

CASE 3.—A B, a white woman, aged 51, admitted Aug. 28, 1934, complained of pain in the back, loss of weight, and weakness.

The patient's father died of a tumor at the age of 40. Her past history was negative in relation to her present illness.

She dated the pain from September 1933 while watching boat races. This grew worse in a month and spread all over the spine and to the shoulders and neck. The pain did not seem any worse than at the beginning of her illness. She had lost 44 pounds (20 kg.) since October 1933. There had been progressive weakness since the onset of symptoms.

The patient was moderately emaciated and quite pale. The chest was barrel shaped and somewhat deformed, as if from previous rickets. The heart was slightly enlarged. No abdominal masses could be palpated. There were a few palpable glands in the cervical and inguinal areas. Limitation of motion

of the shoulders was present. There was exaggeration of the dorsal kyphosis. Marked weakness prevented the patient from standing.

Laboratory examination revealed Wassermann reaction, negative, red blood cells, 3,120,000, white blood cells, 13,100, polymorphonuclear neutrophils, 73 per cent, polymorphonuclear eosinophils, 1 per cent, small lymphocytes, 21 per cent, large lymphocytes, 2 per cent, transitionals, 3 per cent, hemoglobin, 94 Gm. Moderate poikilocytosis was present. The blood calcium was 13.67 mg. and phosphatase, 4.55 mg.

Roentgen examination showed marked osteoporosis of the cervical vertebrae and osteoporosis, with narrowing of several of the dorsal and lumbar vertebrae. The ribs and scapulae also showed osteoporosis, with areas of destruction throughout these bones. Similar changes were seen in the pelvis and femurs. The skull was the seat of multiple areas of destruction scattered throughout the cranial vault. These areas varied in size from a few millimeters to 2 cm. The impression was that this case was probably one of multiple myeloma.

The patient steadily declined and died, September 18.

At autopsy, in each kidney a tumor mass was found. These were rubbery in consistency and suggested an infiltrative mass, since the margins were not sharply delimited. A few enlarged retroperitoneal glands were found and on section resembled the kidney lesions. In the bodies of the lower dorsal and lumbar vertebrae the bone marrow was replaced by grayish, friable, granular material suggesting leukemic involvement. There was marked decalcification of all the bones. The essential bone lesion appeared to be a rarefaction of bone structure with thinning of the cortex together with replacement of these structures by grayish, friable, very cellular tissue.

Microscopic examination of the lymph nodes showed the normal lymphatic structure almost entirely replaced by cells derived from the granulocytic elements. There were myelocytes and myeloblasts and polymorphonuclear leukocytes. There were also large multinucleated giant cells which resembled megakaryocytes. The remaining cells were lymphocytic and monocytic in nature. Similar cellular elements were observed in the kidney lesions. The material from the bone marrow was made up of closely packed masses of myelocytic cells with stroma. These included not only myelocytes but also myeloblasts and partially obscured polymorphonuclear leukocytes together with occasional large, multinucleated pink-staining megakaryocytes. An occasional erythroblast was seen. A diagnosis was made of diffuse aleukemic myelosis involving the vertebrae, ribs, sternum, kidneys, spleen, retroperitoneal lymph nodes and liver.

HODGKIN'S DISEASE

Hodgkin's disease is characterized by painless progressive lymph node enlargement, often beginning in the cervical groups. It is frequently accompanied by fever, and in later stages by anemia and cachexia. The blood changes are not diagnostic, although there is usually a slight leukocytosis as the disease progresses. There may be an increase in the eosinophils and lymphocytes. The blood platelets are usually increased.

The glandular involvement may be local or it may involve all the lymph glands of the body. The spleen is frequently involved and enlarged. The liver is less often affected. Cutaneous manifestations are common and quite annoying, because of pruritus.

The bone marrow may be involved rather frequently. Krumbhaar¹⁹ has reported a case with involvement of the bone marrow and spleen without involvement of the lymph nodes. Craver and Copeland²⁰ reported twenty-seven cases of demonstrable bone changes (15.7 per cent) in a series of 172 proved cases of Hodgkin's disease. They report the incidence of osseous changes from other authors' reports as varying from 10.7 per

¹⁶ Baldrige C. W. and Fowler W. M. Aleukemic Myelosis. Arch. Int. Med. 52: 852-876 (Dec.) 1933.

¹⁷ Stephens D. J. and Bredeck J. F. Aleukemia Myelosis with Osteosclerosis. Ann. Int. Med. 6: 1087-1096 (Feb.) 1933.

¹⁸ Jaffe R. H. Aleukemic Myelosis. Arch. Path. 3: 56-72 (Jan.) 1937.

¹⁹ Krumbhaar E. B. Hodgkin's Disease of Bone Marrow and Spleen Without Apparent Involvement of Lymph Nodes. Am. J. M. Sc. 182: 765-769 (Dec.) 1931.

²⁰ Craver L. F. and Copeland M. M. Changes in the Bones in Hodgkin's Cranioma. Arch. Surg. 28: 1062-1086 (June) 1934.

cent to 34 per cent. Pain usually preceded discovery of the bone lesions, although in some cases the lesions were discovered accidentally by roentgen examination. In a review of the literature they found the following bones involved in the order of their frequency: vertebrae, sternum, pelvis, femur, ribs, skull, humerus, scapula and clavicle.

Roentgen examination discloses both osteoclastic and osteoplastic lesions. In the spine the two types of lesions may be present in the same case. When osteoclastic lesions are present there may be collapse of the affected vertebrae, with considerable deformity. In one of our cases the collapse occurred when the patient was sitting up in bed. The disks are usually unaffected. The pelvis may show rather extensive osteolytic lesions with large, cystic-like areas interspersed with areas of eburnation. Pfahler and O'Boyle²¹ reported a case of sacro-iliac involvement, which cleared up under roentgen therapy. We have recently had a patient with similar involvement, which cleared up similarly under roentgen therapy.

Lesions of the long bones are apt to begin in the proximal ends. In some instances the lesions are exactly similar to metastatic malignant growths of the osteolytic type, while in others there is evidence of sclerosis surrounding faintly visible areas of bone destruction. There may be some periosteal thickening. The ribs show similar punched-out areas of bone destruction. Lesions of the skull are apt to be osteoclastic.

Roentgen therapy is the most effective agent in the treatment of Hodgkin's disease. Radium therapy may be used but is not economical as to time or expense, and the final results are practically the same. The method of applying the radiation therapy varies as to dosage applied, voltage and filtration, also as to the number of areas treated. Desjardins²² prefers the use of from 135 to 140 kilovolts filtered through 4 to 6 mm of aluminum. He also advocates treating all the bodily lymph nodes even though only part of them have demonstrable involvement. Leucutia²³ uses voltages from 160 to 200 kilovolts filtered through copper or zinc and exposes only the actually diseased areas. Craver and Copeland²⁰ advocate high voltage applied in either suberythema or fractional doses, depending on the local and general condition of the patient. We use from 180 to 200 kilovolts filtered through 0.5 mm of copper applied in suberythema doses when the patient is in satisfactory condition, otherwise, fractional dosage is used. We treat only the areas of demonstrable involvement because we consider that the disease has a hopeless prognosis, and excessive irradiation may cause leukopenia and severe anemia in a patient who is in need of all his bodily defenses. Craver and Copeland²⁰ have aptly stated the case: "The treatment regarded as best is that which will secure the best palliation for the longest time. The treatment should never be so severe as to make it seem harder to bear than the disease." Leucutia²³ states that the five year survival group mounted to from 15 per cent to 33 per cent. In 8 per cent of the cases there is a ten year survival. In addition there is considerable symptomatic improvement.

²¹ Pfahler G. E. and O'Boyle, C. P. A Case of Hodgkin's Disease with Late Development of Sacro-Iliac Disease Cured by Roentgen Treatment, *Am J Roentgenol* 11: 406-410 (May) 1924.

²² Desjardins J. A. U. Radiotherapy for Hodgkin's Disease and Lymphosarcoma, *J. A. M. A.* 89: 1231-1236 (Oct. 8) 1932.

²³ Leucutia, Traian. Irradiation in Lymphosarcoma, Hodgkin's Disease and Leukemia, *Am J M. Sc.* 188: 612-623 (Nov.) 1934.

CASE 4—F. C., a white man, aged 40, admitted, Nov. 17, 1934, complained of swelling of the neck and low back pain. Examination revealed a large mass of glands in the right cervical area. There was also enlargement of the axillary and inguinal glands. Some tenderness was elicited over the lower part of the back. The blood studies were negative. Biopsy of an axillary gland resulted in a diagnosis of Hodgkin's disease. Roentgen films of the chest showed widening of the upper mediastinum.

High voltage roentgen therapy was administered over the cervical, inguinal, axillary and mediastinal glands and also over the lumbar spine. From 190 to 200 kilovolts was used and from 560 to 696 roentgens per field was administered. This resulted in disappearance of the glands in one month, but the patient continued to feel bad.

May 13, 1935 he was readmitted. On examination a few superficial glands were felt. There was a large mass in the upper part of the abdomen apparently continuous with the liver and extending below the umbilicus on the right side. The spleen was not felt. Roentgen examination at that time revealed fluid in the right pleural cavity. There were punched out areas of bone destruction in the right scapula and several ribs. There was also involvement of the dorsal and lumbar vertebrae, with areas of destruction, and extensive decalcification of many of the vertebrae. There was also extensive involvement of the bones of the pelvis and upper portion of the right femur.

May 21, when the patient sat up in bed, he had a feeling that his spine gave way and marked tenderness was elicited over the midlumbar area. Roentgen examination showed definite narrowing of the seventh dorsal vertebra.

LYMPHOSARCOMA

Lymphosarcoma is similar in many of its clinical aspects to Hodgkin's disease and it may be difficult to separate the two. It often involves a somewhat older group in general. There is less likelihood of an accompanying fever, and it is more radiosensitive than Hodgkin's disease. Lymphosarcoma frequently involves parts of the gastro-intestinal tract and peritoneum. Microscopic examination of an excised gland is necessary to establish the exact diagnosis.

Bone involvement in lymphosarcoma is not nearly so common as it is in Hodgkin's disease. The roentgen changes are similar, however. There are sometimes osteolytic lesions of the long bones with pathologic fracture. Occasionally periosteal lesions are seen. Pohle and Ritchie²⁴ reported a case of lymphosarcoma of the femur in which a pathologic fracture was sustained. There were areas of involvement in the left femur, right ilium, right radius, right parietal bone and several ribs. There were areas of increased bone density as well as areas of osteolysis. At autopsy widespread lesions were found. In the ribs there were fusiform osteolytic lesions with pathologic fractures. Microscopically it proved to be lymphosarcoma. Leucutia²³ found the cortex intact in his cases, except for occasional areas of invasion. He believes that this respect for the cortex by lymphosarcoma explains the rarity of roentgen changes in the bones. Histologically he found replacement of the bone marrow by tumor tissue and later gradual destruction of the normal bone marrow tissue.

In this disease roentgen therapy is also of prime importance. While lymphosarcoma almost universally causes the death of the patient, there are a few patients who have lived for a period of over ten years and who should probably be put in the category of cured cases. The average length of life in treated patients varies from two to four years. Approximately from

²⁴ Pohle E. A. and Ritchie G. Lymphosarcoma of the Femur, *Radiology* 18: 635-637 (March) 1932.

15 to 20 per cent will live five years. The reticulum cell type of lymphosarcoma is somewhat more resistant to radiation than the lymphocytic type, and the results show a shorter span of life. We prefer the use of from 180 to 200 kilovolts filtered through 0.5 mm of copper plus 1 mm of aluminum, and the administration of suberythema doses to the affected glands. We do not treat the areas in which involvement was not demonstrated, except in certain cases in which we have reason to believe that there may be involvement of the retroperitoneal nodes. In the abdomen, definite verification may be difficult to obtain unless the glands are quite large. The usual medical supportive measures should also be carried out in all these cases.

MONOCYTIC LEUKEMIA

Monocytic leukemia is a third type of leukemia about which there is no very general agreement as to its separate entity. It is characterized by an increase in the number of monocytic cells associated with extensive growth of the reticulo-endothelial cells in the various tissues. Most of the cases have been of an acute type lasting from a few weeks to several months. Pronounced anemias and some fever are usually present. There is elevation of the white blood cell count, with from 50 to 75 per cent of the cells being monocytes.

Postmortem studies show enlargement of the liver, spleen and lymph nodes. There is often involvement of the kidneys, adrenals and other viscera. In some reported cases tumor masses have been found similar to those in chloroma. The bone marrow is usually hyperplastic and there are groups of monocytes present which are not seen under normal conditions.

Very little information can be gained from the literature in regard to possible roentgen changes in the bones. Osgood and Lyght²⁵ have reported two cases in which roentgenograms were made of several bones but nothing suggestive was found. Doan and Wiseman²⁶ also found no roentgen evidence of pathologic changes of the bone in one of their cases. The same authors tried roentgen therapy in several of their cases with very little beneficial effect. Dameshek²⁷ also tried irradiation in a case without any considerable benefit.

COMMENT

In reviewing the roentgen changes in the bones of these cases, one cannot help but be struck by certain points of similarity in the various diseases.

Periosteal changes are of two types: (1) elevation of the periosteum with calcification parallel to the shaft of the bone, and (2) raylike striae perpendicular to the bone. In the diseases under consideration we find the parallel type of periosteal change in lymphatic leukemia, aleukemic myelosis, chloroma and Hodgkin's disease. In myelogenous leukemia and lymphosarcoma no similar changes were reported, but there are very few reported cases in the literature, so that it is possible that they might show this change. In the second type with perpendicular striae, these changes were found in chloroma and aleukemic myelosis. This was quite a striking finding in our case of chloroma and was very similar to the raylike changes that are seen in osteogenic sarcoma.

Bone destruction may be classified under several headings: 1. Punched-out areas of bone destruction. This type of lesion was present in myelogenous leukemia, aleukemic myelosis, chloroma, Hodgkin's disease and lymphosarcoma. 2. Bone erosion in the ends of the diaphyses of the long bones. This was found in lymphatic leukemia, aleukemic myelosis, chloroma and Hodgkin's disease. 3. Pinpoint areas of decalcification or destruction. These were seen in aleukemic myelosis and chloroma and were usually in the flat bones, particularly in the skull. 4. Erosion of the cortex from within the medullary canal. This was reported from pathologic material of myelogenous leukemia by Craver and Copeland,² who believed that it was rather difficult to demonstrate on the roentgenogram and considered it a late lesion.

Osteosclerosis was also a prominent finding in these diseases. It may be a generalized condition, as is seen in aleukemic myelosis, or may be present in certain locations, as is seen in Hodgkin's disease and myelogenous leukemia. It is seen occasionally in lymphatic leukemia.

Generalized osteoporosis has been seen in lymphatic leukemia, aleukemic myelosis, and chloroma. In some cases of long standing this might be atrophy from disuse, but there would also appear to be some cases presenting this sign due to the disease itself.

From this summary of bone changes it would seem that there are no characteristic changes that would lead one to differentiate these rather uncommon diseases roentgenologically. We have found, however, that the periosteal changes in conjunction with the peculiar moth-eaten areas of erosion at the ends of the diaphyses—usually at the proximal ends along the medial border—are changes that are rather uncommon in other diseases. When these are associated with the pinpoint areas of decalcification in the flat bones, one should suspect some myeloid or lymphoid neoplastic condition.

We have recently studied three cases of sympathetic neuroblastoma that show practically the same roentgen changes as the diseases under consideration. There were extensive areas of destruction in the long bones and areas of erosion at the proximal ends of the diaphyses. Considerable localized osteoporosis was present near the ends of the long bones at the knee joints in one case. Pinpoint decalcification in the skull was present, together with larger focal areas of destruction in the pelvic bones, ribs and scapulae. It would be very difficult from the roentgen picture alone to differentiate these cases from the neoplastic diseases. These cases will be reported in detail elsewhere.

In the differential diagnosis one must consider metastatic carcinoma, multiple myeloma, osteogenic sarcoma, xanthomatosis, Gaucher's disease, Albers-Schönberg's disease, and bone infections.

Therapy in these conditions is mostly concerned with irradiation, although the usual medical supportive measures are indispensable. In the acute form of lymphatic leukemia, irradiation is contraindicated and may even be harmful. In the chronic form startling remissions occur, but the prognosis is uniformly bad. The same may be said of myelogenous leukemia, although the span of life is somewhat longer and the morbidity is usually less. In aleukemic myelosis there is no treatment that gives even temporary satisfactory results, although this may be due to the fact that very few cases are diagnosed ante mortem and, therefore, no large statistics on therapy are available. One patient with chloroma

²⁵ Osgood, C. W. and Lyght, C. E. Monocytic Leukemia. *J. Lab. & Clin. Med.* 18: 612-626 (March) 1933.
²⁶ Doan, C. A. and Wiseman, B. K. The Monocytic Monocytosis and Monocytic Leukemia. *A Clinical and Pathological Study.* *Ann. Int. Med.* 8: 383-416 (Oct.) 1934.
²⁷ Dameshek, William. Acute Monocytic Leukemia. *Arch. Int. Med.* 40: 18-240 (Oct.) 1930.

was alive and well two and one-half years after radiation therapy, but no other case could be found in which the progress of the disease was arrested by any method of treatment. High voltage roentgen therapy is the method of choice in both Hodgkin's disease and lymphosarcoma. A considerable symptomatic improvement and temporary abeyance of the disease process is achieved in many cases by this method of therapy. The average length of life in these cases is definitely raised and in a very few cases one may use the term cure.

PROGRESS AND PROBLEMS IN ENDOCRINOLOGY

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So rapid has been the progress in endocrinology during the past few years that selection of material for special consideration presents a difficult task. Hundreds of sound studies have been carried out and of these perhaps not one is without significance to pediatricians. Some, however, are of more immediate interest than others.

IMPORTANCE OF THE THYROID GLAND

Despite the wealth of new information about other glands, the thyroid gland still remains the most important to the practitioner in that thyroid problems are most easily recognized and the thyroid hormone is the most readily available and most effective for therapeutic purposes. The thyroid gland exercises a twofold function. In childhood it has a widely pervasive influence on the anabolic processes. Neither growth nor differentiation can take place in any adequate degree without the agency of the thyroid hormone. Thus, in thyroid deficiency there are seen all the well known abnormalities of physical and mental development and, as a result, poverty of the personality.

In the franker manifestations these effects are unmistakable and need no further elucidation. Thyroid deficiency, however, is manifested in all degrees from outspoken myxedema to complete normality. It is important to remember, as Shelton says, that "if physicians depend upon myxedema as the essential feature in the diagnosis of thyroid insufficiency at any period of life, then they must overlook the majority of hypothyroid sufferers."

There are a large number of cases of thyroid deficiency in children in which the gross signs of the condition, such as myxedema, dwarfism or obesity, are not apparent. Typically, the picture consists of moderate or slight delay in growth, teething and skeletal development, mental retardation, dry and brittle hair, poor nutrition and sluggish functions of the skin, constipation, emotional instability, disturbed sleep, capricious appetite and intractability, painful muscles and joints, and, what is especially illuminating, failure to respond to dietary treatment. An important cause of anemia that is rather commonly overlooked is thyroid deficiency. Frequently accompanying this are weakness and weariness. Menorrhagia and metrorrhagia in girls are not infrequently to be ascribed to this same cause. Several of the dermatoses can at

times be traced back to thyroid hypofunction. Lesser degrees of nervous involvement are seen as forgetfulness, inattentiveness and restricted initiative. Lissner is authority for the statement that thyroid deficiency also with significant frequency plays a causal role in certain diathetic manifestations in infants, including vomiting, intestinal colic and even megacolon and ascites. In short, neglect to consider this gland leaves many a pediatric problem only partially, if at all, solved.

The simultaneous occurrence of any two or three of the manifestations just listed should throw suspicion on the thyroid gland. The most direct aid toward the recognition of the glandular agency in the symptomatology is a study of carpal development as disclosed in roentgenograms. An elevation of the blood cholesterol content is also of some diagnostic significance, but so wide is the normal fluctuation of the titer that no great dependence can be placed on it. Often a therapeutic test with desiccated thyroid in small doses gives illuminating results. Variations in the creatine output are also worthy of further study for their diagnostic significance.

Little need be said at this juncture of the catabolic effects of the thyroid hormone. Occasionally these are seen in clinical manifestation in the early years, as in cases of exophthalmic goiter, and therapeutically this property is occasionally of use in the treatment of obesity. The stimulating properties of the thyroid hormone can be utilized further in case of a variety of deficiencies involving other endocrine glands. There is direct evidence that some of these glands are susceptible of stimulation by this agent, and there is presumptive evidence that this is true also of others. Despite the well grounded objections to glandular polypharmacy there is a sound basis for the addition of thyroid substance to a variety of other glandular products when it is desired to use not only substitution therapy but also supplementary glandular stimulation.

Perhaps an apology should be offered for reiterating these matters, as they have often been discussed in the medical literature. Nevertheless many physicians are disinclined to profit by them because of an exaggerated fear of thyroid medication. Despite the fact that the best way to place an endocrine gland at rest is to administer its active principle, there is a widely held misgiving that thyroid medication may give rise to exophthalmic goiter. While the efforts of physicians to protect the public from dangerous dosing with thyroid derivatives is commendable, it is time, as Lissner says, that the exaggerated fear of this valuable medicament should be assuaged. It is doubtful if any other product listed in the pharmacopeia when properly used is less harmful or more valuable.

Thyroid should be prescribed initially in small doses, preferably no more than one-fourth grain (0.02 Gm.) of desiccated substance a day. If the patient happens to have a very low titer of circulating thyroxine, even this dosage may evoke an overreaction. This is frankly manifested as nervous tension and often tremors and lacrimation—in short, the patient becomes "jittery." Such a reaction to small doses is, to my mind, pathognomonic of thyroid deficiency and indicates an imperative demand for continuation of the treatment. After a few days' rest it should be resumed at a level of one-tenth grain (0.006 Gm.) daily and gradually increased to the empirical optimum for the patient. The characteristic lag of the reaction and the cumulative effect must be kept in mind. It is also important to

realize that the patient whose tissues are starving for thyroid may have only a narrow zone between too little and too much, hence until the organism becomes adjusted the dosage must be carefully regulated. In this respect every patient is a law unto himself.

OTHER ELEMENTS IN THE PROBLEM OF ORIENTATION

Today the pituitary body is in the focus of medical attention. From this gland are derived a variety of active substances that influence an astonishing number of physiologic functions. That it contributes importantly to growth has been known for many years. Also familiar now is the fact that sexual development and the continuation of sexual activity are dependent on pituitary hormones. For the growth hormone Evans has recently proposed the designation somatotropic. The promotion of sexual activities seems to depend on two gonadotropic factors, one of which stimulates the gametogenic tissues and the other the interstitial tissues of the primary gonads. The morphologic integrity of the thyroid gland as well as its continuing function depends on another principle, the thyrotropic. Similarly, an adrenotropic hormone preserves the integrity of the adrenal glands.

All of these relationships are of course important factors in the everyday work of the pediatrician. Of somewhat special pediatric interest is the recently discovered mammatropic hormone, which has been especially studied by Riddle. It is this agent that sets into activity the ripened mammary glands of the mother. It is due to the beneficent influence of this hormone that problems of infant feeding are usually automatically solved. Riddle's more recent work has suggested, too, that the mammatropic hormone plays a considerable role in the setting up and maintenance of the maternal instincts. Under its influence virgin rats have been made to adopt and mother not only infant rats but also mice, squabs and rabbits. The part that it may play in human psychology presents a problem worthy of consideration. One of the most surprising developments of the past two years is the discovery that the anterior pituitary body plays an important part in the regulation of sugar metabolism. It has now been sufficiently demonstrated that experimental diabetes can be prevented or largely ameliorated by the extirpation of the pituitary gland. This discovery logically compels a restudy of the entire problem of diabetes with due regard to the interglandular relationships. The pituitary gland plays a part, too, in fat metabolism and probably in water metabolism. These are a few of the primary influences of pituitary hormones that can now be recognized. The secondary influences present an almost bewildering array of problems as yet largely untouched and demanding intensive investigation.

Growing enlightenment is increasing the importance that must be ascribed to the adrenal cortex. Deficiency of its secretion retards growth as well as mammary activity, hence it must be considered as a hitherto neglected factor in feeding problems. Firor and Grollman's recent discovery that one of the cortex hormones can be adsorbed on charcoal, in which form it is effective when administered by mouth, promises to be a discovery of major clinical significance. Work in our laboratory (by J. M. Looney) has disclosed an active extract that is apparently neither epinephrine nor so-called cortin, an adrenal cortical extract, and that has a marked pressor influence. This may prove to be of importance in the treatment of conditions of circulatory asthma.

Of special interest to the pediatrician is also the recent discovery of the potency of Hanson's extract of the thymus. Several generations of rats have now been treated with astonishing increasing stimulation of infantile development. While it is true that the work hitherto reported by Rowntree and his colleagues has dealt especially with effects obtained by treating the parents, it is hoped that the extract will prove likewise to have an important direct influence. At any rate Asher has recently reported the discovery of a thymic extract that does directly promote development. Hence there may soon be available in such extracts a valuable medicament for use in cases of delayed development in children. Possibly the thymic principle, too, will lend itself to adsorption on charcoal and thus become available for oral use. As Dr. Rowntree is reporting the work of his group before another section, it would scarcely be gracious for me to develop this topic further.

Passing mention only may be made of recent studies of the parathyroid glands in relation to calcium metabolism and skeletal disorders. Overactivity of the parathyroid glands may give rise to a variety of symptoms, such as joint pains, weakness and polyuria. These manifestations are more common in adults but are occasionally seen also in children. The relationship of parathyroid deficiency to fretfulness and disorders of personality is in need of further study.

COMPLICATING FACTORS IN ENDOCRINE RESEARCH

So much then for orientation.¹ The endocrinologist finds himself almost overwhelmed by the shower of blessings that are falling on him. He is somewhat bewildered by the multitude of fascinating problems that are opening up before him. Among these the translation of the laboratory results into their clinical meanings is especially attractive. But much of this translating must be done by the physicians themselves, hence my chief mission is to utter a Macedonian call.

Even the older endocrinology, however, was far from its final fruition in the field of pediatrics. Possibly in considerable measure because puppies and kittens are not good laboratory animals, the endocrinology of infancy still remains an almost virgin field. Likewise most of the hormone relationships between mother and child require elucidation. How does the infant fare in the transition from maternal endocrine support to hormone autonomy? When does the transition take place? What could be done for a poorly developing infant by endocrine treatment of the mother? What are the indications for supplementing feeding formulas by the direct administration of hormones? Perhaps these problems should be attacked directly rather than through the experimental laboratories. If so, the cooperation of the pediatrician is essential.

There is one aspect of endocrinology, in any case, that necessarily falls on the pediatrician. Medicine is now in a transitional phase. The ineptitude of regarding a man as a mere peripatetic collection of interesting organs is becoming increasingly clear. The personality of their possessor is more important than his organs, no matter what fascinating pathologic condition or secretory versatility they may disclose. By and large, however, endocrinology still remains in the medical Dark Age of preoccupation with organs. There is an urgent need for the study of hormones as factors in personality. This problem must be studied largely

¹ Further details may be found in an excellent series of summarizing articles published in *THE JOURNAL* from Feb. 9 to Aug. 31, 1935, and in the current Yearbook of Neurology, Psychiatry and Endocrinology in the Practical Medicine Series.

on human subjects, and the most fruitful period at which the study can be made is in the developing years when personality is in the making. Although he may need specialized technical assistance, the pediatrician should almost necessarily play a leading role in such studies, and the endocrinologist would be delighted to have him assume primary responsibility.

As the pediatrician undertakes endocrine research, he encounters several complicating factors, some of which have as yet received perhaps too little attention at the hands of clinical endocrinologists.

The very logic of the situation with which the investigator is confronted is likely to be misapprehended. One is prone to look for simple causal sequences. The intrinsically complex nature of the phenomenology can be illustrated by data from elementary inorganic chemistry. If a pinch of table salt and one of potassium bromide are thrown into a glass of water every possible combination of the substances will at once appear—sodium chloride, sodium bromide, potassium chloride, potassium bromide, sodium ion, potassium ion, chlorine ion and bromine ion. When equilibrium is established, the concentration of each constituent of the solution is determined by the concentration of each of the others. Thus, each factor entering into the equation is simultaneously a cause and an effect. One is therefore dealing with a logic of complexes and not merely with a chain of sequences in which causes and effects stay nicely separated. The same is eminently true of the physiology and pathology of hormones—the hormones influence the internal milieu and the milieu influences the actions of the hormones.

A special phase of the complex relationships is that the endocrine organs are immediately interrelated. For example, depression of the anterior pituitary body changes not only the circulating titer of each of its hormones but also the titers of at least the thyroid gland, adrenal cortex and sex glands and perhaps the parathyroid and pancreatic hormones. These changes in turn react on the pituitary body as well as exert their primary effects on the physiologic processes generally. It is therefore practically impossible to distinguish cleancut, uniglandular factors, since complex equilibriums are always involved.

To the clinical endocrinologist the problem of diagnosis is of course of major importance. A few *endocrinopathies* so stamp themselves on the physique as to be recognized even by the tyro, but frank cases of this sort are the exception rather than the rule. Often the history is informative and a skilful physical examination will bring out important diagnostic points, but for the recognition of the more obscure endocrinopathies laboratory aid is indispensable. Presumably each glandular disorder induces a characteristic change in the metabolic picture (equilibrium), and a beginning has been made toward the recognition of these. Thus a combination of depressed basal metabolism, secondary anemia, slow pulse rate, reduced blood pressure, relatively scanty urine, increased blood cholesterol content and depressed urinary nitrogen content commonly signifies thyroid deficiency. A particular need in present-day endocrine research is the further study of the metabolic pictures produced by each glandular disorder. No doubt many intergradations of pictures must always be reckoned with, but at least it may be possible to recognize those of the outstanding primary glandular disorders. An elaborate research of the type suggested was interrupted by the recent untimely death of A. W. Rowe.

A beginning, too, has been made in the direct determination of the hormone content of the blood. A study of the theelin titer is of practical aid in the understanding of menstrual difficulties in girls. Less directly interpretable is the rate of output of theelin in the urine. Further development of assay methods for use in diagnosis would be a valuable contribution to clinical endocrinology.

Collip's recent report of the discovery of antihormones holds out promise of a far-reaching increase of diagnostic resources. If for each hormone there should prove to exist a protective antihormone, it should be possible to isolate these and set up direct systems of titration. It would be theoretically possible—and perhaps practicable—to determine for each individual his precise endocrine status.

This leads to the consideration of another intrinsic complexity of endocrinology. If antihormones actually exist, then any given endocrinopathy is susceptible of two explanations. Take hypothyroidism for example. It may be due, as has hitherto been supposed, to a low output of thyroxine or, on the other hand, to an excess production of antithyroid hormone. It is encouraging to recognize, however, that the two possibilities should lend themselves to relatively simple recognition by therapeutic test. If the thyroxine titer were low, the patient would respond sharply to medication in small doses, if the antihormone titer were high, the threshold of sensitivity to thyroxine would be correspondingly elevated. This is Collip's principle of inverse response.

Another variable in the endocrine equation is the tissue reactivity of the subject. In his studies of endocrine factors in heredity Stockard has been led to the conception that it is the degree of reactivity to the hormones rather than glandular efficiency that is inherited. Riddle has found that some species of doves react to only one-fifteenth as much of a pituitary preparation as is necessary to give a reaction in other strains. The occurrence of circumscribed areas of myxedema in patients showing clinical hyperthyroidism affords a particularly striking example of tissue variability. At the present time this factor seems to be of theoretical rather than practical interest, but, should exact methods of diagnosis by blood assay be developed, it will need to be taken into account and compensated for in determining dosages. Perhaps even now the principle has some meaning as explaining the mixture of symptoms of glandular hyperactivity and hypo-activity that are encountered when a patient is in a transition stage of glandular involution, e. g., in the later stages of acromegaly.

One cause of tissue refractoriness might be vitamin deficiency. In the absence of adequate supplies of vitamin D, parathyroid extract is ineffective, and this fact may conceivably illustrate a principle of wide applicability. The converse relationship may also hold. Hartman has found that vitamin assimilation is influenced by the amount of adrenal cortical hormone available to the organism. The same may be true of other hormones. The pediatrician seems to be in a favorable strategic position to investigate the hormone-vitamin relationships.

Having taken into account as best one can the various factors that might give rise to endocrine deficiency, actual or virtual, and having determined on the hormone indicated in any given case, the question of dosage arises. This must be determined empirically for each subject. The reaction threshold, as previously suggested, can vary widely from case to case. One of

my adult subjects reacts sharply and objectively to thyroid in dosage of one-third grain (0.02 Gm.) a day. Sleeper and I studied a schizophrenic patient who took 60 grains (4 Gm.) a day over a period of weeks and with only minimal effects.

The question of dosage is important not only because of the necessity of adjusting it to optimum efficiency but because of the danger of evoking the production of antihormone or, at least, tissue refractoriness. Lissner has reported a case of tetany in which the outcome was fatal because of the fact that the patient ultimately became unresponsive despite the use of enormous doses of parathyroid extract. Such refractoriness may have arisen because of the unphysiologic way in which the hormone reached the circulation. When several hours' supply is administered at once, a succession of feasts and famines is set up that is but a poor imitation of a smooth natural inflow—and that perhaps delicately regulated to the bodily need prevailing at any given time. It is rather probable in such cases that the periodic subjection of the body to excessive hormone influence sets up a protective outpouring of antihormone, and that a cumulative vicious circle is thus established. It would seem desirable, therefore, to incorporate hormone preparations that are to be given hypodermically in an oil menstruum or an emulsion so that absorption will take place more evenly than when aqueous solutions are used. As an immediately practical point, evidence has recently been offered that the total effect of a given amount of hormone is severalfold greater when given so as to promote slow absorption. Small doses frequently repeated are also more effective than large doses at longer intervals. The explanation is probably the same as in the case just discussed. Both on empirical and on theoretical grounds, then, the smallest dosage of a given preparation that will produce the desired effect should be used. As an empirical rule, also, the omission of medication for one week of each month seems to be more effective than continuous medication. Possibly the vacations permit the body to dispose of accumulated antihormone.

Another reason for concern about dosage is that some hormones—perhaps all—are diphasic in their influence. Thus, thyroid gives either anabolic or catabolic effects depending on the amount used. As Jellinek and I as well as others have shown, it promotes the formation of red blood cells in small or moderate doses but leads to secondary anemia if too vigorously administered. Other examples of reversal of effects with change of dosage could be cited, but further research is needed to determine to what extent the diphasic reaction is characteristic of hormones in general. It is not unlikely that the operation of this principle would account in numerous instances for discrepancies in the results reported from glandular therapy.

To round out the tale of difficulties, attention may be called to the fact that glandular imbalance gives a picture that is decidedly different from that of a compensated deficit or plethora of hormone. This is most clearly seen in the reaction to ovarian extirpation in middle aged patients or in the nervous tension of the menstrual period. The manifestations are due to ovarian deficiency, but that condition, when compensated as in girlhood or old age, is benign. Merely to overcome a given glandular deficit by substitution therapy is in principle fairly easy, but to reestablish a delicate glandular balance presents a much more difficult problem. This principle comes into practical consideration when the pediatrician undertakes the hormone treatment of

menstrual difficulties in girls. The cycle depends on a rather complex interaction of hormones, and each addition or subtraction disturbs the balance among them. Ideal therapeutic results can be expected only when the distortions of the normal formulas are recognized and individually corrected. Since the relationships vary from period to period during the cycle, a highly complex theoretical problem is thus presented. Practically, however, nature seems to be able to make out fairly well on a makeshift basis and, if a few of the major abnormalities are artificially corrected, to make the other adjustments spontaneously. Otherwise endocrine therapy would never offer better than a forlorn hope.

So much, then, for the outstanding theoretical and practical difficulties in endocrine research. The situation is and must remain complex. The difficulties have always existed—hence, no doubt, the slowness with which advancement in practical endocrinology has occurred. Perhaps the frank recognition of them would afford better technics for dealing with them and lead to an acceleration of progress.

In the last analysis no amount of knowledge of the physiology of the rat—or even the monkey—will in itself solve the pediatrician's problems. At best, only principles and "leads" can be derived from studies on the lower animals. The ultimate human problems must be solved in human terms. Hence the only hope for the final understanding of the endocrinology of infancy and childhood is in research conducted by the pediatricians themselves. The old adage is apposite. You can lead a horse to water but the deglutition must be voluntary. If this paper has served in any way to make the beverage seem more attractive, its purposes will have been served. Seriously, it seems imperative that the pediatricians as a group should become more vigorously concerned with the problems of endocrinology. In conclusion may I reiterate a hope that in the study of these problems the most important of all, the influence of the hormones on personality, will not escape judicious and critical attention.

SUMMARY

The thyroid gland, despite numerous recent observations on other glands, is still the one of most importance to the practical pediatrician. Minor degrees of thyroid deficiency as causes of disorders in childhood are of frequent occurrence.

The derivation of active substances from the anterior lobe of the hypophysis has given somatotrophic, gonadotrophic, mammatrophic, thyrotrophic and adrenotrophic fractions, each of which presumably enters into the problems of the pediatrician. The influence of the pituitary body on carbohydrate, fat and water metabolism demands practical consideration. The relation of the adrenal cortical hormones to growth and lactation is of special pediatric interest, as is also the newer work on thymic extracts. The influence of hormone factors on the personality demands study.

Some of the difficulties of endocrine research are the complex nature of the relationships involved, the difficulties of diagnosis, the recently reported existence of antihormones, variations of tissue reactivity, the diphasic influence of individual hormones and the special effects of glandular imbalance.

The responsibility for the final solution of the endocrine problems of infancy and childhood devolves primarily on the pediatricians.

25 Shattuck Street.

A HEMOLYTIC BLOOD TRANSFUSION REACTION WITH OLIGURIA

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CINCINNATI

My purpose in this paper is to present a case in which recovery followed a hemolytic blood transfusion reaction with suppression of urine

In 1931 Bordley¹ presented a review of the literature and a report of cases of hemolytic transfusion reactions with oliguria, and he added three more from the records of the Johns Hopkins Hospital. From the study of these seventeen cases, according to Bordley,¹ a clinical syndrome that is characteristic of the reaction may be outlined as follows (a) Immediately after the transfusion there is a sharp febrile reaction, followed frequently by hemoglobinuria and invariably by suppression of urine, (b) there is an interval of several days during which there is symptomatic improvement but continued oliguria, and (c) after that interval the characteristic symptoms (agitation or drowsiness followed by uremia with convulsions and coma) develop rapidly and usually reach their peak eight days after the transfusion. Progressive uremia is the picture in the fatal cases, while profuse diuresis accompanies recovery.

The pathologic picture as described by Baker and Dodds² and Witts³ and as discussed by Bordley¹ is one of central or nodular necrosis of the liver, pale edematous kidneys, with the collecting tubules filled with cellular debris (desquamated tubular epithelium plus red blood cells and lymphocytes) and degenerative changes in all tubular epithelium.

In the case reported here the clinical picture was typical of a hemolytic blood transfusion reaction with oliguria.

A Negro man, aged 42, was admitted to the Cincinnati General Hospital at 8 11 p m, Jan 20 1935. Approximately one-half hour earlier he was cut on the right forearm with a razor. There was a profuse hemorrhage of the arterial type, and the patient was brought to the hospital by a friend who wrapped the bleeding arm in a towel. During transportation the patient lapsed into unconsciousness and did not react until his arrival in the receiving ward. Examination revealed a laceration 12 inches (30 cm) long over the volar surface of the right forearm. The radial artery and numerous other smaller arteries were clamped the arm was wrapped in sterile dressings, and shock treatment was instituted. The blood pressure was 80 systolic, 50 diastolic on admission, the patient's skin was cold and clammy, with profuse perspiration. Seven hundred cubic centimeters of a 5 per cent solution of dextrose was given intravenously with the patient in shock position, and external heat applied. Later the patient's blood pressure was found to be 50 systolic, so 500 cc of a 5 per cent solution of dextrose with 32 mg of acacia was given. The blood pressure rose to 95 systolic, 60 diastolic. The patient was moved to the ward at 11 p m. The white blood cell count was 18,000, urine analysis showed a specific gravity of 1.016 and an alkaline reaction. The urine was straw colored and contained no albumin. The amount of sugar was recorded as 3+ after the administration of dextrose. The microscopic examination was negative. At midnight 500 cc. of a 5 per cent solution of dextrose with 32 mg of acacia was again given intravenously because the blood

pressure had dropped to 60 systolic, 40 diastolic. At the completion of the injection the blood pressure was 100 systolic, 60 diastolic. The patient complained of nausea but did not vomit.

At 1 a m the patient's blood was typed and cross matched. His blood and that of the donor were both type IV. Cross matching showed no agglutination at the end of one-half hour. At 1 45, 500 cc of citrated blood with 300 cc of physiologic solution of sodium chloride was given. The pulse rate throughout the transfusion was 88. The patient made no complaints and showed no signs of what might be interpreted as an immediate reaction.

The patient was sent to the operating room at 2 30 a m. Under gas anesthesia the wound was thoroughly cleansed and the edges were excised. Examination revealed division of the radial artery and of a number of tendons, and partial division of the median nerve and transverse carpal ligament. The tendons and nerve were repaired with fine black silk, the subcutaneous tissue was sutured with interrupted catgut, and the skin closed with interrupted silk. The patient was returned to the ward in good condition.

At 9 30 a m the patient was taking fluids well with slight nausea. He vomited a small amount of greenish material, the temperature was 103 F. At 2 30 p m the general condition was much improved. The blood pressure was 110 systolic, 70 diastolic, temperature 101.4 F, pulse rate 112 and respirations 24. Tetanus antitoxin, 1,500 units was given subcutaneously.

On January 22 the patient urinated for the first time after the operation (forty nine hours previously). The bladder had not been distended and there was no pain or tenderness in the costovertebral angles. Urinalysis showed 500 cc. of reddish black urine 3+ albumin occasional white blood cells, 4 or 5 red blood cells per high power field an occasional granular cast and a 4+ benzidine reaction. Ammonium chloride, 30 grams (2 Gm) three times a day was ordered. Fluids were to be forced.

On January 23 the patient did not urinate. He vomited without nausea 700 cc. Fluids taken by mouth amounted to 2,800 cc. The blood urea nitrogen was 80 mg per hundred cubic centimeters. An intravenous injection of 800 cc. of physiologic solution of sodium chloride and 50 cc. of a 50 per cent solution of dextrose was given.

On January 24 the patient voided 500 cc. of urine. A cough developed and a small amount of blood streaked sputum was expectorated. A urine examination showed reddish brown urine albumin 3+, many red blood cells and occasional white cells. A blood count showed 9,900 white blood cells and 2,740,000 red blood cells. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously.

On January 25 the patient vomited 500 cc of greenish material without being nauseated. There was an output of 175 cc of reddish brown urine, which showed albumin 3+ and a 2+ benzidine reaction. There were an occasional granular cast and white blood cell. The blood urea nitrogen was 100 mg per hundred cubic centimeters, carbon dioxide, 31 volumes per cent. The red blood cell count was 2,600,000. Roentgen examination of the chest was negative. Hot moist packs were applied to the lumbar region 1,000 cc. of Fischer's solution was given intravenously with 100 cc. of physiologic solution of sodium chloride. This was followed in twenty minutes by a severe chill, which lasted for fifteen minutes. The blood pressure rose to 180 systolic, 90 diastolic. The temperature after the chill was 102 F.

January 26 the patient had no complaints. He vomited without being nauseated a total of 600 cc. The total urinary output was 75 cc of amber urine with albumin 2+, benzidine 0, many white blood cells and a few granular casts. He again expectorated a small amount of blood streaked sputum, which was negative for tubercle bacilli. The blood urea nitrogen was 115 mg per hundred cubic centimeters, carbon dioxide, 30 volumes per cent. Eight hundred cubic centimeters of a 10 per cent solution of dextrose was given intravenously.

January 27 the patient appeared somewhat drowsy and vomited four times a total of 725 cc. of material, which showed a 3+ benzidine reaction. The total urinary output was 405 cc. The temperature was normal, having shown a gradual curve

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¹ Bordley James H. Reactions Following Transfusion of Blood with Urinary Suppression and Uremia. Arch Int Med 47:288-315 (Feb) 1931.

² Baker S L and Dodds E C. Obstruction of the Renal Tubules During the Excretion of Hemoglobin. Brit J Exper Path 8:247 (Oct.) 1925.

³ Witts L J. A Note on Blood Transfusion with an Account of a Fatal Reaction. Lancet 1:1297-1299 (June 22) 1929.

downward from the postoperative temperature of 103 F. The patient continued to have blood streaked sputum. The urine was amber with 2+ albumin. There were occasional granular casts. Five hundred cubic centimeters of a 10 per cent solution of dextrose and 400 cc of a 5 per cent solution were given intravenously.

January 28 the patient was moderately stuporous but he responded well, had no complaints and breathed comfortably. There was moderate pitting edema of both legs to the thighs.

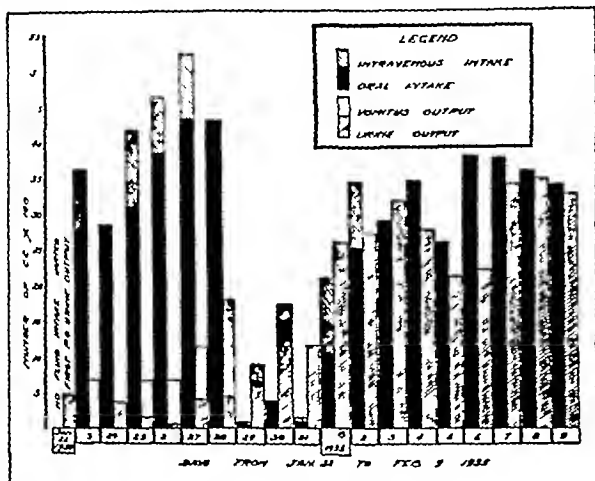


Chart 1—Total daily fluid intake and output

for the first time. There was a fluid wave in the abdomen and a moderate right hydrothorax. The ophthalmoscopic examination was negative. The patient vomited four times a total of 1,275 cc., one specimen of which contained a moderate amount of bright red blood. He voided a total of 465 cc of urine showing a specific gravity of 1.010, an acid reaction 2+ albumin, clumped white blood cells, no casts and a trace of benzidine. The blood urea nitrogen was 135 mg per hundred cubic centimeters, carbon dioxide, 20 volumes per cent. The patient had had a total intake of approximately 30,000 cc and a urinary output of approximately 2,200 cc from the time of admission, with only slight edema of the legs. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously. The Karell diet replaced the regular diet. Sodium bicarbonate, 30 grains (2 Gm.), was given four times a day. The ammonium chloride was discontinued. The wound was dressed and part of the silk skin sutures was removed. The wound was well healed, with no evidence of infection or hematoma.

January 29 the patient was moderately stuporous but was rational and offered no complaints. He expectorated a small amount of blood streaked sputum and vomited 200 cc. of greenish fluid without blood. The urinary output was 660 cc., which showed a specific gravity of 1.015, light yellow color, alkaline reaction, no albumin and occasional white blood cells, no blood by benzidine test and no casts. The patient's blood and blood from the donor were typed and cross-matched again. Both were type IV and the match was perfect at the end of eight hours. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously. The wound was healing well.

January 30 the patient offered no complaints. His general condition was unchanged. The edema of the legs had neither progressed nor receded. He vomited 200 cc. of greenish fluid (this was the last time that he vomited). The urinary output was 1,500 cc., and showed only a few white blood cells. The blood urea nitrogen was 110 mg per hundred cubic centimeters, carbon dioxide, 17 volumes per cent. The patient had a rather severe nosebleed which lasted for twenty minutes and was stopped by packing. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously.

January 31 the patient was free from edema, muscular twitchings were noted over the body and extremities. There was no increase in drowsiness. The urinary output was 1,200

cc of normal urine. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously. The diet was changed from a Karell to a low protein salt-free diet with a fluid intake limited to 1,000 cc. daily.

February 1 there were no subjective complaints or objective changes. The urinary output was 2,600 cc. of normal urine. The blood urea nitrogen was 145 mg per hundred cubic centimeters, carbon dioxide, 25 volumes per cent. Fifty cubic centimeters of a 50 per cent solution of dextrose and 1,000 cc of Fischer's solution were given intravenously. The wound was completely healed.

February 2 all muscular twitching had ceased and there was no drowsiness. The patient wanted to get up and stated that he felt "fine." He voided 2,725 cc of normal urine. The blood urea nitrogen was 165 mg per hundred cubic centimeters and carbon dioxide was 28 volumes per cent. The blood count showed 1,000,000 erythrocytes. The patient's blood was typed and cross-matched for a transfusion. His blood and that of the donor were of type IV, they cross-matched perfectly at the end of one-half hour at room temperature, and no agglutination was noted after one hour in the incubator. He was given 50 cc of a 50 per cent solution of dextrose intravenously. Six hundred cubic centimeters of citrated blood with 300 cc of saline solution was given later with no immediate reaction.

February 3 there was no change in the condition. The patient voided 3,175 cc of normal urine. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously.

February 4 the patient remained free from edema and made no subjective complaints. There was no drowsiness or muscular twitching. He voided 2,800 cc. of normal urine. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously.

February 5 there was no change noted. The patient voided 2,125 cc of normal urine. The blood urea nitrogen was 135 mg per hundred cubic centimeters, carbon dioxide, 43 volumes

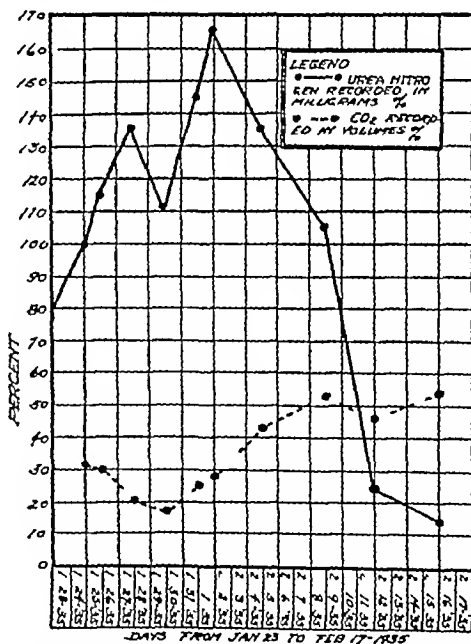


Chart 2—Total daily urea nitrogen and carbon dioxide

per cent. The red blood cell count was 3,400,000. Fifty cubic centimeters of a 50 per cent solution of dextrose was given intravenously.

From February 5 improvement was noted. February 9 the patient sat up in a chair without any apparent ill effect. The urine remained normal except for an occasional trace of albumin. The blood urea nitrogen was 105 mg per hundred cubic centimeters, carbon dioxide, 53 volumes per cent. No special treatment had been given since February 5.

February 12 the patient had a small localized abscess over the left frontal area, and an elevation of temperature to 100 F.

The blood urea nitrogen was 24 mg per hundred cubic centimeters, carbon dioxide, 46 volumes per cent. Hot saline solution compresses were applied to the abscess. The regular diet was given and fluids were taken as desired. Iron and ammonium citrate, 30 grains (2 Gm.), was given four times a day.

February 13 the left supra-orbital abscess was incised and drained. A phenolsulphonphthalein test showed a 35 per cent output in the first hour and 15 per cent in the second hour, a total of 50 per cent in two hours.

February 14 the patient was up and about with no complaints. Urinary concentration tests showed the following specific gravity values at 7 45 p m 1002, 9 45 1004, 11 30 1005, 3 a m 1005, 5 1005, 8 30 1006, 10 30 1008.

On February 15 the following specific gravity values were noted in the dilution test at 9 10 1007, 10 10 1000, 11 10 1001. These were the only adequate specimens obtainable.

February 16 the patient wanted to go home, said he felt well and had no complaints of any kind. The blood urea nitrogen was 14 mg per hundred cubic centimeters, carbon dioxide, 54 volumes per cent.

February 18 the patient was discharged from the hospital with no subjective complaints or objective signs referable to the blood transfusion reaction. The last urinary specimen was clear and straw colored and showed an alkaline reaction, specific gravity 1005, a trace of albumin, no sugar, an occasional white blood cell, no red blood cells, no casts and a negative benzidine reaction.

Since Bordley¹ reported his review of seventeen cases in 1931, Payne⁴ has reported a typical case from Guy's Hospital in which the donor and the recipient were of type IV before transfusion. On a repeated cross-matching and typing after the transfusion they were found to belong to the type IV group and cross-matched perfectly. The patient died on the third day after transfusion, presenting a clinical picture of suppression of urine and uremia.

Von Deesten and Cosgrove⁵ have also reported a case in which a transfusion of 750 cc of whole blood was followed immediately by a reaction characterized by severe headache and pain in the lumbar spine and both legs. Shortly afterward there was vomiting of blood streaked vomitus. Later hematuria, hemoglobinuria and oliguria developed. The delayed reaction reached its peak on the ninth day. The clinical observations were those of severe uremia with retention of urea nitrogen and creatinine, rigidity of the neck, convulsions and coma. Previous to this time the treatment had included the intravenous and intramuscular administration of magnesium sulphate and the intravenous administration of dextrose without beneficial results. Venesection of 450 cc of blood followed by an intravenous injection of 500 cc of physiologic solution of sodium chloride resulted in immediate cessation of the uremic symptoms and the patient made a slow but uneventful recovery.

Johnson and Conway⁶ have reported three cases in which there were typical reactions, Stewart,⁷ two cases, Parr and Krischner⁸ and Baron⁹ have each reported one case, making an addition of ten cases to the literature since 1931.

A study of these twenty-nine cases, including the case reported in this paper, reveals the following:

- 1 The amount of blood given varied from 40 to 1,000 cc.
- 2 The citrate method was used thirteen times and whole blood ten times, the method not being specified in five instances. Once blood from the peritoneal cavity in a case of ruptured ectopic pregnancy was given.
- 3 There were eighteen deaths and eleven recoveries, a mortality rate of 62 per cent.
- 4 The peak of the reaction occurred from the third to the eighteenth day, excluding the patients who died at four and one-half and eight hours, the average time for the peak of the reaction was the ninth day.
- 5 Death followed transfusions varying from 230 to 1,000 cc., whereas recovery followed transfusions varying from 40 to 750 cc.

Polayes and Lederer¹⁰ report a study of 2,500 blood transfusions and classify the causes of reactions as follows:

I Incompatibility

(a) Errors in grouping

- 1 Poor technic.
- 2 Use of low titered or contaminated serum.
- 3 Weak agglutinins or agglutinogens in the recipient's blood.
- 4 Pseudo-agglutination.
- 5 Auto-agglutination, cold agglutination and subgroups.
- 6 Anomalous or atypical agglutination.
- 7 Contamination of recipient's blood by bacteria.

(b) Indiscriminate use of the universal donor

(c) Immune iso-antibodies and hemolysis

- II The use of unclean apparatus
- III The use of citrate solutions
- IV Incipient coagulative changes in the transfused blood.
- V Allergic phenomena in the recipient.
- VI Systemic diseases in the recipient
- VII Transmission of disease to the recipient

In order to place the present case in this classification, it must be classified as a reaction due to hemolysis in the recipient's blood, and thus it falls into the group of incompatibilities which cannot be forecast from the simple, direct cross-matching of the donor's and the recipient's blood.

This type of blood transfusion reaction is rare, as shown in the report by Witts³ of a series of 3,430 blood transfusions without a single case of hemolytic reaction. It is a very serious reaction, as death has occurred in 62 per cent of all reported cases. In view of this fact one should consider the advisability of adding to the cross-matching procedure a test for hemolysis between the donor's and the recipient's blood.

SUMMARY AND CONCLUSIONS

- 1 A typical case of a hemolytic blood transfusion reaction with oliguria was studied, together with twenty-eight cases that have previously been reported.
- 2 The peak of the reaction after the transfusion usually occurs on the ninth day.
- 3 In the twenty-nine cases reported there were eighteen deaths, a mortality of 62 per cent.
- 4 Neither recovery nor death depends on the method of the transfusion or the amount of blood given.
- 5 The reaction appears to be one of hemolysis and cannot be forecast by cross-matching.

⁴ Payne R. V. Acute Hemolytic Anemia. Death After Transfusion. Guy's Hosp. Rep. 84: 65-71 (Jan.) 1934.

⁵ Von Deesten H. T. and Cosgrove S. A. Renal Insufficiency Following Blood Transfusion. Recovery After Venesection. Ann. Int. Med. 7: 105-108 (July) 1933.

⁶ Johnson R. A. and Conway J. F. Urinary Suppression and Uremia Following Transfusion of Blood. Am. J. Obst. & Gynec. 26: 255-260 (Aug.) 1933.

⁷ Stewart S. G. Acute Renal Insufficiency Following Transfusion. M. Clin. North America. 15: 553-559 (Sept.) 1931.

⁸ Parr, L. W. and Krischner, Harold. Hemolytic Transfusion Fatality with Donor and Recipient in Same Blood Group. J. A. M. A. 98: 47 (Jan. 2) 1932.

⁹ Baron Charles. The Present Status of Hemolysis in Blood Transfusion with Report of a Fatal Case. Kentucky M. J. 30: 326-328 (June) 1932.

¹⁰ Polayes S. H. and Lederer Max. Reactions to Blood Transfusion. J. Lab. & Clin. Med. 17: 1029-1043 (July) 1932.

ALLERGIC REACTIONS ASSOCIATED
WITH COHABITATIONWARREN T VAUGHAN, MD
AND
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The possibility of sensitization to emanations from individual human beings has been suggested in the past but so far as we have been able to discover, no clearly authentic case of this type has been reported. Over quite a period of time, one of us included tests for sensitization to human hair in the routine sensitization studies. When, after several hundred such tests, it was found that no case had given a positive reaction, the use of this allergen was discontinued. One young woman with dermatitis from allergy to silk found that each time she had her hair trimmed the dermatitis over her neck and shoulders flared up. She was sensitive by scratch test neither to stock human hair nor to an extract of her own hair. A patch test with her own hair was negative. No special washes or other treatment of the hair was used at these times.

In the cases of supposed sensitization to human beings, it seems much more probable that some allergenic substance in the immediate environment of the person under suspicion is the etiologic agent. The following cases tend to confirm this premise.

CASE 1—A woman, aged 38, perennially asthmatic, found that her asthma was increased when she slept with her husband. Among other things she was found sensitive to extract of tobacco smoke. Her husband was a heavy smoker. Following desensitization with tobacco smoke extract, her nocturnal asthma was decidedly improved. The patient was primarily intrinsically asthmatic, also sensitive to a number of extrinsic allergens, and, on the whole, relief from asthma was not satisfactory. At the same time, relief from the tobacco smoke factor at night was sufficiently marked to be convincing.

Other allergens may act in the same way in cohabitants. Thus, a young woman in our experience, sensitive to horse dander, had attacks of asthma whenever her brother went horseback riding and subsequently sat near her without first bathing and changing his clothes. Further possible applications of this type of exposure are obvious.

CASE 2—A man, aged 30, who had had no previous allergic manifestations except an occasional attack of migraine, was married in the summer of 1934. About two months later a papular, pruritic dermatitis appeared on the legs, which soon involved both lower extremities and the lower part of the abdomen and back. The dermatitis became very extensive and was accompanied by considerable edema. The patient was found sensitive to wheat and silk. At first he stated that he did not have any direct contact with silk but later recalled that his wife wore a silk nightgown. She changed to linen night clothes and the patient left wheat out of his diet. The dermatitis was promptly relieved. After two weeks when it had cleared up satisfactorily, his wife again wore a silk nightgown. The next morning he had a mild return of the dermatitis. Since then she has continued to wear linen and the dermatitis has not recurred, except on one occasion when he experimented with the eating of wheat.

CASE 3—A man, aged 26, first seen in December 1933, suffered from a dermatitis involving both feet and ankles. He also gave a history of hay fever and was found sensitive to a number of pollens. *Trichophyton* was found in some of the scales from his feet and he was strongly sensitive to *trichophyton* extract. Among the foods he gave several positive reactions and he was placed on a diet. With dietary avoidances

local treatment and *trichophyton* desensitization the condition gradually cleared up, over a period of several months. When recovery was sufficiently advanced he experimented with additions of food to his diet and found that he could eat all positively reacting foods with impunity except lemon and chocolate. These he still avoids after fifteen months. When, occasionally, he inadvertently ingests one or the other of these he has a return of the dermatitis.

The patient was married in the summer of 1934. For economic reasons it was felt that there should be some delay in the rearing of a family, and contraceptives were therefore employed. The first contraceptive used was a vaginal suppository with a base of oil of theobroma. Each time, within twenty-four hours after coitus, the patient experienced a disagreeable and embarrassing acute dermatitis of the genitalia. After a few weeks he recalled his sensitization to cocoa and, suspecting oil of theobroma as an etiologic factor, he changed the contraceptive to a contraceptive jelly. Since then he has had no return of these symptoms.

CASE 4—A married man, aged 50, coming to the office in July 1934, complained of intense burning stinging and itching of the shaft of the penis, which had started about six hours earlier, coming on about 4 o'clock in the morning. On examination the shaft and prepuce were swollen, edematous and very red indicative of the acute inflammation present. When the patient was questioned it was learned that he had had intercourse with his wife on retiring the night before and, as had been his custom for about twenty-five years, had used a condom. The patient then recalled that for the preceding two or three months he had had similar attacks of dermatitis on the penis, and for the first time he recalled that it always appeared after intercourse. A patch test was done with one of the condoms, which came out of the same box as the one he had used the night before. The patch test was applied to the inner side of the arm and another to the inner side of the thigh. Both of these patch tests, when removed twenty-four hours later, showed a good positive reaction. Since that time contraceptive jellies have been used and the patient has had no further trouble.

COMMENT

These cases illustrate the fact that symptoms associated with contact with some single individual are probably due to some allergenic substance in the person's immediate environment. In view of present immunologic concepts, this seems much more logical than some curious and unexplained sensitization to what are essentially homologous proteins. A few similar cases have been reported.

Rattner and Pusey¹ report the case of a young married man with dermatitis due to a certain perfume which his wife was in the habit of using.

Ford² reports a case of contact dermatitis due to quinine, confirmed by a patch test positive to the drug, and manifested by a vesicular dermatitis of the face, scalp and neck following two applications of Kreml Hair Tonic. Several months later this patient returned with a similar dermatitis involving the penis, scrotum, eyes, cheeks, ears and sides of the neck. It first started on the genitalia. This time the etiologic agent was found to be a contraceptive vaginal suppository containing quinine bisulphate and boric acid in a base of oil of theobroma.

Metzger³ has described an interesting case of asthma from cohabitation. A sea captain was always free from asthma when on his vessel and on the high seas. Within half an hour or so after landing at port, any port, he would have a violent attack of asthma. The

1 Rattner Herbert and Pusey W A. Neurodermatitis or Irritant Dermatitis? Report of Case. *J A M A* 99 1934 (Dec 3) 1932

2 Ford W K. Drug Eruption Due to Quinine. Recurrence Following Use of Contraceptives. *J A M A* 103 483 (Aug 18) 1934

3 Metzger F C. Tampa Fla. Personal communication to the authors

only substance to which he was found sensitive was orris root. The captain's "on-shore" proclivities may be easily deduced.

Duke⁴ has described the case of a woman with asthma following coitus, which the husband thought due to sensitization to semen. Duke, however, concluded that it was a case of physical allergy due to heat and effort.

SUMMARY

So-called allergy to human beings can probably always be explained as due to some allergenic substance in the person's immediate environment. In some illustrative cases reported allergic reactions following concubency or coitus have been explained in this manner.

Professional Building

VARIABILITY IN THE STRENGTH OF TOXIN USED FOR THE DICK TEST

EMANUEL FRIEDMAN, MD
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During the last two years we have encountered from time to time in the course of our work of immunization against scarlet fever, both by the hypodermic and by the intranasal method, reactions that appeared inconsistent and strikingly at variance with what had been anticipated. In our¹ publication on the subject we endeavored to account for such unexpected results by advancing the hypothesis that in some individuals the level of immunity to scarlet fever may vary from time to time, under the influence of factors beyond our knowledge. In the last six months the conviction has been forced on us that other factors play a part in the causation of these unexpected reactions. The experiences that led to this conclusion deserve, we believe, to be set forth in detail.

During November and December of 1934 we obtained from the use of one particular batch of Squibb's Dick Toxin uniformly strong positive reactions, and it was noted that almost every applicant for active immunization developed a positive reaction. The test was applied to a number of individuals who had had scarlet fever and it was most disconcerting to find that these too, in a large percentage of instances, yielded a positive outcome. Our colleagues using the same brand of toxin reported similar experiences. We communicated our difficulties to the manufacturers of this product and were informed that investigation showed this particular toxin to conform to established standards of potency. Needless to say that all tests had been performed with meticulous regard for every detail.

Despite the assurance of the manufacturers, we were convinced that this particular toxin was many times more potent than the Dick toxin we had used on previous occasions.² Our confidence in the reliability of the Dick test as an index to scarlet fever immunity had been shaken somewhat. Nevertheless, we felt quite certain, and are as fully convinced today, on the basis

of personal experience and review of the literature, that the Dick reaction is, in the main, a dependable indicator of scarlet fever immunity and that successful immunization in positive reactors can be achieved by means of the injection or nasal insufflation of sufficient amounts of the specific scarlet fever toxin.

With the use of a new supply of toxin, our work progressed more satisfactorily for a time. However, we were destined to be disappointed again before long. On March 15, forty-one positive reactors at the Preventorium of the National Jewish Hospital received their initial inoculation of scarlet fever toxin by the hypodermic route. Successive weekly injections were given in accordance with the directions of the Dicks. On May 10, thirty-eight of these children were available for retesting, and twenty-three, or 60.5 per cent, gave a negative reaction. On May 11 the fifteen children who were still positive received a sixth injection of 80,000 skin test doses. On June 8, thirteen of these fifteen presented themselves for Dick testing. To our surprise, all thirteen were again positive, and what was even more disconcerting was to find the reactions in most instances of considerably greater intensity than the initial reactions. Moreover, the reactions persisted for from seventy-two to ninety-six hours. Mulford's products were used both for inoculation and for Dick testing. However, the toxin used for the final Dick test was purchased at a later date than the toxin used for the preliminary and second tests.

The following day, June 9, the very same toxin which produced these marked reactions was used in testing seven children who had shown a negative reaction on February 7. Two of these seven now presented a positive Dick. On the same day a second group of seven children who were positive on February 7 and had received five injections of toxin and had given negative reactions on May 10 were likewise retested with the same potent toxin. Four now showed positive reactions.

These results left no room for doubt that this particular toxin possessed a much higher degree of potency than that used in February and March. Thus, for the second time we came across a toxin that unmistakably failed to conform with established standards for potency.

In order to confirm this impression, we selected five children who were still positive (June 9) with this inordinately powerful Dick toxin of Mulford after having received six immunizing doses of toxin, and tested them on June 10 with a Squibb preparation which we had been using for some weeks in our office. Three of these were now negative, and two yielded mildly positive reactions. As a further check twelve of the children inoculated with six doses of toxin and still positive with Mulford's were again tested with a newly purchased Squibb toxin. Only one of these twelve children showed a positive reaction.

In other words, the same group of children tested within a period of a few days with Dick toxin obtained from three different sources yielded results that varied within wide limits. This justifies the conclusion that Dick toxin designed to test the susceptibility of individuals to scarlet fever, and to determine the effectiveness of active immunization against this disease, possesses at times varying degrees of potency, and its use may lead to erroneous conclusions.

We were curious to determine whether the application of this inordinately powerful toxin of Mulford would yield an equally high incidence of positive reactions in another group of children. We could see no

⁴ Duke, W. W. Clinic before the Virginia Carolina Tri State Medical Association Greenville S. C. February 1933.

¹ Friedman, Emanuel, Esserman, A. L. and Black, M. H. Active Immunization Against Scarlet Fever by the Nasal Route. *J. Pediatr.* 5: 504 (Oct.) 1934.

² Of sixteen children who were negative with three different makes of Dick toxin twelve yielded (June 28, 1935) strong positive reactions with this preparation.

reason for a different outcome. Accordingly, on June 28 we tested nineteen children free from acute infections, in residence at the Children's Hospital. The Mulford toxin bore the same serial number and expiration date as the one that gave rise to the strong reactions at the previctorium. As controls, we elected to use Squibb's and Parke, Davis's Dick toxin. To our utter amazement the reactions obtained from the application of these three different toxins were almost identical. Fifteen were negative to all three tests, four were positive to all three, with almost no variation in the degree of intensity, and in one instance Squibb's yielded a borderline positive, whereas the two other toxins proved negative.

This indeed was an unexpected outcome. If the Mulford toxin used at the Children's Hospital possessed—as it should—the same high potency as the product bearing the identical serial number and expiration date used at the previctorium, why did we not get a higher percentage of positives with the Mulford preparation than with the controls—as was the case at the latter institution? Are we not justified in our belief that the two products which should have possessed the same degree of potency were actually quite dissimilar in this respect?

These experiences make the conclusion inescapable that the Dick toxin manufactured by various pharmaceutical concerns lacks uniformity of composition. (Parenthetically, it may not be out of order to ask whether the toxin furnished for the active immunization against scarlet fever may not likewise vary in potency.) This doubtless constitutes a serious hindrance to the widespread practice of active immunization against scarlet fever. It is incumbent on the biologic houses to correct this unfortunate situation speedily and thereby pave the way for a more general acceptance by the profession of an effective prophylactic measure against a dreaded disease.

Furthermore, attention should be directed to the fact that in our limited experience approximately 12 per cent of a group of children reacted to the intradermal introduction of 0.1 cc of phenol in the dilution of 0.4 per cent. This is the amount of phenol added to the Dick material as a preservative. Hence the advisability of controlling the Dick test by means of the injection of phenol in the concentration mentioned in order to eliminate false positive reactions.

And, again, it is quite likely that a certain percentage of positive Dick reactors owe their reaction to the protein substances found in the medium on which the streptococci has been grown, rather than to the specific toxin. This medium should therefore be made available so that we may be able to differentiate these protein reactions from those actually due to the specific toxin.

CONCLUSION

There is too great a variability in potency of the Dick toxin available at present, to make it serve as a dependable index to the presence or absence of immunity to scarlet fever.

Until this toxin is properly standardized and all commercial toxins are of uniform strength, it is impossible to determine with any degree of accuracy to what extent attempts at active immunization have been successful.

It would appear, therefore, that the present scheme of active immunization against scarlet fever rests on an insecure foundation.

326 Republic Building

Clinical Notes, Suggestions and New Instruments

WHEAT HAIRS AND DUST AS A COMMON CAUSE OF ASTHMA AMONG WORKERS IN WHEAT FLOUR MILLS

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In the study of four consecutive cases of asthma observed among workers in wheat flour mills, I have been able to trace the source of illness. I believe, to sensitization to wheat hairs or the surface scales of wheat or both. I believe that wheat hair is probably the morphologic structure which is responsible for a majority of cases of wheat asthma among millers.

The four patients all gave a like history of finding that they were subject to asthma while working in wheat mills, especially on windy days and when they worked in certain rooms in which they were exposed to the dust that came from the first cleaning of the wheat grain. The most severe attacks followed mishaps

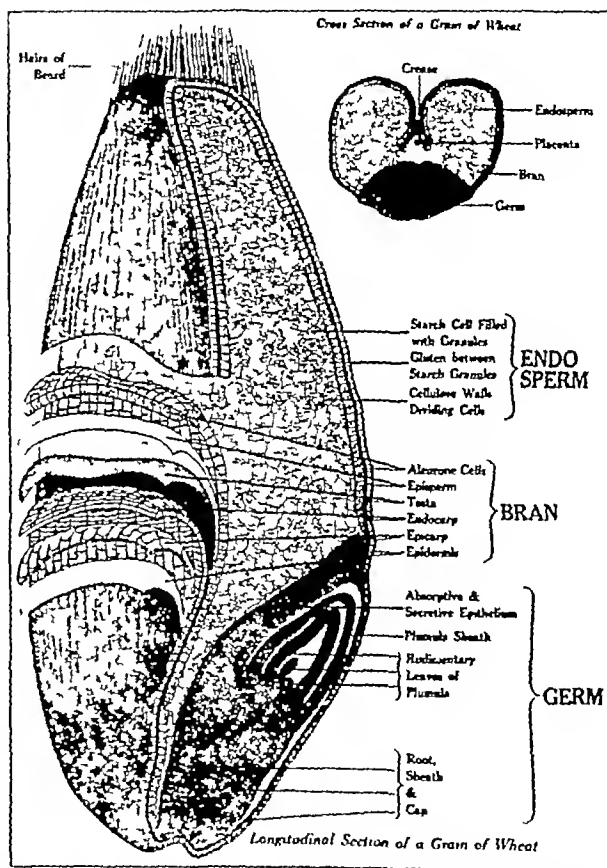


Fig. 1—Longitudinal and cross section of a grain of wheat. Note sharp pointed hairs at the top of the longitudinal section, which are broken off at the first cleaning of the wheat grain. In the original from which this reproduction was made the longitudinal section was magnified 70 diameters and the cross section 30.

in the machinery of the mill or the cleaning of apparatus or rooms that exposed the workers to unusually large amounts of this dust. Depending on the degree and duration of exposure attacks of asthma would follow, which would last from a day to a week or more and vary from cough or marked asthma to a completely prostrating asthma that was difficult to relieve by therapeutic measures.

Apparently sensitization came on after several years' work in a mill and gradually increased in severity until it resulted, in two cases, in an illness that caused the patients to quit milling in spite of treatment with extract from wheat hairs and dust, which reduced the frequency and severity of their attacks. One patient was so disabled at the age of 53 by a complicating

emphysema that he was granted disability insurance. This patient was not grossly affected by any agent other than wheat dust.

The patients were all tested with extracts of the different fractions of wheat obtained in the process of milling, namely, dust obtained from the first polishing of wheat, from bran and germ, from the different grades of flour, from the dust obtained from the different localities in the mill, and from wheat rust.

Whereas reactions varying from a simple erythema to small wheals with small pseudopods and erythema were obtained with one or several of the fractions used, the gross reactions in every case were obtained first from extracts made up from dust escaping from the apparatus for the first cleaning of the grain and secondly from flour dust collected from localities in which this type of wheat dust was most abundant. The latter dust appeared macroscopically to be made up entirely of wheat flour. The former appeared microscopically to be made up of about equal quantities of hairs and the surface scales from wheat. It was difficult to separate these two elements, so that tests were made from the mixture of the two. Scratch tests made with the bran and germ fractions gave much smaller reactions than tests with hairs, and tests with the better grades of flour gave little or no reaction.

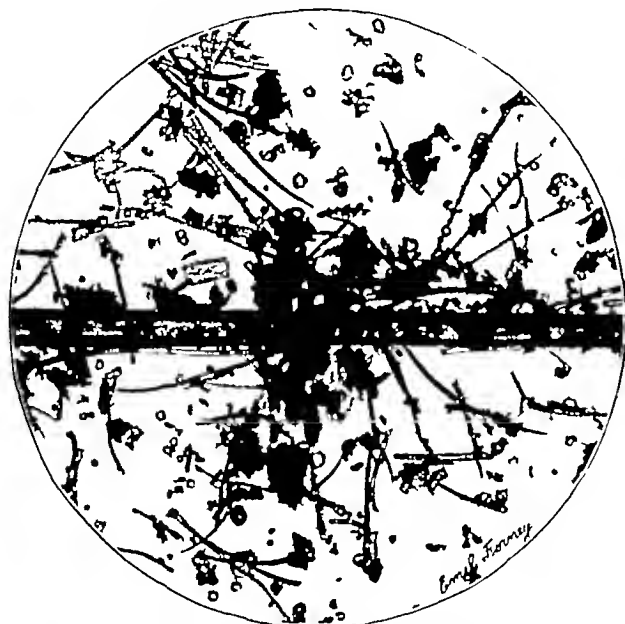


Fig 2—Specimen of dust taken from the first cleaning of wheat grains in the process of milling with a human hair placed laterally in the dust. Note by comparison with the human hair how small and sharp are the hairs of wheat grains. An extract of this fraction of the grain gave very much larger skin tests in millers with asthma than did extracts of other portions of the grain such as bran germ and the various grades of flour. Injection of infinitesimal amounts of wheat hair extract gave large local reactions and asthma in sensitive millers. The hairs of the wheat grain appear morphologically and chemically to be vicious sensitizers to workers in flour mills.

Intracutaneous tests with high dilutions of the hair and dust fractions would give rise to large wheals with pseudopods and large areas of erythema, and tests with high dilutions of extract given subcutaneously caused asthma.

TREATMENT

Two patients were treated with small ascending doses of wheat dust extract, with marked increase in their tolerance and gross symptomatic relief. However, after thorough trial these two patients became discouraged, in fact frightened into discontinuing their work as millers, because of severe attacks of asthma, which occasionally followed unavoidable gross exposure to the dust from wheat.

COMMENT

I once observed a case of iritis caused by hairs that had penetrated the cornea and lodged in the iris. These hairs could be seen with a corneal microscope and were the same color as the hairs in a brush used by the patient in applying remedies

to the eye for conjunctivitis. The iritis was looked on as a foreign body reaction.

If one will observe the small size of wheat hairs as compared with human hair, shown in figure 2, one should be convinced that these hairs might penetrate delicate structures in the respiratory tract and no doubt cause foreign body reactions as well as sensitize susceptible individuals.

It is believed that the asthma observed in the millers is of two sources, one a foreign body reaction, the other an allergy reaction caused by sensitization to some substance contained in the wheat hair or carried into the tissues by the wheat hairs.

The cases of asthma referred to in this paper were unusually severe, prolonged and intractable. It is believed that this is due to the twofold source of asthmatic symptoms, namely, the foreign body reaction and the allergy reaction.

CONCLUSIONS

From experience gained from a study of four consecutive cases of asthma among wheat flour mill workers, sensitization to the hairs and outer cells of wheat proved to be the commonest cause of asthmatic symptoms.

Avoidance of wheat hairs gave relief in each case.

Continuous exposure to wheat hairs over a period of years caused debility and emphysema.

Treatment with extract of wheat hairs is partly successful but does not protect the patient against extreme exposure to wheat dust. A change in occupation is often advisable unless wheat dust can be avoided.

820 Professional Building

PENTOSURIA IN TWINS

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This case is of interest for the following reasons: 1 It is the first recorded instance of pentosuria occurring in twins. 2 One of the twins is a physician. 3 Reducing substances in the urine have been known to be present for seventeen years. 4 The cases were previously reported as juvenile diabetes in twins¹ and as renal diabetes².

History—L. W., a man, aged 28, a physician, and M. W., his twin sister, came under observation in 1918, at the age of 11 years, because the girl complained of irritation of the genitalia and thirst. Examination of the urine revealed sugar at this time. Because the two children always suffered simultaneously from the same diseases, the mother had the boy's urine examined, and sugar was found in it also. Shortly thereafter the children were hospitalized for further study. The urine showed a reducing substance, which was analyzed and thought to be dextrose. The blood sugar of both children was 0.06 per cent. The diagnosis at this time was juvenile diabetes in twins. It was found that they were excreting from 1.5 to 3 Gm. of sugar daily, and this amount remained fairly constant, despite efforts to eliminate the sugar completely. After three months of dietary restriction the children rebelled and ate what they pleased, with the exception of sugar. The blood sugar was 0.08 per cent and there were no symptoms suggestive of diabetes. The children developed normally and two years later the mother reported that they were perfectly well, but the urine of both still contained sugar. The diagnosis at this time was renal diabetes.

In 1933 L. W. came to Montefiore Hospital as a member of the resident staff and, learning of our interest in the various urine sugars, he consulted us. The interval history was entirely uneventful, he and his sister had not adhered to any diet. Occasionally when troubled by his conscience or by the fear that true diabetes might develop he voluntarily omitted sweets, but a robust appetite soon reasserted itself. The urine always contained a trace of sugar, and the blood sugar was always within normal limits.

The reducing substance was found to be pentose. The sister's urine also contained pentose. Specimens from both parents and a brother were examined and found to be sugar free.

¹ Strouse, Solomon. *M. Clinics North America* 1: 1241 (March) 1918.
² Strouse, Solomon. *Renal Glycosuria Arch. Int. Med.* 26: 768 (Dec.) 1920.

The reducing substance in the urine did not ferment with yeast and gave a positive Bial's test. Benedict's solution was reduced within ten minutes at 55 C. On treatment with phenylhydrazine the characteristic pentosazone was formed. The melting point after purification was 160 C. Mixed with an equal quantity of *d*-xylosazone (prepared from *d*-xylose) and recrystallized from 95 per cent alcohol, the racemic xylosazone was formed and the melting point was elevated to 200 C. In this way the reducing substance was identified as *l*-xyloketose. In twenty-seven other cases of pentosuria that we have studied, the urine sugar has also been established as *l*-xyloketose.

COMMENT

Pentosuria and renal diabetes are similar in many respects and may easily be mistaken for each other. In both conditions sugar is found in all specimens of urine, and the blood sugar and sugar tolerance are normal. Neither condition produces symptoms, and the finding of sugar in the urine is often an accidental one. The diagnosis can be established only by chemical studies and identification of the reducing substance. By means of three simple tests it is possible to learn whether one is dealing with renal diabetes or pentosuria. In cases of renal diabetes the fermentation test is positive, Bial's test is negative and Benedict's solution is not reduced at 55 C within ten minutes. In pentosuria the fermentation test is negative, Bial's test is positive and Benedict's solution is reduced at 55 C within ten minutes, provided the urine pentose is *l*-xyloketose. If further identification is desired, the osazone should be prepared and identified by microscopic examination and determination of the melting point.

In our series we have encountered several cases that have been wrongly diagnosed as renal diabetes and we would emphasize that in all cases of renal diabetes in which the reducing substance has not been identified another examination should be made, for it is in this group that one is most apt to discover cases of pentosuria.

Montefiore Hospital

PARATHYROID EXTRACT AND VIOSTEROL TREATMENT OF RADIUM POISONING

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In 1929 Flinn and Seidlin¹ reported the results of treating three cases of radium poisoning in painters of luminous dials by injections of parathyroid extract-Collip over a period of seven weeks. Their report was remarkable in that it showed a loss in radioactivity of about 50 per cent. In 1931 Flinn² reported an increase in the elimination of radium from the human body when the patients were given viosterol for some time. A marked decrease in radioactivity was again observed. The decrease in radioactivity was measured directly on the living subjects with an electroscope by the gamma method or by testing the radon present in the expired air of the patients.

Our patients were four radioactive girls of the New Jersey radium patients who were placed under the supervision of a commission consisting of Dr. James Ewing, Dr. E. B. Krumbhaar, and Dr. Lloyd F. Craver.

METHOD OF TREATMENT

The patients were not hospitalized but the administration of the drugs and the diet of the patients were carefully controlled. Since control over one of the patients was not so good as we desired, radium determinations were not made on her excreta.

The treatment was based on the assumption that the administration of a diet low in calcium together with injections of parathyroid extract might favor mobilization not only of calcium but also of part of the radium deposit in the bones, and

possibly its excretion. Since these patients all showed rather pronounced structural changes in the bones, it was thought best not to continue this "radium and calcium mobilizing regimen" indefinitely but to provide rest periods of high calcium intake together with small doses of viosterol, which was believed to favor assimilation of calcium, in order to permit some repair. Accordingly it was decided to give periods of treatment as follows:

1. No treatment

2. Three weeks of low calcium diet. Injections of parathyroid extract every other day, beginning with 10 units and increasing to 50 units a day.

Radium Elimination—Total Per Day Expressed in Micrograms (10^{-12} Gm.)

	Period	Patient A	Patient B	Patient C
1	Nov 3-6 1930 no treatment	1 040	118	268
2	Nov 24-27 1930 low calcium diet + parathyroid extract	1 639	142	312
3	Dec 15-18 1930 high calcium diet + viosterol	895	190	375
4	Jan 5-8 1931 same as period 2	1,381	250	624*
5	Jan 26-29 1931 same as period 3	979	191	384

This patient refused further injections of parathyroid extract

3. Three weeks of high calcium diet, calcium lactate 20 grains (13 Gm.) three times a day, and viosterol from 5 to 10 drops three times a day.

4. Three weeks the same as period 2, the amount of parathyroid extract being increased to the maximum dose of 50 units more rapidly.

5. Three weeks the same as period 3

Five collections of stools and urine were made, a three days collection of such excrement being lumped in separate containers.³ The first collection was for three days preceding the beginning of the treatment. The four other collections were for the final three days of each treatment period, as enumerated.

RADIUM DETERMINATIONS

Each collection of feces was ashed and weighed. The radium determinations were made on aliquot parts of the residues, by the emanation method, the bisulphate fusion method,⁴ or solution in nitric acid,⁵ being employed. These determinations were all made in duplicate. The samples of urine were evaporated to dryness, ignited and weighed. One radium determination was made on each collection of urine. The radium content of the urine rarely exceeded 5 per cent of the total radium excreted.

The results of the radium determinations are given in very condensed form in the accompanying table.

In February 1929⁶ patient A excreted a total of 1,115 micrograms ($1,115 \times 10^{-12}$ Gm.) radium per day; patient B, 322 micrograms.

In March 1931 Dr. Failla measured the radon expired by patient A. A decrease in activity of less than 10 per cent was observed.

In June 1932 a gamma ray measurement was made on patient A. The readings of the instrument came out practically the same as the value found in February 1929. Further examination of the patients for radioactivity following the experimental period was not found practicable.

COMMENT

The table clearly shows that the three patients responded only slightly to the administration of parathyroid extract with low calcium diet in their rate of elimination of radium, and the viosterol treatment with high calcium diet produced no increase. The increase observed for the parathyroid extract

3. Dr. W. D. Turner, Columbia University, in cooperation with the United States Radium Corporation, prepared the collection of excreta for the radium determinations. Dr. Henry C. Johnston of East Orange, N. J., supervised the details of medication and collection of excreta.
4. J. Barker, H. H. The Bisulphate Method of Determining Radium. J. Indust. & Engin. Chem. 10: 525-527, 1918.
5. Lind, S. C. Practical Methods for the Determination of Radium. J. Indust. & Engin. Chem. 7: 406, 1924-1929. 1915: 12: 469, 1920.
6. Schlundt, Herman, and Failla, G. The Normal Elimination of Radium. Am. J. Roentgenol. 26: 265-271 (Aug.) 1931.

3. Lasker, Margaret, and Enklewitz, Morris. J. Biol. Chem. 101: 289 (June) 1933.

1. Flinn, F. B., and Seidlin, S. M. Parathormone in the Treatment of Radium Poisoning. Bull. Johns Hopkins Hosp. 45: 269-275 (Nov.) 1929.

2. Flinn, F. B. Elimination of Radium Salts from the Human Body. J. A. M. A. 96: 1763 (May 23) 1931.

and low calcium intake, however, does not represent a substantial loss of radium. A simple computation will reveal this fact. If patient A eliminated radium at the increased rate of 1,640 micrograms daily for a period of three months, she would lose only 0.15 microgram of radium during this period. Since her radium content was about 20 micrograms, it will be noted that with her best record it would take a year and eight months to eliminate 1 microgram of radium, representing merely 5 per cent of the total radium in her system. Normally patient A eliminated about 3 per cent of the radium in her system in the period of a year and eight months. In other words, patient A who had contracted radium poisoning fully eight years before, retained the radium tenaciously. The administration of neither parathyroid extract nor viosterol caused a substantial reduction in the total radium fixed in the system.

Central Park West at One Hundred and Sixth Street

Special Article

THE RELATIONSHIP OF DRUG THERAPY TO AGRANULOCYTOSIS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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AND
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Since the disease agranulocytosis, or acute granulopenia, was first described in Germany¹ in 1922 and in the United States² in 1924 there has been much study concerning its pathogenicity and, in particular its etiology. Since it was first described thirteen years ago there have been hundreds of reports of the disease in the medical literature and it was responsible for more than 1,500 deaths in the United States alone in the three year period ended in 1934.

There has been considerable discussion as to the occurrence of the disease before 1922, and this question is important because of the possible relation to various etiologic factors. It seems obvious that this disease is one that presents little diagnostic difficulty, since the clinical picture is dramatic, the outcome is usually fatal, and the physician who makes leukocyte counts should experience little difficulty in its recognition. It appears unlikely, therefore, that it occurred in any considerable numbers before the year 1922, for, if it had, expert clinicians of the preceding period would certainly have described it. Occasional instances of profound leukopenia, however, are recorded in the literature, such as the one reported by Brown³ in 1902, but these were only rare and sporadic as compared with the prevalence of the disease today.

We⁴ have pointed out in previous publications that the disease in the United States has occurred mainly in women of middle age, although no age is exempt, and that it occurs rarely in the colored race except in those instances in which a definite etiology, such as the administration of neoarsphenamine, can usually be

established. Also we have called attention to the fact that it seems to be more prevalent in people of a better social status, and this is further indicated by its rarity in municipal and charity hospitals. When such cases do occur, the history of drug administration can usually be elicited. In addition, we have noted the prevalence of the disease among people of the medical group and our studies show its frequency in this group to be eight times that of the population of the United States at large.^{4b}

Agranulocytosis seems to be world wide in its distribution and has been reported mainly from the so-called civilized countries. However, this might be explained on the basis of better facilities for diagnosis and reports. By far the largest number of cases apparently have occurred in the United States and Germany, while they have been fairly numerous in France and Italy but comparatively rare in Great Britain, where, according to Hall,⁵ only twelve cases have been observed. It seems to occur in larger numbers in those countries which have become flooded with various synthetic drugs.

CHARACTERISTICS OF THE DISEASE

Agranulocytosis may be defined as a disease in which, essentially, there is a marked diminution, or total absence, of the granulocytes of the peripheral blood, which is followed by loss of cellular resistance and this, in turn, followed by infectious processes of various types. Although the basic pathologic change is a neutropenia of the peripheral blood the underlying pathologic process in the bone marrow has not been completely worked out. It seems, however, that there is a hypoplasia of granulocytic elements in the bone marrow and it is our purpose in this paper to determine from available evidence whether or not these changes are caused by the use of certain drugs.

ETIOLOGY

Since the disease was first described, many efforts have been made to determine its cause. Among the first workers in this field were those who endeavored to establish a bacterial etiology, including Lovett,⁶ working with *Bacillus pyocyaneus* and, more recently, Dennis,⁷ who attempted to show that the absorbed toxins from growing bacteria were capable of producing a profound leukopenia. Many efforts have been made to produce the disease in lower animals by the injection of any and all bacteria that have been isolated from the blood streams of various patients, but all of these have been generally unsuccessful and the degree of leukopenia produced by the injection of this class of products seems to be no different than that produced by the injection of any finely divided, inert, particulate matter.

Other theories of etiology have included one of dietary deficiency, as illustrated by the work of Langston and Day,⁸ who have been able to produce marked leukopenia in monkeys by the use of diets deficient in vitamin G. However, their animals showed red cell and platelet deficiencies as well, resulting in a hematologic picture more nearly simulating aplastic anemia. Furthermore, Miller and Rhoads⁹ have produced similar

From the Department of Pathology, Emory University School of Medicine.

Read before the General Scientific Meeting at the Eighty Sixth Annual Session of the American Medical Association Atlantic City N. J. June 10, 1935.

1. Schultz W. Ueber eigenartige Halskrankungen. Deutsche med. Wchnschr. 48:1494 (Nov. 3) 1922.

2. Lovett B. R. Agranulocytic Angina, J. A. M. A. 83:1498 (Nov. 8) 1924.

3. Brown P. K. A Fatal Case of Primary Acute Infectious Pharyngitis with Extreme Leukopenia. Am. Med. 3:649 (April 19) 1902.

4. Kracke R. R. and Parker F. P. The Etiology of Granulopenia (Agranulocytosis) with Particular Reference to the Drugs Containing the Benzene Ring. (a) J. Lab. & Clin. Med. 19:799 (May) 1934. (b) Am. J. Clin. Path. 4:453 (Nov.) 1934.

5. Hall Donald. Agranulocytic Angina. Four Cases Treated with Pentnucleotide, Lancet 2:1441 (Dec. 29) 1934.

6. Dennis E. W. Experimental Granulopenia Due to Bacterial Toxins Elaborated in Vivo. J. Exper. Med. 57:993 (June) 1933.

7. Langston W. C., and Day P. Personal communication to the authors in May 1935.

8. Miller, D. K. and Rhoads C. P. Experimental Production in Dogs of Acute Stomatitis, Associated with Leukopenia and a Nutritional Defect of the Myeloid Elements of the Bone Marrow. J. Exper. Med. 61:173 (Feb.) 1935.

leukopenias with ulcerative stomatitis by feeding dogs a type of deficiency diet that causes black tongue. It is possible that these dietary deficiencies may play some role in the experimental production and clinical development of the leukopenic state.

Another conception of the cause of agranulocytosis is that which assumes a hormonal dysfunction and in support of this is the work of Britton and Corey⁹ who observed marked leukopenia in their groups of adrenalectomized cats. Also Thompson¹⁰ has stressed the coincidental occurrence of menstruation in his cases of agranulocytosis and states that in eighteen young women with agranulocytic angina the onset of subjective symptoms occurred within a day or two of the onset of the regular menstrual period and that all were menstruating at the time of admission to the hospital. At first this appeared to be an important incrimination of hormonal disturbances in the production of the disease, but it was realized that young women with painful menstruation usually take various types of analgesics at that time, and this class of patients can now be explained on the basis of drug administration prior to and during the menstrual period. In this connection, Johnson¹¹ has reported the case of a doctor's wife who suffered recurrent attacks of agranulocytosis coincident with menstruation, which at first was thought to be etiologic in producing her attacks, but when she discontinued the use of cibalgin (containing amidopyrine), there were no further recurrences.

The experimental production and clinical development of various types of granulopenia, after contact with certain chemicals, has long been recognized. In 1910 Selling¹² made a careful study of three cases of profound leukopenia with hemorrhages that occurred as a result of the cumulative and delayed effect of industrial benzene poisoning, and since that time many observations have been made relative to the depressant action of benzene on the leukopoietic system. Weiskotten¹³ has demonstrated the marked depressant effect of benzene on the hematopoietic system of rabbits and one of us¹⁴ has shown that benzene can be injected into rabbits in such small quantities as to exert a selective action on the leukopoietic system producing a profound leukopenia with the red cells and platelets unaffected. So far as is known at this time, benzene is the only chemical that will consistently produce a profound leukopenic state in an experimental animal.

RELATION OF DRUGS TO LEUKOPENIA

The first intimation that drugs might be responsible for agranulocytosis was a publication¹⁵ in September 1931 describing a case of acute fulminant agranulocytosis following the ingestion of large quantities of acetphenetidin. Also in January 1932 it was reported¹⁶ that eight of a series of nine patients had taken drugs of the coal-tar series prior to the clinical onset of their disease, and at that time unsuccessful efforts were

reported to produce the disease in rabbits by the injection of amidopyrine, acetphenetidin, Peralga and Dial. In May 1933 Videbech¹⁶ of Denmark reported a typical case following the administration of amidopyrine. This was followed by two cases reported by Costen,¹⁷ one following amidopyrine and the other acetphenetidin. In 1933 deVries¹⁸ reported from Holland one case following the administration of amidopyrine. These reports were then followed by that of Madison and Squier¹⁹ in which they pointed out that all fourteen of their patients had developed the disease after the use of amidopyrine or one of its combinations. Following their report, Watkins²⁰ restudied the cases of agranulocytosis seen at the Mayo Clinic and found that thirteen of these had apparently followed the administration of amidopyrine. Then Holten, Nielsen and Transbøl²¹ in Denmark reported that five cases of agranulocytosis had developed following amidopyrine medication while the patients were being hospitalized for other diseases. At the same time Jorgensen²² reported another case from Denmark, after amidopyrine. There then followed rapidly an increasing number of reports of patients developing the disease following the use of amidopyrine particularly and involving some other drugs as well. These include one case by Andersen,²³ another by Holten, Nielsen and Transbøl,²⁴ fifteen by Seemann,²⁵ one by Larsen,²⁶ one by Randall,²⁷ fourteen by Hoffman, Butt and Hickey,²⁸ two by Zininger,²⁹ four additional cases by us,³⁰ one by Zinberg, Katzenstein and Wice,³¹ two by Rawls,³² one by Benjamin and Biederman,³³ one following dinitrophenol by Bohn,³⁴ then eighteen by Groen and Gelderman³⁵ from Holland, two by Corelli³⁶ from Italy, one after dinitrophenol by Davidson and Shapiro,³⁷ seventeen by Fitzhugh,³⁸

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- 11 Johnson W M. A Case of Granulopenia Following Amidopyrine with Two Recurrences. *J A M A* 103: 1299 (Oct 27) 1934.
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- 16 Videbech Hemming. Tilfælde af agranulocytose med exanthem. *Hospitalstid* 76: 535 (May 11) 1933.
- 17 Costen J B. Agranulocytosis: Appearance of the Early Pharyngeal Lesion. Three Cases. One Apparent Recovery. *Ann Otol Rhin & Laryng* 42: 372 (June) 1933.
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- 21 Holten C, Nielsen H E and Transbøl Kristian S. Nosocomiale Tilfælde af Agranulocytose hos patienter behandlede med amidopyrin. Et hidrags til kendskabet til agranulocytosens ætiologi (Forelsbig meddelelse). *Ugesk f læger* 96: 155 (Feb 8) 1934.
- 22 Jorgensen H P. *Ugesk f læger* 96: 225 (Feb 22) 1934 cited by Plum P. *Lancet* 1: 14 (Jan 5) 1935.
- 23 Andersen M S. En forelæsnng on agranulocytose recidivans. *Ugesk f læger* 96: 237 (March 1) 1934.
- 24 Holten C, Nielsen, H E and Transbøl K. Nosocomial Case of Agranulocytosis After Amidopyrine Therapy. *Ugesk f læger* 96: 245 (March 1) 1934.
- 25 Seemann H. Om amidopyrin som ætiologisk faktor ved agranulocytose. *Ugesk f læger* 96: 241 (March 1) 1934.
- 26 Larsen B. Tilfælde af agranulocytose hos en amidopyrine-behandelt patient. *Ugesk f læger* 96: 430 (March 17) 1934.
- 27 Randall C L. Severe Granulopenia Following the Use of Barbiturates and Amidopyrine. *J A M A* 102: 1137 (April 7) 1934.
- 28 Hoffman, A M, Butt E M and Hickey N G. Neutropenia Following Amidopyrine. Preliminary Report. *J A M A* 102: 1213 (April 14) 1934.
- 29 Zininger, Pauline. Granulocytopenia. *J A M A* 102: 1420 (April 28) 1934.
- 30 Zinberg I S, Katzenstein Lawrence and Wice L E. Neutropenia. *J A M A* 102: 2098 (June 23) 1934.
- 31 Rawls W B. Neutropenia Developing During Amidopyrine Medication. Two Cases. *Am J M Sc* 187: 837 (June) 1934.
- 32 Benjamin J E and Biederman J B. Agranulocytic Leukopenia. Report of a Case Successfully Treated with X Rays. Effect of Amidopyrine. *J A M A* 103: 161 (July 21) 1934.
- 33 Bohn S S. Agranulocytic Angina Following Ingestion of Dinitrophenol. *J A M A* 103: 249 (July 28) 1934.
- 34 Groen J and Gelderman C J. Agranulocytose (Maligne Neutropenie) door Due Geneesmiddelen. *Nederl. tijdschr. v. geneesk* 78: 3444 (July 29) 1934.
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- 36 Davidson E. N and Shapiro Matthew. Neutropenia Following Dinitrophenol with Improvement After Pentnucleotide and Leukocyte Cream. *J A M A* 103: 480 (Aug 18) 1934.
- 37 Fitzhugh T. Drug Idiosyncrasy with Special Reference to Amidopyrine as a Cause of Agranulocytic Angina. *Ann Int Med* 8: 148 (Aug) 1934.

six by Plum³⁸ from Denmark, one by Witt,³⁹ who also observed two others following amidopyrine, one by Knudsen⁴⁰ from Denmark, two following dinitrophenol by Dameshek and Gargill,⁴¹ another after dinitrophenol by Silver,⁴² seven by Jackson,⁴³ one by Johnson⁴⁴ another by Holten, Nielsen and Transbøl⁴⁵ one by Moltke⁴⁶ of Denmark, and then four from China by Zia and Forkner⁴⁷ in patients who were being treated for kala-azar with Neostibosan. Then Squier and Madison⁴⁸ reported six additional cases, one presumably following acetanilid, and this was followed by one from England by Fisher,⁴⁹ another English case by Smith,⁵⁰ one by Stone and Margolis,⁵¹ then one from England by Hall,⁵² and in the meantime Sturgis⁵³ had found that seven of the nine cases seen at the University of Michigan had followed the administration of amidopyrine. Then an additional one was reported by Plum⁵⁴ from Denmark, followed by one by Maarsso⁵⁵ of the same country. Finally, another after amidopyrine was reported by Taussig⁵⁶ and another by Limarzi and Murphy⁵⁷ in May 1935. This long list of reported cases of agranulocytosis apparently following the administration of drugs may not be entirely complete, but we find no reference to any others in the literature available to us.

Thus there have been reported at this time 172 cases of agranulocytosis that apparently have followed the administration of drugs. Of this group 153 followed the use of amidopyrine, six dinitrophenol, four Neostibosan, three acetphenetidin, two acetanilid, two antipyrine, one acetylsalicylic acid and one quinine. It can be readily seen, therefore, that the chief indictment of drugs in the production of this disease is against amidopyrine, either alone or in combination with one of the barbiturates, and it appears that there can be little question that amidopyrine is causative in a large number of cases. It also seems that the evidence incriminating dinitrophenol is quite definite. It is questionable as to whether acetanilid, acetphenetidin antipyrine, acetylsalicylic acid and quinine are capable of producing the disease.

It has long been recognized that organic arsenical compounds are capable of producing profound leuko-

cytic depression and, in some instances complete bone marrow aplasia, and there are many reports of agranulocytosis following the administration of neoarsphenamine, such as those by Cassoute, Poinso, Zuccoli, Montus and Guerard⁵⁸ and by Pouzin-Malegue.⁵⁹ Also it has been shown by Mink and Campbell,⁶⁰ in a careful study of reactions following the administration of neoarsphenamine in the United States Navy over a period of five years, that definite bone marrow depression occurs in a small percentage of the cases, with leukopenia being a predominant part of the hematologic picture. It should be pointed out here that the organic arsenical products are composed mainly of a double benzene ring structure.

Also there have been reported numerous instances of agranulocytosis and the granulopenic syndromes following the injection of the gold salts, which are widely used in the treatment of tuberculosis and arthritis in France. At least twelve of these have been reported by Lande,⁶¹ Jacob and Douady,⁶² Achard, Coste and Cahen,⁶³ Jacquelin and Allanic,⁶⁴ Brailion,⁶⁵ Angeras and Ginsbourg,⁶⁶ Chabaud, Ginsbourg and Langlet,⁶⁷ Flandin, Escalier, Sassier and Joly,⁶⁸ and Forestier.⁶⁹ Ten of the twelve patients were treated with crisalbine, which is a straight chain organic gold compound, while two were treated with solganol, which contains a benzene ring structure. It should be pointed out that all these patients were being treated for either tuberculosis or arthritis and apparently no effort was made to ascertain whether or not there was coincidental administration of amidopyrine or some of its preparations. Forestier⁶⁹ states that the administration of these analgesic preparations could not be excluded in his two patients. Thus, in a summary of the cases of agranulocytosis reported as having followed the administration of drugs, it seems that at least four definite classes of drugs can be incriminated: amidopyrine, dinitrophenol, gold salts and organic arsenical compounds.

In addition to the large number of patients that apparently have developed the disease following the administration of drugs, much clinical experimental evidence has accumulated to indicate that drugs are causative in agranulocytosis. For example, Madison and Squier¹⁹ gave a single dose of amidopyrine to each of two patients who had recovered from the disease and this was followed by a profound fall in the granulocytes, with a recurrent attack. They also gave a normal person a similar dose, with no change in the

38 Plum P. Experimental og sam aarsæg til agranulocytose. Ugeskr f læger 96: 916 (Aug. 23) 1934.

39 Witt W H. Agranulocytosis with Report of a Case and with Special Reference to Certain Barbiturates as a Cause of the Disease. J Tennessee M A 27: 283 (Aug.) 1934.

40 Knudsen O. Et helbredt tilfælde af agranulocytose opstaaet efter en meget lille amidopyrindosis. Ugeskr f læger 96: 923 (Aug. 23) 1934.

41 Dameshek William and Gargill S L. Studies in Agranulocytosis. Report of Two Cases of Agranulocytosis Following the Use of Dinitrophenol. New England J Med 211: 440 (Sept. 6) 1934.

42 Silver Solomon A. New Danger in Dinitrophenol Therapy. Agranulocytosis with Fatal Outcome. J A M A 103: 1058 (Oct. 6) 1934.

43 Jackson H. The Relation of Amidopyrine and Allied Drugs to the Etiology of Agranulocytic Angina. Am J M Sc 188: 482 (Oct.) 1934.

44 Holten C, Nielsen H E and Transbøl K. Et nyt nosocomial tilfælde af agranulocytose. Ugeskr f læger 96: 1162 (Oct. 25) 1934.

45 Moltke Otto. Amidopyrin-agranulocytose og achylhypopyridin. Ugeskr f læger 96: 1160 (Oct. 25) 1934.

46 Zia L S and Forkner C E. The Syndrome of Acute Agranulocytosis and Its Occurrence as a Complication of Kala Azar. Am. J. M. Sc 188: 624 (Nov.) 1934.

47 Squier T L and Madison F W. Primary Granulocytopenia Due to Hypersensitivity to Amidopyrine. J Allergy 6: 9 (Nov.) 1934.

48 Fisher J H. Agranulocytic Angina. Two Cases, Lancet 2: 1217 (Dec. 1) 1934.

49 Smith E. J. Agranulocytic Angina Treated with Pentnucleotide. Lancet 2: 1219 (Dec. 1) 1934.

50 Stone, C H and Margolis Julius. Granulopenia Following Allonal. J A M A 103: 1933 (Dec. 22) 1934.

51 Sturgis C C. Tr A Am Physicians 1934.

52 Plum, P. Agranulocytosis Due to Amidopyrine. An Experimental and Clinical Study of Seven New Cases. Lancet 1: 14 (Jan. 5) 1935.

53 Maarsso Christian. Et letalt forlignende tilfælde af agranulocytose efter amidopyrin (Klimaxid tabletter). Ugeskr f læger 97: 47 (Jan. 10) 1935.

54 Taussig A. E. Cutaneous Allergy Following the Ingestion of Amidopyrine. J Allergy 6: 291 (March) 1935.

55 Limarzi L R and Murphy I G. Amidopyrine and Granulopenia. J Lah & Clin Med 20: 616 (March) 1935.

56 Cassoute, Poinso, Zuccoli, Montus and Guerard. Agranulocytose pure apres deux injections de novarsenobenzol. Syndrome cardiaque transitoire eosinophilie. Bull et mem. Soc med d hop de Paris 48: 14 (Jan. 8) 1932.

57 Pouzin Malegue. A propos d'un cas d'agranulocytose post arsenobenzolique. Bull et mem. Soc med d hop de Paris 62: 1786 (Dec. 21) 1928.

58 Mink O J and Campbell H D. Toxic Effects of Arsenical Compounds Employed in the Treatment of Disease in the U S Navy. U S Nav M Bull 31: 383 (Oct.) 1933.

59 Lande K. Die gunstige Beeinflussung schleicher Danerinfekte durch Solganol. Munchen med Wchnschr 74: 1132 (July 8) 1927.

60 Jacob and Douady D. Un cas d'agranulocytose chez une tuberculeuse traitee par la crisalbine. Bull et mem. Soc med d hop de Paris 64: 798 (May 9) 1930.

61 Achard C, Coste F and Cahen R. A propos des desordres hematologiques provoques par les sels d'or. Bull et mem. Soc med d hop de Paris 48: 547 (April 22) 1932.

62 Jacquelin, A and Allanic A. Sur un nouveau cas d'agranulocytose post-chrysotherapie. Bull et mem. Soc med d hop de Paris 48: 539 (April 22) 1932.

63 Brailion J. Agranulocytose au cours de laurotherapie sans incidents. Le sang 8: 352 (Feb. 5) 1934.

64 Angeras and Ginsbourg. Aleucie hemorragique (agranulocytose) post-chrysotherapie. Le sang 6: 798 (June 1) 1932.

65 Chabaud J, Ginsbourg B and Langlet, L. Un cas de syndrome agranulocytairique aigue fruste. Bull et mem. Soc med d hop de Paris 49: 1238 (Nov. 3) 1933.

66 Flandin C, Escalier A, Sassier P and Joly F. Un cas d'agranulocytose mortelle par intolerance a l'or chez un tuberculeux pulmonaire. Bull et mem. Soc. med d hop de Paris 49: 556 (April 28) 1933.

67 Forestier J. Rheumatoid Arthritis and Its Treatment by Gold Salts. J Lah & Clin Med 20: 827 (May) 1935.

leukocyte count. Furthermore, the administration of amytal alone, a straight chain barbiturate, produced no effect on the blood counts of the patients who had recovered. Plum²⁹ studied the effect of a single dose of amidopyrine on a patient who had recovered from agranulocytosis, by giving only 3 grains (0.2 Gm.), this resulting in the leukocyte count falling from 9,000 to 1,900 in one and a half hours, and at the end of twenty-four hours the count was 2,000 per cubic millimeter. He concluded that a small, single dose of the drug has a marked depressant effect on the white cell count. Sturges⁶¹ gave amidopyrine in doses varying from 5 to 15 grains (0.3 to 1 Gm.) to three patients who had recovered from the disease and this was followed by a profound reduction in the leukocyte count, but the administration of 5 grains of barbitol had no effect. Benjamin and Biederman³² gave 10 grains (0.65 Gm.) of amidopyrine to a patient who had recovered, producing a leukopenia of 1,000 per cubic millimeter, twenty-four hours later. The same patient was then given acetylsalicylic acid and a barbiturate with no effect. In the series of Rawls,³¹ of 200 patients being treated for arthritis with amidopyrine, two developed neutropenia and one of these recovered by simply leaving off the drug, but when it was resumed, a second attack was precipitated. Zinberg, Katzenstein and Wice³⁰ gave 5 grains of amidopyrine to a patient who had recovered, which was followed by a leukopenia of 2,700. Two weeks later the same patient was given another dose of 5 grains with a resulting leukopenia of 1,300. Therefore it can readily be seen from such experiments as these that certain individuals, especially those who have recovered from an attack of the disease, seem to be unusually susceptible to the action of the drug, to such an extent that successive attacks may be produced at will, but that this cannot be done in a person who is not susceptible. It does not necessarily follow that all cases of agranulocytosis would react in this way, as indicated by the observation of Limarzi and Murphy,⁵⁵ who treated a patient with a large quantity of amidopyrine, apparently followed by no ill effects. Terry and Sanders⁶⁸ have even treated a patient with myeloid leukemia by daily administration of amidopyrine and reported a reduction of the leukocyte count from 180,000 to 20,000 per cubic millimeter, although previous radiation therapy might have been responsible for this.

When the relationship of drug administration to agranulocytosis was first suspected, there soon followed attempts on the part of many investigators to reproduce the disease in lower animals by the administration of the drugs in question. One of us¹⁴ reported the injection of rabbits with amidopyrine, acetphenetidin, Peralga and Dial, but with no effect on the leukocyte count in any of the animals. Madison and Squier¹⁹ administered amidopyrine in large doses to rabbits by mouth and produced a leukopenia on the thirtieth day in only one animal out of eighteen. Hoffman, Butt and Hickey²⁸ stated that they fed amidopyrine to a number of rabbits and that this was followed in a few weeks by a definite depression of the total white cell count. Feeling that the Neostibosan used in the treatment of kala-azar might have been responsible for their four cases of agranulocytosis, Zia and Forkner⁴⁰ gave animals large and repeated doses of the drug and stated that they could observe no significant changes in the blood picture.

In previous studies we⁴⁴ have shown that when benzene is injected into rabbits the effect on the bone marrow is probably produced by one of the oxidation products, and we have found that marked leukopenia could be produced by catechol and quinone^{4b} but that no depressant effect was observed from the other oxidation products. Also we have demonstrated that amidopyrine can be oxidized easily, in vitro, under

TABLE 1—A Chronological List of Reported Cases of Agranulocytosis Following the Use of Drugs*

Author	Where Observed	Date of Publication	No of Cases	Drug Involved	
1 Kracke	United States	Sept 1931	1	Acetphenetidin	
2 Kracke	United States	Jan 1932	6†	Amidopyrine	
3 Videbech	Denmark	May 1933	1	Amidopyrine	
4 Costen	United States	June 1933	2	{Amidopyrine Acetphenetidin	1
5 de Vries	Holland	Sept 1933	1	Amidopyrine	
6 Watkins	United States	Nov 1933	13‡	Amidopyrine	
7 Holten and others	Denmark	Feb 1934	5	Amidopyrine	
8 Jorgensen	Denmark	Feb 1934	1	Amidopyrine	
9 Madison and Squier	United States	Mar 1934	14	Amidopyrine	
10 Anderson	Denmark	Mar 1934	1	Amidopyrine	
11 Holten and others	Denmark	Mar 1934	1	Amidopyrine	
12 Seemann	Denmark	Mar 1934	15‡	Amidopyrine	
13 Larsen	Denmark	Mar 1934	1	Amidopyrine	
14 Randall	United States	April 1934	2	Amidopyrine	
15 Hoffman and others	United States	April 1934	14‡	{Amidopyrine Dinitrophenol	13
16 Zininger	United States	April 1934	2	Amidopyrine	1
17 Kracke and Parker	United States	May 1934	4†	{Acetanilid Acetphenetidin	2 1
18 Zinberg and others	United States	June 1934	1	Amidopyrine	
19 Rawls	United States	June 1934	2	Amidopyrine	
20 Benjamin and Biederman	United States	July 1934	1	Amidopyrine	
21 Bohn	United States	July 1934	1	Dinitrophenol	
22 Groen and Gellerman	Holland	July 1934	18	{Amidopyrine Antipyrine Acetylsalicylic acid Quinine	14 2 1 1
23 Corelli	Italy	Aug 1934	2	Amidopyrine	
24 Davidson and Shapiro	United States	Aug 1934	1	Dinitrophenol	
25 Fitzhugh	United States	Aug 1934	17	Amidopyrine	
26 Plum	Denmark	Aug 1934	6	Amidopyrine	
27 Witt	United States	Aug 1934	1	Amidopyrine	
28 Knudsen	Denmark	Aug 1934	2	Amidopyrine	
29 Dameshek and Gargill	United States	Sept 1934	2	Dinitrophenol	
30 Silver	United States	Oct 1934	1	Dinitrophenol	
31 Jackson	United States	Oct 1934	7‡	Amidopyrine	
32 Johnson	United States	Oct 1934	1	Amidopyrine	
33 Holten and others	Denmark	Oct 1934	1	Amidopyrine	
34 Moltke	Denmark	Oct 1934	1	Amidopyrine	
35 Zia and Forkner	China	Nov 1934	4	Neostibosan	
36 Squier and Madison	United States	Nov 1934	6†	{Amidopyrine Acetanilid	5 1
37 Fisher	England	Dec 1934	1	Amidopyrine	
38 Smith	England	Dec 1934	1	Amidopyrine	
39 Stone and Margolls	United States	Dec 1934	1	Amidopyrine	
40 Hall	England	Dec 1934	1	Amidopyrine	
41 Sturges	United States	Dec 1934	7‡	Amidopyrine	
42 Plum	Denmark	Jan 1935	1†	Amidopyrine	
43 Maassig	Denmark	Jan 1935	1	Amidopyrine	
44 Taussig	United States	Mar 1935	1	Amidopyrine	
45 Limarzi and Murphy	United States	Mar 1935	1	Amidopyrine	

* Cases reported to have followed the administration of gold salts are not included in the table because of inadequate investigation of other drug therapy. Cases following organic arsenicals are not included in the table because of previous acceptance of their hematopoietic depressant action.

† Because of previous report, figures refer only to new cases.

‡ Figure refers to amidopyrine cases in a reinvestigated group.

conditions simulating those in the gastro-intestinal tract, and that the resulting product contains catechol and quinone. Chimenko,⁶⁹ working with rabbits, found that the injection of quinone, catechol, dinitrophenol, antipyrine and phenylhydrazine would prevent the response of leukocytosis that normally follows the administration of nucleic acid products. He concluded, therefore, that the activity of the bone marrow of these

68 Terry, M. C. and Sanders, A. O. A Case of Myeloid Leukemia Treated with Luminal and Amidopyrine, *Proc. Soc. Exper. Biol. & Med.* 31:1154 (June) 1934.

69 Chimenko, D. R. Inhibition of Leukogenic Activity in the Rabbit by Certain Cyclic Compounds *Proc. Soc. Exper. Biol. & Med.* 32:823 (March) 1935.

animals was inhibited by these chemicals. Miller⁷⁰ gave amidopyrine orally to a group of sixteen dogs and found that the drug exerted a toxic effect on the bone marrow, but apparently insufficient to produce depression of the circulating elements of the blood. It can be seen, therefore, that experimental leukopenia in animals can be produced occasionally by the oral administration of drugs, with moderate frequency with their oxidation products, and consistently with benzene. It seems probable that another factor is necessary in the development of agranulocytosis in either the animal or man, and this factor may be that which is referred to as hypersensitivity, susceptibility, allergy or idiosyncrasy.

THE MECHANISM OF DRUG ACTION

Allergic reactions to drugs have long been recognized, but descriptions of this phenomenon have not included bone marrow or blood cellular changes. Unger⁷¹ states that the coal-tar series of drugs are more important than any others from the point of view of allergy. Taussig⁷⁴ has reported an instance in which the patient used amidopyrine for many years with impunity, but after abstaining from the drug for several months he had a single dose of 5 grains, and this was followed immediately by a severe attack of urticaria, angioneurotic edema, bronchial asthma and a mild granulopenia which lasted for several days. Squier and Madison⁴⁷ were able to demonstrate skin sensitivity to amidopyrine by patch testing in two of three patients who had recovered. They believe that acute granulocytopenia can be produced by repeated administration of amidopyrine to persons who have developed an allergic hypersensitivity to that drug. Groen and Gelderman³⁴ believe that certain individuals have an increased susceptibility or an idiosyncrasy to amidopyrine. Randall²⁷ studied the allergic response in his patient by injecting amidopyrine and phenobarbital subcutaneously, but this was not followed by a local reaction or change in the leukocyte count. Benjamin and Biederman³² found no evidence of the allergic state in their patient with studies by intracutaneous and patch test methods. Limarzi and Murphy⁶⁶ also did patch tests on their patient, with negative results. Reznikoff⁷² states that, when one considers the enormous amount of amidopyrine consumed and the relatively few individuals affected with granulocytopenia, it is obvious that one is dealing with the question of sensitivity in certain patients rather than with the universal action of the drug. Vaughn⁷³ has pointed out that a leukopenia will usually be found after ingestion of food to which a patient is sensitive, but, on the other hand, he emphasizes that the leukopenia involves all white blood cells and is not a true granulopenia.

It can be seen, therefore, that sufficient evidence has not accumulated to justify the statement that the action of amidopyrine is a true allergic response. It appears more probable that other factors influencing the fate and disposal of drugs in the animal body have not been worked out sufficiently to explain why the occasional person has a damaged hematopoietic system from the use of drugs.

We have presented evidence in previous publications⁴ to indicate that in certain individuals amidopyrine may undergo an atypical oxidation reaction and that certain of these oxidation products have a depressing effect on the bone marrow and are capable of producing granulopenia in rabbits. This action brings up the question as to what part of the amidopyrine structure is responsible for its depressant effect. Herz⁷⁴ attributes the action to the attached pyrazolon group, mainly because this structure is found only in amidopyrine, and also because of its chemical similarity to phenylhydrazine, which is a recognized erythropoietic depressant. Andersen²³ also believes that it is the pyrazolon group which is the harmful element and not the benzene nucleus. On the other hand, there is more evidence to indicate that the bone marrow depression is caused by those products containing the benzene ring in such a form that they lend themselves to easy oxidation, and we have pointed out before that the benzene ring with either the attached amine or nitro group fulfills this requirement. We consider the ease of oxidation of the drug to be the most important factor and we are cognizant of the fact that many other drugs, such as acetylsalicylic acid, contain the benzene ring, but they do not oxidize readily and therefore are relatively harmless from a hematologic point of view. Furthermore, the occurrence of a group of cases following the administration of dinitrophenol is strongly indicative that the pyrazolon ring plays no part in the production of this disease.

Assuming that these drugs are capable of producing agranulocytosis in susceptible individuals, the question arises as to how much of the drug is capable of producing an attack. There can be no answer to this question, since the case reports show that an attack may be precipitated in one person by the administration of a single small dose, whereas in another it appears to result from the administration of large quantities over a long period of time.

Watkins²⁰ reviewed a series of thirty-two patients with granulocytopenia who had been seen at the Mayo Clinic and found that twelve of these had taken amidopyrine before the clinical onset, that twelve others had taken only the barbiturates, and that in eight patients no drug had been used before the onset of the illness. This was the first, and practically the only report, incriminating the barbiturates and it would appear more likely that thorough and adequate histories could not be obtained on this group. There has been little evidence to justify the inclusion of the barbiturates among the drugs causing agranulocytosis.

It should be emphasized that it is practically impossible to obtain a reliable drug history on a patient who is dead, regardless of all statements of relatives, friends and physicians, concerning medication in that patient. Since the drug theory of etiology has become wide spread, Fitzhugh³⁷ has reviewed a series of patients and his report indicates that only a small percentage in the group followed the use of amidopyrine, but a negative history of drug usage has little value. We have attempted to obtain information from patients, with absolute denial of their having taken amidopyrine drugs, and in one instance found that the patient unknowingly had been taking large quantities of amidopyrine in a patented preparation, and this was ascertained only after chemical analysis of the product. In another instance we had to search through thousands

70 Miller D. K. Histological Changes in the Bone Marrow of the Dog Following Amidopyrine Administration. *Science* 80: 320 (Oct. 5) 1934.

71 Unger L. Drug Idiosyncrasy. *J. Allergy* 3: 77 (Nov.) 1931.

72 The Relation of Amidopyrine and the Barbituric Acid Derivatives to Granulocytopenia. Special Report of Council on Pharmacy and Chemistry. American Medical Association. *J. A. M. A.* 102: 2183 (June 30) 1934.

73 Vaughn W. T. Personal communication to the authors. Dec. 3 1934.

74 Herz, L. F. The Role of Amidopyrine in Granulocytopenia with Special Reference to Its Chemical Structure. *J. Lab. & Clin. Med.* 20: 33 (Oct.) 1934.

of old prescriptions in a drug store to establish the fact that the patient had been taking amidopyrine. Patient 1 in Plum's²⁸ series was a woman who denied taking amidopyrine or any of its compounds, the patient's physician also stating that it could be absolutely excluded, and it was only after the most thorough investigation that this history was found to be unreliable. Another patient in Plum's series stated that she absolutely had not taken any amidopyrine preparations. In this her physician also agreed, and it was only on examination of her medicine chest that amidopyrine preparations, which she had been using, were found. Zimniger²⁹ lived in the same house with and prescribed for her two aunts, who both died from agranu-

TABLE 2—A Partial List of American Proprietary Preparations That Did or Do Contain Amidopyrine*

Name of Drug	Manufacturer
Allonal	Hoffmann La Roche Inc
Alphabio	Onna & Ingram Inc
Amarbital	A W Kretschmar, Inc
Amidol	Filnt, Eaton & Co
Azido-Neonal	Abbott Laboratories
Amidoneine	Pittman Moore Company
Amidophen	Ell Lilly & Co
Amidos	The National Drug Company
Azidolal Compound	William H Rorer Inc
Amifeine	McNell Laboratories Inc
Amibol	The Smith Dorsey Company
Am Phen Al	G S Stoddard & Co Inc
Ampydia	National Aniline & Chemical Company Inc
Amytal Compound	Ell Lilly & Co
Asalgia	The William S Merrell Company
Antaba	The William S Merrell Company
Daramid	McNell Laboratories Inc
Darb-Amid	Rutliff & Oze Company Inc
Benzedo Compound	Abbott Laboratories
Cibalgine	Olba Company, Inc
Cinchopyrine	Abbott Laboratories
Combral	Winthrop Chemical Company Inc
Cronal	Cronal Company Inc
Dymen	Coland Laboratories
Dyco	Abbott Laboratories
Eu Med	The Orace Company
Gardan	H A Metz Company
Ornalgos	John Wyeth & Brother Inc
Hexin	Hexin Inc
Iprat Amidopyrine	E R Squibb & Sons
Kalm	Johnson & Johnson
Lumodrin	Winthrop Chemical Company Inc
Mildol	General Drug Company
Mylin	Miflin Chemical Corporation
Neonal Compound	Abbott Laboratories
Neurodyne	Chicago Pharmaceutical Company
Nod	Reader Drug Company
Optalidon	Sandoz Chemical Works
Peralga	Schering & Glatz Inc
Phenamidol	The Upjohn Company
Phen Amidol	Carroll Dunham Smith Pharmaceutical Company
Phenopyrine	Cole Chemical Company Inc
Pyramidon	H A Metz Laboratories Inc
Pyraminal	H A Metz Laboratories Inc
Sequit	Laboratories JAQ Inc
Yeast Vite	Yeast Vite (U S A) Inc

* List supplied by Council on Pharmacy and Chemistry American Medical Association (May 1930). This list does not include many of the large group of patent medicines or secret formula remedies.

locytosis. After their death she was amazed to find many empty containers of amytal compound in their apartment. These examples illustrate the difficulty of procuring a reliable history in a living patient and it should be emphasized that a negative drug history is often a worthless one. Therefore, any large series of cases reinvestigated for history of drug administration such as those reported by Jackson,⁴³ Fitzhugh⁴⁷ and Watkins,⁴⁹ are relatively unreliable.

Furthermore, since 1922, amidopyrine has been so widely used in combination with other preparations, such as the barbiturates, and the resulting mixtures have been given such a wide variety of names that it is practically impossible for either patient or physician to be aware of what drugs do or do not contain amidopyrine. A list of some of the proprietary preparations that did, or do now, contain amidopyrine is given in table 2.

COMMENT AND RECOMMENDATIONS

At this time it seems well established that amidopyrine, dinitrophenol and possibly other closely related drugs are incriminated as etiologic agents in agranulocytosis. Evidence to this effect is found in the widespread introduction of these drugs coincident with the appearance of the disease, in the occurrence of 172 cases that have been reported as following the use of these drugs, in the occasional patient who has recovered only to develop successive attacks on the readministration of the drugs, in the occasional experimental animal that has developed the disease after the introduction of the drugs or some of their oxidation products, and finally in the prevalence of the disease in that class of people who are the largest users of these drugs.

This conception of the etiology has received general confirmation throughout the world, as indicated by the reports of Plum⁵² from Denmark, Groen and Gelderman⁵⁴ from Holland, Corelli⁵⁵ from Italy, Smith,⁴⁰ Fisher⁴⁸ and Hall⁵ from England, and those of Sturges⁵¹ and many others from the United States. Johns⁷⁵ states that he has seen ten cases of this disease, in all of which a history of drug administration could be elicited. Groen and Gelderman⁵⁴ conclude that a drug etiology of agranulocytosis is much more often the rule than the exception. Plum⁵² states that since the etiologic significance of amidopyrine has become a subject of general discussion in Denmark no new patient with agranulocytosis has been admitted to the Blegdams Hospital during a five months period, whereas in the same five months in the preceding year five patients were seen with the disease. We are impressed with the decreased number of cases in Georgia since knowledge of this relationship of drugs has become widespread among physicians and the public.

The question now arises as to what should be the attitude of the physician with respect to these drugs, particularly amidopyrine. The Council on Pharmacy and Chemistry of the American Medical Association,⁷² in its recommendations concerning this question, discourages the indiscriminate administration of amidopyrine and, in particular, the exploitation of this drug to the public, in which individuals are urged to resort to self medication, and it condemns the situation whereby a potentially harmful drug is exploited to the public under a hundred different uninformative trade names. It seems desirable that it should be dispensed only by physicians in nonrefillable prescriptions, so that this danger of agranulocytosis may be largely removed from the unprotected public. Furthermore, it seems that every physician should prescribe amidopyrine with caution and he should not follow the careless custom of giving a patient a prescription for relief of pain with such indefinite direction as to have it refilled whenever the patient chooses to do so.

Amidopyrine is admittedly a valuable drug and, no doubt, has its place in therapeutics, but only under well controlled conditions and under supervision of a physician, and even then the leukocyte count should be checked from time to time to determine whether or not there is bone marrow depression.

A discussion of the relationship between drug administration and agranulocytosis would be incomplete without some comment relative to drug therapy after the disease has developed. It seems to us that the most valuable therapeutic measure that can be employed is to refrain carefully from using amidopyrine drugs dur-

75 Johns, F M. Personal communication to the authors Dec. 17 1934.

ing the attack, and it seems probable that the recovery of a patient is sometimes due to the mere omission of the offending drug, and it is in such instances that some supposedly remedial agent is often erroneously credited with a therapeutic efficacy that it does not deserve. If physicians would use these drugs with caution, if their indiscriminate sale could be controlled, and if the distribution of patented preparations containing amidopyrine could be suppressed, it is possible that this disease, which has now claimed thousands of lives, might entirely disappear.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

COD LIVER OIL CONCENTRATE LIQUID (LEDERLE)—A concentrate of the unsaponifiable fraction of cod liver oil dissolved in sufficient cod liver oil to give the desired potency to the marketed product. It has a vitamin A potency of not less than 55,100 units (U S P X Revised, 1934) per gram and a vitamin D potency of not less than 5,510 units (U S P X Revised, 1934) per gram.

Actions and Uses—It possesses the therapeutic properties attributed to the vitamins present in cod liver oil.

Dosage—For the concentrate in vials, 9 drops (3 minims, 0.18 cc) daily for infants (the vials are marketed with a dropper designed to dispense three drops to the minim), for the capsules, one to two daily for children, two to three daily for adults.

Manufactured by the Lederle Laboratories Inc. Pearl River, New York. No U S Patent or trademark.

Cod Liver Oil Concentrate Liquid (Lederle) Vials, 5 cc—Each minim (3 drops, 0.06 cc) has a vitamin A potency of not less than 3,138 units (U S P X Revised, 1934) and a vitamin D potency of not less than 314 units (U S P X Revised, 1934).

Cod Liver Oil Concentrate Liquid (Lederle) Capsules, 3 minims—Each capsule has a vitamin A potency of 9,400 units (U S P X Revised, 1934) and a vitamin D potency of 940 units (U S P X Revised, 1934).

LAROCAINE HYDROCHLORIDE—*p*-aminobenzoyl-2,2-dimethyl-3-diethylaminopropanol hydrochloride.— γ -diethylamino- β -dimethylpropyl-*p*-aminobenzoate hydrochloride— $\text{NH}_2(\text{C}_6\text{H}_4)\text{OCH}_2\text{C}(\text{CH}_3)_2\text{CH}_2\text{N}(\text{C}_2\text{H}_5)_2 \text{HCl}$. The base of larocaine belongs to the procaine type. It differs from procaine in having a propanol group instead of the ethanol group and has two methyl groups attached to the former.

Action and Uses—Larocaine hydrochloride acts as a surface as well as a conduction (infiltration) anesthetic and compares quite favorably in both fields with either cocaine or procaine. Larocaine hydrochloride is quick in action and produces anesthesia of a somewhat longer duration than cocaine or procaine. The average duration of conduction anesthesia is from three to five hours. Larocaine hydrochloride is non-narcotic and non-habit forming.

Dosage—For corneal and conjunctival anesthesia, from 2 to 5 per cent solutions may be used. In otorhinolaryngology, 5 to 10 per cent solutions have been employed. From 0.75 to 1 per cent solutions are used in urology. For conduction anesthesia, 0.25 to 2 per cent solutions may be used. Solutions of larocaine hydrochloride may be sterilized by boiling for ten minutes. Epinephrine when desired may be added just prior to administration. Stock solutions should be kept in dark bottles. The product is supplied in vials containing $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and 1 ounce of larocaine hydrochloride in powder form.

Manufactured by F. Hoffmann-La Roche & Co. Basle, Switzerland (Hoffmann-La Roche Inc. Nutley, N. J. distributor). U S Patent 1,824,676 (Sept. 22, 1931; expires 1948). U S trademark 283,775.

Larocaine hydrochloride occurs as a fine white odorless crystalline powder when applied to the tongue it possesses a bitter taste followed by a sense of numbness permanent in the air at ordinary temperatures freely soluble in water soluble in alcohol sparingly soluble in chloroform insoluble in ether. Its aqueous solution is faintly acid to litmus. Larocaine hydrochloride melts at 196-197°C, with decom-

position. From aqueous solutions, alkali carbonates and hydroxides precipitate the free base as a colorless oil which solidifies after a time at ordinary temperature.

Dissolve about 0.05 Gm. of larocaine hydrochloride in 50 cc. of water separate portions of 5 cc. each to one portion add 5 cc. of silver nitrate solution a white precipitate results soluble in an excess of ammonia water to another portion add 0.2 cc. of diluted hydrochloric acid 0.2 cc. of a 10 per cent solution of sodium nitrite and gradually mix with a solution containing 0.2 Gm. of betanaphthol dissolved in 10 cc. of a 10 per cent sodium hydroxide solution a red precipitate is formed (distinction from the anesthetics not responding to the diazo reaction) to another portion add 0.3 cc. of diluted sulphuric acid followed by the addition of 0.5 cc. of tenth normal potassium permanganate solution the red coloration disappears immediately (distinction from cocaine and some other local anesthetics). Dissolve about 0.1 Gm. of larocaine hydrochloride in 1 cc. of sulphuric acid the solution is colorless (readily carbonizable substances). Saturate about 0.1 Gm. of larocaine hydrochloride dissolved in 10 cc. of water with hydrogen sulphide no coloration or precipitation results (sells of heavy metals).

Dry about 0.5 Gm. of larocaine hydrochloride accurately weighed, at 100°C. for six hours the loss in weight does not exceed 1 per cent. Incinerate about 0.5 Gm. of larocaine hydrochloride, accurately weighed, the residue is not more than 0.1 per cent. Transfer about 0.3 Gm. of larocaine hydrochloride accurately weighed to a 500 cc. Kjeldahl flask and determine the nitrogen content according to the official method described in Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, third edition page 20 chapter 2 paragraph 22 the percentage of nitrogen corresponds to not less than 8.8 per cent nor more than 9 per cent when calculated to the dried substance. Transfer about 0.3 Gm. of larocaine hydrochloride accurately weighed to a suitable Squibb separatory funnel, add 25 cc. of water followed by the addition of 5 cc. of ammonia water extract with seven successive portions of ether using 35 cc., 30 cc., 25 cc., 25 cc., 20 cc., 15 cc. and 10 cc. respectively wash the combined ethereal solution with 15 cc. of water filter through a pledget of cotton and evaporate to a thick oil in a stream of warm air expose over sulphuric acid in a partially exhausted desiccator dissolve the only residue in about 20 cc. of previously neutralized alcohol warm slightly add 12.5 cc. of tenth normal hydrochloric acid solution followed by the addition of an equal volume of water determine the excess of acid by titration with tenth normal sodium hydroxide solution using methyl red as an indicator the amount of tenth normal hydrochloric acid solution consumed corresponds to not less than 87 per cent nor more than 89 per cent aminobenzoyldimethyldiethylammonio propanol when calculated to the dried substance. Transfer the ammoniacal aqueous portion from the immiscible solvent extraction to a 400 cc. beaker and place on the steam bath for three hours add 100 cc. of water followed by the addition of 10 cc. of nitric acid and 25 cc. of silver nitrate solution subsequently boil with continuous stirring and allow to cool in a dark place. Collect the precipitate of silver chloride on a Gooch crucible, wash with a diluted nitric acid and water followed by alcohol and ether finally dry to constant weight at 105°C. the amount of hydrogen chloride calculated from the silver chloride found corresponds to not less than 11.5 per cent nor more than 11.7 per cent when calculated to the dried substance.

WHITE'S COD LIVER OIL CONCENTRATE (LIQUID)—A concentrate of the unsaponifiable fraction of cod liver oil dissolved in sufficient cod liver oil to give the desired potency to the finished product. It has a vitamin A potency of not less than 60,000 units (U S P X Revised, 1934) per gram and a vitamin D potency of not less than 8,500 units (U S P X Revised, 1934) per gram.

Actions and Uses—It possesses properties similar to those of cod liver oil so far as these depend on the vitamin content of the latter.

Dosage—For the Liquid: Infants, from six to eight drops daily, children, two to four drops daily, adults four drops three times daily. The liquid is marketed with a dropper designed to supply $\frac{2}{3}$ minim (0.041 cc.) in each two drops. For the Capsules: Children, one capsule daily, adults, one to two capsules daily.

Manufactured by Health Products Corp. Newark, N. J. U S patent 1,984,858.

White's Cod Liver Oil Concentrate Capsules, 3 minims—Each capsule contains White's Cod Liver Oil Concentrate (Liquid) 3 minims and has a vitamin A potency of not less than 10,260 units (U S P X Revised, 1934) and a vitamin D potency of not less than 1,453 units (U S P X Revised, 1934).

White's Cod Liver Oil Concentrate Liquid Vials, 50 cc—Each $\frac{1}{2}$ minim (0.038 Gm.) has a vitamin A potency of not less than 2,280 units (U S P X Revised, 1934) and a vitamin D potency of not less than 323 units (U S P X Revised, 1934).

DEXTROSE (See New and Nonofficial Remedies, 1935, p. 280).

Wm. S. Merrell Co., Cincinnati.

Ampoules Solution Dextrose 50%, 20 cc Each cubic centimeter contains approximately 0.57 Gm. of anhydrous dextrose.

Ampoules Solution Dextrose 50%, 50 cc Each cubic centimeter contains approximately 0.57 Gm. of anhydrous dextrose.

DIPHThERIA TOXOID (See New and Nonofficial Remedies, 1935, p. 392).

Parke, Davis & Co., Detroit.

Diphtheria Toxoid—(See New and Nonofficial Remedies, 1935, p. 395). For determining sensitivity to the nonantigenic portion of diphtheria toxoid a diluted diphtheria toxoid is applied. This is marketed in packages of one 0.5 cc. vial and in packages of one 5 cc. vial containing diluted diphtheria toxoid sufficient for five and fifty reactions tests respectively.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

RAYMOND HERTWIG Secretary

SPINTRATE TABLETS (CANDY COATED)

Distributor—M & R Dietetic Laboratories, Inc., Columbus, Ohio

Manufacturer—Spinach Products Company of South Carolina, Columbia, S C

Description—Candy-coated powdered spinach tablets The powdered spinach (Spinrate, THE JOURNAL, Aug 5, 1933, p 448) contains small quantities of agar, gelatin or acacia gum and stearic acid The candy coating is sugar colored with United States Department of Agriculture certified color

Manufacture—Powdered spinach is admixed with small quantities of agar, gelatin or acacia gum, and stearic acid to permit molding into tablets, which are coated with colored sugar Each tablet contains 0.4 Gm of powdered spinach and 0.2 Gm of sugar coating

Analysis (submitted by manufacturer) —

	per cent
Moisture	6.0
Ash	10.7
Fat (ether extract)	1.4
Protein (N \times 6.25)	20.4
Crude fiber	5.5
Carbohydrates other than crude fiber (by difference)	56.0

	parts per million
Calcium (Ca)	7,100
Chlorine (Cl)	4,000
Copper (Cu)	6
Iron (Fe)	350
Magnesium (Mg)	2,800
Manganese (Mn)	90
Phosphorus (P)	4,200
Potassium (K)	29,300
Sodium (Na)	14,600
Sulphur (S)	2,700

Iodine (I)

parts per billion
460

Calories—3.2 per gram 91 per ounce 1.9 per tablet.

Vitamins—Biologic assay shows Spinrate to be an excellent source of vitamins A, B and G

Claims of Manufacturer—Excellent source of iron and iodine.

JENNY LEE BRAND GENUINE EGG NOODLES MINNESOTA BRAND EGG NOODLES—BROAD, FINE OR CHOW MEIN STYLE, MEDIUM WIDE

Manufacturer—Minnesota Macaroni Company, St. Paul

Description—Egg noodles prepared from durum flour, egg yolk and water

Manufacture—Durum flour is moistened with water and mixed with a definite quantity of egg yolk. The dough is kneaded, rolled, cut into ribbons, dried as described for Minnesota Brand Amberrolls—Elbow Macaroni (THE JOURNAL, Aug 3, 1935, p 369) and packed.

Analysis (submitted by manufacturer) —

	per cent
Moisture	9.0
Ash	1.2
Sodium chloride	0.3
Fat (acid hydrolysis method)	3.7
Protein (N \times 6.25)	13.9
Water sol protein nitrogen precipitable by 40% alcohol	0.07
Lipoid phosphoric acid as P_2O_5	0.14
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference)	71.7
Estimated commercial yolk solids	6.0

Calories—3.8 per gram 108 per ounce.

Claims of Manufacturer—Conforms with U S Department of Agriculture definition and standard for egg noodles

- (1) BLUE RIBBON BRAND WHEAT CEREAL
- (2) DEFIANCE BRAND WHEAT CEREAL
- (3) NONE-SUCH BRAND WHEAT FOOD

Distributors—(1) Oakford & Fahnestock, Peoria, Ill, (2) Jobbers Service, Inc., Coldwater, Mich, (3) Durand-McNeil-Horner Company, Chicago

Packer—Campbell Cereal Company, Northfield, Minn

Description—Wheat middlings, endosperm or farina

Manufacture—Wheat farina is obtained from flour mills, heated at 52 C. for thirty minutes to destroy any insect infestation and packed in cartons

Analysis (submitted by packer) —

	per cent
Moisture	12.2
Ash	0.4
Fat (ether extraction method)	0.4
Protein (N \times 5.7)	10.1
Reducing sugars as dextrose	0.5
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	76.9

Calories—3.5 per gram 99 per ounce

Claims of Distributors—For use as a breakfast cereal or other table dishes also for infant feeding as a carbohydrate supplement to milk under the directions of a physician

DAISY BRAND CALIFORNIA PITTED PRUNES DAPHNE BRAND CALIFORNIA PRUNES HELIOTROPE BRAND CALIFORNIA PRUNES LIBERTY BRAND PITTED PRUNES MISSION BRAND CALIFORNIA PRUNES PANSY BRAND CALIFORNIA PRUNES PANSY BRAND LARGE SANTA CLARA PRUNES PANSY BRAND MEDIUM SANTA CLARA PRUNES PANSY BRAND SMALL SANTA CLARA PRUNES PHOENIX BRAND CALIFORNIA PRUNES ROSEDALE BRAND SANTA CLARA PRUNES

Packer—Guggenheimer & Company, San Francisco

Description—Partially dried, whole ripe prune plums, pitted or unpitted. See California Prunes Educational Advertising (THE JOURNAL, Nov 10, 1934, p 1453)

PURINA WHOLE WHEAT FLOUR

Manufacturer—Ralston Purina Company, St. Louis

Description—High protein whole wheat flour

Manufacture—High protein dark hard red winter wheat is cleaned of foreign material, milled to a definite granulation, retaining all the bran, embryo and endosperm, and packed in sacks

Analysis (submitted by manufacturer) —

	per cent
Moisture	9.5
Ash	1.8
Fat (ether extraction method)	1.9
Protein (N \times 5.7)	15.3
Crude fiber	2.2
Carbohydrates other than crude fiber (by difference)	69.3

Calories—3.6 per gram 102 per ounce

Claims of Manufacturer—Conforms to United States Department of Agriculture definition and standard

- 1 GLENWOOD BRAND THOMPSON SEEDLESS RAISINS
- 2 GLENWOOD BRAND THOMPSON SEEDLESS RAISINS
- MISSION BRAND THOMPSON SEEDLESS RAISINS

Packer—Guggenheimer & Company, San Francisco

Description—1 Sun-dried Thompson seedless grapes

2 Thompson seedless grapes treated with a very small quantity of refined raisin seed oil.

Preparation—1 The same as Gazelle Brand Seedless Raisins (THE JOURNAL, Jan 26, 1935 p 317)

2 The same as Gazelle Brand Seedless Raisins (THE JOURNAL, Jan 26, 1935, p 317) with the exception that these raisins are treated with a very small quantity of refined raisin seed oil to lessen adherence.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 21, 1935

DISEASE AND HISTORY

The reciprocal relations of disease and history not only provide food for philosophic speculation but offer much information worthy of study by the statesmen who direct the destiny of nations. The panorama produced by the effect of one on the other has been recently painted by Stewart.¹ He questions the historical justification of the relative amount of study devoted, for example, to Napoleon and to Pasteur or to Jenner. Which, he asks, more definitely made and molded history? One cannot question, he concludes, that disease and its gradual control are tremendously important molders of the history of mankind.

The first steps of the nomad in civilization, the gathering of houses into towns, doubtless trebled disease and cost innumerable lives. The principles of sanitation, though known to the ancient Hebrews, for centuries lagged far behind the advance in other lines of what we call civilization. Primitive communities were thus saved from extermination chiefly by their instinct for isolation. This fact has left primitive peoples relatively free from diseases and relatively immune to those which they did have. New diseases, however, brought to such groups have again and again practically annihilated whole populations. The introduction of a new relatively innocuous disease such as measles among the Boers resulted in the loss of one fifth of their numbers in concentration camps.

Travel, added to the concentration of peoples, ushered in a wider area for disease. The speed of travel closely paralleled the spread of disease and the march of civilization. In the second century A. D. it took plague forty years to reach China from the Red Sea. In the fall of 1888 an influenza epidemic was at Hong-kong, by the beginning of the next November it was in St. Petersburg. But for modern preventive medicine, disease would now travel as fast as the airplane.

The effect of pestilences on individual communities and countries is a phase of historical study still largely undisturbed. Bubonic plague alone in the ten years

that preceded 1907 carried off 6 millions in India. In 1910 was fatal to 46,000 in Manchuria and as late as 1923 killed a quarter of a million people, mostly in India. This was in modern times, but this destruction appears small in comparison with the havoc wrought by the Black Death. Villages and towns were left without inhabitants, in London 50,000 bodies were thrown into one burying ground, in a year in Europe 25 millions of people, half the population, died.

Such a convulsion must of necessity make history. That this resultant history is contradictory does not invalidate the thesis. The effect in England has been variously described. "Amid the general lamentation and woe the influence and authority of every law, human and divine, vanished." It paralyzed trade and industry, especially agriculture, but also paralyzed war and politics. "It detached people from the soil, drove them into the towns, increased urban population at the expense of rural, planted the germs of commerce and industry and began the expansion of England manifested in the time of Elizabeth." So with desolation came elbow room and opportunity.

The association between war and disease is as old as war itself. Sieges and campaigns have more often been decided by the race between pestilences in rival camps than by the force of arms. An invading army has brought pestilences that destroyed the invaders themselves first and sometimes the enemy. At other times the invaders acquired new diseases from the neutral or enemy countries through which they passed. "All that we gained in the end by engaging in the crusades," said Voltaire, "was the leprosy." As late as the Civil War, two Northern soldiers died of disease for every one who died by the weapons of the enemy. Such examples may be multiplied through all history.

These are examples of how disease has wrought history. The connection has always been close, not only in the lives of nations but also in the lives of individuals who make the history of nations. The gastric ulcer of a premier, the migraine of a foreign minister, the failing memory of a cabinet officer or the paranoia of a dictator may change in a brief period the economics, the history or the health of a nation.

THE GENESIS AND CONTROL OF EPIDEMICS

So long as human beings are gregarious and prefer to live in crowded communities, they must contend with epidemics. In some modern centers of civilization there has developed a false sense of security in this regard. An epidemic is a disease of the crowd and may flare up like a forest fire. Modern preventive medicine and interest in public health measures have accomplished miracles in controlling herd infections. Nevertheless, calamity always is possible. Witness the recent terrific epidemic of malaria in Ceylon, where an enormous mortality rate has been recorded in a disease the cause of which is known and for which specific treatment is

¹ Stewart D. A. Disease and History. Ann. M. Hist. 7: 351 (July) 1935.

available. The Chicago outbreak of amebiasis was significant. Consider the St. Louis epidemic of encephalitis and the recent outbreaks of poliomyelitis. Historically our concepts of epidemics may be grouped in two broad periods: (1) the descriptive period, when the natural history of epidemics was studied and correlated as to place, time and meteorological conditions, (2) the modern period, when the rise, subsidence and periodicity of epidemics is studied mathematically, graphically and even experimentally.

As Garrison¹ has indicated, the main protagonists of the former point of view were Hippocrates, Baillou and Sydenham. The modern theories have been expressed by Farr, Pearson, Ross, Greenwood and others. Sir Ronald Ross has classed epidemic diseases into (1) those of sluggish course and progression, such as leprosy or tuberculosis, (2) diseases of periodic recurrence, such as measles or scarlatina, (3) pandemic diseases, such as plague, cholera and influenza, which appear in full force at wide intervals of time. Gill², a modern epidemiologist, has attempted a rational explanation of the genesis of epidemics. He finds that all epidemics and pandemics, irrespective of their parasitic cause or mode of spread, exhibit characteristic features as concerns geographic distribution, periodicity, seasonal incidence, wave form, diffusibility, toxicity, and special incidence in certain age groups. Gill maintains that there has been no demonstration of an exaltation of virulence of specific parasites in association with the rise of an epidemic. He presents the "quantum theory" as an explanation of the genesis of epidemics. This theory postulates that all epidemic manifestations are the outcome of loss of equilibrium between the dose of toxin and the degree of resistance, or between "infection" and "immunity." The effect of the introduction of living pathogenic organisms into the human body may be determined not only by the quantity of infection (dose) but also by the size (mass) and resistance (relative immunity) of the host. Circumstances conducive to a sudden increase of the infection quantum play a predominant part in determining epidemic outbreaks. The quantum theory of Gill states that four factors are concerned in the origin of all epidemics: the reservoir, the parasite, the immunity, and the transmission factor. The actual occurrence of an epidemic is due to quantitative changes in equilibrium between "infection" and "immunity." This theory assumes the presence in all parasitic diseases of a reservoir of infection in which the specific parasite will be able to survive in a state of symbiosis with its host during periods adverse to its transmission. No instance is known of an epidemic disease in which either man or one of the lower animals does not constitute the reservoir. A given disease may be endemic in a community and at times epidemic. The disease may be considered hyper-

endemic, when infection and immunity are constant and high, or mildly endemic, when infection and immunity are constant and low. As concerns epidemicity there is first a preepidemic status, during which infection is long interrupted and immunity is absent. Then follows the epidemic status, when infection is constantly high and immunity is low. As mortality and morbidity subside, the postepidemic status is reached, when infection and immunity are both high. This is followed by the interepidemic status, characterized by intermittent infection in association with high herd immunity.

It is the duty of the epidemiologist to keep accurate records of the important herd diseases, chart their incidence and even attempt to predict their epidemic and pandemic occurrence under certain climatic, meteorological, social and economic conditions. However, the modern epidemiologist is not content with general biostatistical studies. He has begun to develop experimental epidemiology, a comparatively new science of extraordinary importance to the general health of communities and nations. Topley³ in 1919 was probably the first modern epidemiologist to study disease as a mass phenomenon under experimental conditions. These pioneer studies were followed by similar though independent investigations by Flexner,⁴ Amoss⁵ and Webster.⁶ Topley noted that breeds and individuals possess definite and different amounts of nonspecific inherited resistance to infection. This resistance is affected by environmental factors, such as season, diet and social and economic conditions, and may be supplemented by a specific acquired immunity. The amount of resistance present in individuals or populations at a given time determines the extent and severity of disease. Topley found that he could induce experimental epidemics in mice under two sets of conditions: (1) by administering to each individual of a previously unexposed community a certain dose of the specific organism by a natural port of entry or (2) by adding susceptible immigrants to already infected populations. He demonstrated that the repeated addition of normal individuals to mouse populations infected with *Pasteurella* is followed by recurring epidemic waves. Such experiments also afford an opportunity of analyzing the microbic and host factors under natural yet controlled conditions and of determining whether virulence actually varies during epidemics and whether epidemics terminate by the development of a specific immunity in the population. In these studies, bacterial strains from fatal cases manifested the same degree of virulence as similar strains from healthy carriers. This tends to prove Gill's contention that there is no noteworthy

³ Topley W. W. C. Goulstonian Lectures on the Spread of Bacterial Infection. *Lancet* 2: 1 (July 5) 1919. The Milroy Lectures on Experimental Epidemiology. *ibid.* 1: 477 (March 6) 1926.

⁴ Flexner Simon. Experimental Epidemiology, *J. Exper. Med.* 30: 9 (July) 1922.

⁵ Amoss H. L. An Artificial Induced Epidemic of Mouse Typhoid, *J. Exper. Med.* 30: 25 (July) 1922.

⁶ Webster L. T. The Mode of Spread of a Friedlander Bacillus-like Respiratory Infection of Mice, *J. Exper. Med.* 47: 685 (May) 1928.

¹ Garrison F. H. *The Newer Epidemiology*. Mil. Surgeon 53: 1 (July) 1923.

² Gill C. A. *The Genesis of Epidemics and the Natural History of Disease*, New York, William Wood & Co. 1928.

exaltation of virulence under epidemic conditions. Further studies indicated that strains of bacteria recovered from a given population at various endemic and epidemic periods of spontaneous infection were of uniform virulence. Experimental epidemiology has apparently demonstrated that the virulence of a given bacterial strain, when analyzed under natural and under controlled conditions, is a relatively stable property. However, changes in dosage exerted a direct effect on mortality when virulence and resistance were constant. These results further tend to substantiate Gill's quantum theory as to the genesis of epidemics. Topley has demonstrated that an epidemic spreading slowly among an isolated herd will lead to a smaller total mortality than will another epidemic of the same disease that spreads rapidly within a short time of its onset. A herd among which an epidemic is spreading will approach extinction more rapidly if it is subjected to the immigration of susceptibles of the same species than if it is kept in isolation. In his experiments Topley found that a bacterial infection which tends to spread naturally may be maintained in an experimental herd for an indefinite period, provided the herd is replenished by immigration of susceptible animals even though the rate of immigration is very slow.

The movement of susceptible but uninfected individuals is one of the main factors determining the course and duration of the epidemic spread of bacterial disease. With the tremendous improvement in modern means of transportation, travel has increased to such an extent as to become a problem to guardians of the public health. As Stallybrass⁷ has indicated, the principal bodies of migrating persons may be classed as (1) emigrants, (2) pilgrims, (3) transient laborers, (4) seafaring populations, railway and air personnel, (5) commercial travelers, merchants, itinerant traders, (6) tourists, (7) vagrants, (8) persons attending markets, fairs, musical or gymnastic contests, football or baseball matches and bull-fights, and (9) soldiers. The Chicago outbreak of amebic dysentery during the Century of Progress exposition is a comparatively recent example of the epidemic possibilities in travel and large gatherings. Leprosy has been found among Mexican railroad workers in Texas. Chinese workers, particularly those smuggled into the country, may act as a grave source of infection with leprosy, cholera, smallpox and amebic dysentery.

A study of the history of epidemics suggests that failure in prevention and control has been due to ignorance of causes and to lack of cooperation. The first essential in prophylaxis is an accurate knowledge of etiology. Then an adequate power of administration is required for education of the public and for effective control of causative factors. Preventive medicine is influenced at every point by the general social questions of education, economics and social welfare. Given a

proper public health organization, the first necessity in control of an epidemic is early notification of cases as they occur. This implies complete cooperation on the part of all practicing physicians. Then the proper quarantine measures, isolation of contacts and carriers, and destruction or nullification of the reservoir of infection are carried out by the proper authorities. The most serious situations in such work are caused by the congested urban populations, the nodal centers of infection, and the slums, where overcrowding, insanitary conditions and ignorance result in endemicity of the infective disease. The incidence of infectious diseases and mortality from them are considerably greater in urban than in rural populations within the same geographic region. Increasing urban congestion and gregariousness is conducive to the development of epidemics. The best preventive measure is the destruction of slums and encouragement of the movement away from cities. The latter should be used merely for the purposes of commerce, while actual home life should be carried out under suburban and rural conditions.

Modern means of communication enable health authorities to keep informed of serious disease manifestations anywhere on the globe. International organization and cooperation are particularly necessary in this connection. In 1907 the Office international d'hygiène publique was established at Paris. By 1929 forty-nine countries had signed the agreement. The statistical bureau of the League of Nations was established at Geneva in 1919. Its weekly, monthly and annual bulletins contain information as to the incidence of plague, cholera, yellow fever, typhus, smallpox and other epidemic diseases. Because of congestion of population, poverty and climate, the Far East has always been a source of epidemics and pandemics. F. Norman White,⁸ in his report to the Health Committee of the League of Nations on the prevalence of epidemic disease in the Far East, has studied the port procedures of maritime sanitation in various countries and has established a standard for class A ports from the standpoint of hygiene and prevention of epidemic disease. This standard requires that there be a qualified and adequate health staff, apparatus for fumigation of large vessels at anchor, a trained staff and means for the capture and extermination of rats, a quarantine station suitable for detention and observation of deck passengers and disinfection of their effects, an adequately equipped bacteriologic laboratory, an infectious disease hospital, a satisfactory water supply, and the machinery and legislation necessary for dealing with vital statistics, including the registration of cases and deaths from dangerous communicable diseases. White has suggested the creation of a central international epidemiologic intelligence bureau for the Far East to gather, correlate and render available the necessary data concerning contagious diseases and coordinate administrative measures in their

⁷ Stallybrass, C. O. *The Principles of Epidemiology and the Process of Infection*. New York: The Macmillan Company, 1931.

⁸ White, F. N. *The Prevalence of Epidemic Disease and Port Health Organization and Procedure in the Far East*. Geneva, 1923.

control There is no reason why such an organization cannot be truly international in scope and activity

Modern epidemiology is a complex science devoted to a study of herd diseases, the conditions of their origin and the means for their control It utilizes biostatistics and laboratory and field studies as well as administrative and legal powers in its efforts to understand and control epidemics The physician at large may profitably broaden his hygienic vision by becoming epidemic minded Such a physician will gladly report all transmissible diseases, out of duty to the community His interest in the individual patient will be based on a broad understanding and sympathy with the aims of modern preventive medicine

Current Comment

CAN THE LEOPARD CHANGE ITS SPOTS?

The "patent medicine" interests have decided that another housecleaning is called for History repeats itself! Nearly thirty years ago, when the present national Food and Drugs Act was under consideration in Congress, the "patent medicine" people, through their publicity department, let it be known that all members of the "Proprietary Association of America"—as the organized "patent medicine" business was then called—would conform to certain rules of truthfulness and decency in advertising their wares Unfortunately, the list of members of the Proprietary Association of America was never made public! About a year ago—in August 1934—there was published in the *Editor and Publisher* an article entitled "Proprietary Association Begins Clean-Up" In this it was stated that the Proprietary Association—the present name for the organized "patent medicine" interests—had created an Advisory Committee on Advertising, which would draw up an "Outline of Ethical Practices in Proprietary Advertising" In June of this year the *New York Times* reported that the Proprietary Association was about to "launch a comprehensive program of research" The function of this "Research Committee," it appears, is to gather evidence to rebut any damaging attacks on "patent medicines" The same article in the *Times* stated that Dr Frederick J Cullen, general representative of the Proprietary Association, was also serving, ex officio, as secretary Dr Cullen, as the *Times* pointed out, was formerly Chief of Drug Control of the Department of Agriculture There has recently been issued (Aug 28, 1935) what is presumably one of the first pieces of work in this field In April 1933 the Department of Agriculture issued under Dr Cullen's name a bulletin warning the public against the coated laxatives that contain phenolphthalein The bulletin was a straightforward, valuable statement of fact, pointing out the potential dangers of phenolphthalein when used indiscriminately by the public in the form of "patent medicines" put up as "pressed fruits, mints, small cubes or lozenges" and "packaged attractively" Now (Aug 28, 1935) the Proprietary Association, under Dr

Cullen's name, sends Bulletin 6365 to all its members In this bulletin Dr Cullen completely reverses himself on phenolphthalein In it he states that the government bulletin (April 1933) issued by him was based on information gathered from medical textbooks and from a report made by a physician in one of the medical journals (the report of the case of a small child who ate a complete box of the "candy laxative" known as "E-Lax" and promptly died) It appears that Dr Cullen today, in his connection with the "patent medicine" interests, has decided, "a more exhaustive study of the effects of phenolphthalein since the issuance of that article (April 1933) has resulted in a change in my opinion as to its harmful effects" This "exhaustive study" seems to have exhausted the doctor's judgment, one wonders where he found the new evidence on which the reversal of his opinion was based Have new controlled studies been reported to warrant such a remarkable change of front or is there just a new job? Undoubtedly the "patent medicine" interests are on the defensive and presumably will spare no expense to convince a gullible public that its business is a public-spirited activity But those who have followed critically the devious methods of the "patent medicine" business for more than a quarter of a century may be excused for holding to the well established opinion that the leopard does not change its spots

THE PATHOMETRISTS

This month the Universal Society of Pathometrists held their sixth annual session According to the newspapers that reported this notable event, "members are physicians who employ the pathoclast instrument, a vibratory mechanism used in diagnosis and treatment" Anybody who happened to read this item might have been convinced that the pathometrists were a new type of scientist representing a distinct advance over what scientific medicine has been able to accomplish in the diagnosis and treatment of disease Nevertheless the pathometrists are merely a hybrid variety of the genus chiropractor They are the chiropractors who use a device developed by the Pathometric Laboratories The Pathometric Laboratories manufacture the pathoclast and the pathoneurometer It appears that Dr J W Wigelsworth of Los Angeles is the inventor of the pathoclast and also the founder of the Anabolic Food Products Wigelsworth, whose name must have been an inspiration of a higher power, expands that cognomen by the letters "D N," which may mean "Doctor of Naprapathy" or "Doctor of Naturopathy" What a marvelous name for a vibrator promotion Wigelsworth really is! As far back as 1918 Wigelsworth was promoting a system of color and homeopathic diagnosis With the passing of Abrams, the real originator of the "clast" and "meter" apparatus, Wigelsworth changed to his new machinery The pathoclast appears as another of the fifty-seven varieties of imitations of the Abrams apparatus The pathoneurometer was no doubt developed to compete with Chiropractor B J Palmer's neurocalometer Using a phrase popularized by that master of comedy Ben Bernie, the "anabolic foods" are the nuts!

Association News

RADIO BROADCASTS

The American Medical Association will broadcast over the Blue network of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) October 1 and each Tuesday thereafter, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program will be "Your Health." The program will be recognizable by a musical salutation through which the voice of the announcer will offer a toast "Ladies and Gentlemen, Your Health!" The theme of the program will be repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The October schedule is as follows:

October 1	Burns	Morris Fishbein	M.D.
October 8	Hazards from Foreign Shores	W. W. Bauer	M.D.
October 15	Unconsciousness	Morris Fishbein	M.D.
October 22	Asphyxiation	W. W. Bauer	M.D.
October 29	Poisonous Plants and Insects	W. W. Bauer	M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Promotions at Medical School—Dr. James M. Shields, associate professor of ophthalmology, and Dr. Claude E. Cooper, associate professor of otolaryngology, have been appointed heads of their departments at the University of Colorado School of Medicine, Denver.

Memorial for Physician—The Pueblo Clinical and Pathological Society recently presented a check for \$30 to the library of the Medical Society of the City and County of Denver to purchase new medical books in memory of Dr. Seymour D. Van Meter, a past president of the latter society. Each book purchased with this money will be inscribed "This book is presented to the library in memory of S. D. Van Meter, M.D., by the Pueblo Clinical and Pathological Society." Dr. Van Meter died in February 1934. For many years he was secretary of the state board of medical examiners.

State Medical Election—Dr. Walter W. King, Denver, was installed as president of the Colorado State Medical Society at the annual meeting in Estes Park, September 4-7. Dr. Arthur J. Markley, Denver, was chosen president-elect and vice presidents elected are Drs. Leo W. Bortree, Colorado Springs, Herman C. Graves, Grand Junction, Archie C. Sudan, Kremmling, and Clarence W. Bixler, Erie. The next annual session will be held in Glenwood Springs, Sept. 9-12, 1936, with headquarters in the Hotel Colorado. There were 375 members of the society, guests and nonmembers and 176 other persons registered at the meeting.

GEORGIA

Dr. Crile to Give McRae Lecture—Dr. George W. Crile, Cleveland, will present the Floyd Wilcox McRae Memorial Lecture of the Fulton County Medical Society, October 11. His address will be entitled "The Genesis and Practice of Medicine."

Births and Deaths Increase—A total of 65,615 live births were registered in Georgia in 1934, as compared with 60,744 in 1933, according to the state department of health. An increase of 4,406 deaths was recorded for 1934, a total of 35,590 deaths for the year as compared with a total of 31,184 in 1933. The infant mortality rate showed an increase of 17.1 per cent, it was stated, the rate in 1934 was 78.7 per thousand live births, in comparison with 67.2 in 1933.

ILLINOIS

Society News—At a meeting of the Peoria City Medical Society, September 3, speakers included Drs. William A. Malcolm on endometriosis, Hugh E. Cooper, backache, Walter H. Baer, early symptoms and treatment of dementia paralytica, and John M. McCuskey, common skin diseases. Dr. Nelson M. Percy, Chicago, addressed the society, September 17, on "Surgery of the Superior Hypogastric Plexus of the Sympathetic Nervous System."—At a meeting of the Jefferson Hamilton County Medical Society, Mount Vernon, a symposium on obstetrics was presented by Drs. Thomas B. Williamson, Harry G. Thompson, William G. Parker, all of Mount Vernon, Frank B. Hiller, Pinckneyville, and John Beverly Moore, Benton.—Dr. Max S. Wien, Chicago, addressed the Stephenson County Medical Society at Freeport, August 28, on "Relation of Dermatology to General Medicine."

Chicago

Dr. Coutard to Give McArthur Lecture—Dr. Henri Coutard, chief of the department of roentgen therapy of cancer, Curie Institute, University of Paris, will deliver the twelfth Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine of Chicago, October 1, at the Chicago Woman's Club. The subject of his illustrated lecture will be "The Conception of Periodicity as a Possible Directing Factor in the Roentgen Therapy of Cancer." The meeting will be a joint session with the Chicago Laryngological and Otolological Society.

INDIANA

Physicians in Chamber of Commerce—Members of the Montgomery County Medical Society, at a meeting July 25, voted to form an organized division of the Crawfordsville Chamber of Commerce. According to the *Journal of the Indiana State Medical Association*, this group will serve as a separate organization from the county medical society and its activities will be centered on business problems of the profession.

IOWA

Personal—Dr. Philip I. Crew has been appointed health officer of Marion.—Dr. Willard W. Hayne, Des Moines, has been appointed medical supervisor of athletics at the State University of Iowa, Iowa City, succeeding Dr. Arthur S. Fourn.

Society News—The Louisa County Medical Society held a fish fry at Chautauqua Park, Columbus, August 8.—Dr. Harold B. Cushing, Montreal, Canada, will discuss "Prevention and Treatment of Scarlet Fever" before the Linn County Medical Society, Cedar Rapids, October 16.—Dr. John F. Erdmann, New York, addressed the Des Moines Academy of Medicine and the Polk County Medical Society, September 13, on "Common Duct Injuries and Their Reconstruction."

KANSAS

Advisory Committee for Health Projects—Drs. Barrett A. Nelson, Manhattan, and Forrest L. Loveland, Topeka, have been appointed representatives of the state medical society on an advisory committee to study health projects to be undertaken with funds made available under the Social Security Act. The committee is composed of representatives from the medical, dental, hospital and nursing professions of the state.

Dr. Brown Made Professor of Hygiene—Dr. Earle G. Brown, Topeka, since 1925 secretary of the Kansas State Board of Health, has been appointed professor of hygiene and preventive medicine at the University of Kansas School of Medicine, Kansas City. Dr. Brown graduated from Northwestern University School of Medicine, Chicago, in 1913, and engaged in private practice in Topeka from 1914 to 1917. In 1919 he was appointed health officer of Topeka, serving in this capacity until he was appointed secretary of the state board of health. Dr. Brown will retain his position with the state board.

Deaths of Physicians—In a study of the deaths of 170 Kansas physicians reported in the last four years, chronic myocarditis was found to be the leading cause of death, being responsible for twenty-seven deaths, according to the state medical journal. Cancer and chronic nephritis were second, diabetes and coronary thrombosis were fourth, cerebral hemorrhage was sixth. Motor vehicles caused five of the seven accidental deaths. Excluding deaths from violence, the average age at death was 67.3 years. The oldest was 96. Excluding deaths from external violence, sixty-one deaths, or 41 per cent, were attributed to diseases of the cardiovascular system. Of the 20,011 deaths of all persons reported in the state in 1934, only 25 per cent were due to cardiovascular disease.

KENTUCKY

State Medical Meeting at Louisville—The eightieth annual session of the Kentucky State Medical Association will be held in Louisville at the Brown Hotel, September 30 to October 3. The annual oration will be delivered by Dr. Sumner L. S. Koch, Chicago, at the banquet Wednesday evening, October 2, on "Injuries to the Hand." The oration in surgery will be given by Dr. Samuel C. Smith, Ashtland, and the oration in medicine by Dr. James H. Pritchett, Louisville. Among papers to be presented are the following:

Dr. Ernest B. Bradley, Lexington: Evaluation of the Newer Methods of Handling Pulmonary Tuberculosis.
Dr. Rockwell Emerson Smith, Henderson: Contract Practice.
Dr. Joseph D. Northcutt, Covington: Social Trends in Medicine.
Dr. James Duffy Hancock, Louisville: Modern Management of Tumors of the Breast.
E. D. Rose, D.D.S., University of Tennessee College of Dentistry, Memphis: What the Physician Should Know About Periodontal Lesions.
Dr. Wilford A. Risteen, Lebanon: Diet in Relation to Abdominal Infections.
Dr. Harry D. Abell, Paducah: Ocular Manifestations of Systemic Disease.
Dr. Benjamin F. Wright, Seco: Emergency Management of Fractures.

There will also be a symposium on obstetrics presented by Drs. Scott D. Breckenridge, Lexington, Charles L. Sherman, Millwood, and Amphas W. Davis, Madisonville. Dr. Joshua B. Lukins, Louisville, will deliver his presidential address at a public meeting Tuesday evening, October 1, at which also Judge Elwood Hamilton, Louisville, will speak.

MICHIGAN

Graduate Courses—The University of Michigan Medical School, Ann Arbor, and the Michigan State Medical Society will open a series of short graduate courses, September 30 in Grand Rapids, Flint, Bay City, one jointly for Battle Creek and Kalamazoo, and one for Manistee, Traverse City and Cadillac. By request of Upper Peninsula physicians the program for that section will be deferred until May 1936. The courses will be held one day a week for eight weeks, the week of October 14 to be omitted to permit attendance at the Interstate Postgraduate Medical Assembly in Detroit. Subjects will include maternal welfare, gynecology, pulmonary disease, diseases of joints, neuropathology, metabolic diseases, diseases of the blood and blood-forming organs, child welfare, skin diseases, cancer, genito-urinary diseases, anorectal diseases, fractures and biliary tract disease. One week courses will be conducted at Detroit and Ann Arbor. Information may be obtained from the department of graduate medicine, University Hospital, Ann Arbor.

MINNESOTA

Society News—Dr. Arthur N. Collins, Duluth, was elected president of the Northern Minnesota Medical Association at its annual meeting, August 12, succeeding Dr. George I. Badeaux, Brainerd. The next annual meeting will be held in Fergus Falls.

Health Survey—Of the \$3,450,000 federal allocation for a national public health survey, Minnesota will receive \$108,500 to carry out its studies, newspapers report. A house to house canvass will be made to determine the prevalence of chronic diseases, physical examinations will be given and studies of medical facilities will be carried out.

Dr. Wangenstein Awarded Philadelphia Prize—The Samuel D. Gross Prize for 1935 has been awarded to Dr. Owen H. Wangenstein, professor of surgery, University of Minnesota School of Medicine, Minneapolis, for an essay entitled "The Therapeutic Problem in Bowel Obstruction." The prize is awarded every five years by the Philadelphia Academy of Surgery to the writer of the best original essay on surgical pathology or surgical practice founded on original investigations.

NEW JERSEY

Hospital News—The new Zurbrugg Hospital, Riverside, with a capacity of forty beds, was opened recently after a delay of three years. The hospital was built with funds left by Theophilus J. Zurbrugg, but no money was available for operating expenses until the Burlington County Board of freeholders agreed to aid in its maintenance. The institution has been in operation since 1915 with a capacity of twelve beds.

Society News—Dr. Arthur C. Christie and Ross Garrett, Washington D. C., addressed the Essex County Medical Society, Newark, September 12, on "Coordination of Resources for Medical Care."—Dr. Albert F. R. Andresen, Brooklyn, and Lloyd K. Riggs, Ph.D., Rutgers University, New Brunswick, addressed the Bergen County Medical Society, Hackensack, September 10, on "Focal Infection" and "Evaluation of Antiseptics in Modern Practice," respectively.

NEW MEXICO

District Health Organization—Health work in New Mexico has been organized into ten districts, each under the supervision of a full time health officer. Nine officers have already been appointed, with headquarters as follows: Drs. Elroy F. McIntyre, Santa Fe, Edgar B. Beaver, Gallup, James R. Scott, Albuquerque, Charles W. Gerber, Las Cruces, William W. Johnston, Las Vegas, Owen E. Puckett, Carlsbad, Frank W. Parker Jr., Silver City, Julian O. Long, Los Lunas, and Leonard A. Dewey, Clovis (temporary).

NEW YORK

Society News—Dr. Spencer T. Snedecor, Hackensack, N. J., addressed the Suffolk County Medical Society, Sayville, July 31, on treatment of burns.—The program of the Westchester County Medical Society, September 17, was presented by members of the staff of Grasslands Hospital, Valhalla, Drs. William G. Childress, White Plains, Morley T. Smith and George C. Adie, New Rochelle, who gave a symposium on bronchiectasis.

New York City

Hospital News—Dr. Bela Halpert, assistant professor of pathology and surgery, Yale University School of Medicine, New Haven Conn., has been appointed head of the division of pathology and associate director of laboratories at the Jewish Hospital of Brooklyn.—Misericordia Hospital opened a new radiology department July 24. It has units for high voltage therapy, diagnostic radiography, fluoroscopy, urology and fracture work.

Personal—Dr. Alva Churchill, associate secretary-general of the International Association for Prevention of Blindness and executive secretary of the International Union Against Tuberculosis, recently arrived in the United States for a series of conferences in various cities on policies and procedures in the world-wide fight against blindness and tuberculosis. Dr. Churchill is the guest of the National Society for the Prevention of Blindness and the National Tuberculosis Association.

City Collects for Accident Cases—Special efforts by the department of hospitals to obtain reimbursement for the city in accident cases in which victims have been cared for in municipal hospitals have resulted in steadily increased collections during the current year, the department reports. In December 1934 the collections amounted to \$930 and by June they had increased to \$5,688. A total of 4,500 potential liability cases have been referred to the department since October 1934. Of this number 650 were closed after investigation because of nonliability or an insolvent defendant, about 1,500 cases in which the department has an interest are now pending. The department also reported that collections had been made in 179 cases not in court.

Positions Open in Health Department—Open competitive examinations for two positions in the New York City Department of Health, research pediatrician (tuberculosis immunization) and epidemiologist, are announced by the Municipal Civil Service Commission. The pediatrician is expected to continue investigations already under way on the use of the Calmette or BCG vaccine, conduct research on pneumonia serums and similar problems. Requirements include graduation from a recognized medical school, experience in the use of vaccines and serums, including specialized experience with BCG vaccine. The salary is \$3,000 a year. Duties of the epidemiologist will be to investigate incipient outbreaks of communicable illness and terminate the transmission of infection at the earliest possible moment. Requirements include graduation from a recognized medical school and two years of special training or experience in epidemiologic work in a state or city health department or the equivalent. The salary is \$5,500 a year. For both positions candidates must have licenses to practice medicine in New York before they can be certified. Candidates must be between 25 and 50 years old. Applications will be received until October 2. Further information may be obtained from William H. Allen, secretary of the civil service commission, Room 1400, Municipal Building, Manhattan.

NORTH CAROLINA

Society News—Dr. Verling K. Hart, Charlotte, addressed the Guilford County Medical Society, Greensboro, August 1, on "Bronchoscopic Observations on Bronchial Obstruction and Bronchiectasis."—Speakers at the regular meeting of the Catawba Valley Medical Society, Morganton, September 10, were Drs. Lester A. Crowell Jr., Lincolnton, on "Vaccination for Poliomyelitis," Samuel F. Ravenel, Greensboro, "Nervous Children," and D. Lesesne Smith, Spartanburg, S. C., "Acute Infectious Diseases and Diarrhea in Children."

Report of Duke Hospital—The annual report of Duke Hospital, Durham, states that 80 per cent of its patients in 1934 came from counties outside of Durham, ninety-three of the 100 counties in the state were represented. During 1934 the hospital cared for 236 patients a day at a cost of \$385,782. The patients paid 43.5 per cent of the cost, counties and cities contributed 34 per cent, other contributions amounted to 31 per cent, and the hospital made up the remainder from its endowment. The outpatient department reported 40,949 visits.

OHIO

Personal—Dr Joyce I. Hartman has been appointed supervisor of health education in the Cleveland public schools, succeeding Dr Lyman W. Childs, who had held the position since 1910.

Hospital News—Babies' and Children's Hospital, Cleveland, one of the University Hospitals group, was to be reopened August 5, after having been closed for two years as an economy measure. Dr Henry J. Gerstenberger will head the department of pediatrics and Dr Carl H. Lenhart, the department of surgery.

Society News—Drs Ralph H. Major, Kansas City, Mo., and Max M. Peet, Ann Arbor, Mich., addressed the Cleveland Academy of Medicine, September 20, on medical and surgical aspects, respectively, of arterial hypertension. Dr Philip H. Kreuscher, Chicago, addressed the Summit County Medical Society, Akron, September 3 on "Back Injuries and Inflammations." Dr Walter M. Simpson, Dayton, discussed fever therapy before the Greene County Medical Society, Xenia, August 1.

Rock Gardens and the Malaria Increase—Eighty-five cases of malaria have been reported to the state health department in the first eight months of the year, thirty-four of them in July and thirty-eight in the first twenty-three days of August. In 1934 there were 104 cases. *Ohio Health News* points to the current fad for rock gardens as one of the causes for an increase of the anopheles mosquito, the hollows and crevices in the rocks provide facilities for development. Other causes are a similar fad for small pools as water gardens and fish ponds, carelessness in leaving empty cans, bottles and discarded automobile tires about houses and, in the country and small villages, continued use of the old fashioned rain barrel.

OREGON

Society News—Dr James Tate Mason, Seattle, President-elect, American Medical Association, addressed the Eastern Oregon Medical Society at a meeting in Ontario, July 27.

Personal—Drs F. Floyd South and Archie C. Van Cleave, Portland, have been appointed to the state board of health to succeed Drs Albert Mount, Oregon City, and Joseph P. Brennan, Pendleton, respectively.

Health Officers' Conference—A conference of city and county health officers was held in Portland, September 16-18. Mornings were given over to clinics at the University of Oregon Medical School, covering antepartum and postpartum conditions and venereal disease. The first afternoon program included discussions of blindness, heart disease, cancer and medical dentistry, the second, venereal disease, and the third, maternal and child health. Among speakers were Drs Frederick A. Kiehle, Homer P. Rush, Thomas A. Davis, Morris L. Bridgeman, Lendon Howard Smith, all of Portland, and Edith P. Sappington of the U. S. Children's Bureau.

PENNSYLVANIA

District Meeting at Reading—The second councilor district of the Medical Society of the State of Pennsylvania held its annual meeting at the Reading Country Club, September 19. The scientific program included papers by Drs Philip F. Williams, Philadelphia, on Intrapartum Care in Relation to Maternal Mortality, Clarence A. Patten, Philadelphia, "Mental Hygiene Viewpoints on Sterilization of the Unfit," Moses Behrend, Philadelphia, "Collapse Therapy in Pulmonary Tuberculosis," and Brig. Gen. Matthew A. DeLaney, commandant of Carlisle Barracks, "What the Medical Department of the U. S. Army Has Contributed to Human Progress." Speakers on organization problems were Drs William H. Mayer, Pittsburgh, on public relations, Francis F. Borzell, Philadelphia, medical service plans, George L. Laverty, Harrisburg, emergency medical relief, and Chauncey L. Palmer, Pittsburgh, legislative problems concerning public health. Testimonials were presented to three members who have practiced medicine fifty years: Drs Anthony F. Myers, Blooming Glen, Josiah B. Keylor, Cochranville, and Levi S. Walton, Jenkintown.

Philadelphia

Hospital News—Dr Frank E. Leivy delivered the first of a series of public health lectures at Mount Sinai Hospital, September 18, on "What You Should Eat and Why." Dr Joseph Edeiken will give the second lecture, October 16, on "Heart Disease: Its Prevention and Care."

SOUTH CAROLINA

Graduate Assembly in Anderson—The first Piedmont Post Graduate Clinical Assembly was held at the Anderson County Hospital, Anderson, September 3-5, with the following program:

Dr William A. Mulherin, Augusta, Ga., Preventive Pediatrics.
Dr Richard M. Pollitzer, Greenville, Infantile Paralysis.
Dr D. Lesesne Smith, Spartanburg, and Saluda, N. C., Everyday Pediatrics.
Dr Joseph Warren White, Greenville, Recent Progress in the Care of Hip Fractures.
Dr George H. Bunch, Columbia, Suppurative Pericarditis.
Dr A. Johnson Bulst, Charleston, Cancer of the Colon.
Dr Joseph H. Cannon, Charleston, Practical Points in Diagnosis and Treatment of Heart Disease.
Dr Kenneth M. Lynch, Charleston, Pathology of Common Cardiac Lesions.
Dr Allen I. Josey, Columbia, Differential Diagnosis of Chronic Digestive Disorders.

One session was held jointly with the South Carolina division of the Southeastern Surgical Congress. At a banquet meeting with the Anderson County Medical Society, speakers were Drs Samuel E. Harmon, Columbia, president of the South Carolina Medical Association, on "Relationship Between Public Health and Government Activities and the Practice of Medicine," Kenneth M. Lynch, Charleston, "Doctors for South Carolina," and Foster M. Routh, Columbia, "The County Health Unit." The assembly was organized last April for graduate instruction of physicians with Dr Edgar A. Hines, Seneca, president, Dr Jack D. Parker, Greenville, vice president, and Dr Archer L. Smethers, Anderson, secretary.

WASHINGTON

State Medical Election—Dr Delmar F. Bice, Yakima, was elected president of the Washington State Medical Association at the annual session at Everett in August. Dr Curtis H. Thomson, Seattle, was reelected secretary. Next year's meeting will be held in Yakima.

WISCONSIN

Personal—Citizens of Mauston held a public reception July 21 in honor of Dr James S. Hess Sr., who has retired after forty-two years of medical practice. A silver plaque was presented to Dr Hess, who is 70 years old. Dr Harry P. Bowen has been appointed postmaster of Watertown for a four year term.

Position Open for Health Officer—The state bureau of personnel, Madison, announces an open competitive examination for the position of assistant state health officer, open to candidates who are citizens of the United States and who have been residents of Wisconsin for one year. Minimum qualifications are as follows: training equivalent to that represented by graduation from a medical school of recognized standing with special training in the field of tuberculosis prevention and other public health work, possession of, or eligibility for, a valid license to practice medicine in Wisconsin, extended professional experience, five years of which shall have been in responsible public health and related work, familiarity with accepted methods and practices in preventive medicine, ability as a public speaker, administrative ability, tact, judgment and good physical condition. Applications will be received until September 28.

Community Honors Dr Nuzum—The Rock County Medical Society, the Janesville Civic and Industrial Council and the staff of Mercy Hospital sponsored a "Golden Medical Holiday," September 17, in honor of Dr Thomas W. Nuzum, who has completed fifty years in the practice of medicine. At a public testimonial dinner in the evening at the Janesville High School, Dr Morris Fishbein, Chicago, Editor of *THE JOURNAL*, made an address on "Medical Progress in the Last Fifty Years." In the morning there were surgical clinics, including an operation performed by Dr Nuzum and clinical conferences in the various departments of Mercy Hospital. After a luncheon at the Janesville Country Club, a scientific program was presented which included papers by Dr Franklin R. Nuzum, Santa Barbara, Calif., read by Dr Thomas Ochsner, Nuzum, Janesville, and Dr John W. Nuzum, Chicago, all sons of the guest of honor. Other papers were read by Drs Nelson M. Percy and Harry Culver, Chicago, and Dr Joseph S. Evans, Madison.

Dr Nuzum was born in Viroqua, Aug 27, 1860, was graduated from Rush Medical College, Chicago, in 1885, and practiced in Albany and Brodhead before going to Janesville in 1906. During the World War he served as a first lieutenant at Fort Sheridan, Ill., and later at Camp Custer, Mich. Dr Nuzum's three sons are all graduates of their father's alma mater.

ALASKA

Dr DeVighe Leaves Alaska—After more than thirty years practice in Alaska, Dr Harry C DeVighe is moving to Santa Barbara, Calif. Dr DeVighe was secretary of the Alaska Board of Medical Examiners for twenty years, twelve years commissioner of health, which position he resigned in 1934, fifteen years secretary of the Territorial Medical Association, and seven years chief surgeon of the Alaska Juneau Gold Mining Company. Dr William P Blanton, Juneau will succeed Dr DeVighe as secretary of the association and in the mine medical work.

PUERTO RICO

Fellowships to Puerto Ricans—Eight Puerto Ricans were recently designated by Dr Eduardo Garrido Morales, commissioner of health, to receive fellowships granted by the Rockefeller Foundation's International Health Division for study in the United States. Those chosen are Drs Norberto A. Quinones, who will study bacteriology, Juan Basora and Victor J. Montilla, public health, Abel de Juan, vital statistics and epidemiology, Jose R. Vivas and Libertad R. Gaetan, tuberculosis, and Misses Winifred M. Mendez and Carmen L. Riera, public health nursing.

GENERAL

Grants Available for Research—The division of medical sciences of the National Research Council will hold a special meeting in November for the consideration of applications for grants in the field of medicine. Applications must be on file with the secretary of the Committee on Grants-in-Aid, Clarence J. West, Ph.D., 2101 Constitution Avenue, Washington, D.C., not later than October 1. Applications received after October 1 and before Feb 1 1936, will be acted on at the next regular meeting in March 1936.

Poliomyelitis Declines—The New York City Department of Health reported September 15 that 238 cases of poliomyelitis had been reported during the week ended September 13, compared with 289 for the preceding week. The high point of the outbreak was reached during the week ended August 30, when 359 cases were reported. The total for the year was 1,552, with fifty-nine deaths. It was reported September 11—Fifty five active cases were reported from Louisville, Ky., September 2, the total since June 15 is seventy-four. Two deaths have occurred.

Health Education Institute—The American Public Health Association's fourth health education institute will be held in Milwaukee, October 4-6, preceding the annual session of the association. The subject of this year's institute will be "Health Education, with Special Reference to Smaller Cities and Rural Communities." Leaders of the discussions will be W. Frank Walker, Dr.P.H., director of the division of health studies, Commonwealth Fund, New York, Wesley Maurer of the school of journalism, University of Michigan, Ann Arbor, Evert G. Routzahn, editor of the public health education section of the *American Journal of Public Health* and Ruth E. Grout, Cataugaus County School Health Service, Olean, N.Y.

Resolution on Professional Relationships—At its recent annual meeting in Portland, Ore., the American Pharmaceutical Association adopted a resolution expressing "the belief that it is essential to good medical care and to the welfare of the public that the personal relation between those engaged in the practice of medicine, dentistry, pharmacy and allied professions and their clientele be preserved." The action was taken, the resolution said in view of the fact that certain proposed methods of providing medical care to the public through federal, state and private agencies contemplate corporate practice involving elimination or serious interference with the personal and private relations between members of the medical, dental, pharmaceutical and nursing professions and their clientele.

Society News—Dr Roscoe C. Giles, Chicago, was elected president of the National Medical Association at its annual session in New Orleans in August. Dr John T. Givens, Norfolk, Va., William D. Giles, DDS, Chicago and Emile J. La Branche, New Orleans were elected vice presidents and Dr Charles A. Lanon, South Brownsville Pa., secretary. Next year's meeting will be held in Philadelphia. The Western Orthopedic Association will hold its annual session at San Francisco October 25-26, with a program of addresses and

clinical meetings at San Francisco, Stanford and Mount Zion hospitals. Dr Merrill C. Mensor, 490 Post Street San Francisco, is secretary.—Dr Henry E. Young, Victoria, B.C., was elected president of the Western Branch of the American Public Health Association at its recent annual meeting at Helena, Mont., and Dr William P. Shepard, San Francisco, secretary. Next year's meeting will be held in Vancouver, B.C.—The Central Association of Obstetricians and Gynecologists will hold its seventh annual meeting in Omaha, October 10-12, at the Hotel Fontenelle.—The American Dermatological Association will hold its next annual meeting at the New Ocean House in Swampscott, Mass., June 4-6, 1936.—The twenty-fourth annual Safety Congress and Exposition will be held in Louisville, Ky., October 14-18.—The International Medical Assembly of the Interstate Postgraduate Medical Association of North America will be held in Detroit, October 14-18 with headquarters at the Masonic Temple.—The Society for Plastic and Reconstructive Surgery will hold its annual meeting at the Hotel Statler, Detroit, October 18-19.

American Hospital Association—The annual session of the American Hospital Association will be held in St. Louis, September 30 to October 4 under the presidency of Robert Jolly Houston, Texas. Among physicians listed on the program for addresses are:

- Dr H. Kennon Dunham, Cincinnati: Interpretation of Chest Films with Special Reference to Tuberculosis
- Dr Everts A. Graham, St. Louis: Differential Diagnosis of Chest Films
- Dr Williams McKim Marriott, St. Louis: Conduct of a Convalescent Department of a Children's Hospital
- Dr Robinson Bosworth, Rockford, Ill.: Rehabilitation of Patients in the Sanatorium
- Dr Magnus C. Petersen, St. Peter, Minn.: The Hospital Library in Relation to Psychiatric Research
- Dr George Harvey Agnew, Toronto: Governmental Methods of Providing Care for the Indigent Sick in Canada Compared with the United States
- Dr Nathaniel W. Faxon, Boston: Past, Present and Future Status of Governmental Hospitals in the Care of the Indigent Sick and Their Relation and Effect on Nongovernmental Public Hospitals

The American Protestant Hospital Association will hold its meeting in St. Louis September 28-30, and the American Occupational Therapy Association will meet simultaneously with the American Hospital Association.

Death Rates in 1934—The U.S. Bureau of the Census announces that there were 1,396,903 deaths in the United States in 1934, a mortality rate of 11 per thousand estimated population, an increase over the rate for 1933, which was 10.7. The bureau has issued a comparative summary of mortality statistics for the last three years, giving mortality rates for all causes of death. The tuberculosis death rate fell from 62.9 per hundred thousand of population in 1932 to 56.6 in 1934, while the rate for cancer and other malignant tumors rose from 102.2 to 106.3 in the two years. The type of cancer most frequently found was that of the digestive tract and peritoneum. Deaths from diabetes increased from 26,368 to 28,000, the rate from 22 to 22.1. The number of deaths from cerebral hemorrhage increased from 94,694 to 97,148. Diseases of the circulatory system caused 333,296 deaths in 1934 compared with 295,509, an increase in rate from 246 to 263.6 per hundred thousand, most numerous were diseases of the myocardium, which caused 136,726 deaths in 1934. The pneumonia death rate was 41.2 in 1932 and 43.3 in 1934 but was 36.4 in 1933. Appendicitis deaths rose slightly, 18,129 in 1934 as compared with 17,111 in 1932. A decrease was shown in deaths from pregnancy, childbirth and the puerperal state, the rates for the three years being 11.1 for 1932, 10.3 for 1933, and 10.2 for 1934. Suicides also showed a downward trend, the rates being 17.4, or 20,927 deaths, in 1932, 15.9, or 19,993 deaths, in 1933, and 14.9, or 18,828 deaths, in 1934. On the other hand, homicides rose from 11,035, or a rate of 9.2, in 1932 to 12,055, or 9.5, in 1934. Primary automobile accidents caused 33,980 deaths in 1934, compared with 29,323 in 1933 and 26,350 in 1932. Air transportation accidents caused 428 deaths in 1934, compared with 434 in 1933 and 386 in 1932. All violent and accidental deaths increased from 117,830 in 1932 and 123,204 in 1933 to 132,022 in 1934.

CORRECTION

Antimeningococcic Antitoxin—In a news item concerning the recent retirement of Dr. Simon Flexner, published in THE JOURNAL, June 22, page 2274, the statement was made that Dr. Flexner "was the first to use the meningococcus antitoxin." The term "antimeningitis serum" should have been used as the statement referred to Dr. Flexner's early work on that serum and not to the recent antitoxin developed by Ferry and used by Hoyne (THE JOURNAL, March 23, p. 980).

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 24, 1935

Defense of the Civil Population Against Gas Attacks

Further information is now available concerning precautions against gas attacks on the civilian population. The St. John Ambulance Brigade is making comprehensive provision. A scheme of education and training will be in full operation by the autumn. It will include instruction of householders in precautionary measures and the formation of an air raids precautions reserve. Selected officers of the brigade from every county have already been given an intensive course of training, and virtually all the personnel of the London district—some 7,000 men and women—are now instructed in anti-gas precautions and first aid in cases of gas poisoning. The brigade is appointing an officer for every county throughout the country and also for every municipal borough. The duties of these anti-gas precautions officers, as they are called, will be important. After thorough training they will be available in their own areas to advise local authorities as to the safeguarding of the civil population. They will supervise the dissemination of knowledge among householders, who will then be in a position to afford their families all the protection possible against poison gas. They will also organize the air raids precautions reserve. It is believed that many citizens who have not time or inclination to join the brigade as members would be prepared in times of emergency to lend a hand in combating the effects of gas. They will be invited to enroll. Their training will be based on the instruction in the official handbook.

The further task of educating the civil population in anti-gas precautions has been begun by a demonstration showing how a householder can make one of his rooms secure against explosive blasts, metal splinters and poison gas for an expenditure not exceeding \$5. Boarded windows and protective curtains over the doors are the only external evidence that the house is equipped to stand a gas attack. Inside, a back bedroom has been completely fitted as a shelter and contains everything needed for a prolonged occupation—canned foods, drinking water, beds, furniture, a wireless set for receiving news, books and games to pass the time, utensils containing the liquid with which the protective curtains over the door and windows must be kept damp, a garden syringe for spraying the curtains, and gas masks for use if the occupants go out of the room or for emergencies. The masks, of a type approved by the government, are said to remain gas tight for sixty hours. It is asserted that a room so protected and furnished may be occupied for several days.

Investigation of Industrial Dust Diseases

An important advance in the investigation of industrial dust diseases such as silicosis has been made by the invention of a thermal precipitator by Prof. R. W. Whytlaw-Gray and Dr. R. F. Lomax. During investigations of exposure of stone masons to dust, carried out by Mr. H. L. Green and Mr. H. H. Watson of the chemical defense experimental station, who were lent by the war office for the purpose, the instrument was developed and perfected until it reached such efficiency that all particles likely to be of pathogenic importance could be collected. The investigations are part of the program of the committee on industrial pulmonary disease, which was set up by the Medical Research Council in 1930. In the report it is stated that definite conclusions have been reached that it is undesirable for stone masons to work in closed yards, that on calm days the exposure to dust may be three or more times greater than on a windy day, and that punching (shearing off large quantities of stone by heavy blows on a pointed tool)

may account for about half the dust that the mason may inhale. The best preventive measures are the wearing of respirators and brushing the stone free from accumulated dust.

Road Accidents

A table just issued by the minister of transport shows that, in the seven years 1928-1934, 24,385 pedestrians were killed and 533,489 injured, 7,235 bicyclists were killed and 292,098 injured, 16,422 motorists were killed and 545,463 injured. The complete total for the seven years is 48,042 killed and 1,371,050 injured, giving an average of 555 killed and injured every twenty-four hours. For the present year the average so far is 116 killed and 4,016 injured per week. During the seven years the number of killed and injured has been constantly rising—from 170,976 in 1928 to 238,946 in 1934. If the figure is taken as 100 for 1928, the figures for the following years are 103.9, 108.3, 122.1, 124.6, 130.7 and 139.8. The increase for bicyclists is particularly high, taking 1928 as 100, the figure in 1934 was 244.1. The increase of accidents cannot be attributed entirely to increase of automobile traffic, which rose from 2,052,539 vehicles in 1928 to 2,416,908 in 1934. This gives a percentage increase only about half of that for the accidents. The road figures contrast unfavorably with those of train accidents. The number of passengers killed while traveling on railways in 1934 was 17, being one in 96 million.

ACCIDENTS TO CHILDREN

During the present year 500 children have already been killed in road accidents, 103 were cycling. Of 386 killed while on foot, 293 were between the ages of 2 and 9 years. In thirty-two cases children were killed when they escaped from their elders, who were supposed to be in charge of them. There were twenty-two cases of stealing rides and fourteen of chasing a ball into the roadway. Most of the children had been repeatedly warned of the dangers of the roads. The report to the National Safety First Association on the subject states that greater foresight on the part of drivers and closer supervision on the part of parents and others are essential if there is to be any improvement. There were twenty-seven cases in which children were run over when a vehicle restarted or reversed after a stop and the driver failed to notice the child. Older children should be given more "safe-cycling instruction", also it is not wise to teach children to "cross quickly," as it tends to make them run across the road—a dominant factor in their accidents. The report also suggests that fatal road accidents to children might be specially investigated by experts with the same thoroughness as accidents on railways.

A School Sanatorium for Tuberculous Boys

At Frimley, Surrey, a new experiment in the treatment of tuberculosis is being carried out at what is known as the Borough Hill Sanatorium Colony, which is a school for tuberculous boys between the ages of 13 and 19. The Borough Hill Colony, founded in 1929, has already proved so successful as to warrant imitation. Seventy per cent of the boys admitted have found employment and some have gained successes at examinations that would be a credit to a normal school. During the last four years 100 per cent passes have been obtained. The boys live under strict discipline and the control of two physicians. They rise at 7 and have their temperatures taken, breakfast at 8 and at 9 go to the classroom or garden. At 12 they rest. At 1.15 they rest again in their cubicles. At 2 they return to the classroom or garden and at 4 knock off for the day and have their temperatures taken again. At 5 there is another period of rest before tea at 5.30. At 6 there is recreation of a kind graded to their state of convalescence and at 8.45 they go to bed. The school has a model office equipped with typewriters and filing cabinets for training for clerkships. Many acres of the grounds are devoted to gardening, for which occupation many of the boys train. The average time taken

to effect a cure is two and one fourth years. Of 130 patients discharged, thirty-seven obtained posts as clerks and twenty-six as gardeners, thirty-eight obtained other employment, and only fourteen were unable to obtain employment. Eleven were discharged unfit for work. Boys who would have died or who after cure would have been thrown helplessly on the world are returned to society after a few years to lead healthy, useful lives.

Paying Patients in Voluntary Hospitals

The voluntary hospitals (hospitals supported by the voluntary subscriptions of the charitable) were established for the gratuitous treatment of the poor, many patients, however, who do not come under the designation of "poor" cannot afford the cost of private treatment but can pay for treatment in hospitals at charges proportionate to their means. Also there are now numerous methods of diagnosis and treatment that cannot be provided without the aid of the specialized equipment and staff of a hospital except at great expense, if at all. Hospitals that might wish to provide for such persons are prevented by legal obstacles arising from the fact that the need was not foreseen when the legal definition of the hospital was settled. A bill to enable them to do so has been introduced into the house of lords. It provides a uniform method of removing these legal obstacles and at the same time safeguards the interests of the sick poor.

The Falling Birth Rate

In the *Times* Mr. Robert Rankin, M.P., deplores the falling birth rate and says that there is not enough of British stock to quarter fill the empty spaces of the empire. Australia, for example, has a habitable rainfall area of 1,725,000 square miles, which should hold at the present density of the United States 46,000,000 persons, whereas it has only 6,700,000. Up to 1930 the British dominions had a rate of expansion that would double their population every thirty-five years. Now immigration is at a standstill and the birth rate is declining. In Australia the fall has been precipitate, the annual rate of natural increase having sunk from 17.4 per thousand in 1914 to 14.34 in 1921, 1925 and 7.1 in 1934, and it cannot be assumed that it has yet touched bottom.

Mr. Rankin thinks that something should be done to stimulate the growth of population, as has been done in Germany, and, he might have added, Italy. But, like most politicians, he does not fully face either causes or consequences. One of the causes of the decline of the birth rate is industrial depression and unemployment. This in its turn is due largely to political interference in industry and in commerce. The interference of trade unions and, to a less extent, of tariffs has arrested the commercial development of Australia, and its "empty spaces," so deplored by politicians, remain. Mr. Rankin does not tell how to remedy this.

A New Campaign for Road Safety

A new edition of the highway code which takes the place of the pamphlet formerly circulated only to motorists, has been distributed by the government to every house in Great Britain. In a foreword the minister of transport says: "This code is put in your hands in the sincere hope that the observance of its provisions will make the roads safer. Its provisions are a simple summary of the best and widest experience each one written in the resolute desire to prevent that kind of mistake or thoughtless action which may result in bereavement or suffering." All together, 15 million copies are to be distributed of which 80,000 will be in Welsh. The new campaign for road safety is to include a film for motion picture theaters, and a van will visit the seaside resorts and relay the provisions of the code and phonograph talks by the minister and others. Posters in underground stations and in omnibuses in London and in public service vehicles throughout the country will also be used. Large stores, catering firms and others are cooperating in the campaign.

PARIS

(From Our Regular Correspondent)

Aug. 5, 1935

Suppression of Street and Radio Noise in Paris

The prefect of police of the department of the Seine, in which Paris is situated, some time ago ordered all honking of automobile horns to cease between 11 p.m. and 7 a.m. Recently, these hours have been changed to 9 p.m. and 8 a.m. Perhaps in the near future an effort will be made to imitate the example of Rome where no honking is permitted at any hour of the day or night. The chief sources of street noise in Paris have been the automobiles, motorcycles, street singers, garbage collectors and pedlers. To these now one can add the radio fans who insist on leaving windows open so that their sound amplifying devices will give the neighbors the benefit of the various broadcasts or records. The Paris police are planning to organize a special antinnoise squad, which is to make the rounds of the city so that on receipt of a single complaint the offenders will be warned. If they continue to offend, a police court summons will follow. French radio stations will be asked to participate in the campaign with broadcasts calculated to convince radio fans that they can obtain better results, without disturbing their neighbors by moderating the power of their sets. As soon as an effective silencer for motorcycles can be found, it will be made obligatory. Any one who has been awakened at 6.30 by the slinging of garbage cans on cement sidewalks will appreciate the order to garbage collectors to perform their task as quietly as possible. Street singing will be limited to those whose cases prove to be worthy and not allowed at an hour when sleep should replace the effort to drown out "harmony murder."

Results of Artificial Pneumothorax for Tuberculosis During Pregnancy

At the May 14 meeting of the Académie de médecine, Rist and Jottras reported their results in the treatment of tuberculous pregnant patients at the Baudelocque Maternity (Professor Couvelaire). The 138 cases included in the report were divided into two groups. In the first there were fifty-eight women in whom the pneumothorax preceded the pregnancy. In the second group were seventy-four in whom this method of treatment was employed during the pregnancy. In the first group, pregnancy occurred while under treatment five years before the report was made, so that one could better judge the end results. Thirty-nine of the fifty-eight in this first group had begun the treatment. Twenty-six, or 67 per cent, of the thirty-nine can be considered cured after five years of observation. Of nineteen women whose pregnancy began less than a year after the pneumothorax treatment twelve (53 per cent) are cured, three years or more after parturition in the case of nine of the twelve, and two years for the other three. In fifteen women in whom pregnancy occurred at a period when the pulmonary lesions were latent, there were thirteen (87 per cent) cures.

In the second group, of seventy-four cases, in which the pneumothorax treatment was begun during the pregnancy, there were thirty-three (45 per cent) favorable results. The earlier in the pregnancy the treatment was employed the better was the prognosis, as shown by comparing the 67 per cent of cures in the first with the 45 per cent of cures in the second group.

If one groups the cases according to whether they showed clinical evidence of pulmonary tuberculosis before or during pregnancy it is to be seen that, of thirty-eight who became pregnant while under treatment, nineteen, or 50 per cent, are cured. On the other hand in thirty-six women in whom the disease appeared during pregnancy, the pneumothorax has cured only fourteen, or 39 per cent. The latter figure emphasizes

the gravity of tuberculosis occurring during pregnancy. Pneumothorax treatment enables one to save the life of both the mother and the child. Its efficacy will more and more limit the indications for therapeutic abortion in the future.

Popularization of Medicine

A plea to the medical profession to enlighten the public as to recent advances is made by R. Massart in the July 14 *Congress Medical*. The article is in line with the publication by the American Medical Association of such a journal as *Hygeia* and the broadcasting program undertaken by the Association. Massart states that the public is often surprised that greater efforts are not being made to keep it informed concerning newer methods of treatment in such a manner that one may keep abreast of medical progress and thus avoid being obliged to secure such information in nonmedical publications. Often all the public, at least in France, knows is what it learns through advertisements of quacks in lay journals. There is much less restriction of this class of publicity here than in the United States. One charlatan in Paris treats all cases by pressure on the sympathetic nerve endings in the nose and his practice can well be envied by those who do not advertise. The public ought to be told that such extravagant claims are impossible to achieve but that the charlatan is profiting by the remarkable success of operations on the sympathetic nervous system by Leriche and other surgeons in France. The patient of the present day is no longer content with the explanations given by the medical man in the past. The higher up in the social and intellectual scale, the more questions are asked by the patient. In France there are journals such as *Guérir* (to cure) which appear weekly and attempt to diffuse knowledge concerning medical achievements, such as the progress made in the treatment of cancer, tuberculosis and heart disease. The articles treat these questions in the simplest nontechnical manner possible, but all criticism and reservations are omitted. The articles are well illustrated. The readers follow the fantastic descriptions as closely as they would an exciting novel, but they cannot distinguish what has been proved and accepted from that which is still in the nebulous stage.

Advice as to treatment can be had from these journals for the asking. This sort of publicity does more harm than good to the medical profession. Advertising campaigns for the use of particular methods have been begun by these lay journals and no one can prophesy how far such a campaign will lead. Massart believes that suppression of these lay publications is impossible. The only remedy is to have the medical profession publish a journal so that in an unselfish manner the duties and the difficulties of the profession can be pointed out. Such a journal should be as well illustrated as are the best of the nonmedical publications. The public should be kept abreast of discoveries in medicine, properly evaluated. The danger of improper and dishonest application by quacks of new methods of treatment must be pointed out. Massart believes his idea is new but evidently he does not know of the excellent work being done in this field by the American Medical Association.

Culture of Entire Thyroid Glands

At the June 26 meeting of the Academy of Sciences, Alexis Carrel and Charles A. Lindbergh made a report of experimental work by which an entire organ or region of the body may be transplanted into a sterile receptacle and through the automatic supplying of a nutrient fluid through the arteries of the organ the circulation may be maintained as under normal conditions. The survival of organs such as the thyroid and ovary has been followed by their development. Such complete visceral cultures is not meant to supplant tissue culture. It differs from the latter not only from the standpoint of technique but also in its objectives. Organ culture aims to study

associations of cells and not the latter alone. The complete organ culture is of aid in the observation of the elaboration *in vitro* of the secretions of endocrine glands, of the substances essential to their growth, of their functional activity, of the laws of association and, finally, of the treatment *in vitro* of organic and arterial diseases.

The method employed in the study of six thyroid glands of the cat and nine of the rooster was described in detail. Three culture mediums were utilized, blood serum more or less diluted, an artificial medium containing amino acids, and a third containing peptones. The circulation of the first two is accompanied by a diminution in the size of the glands, which, however, conserve their normal structure in part and the follicles remain filled with colloid substance even after twenty-one days of blood serum circulation. The glands undergo degenerative changes in a medium containing relatively high percentages of amino acids. The liquid the use of which is followed by the most marked growth of the thyroid is that containing peptones. In three or four days the gland doubles in size. From the histologic point of view one notes either epithelial proliferation with disappearance of colloid material or an increase in the size of the cells with production of colloid material. There can be no doubt that the gland continues to function, but the architecture, follicular structure and activity vary according to the chemical, physical and physicochemical composition of the fluid circulating through the vessels of the gland. This new method would seem to have important application in physiologic chemistry, pathology and clinical medicine.

Destruction of Rats in Warehouses

The destruction of rats has been studied for many years by Loir of Havre, because of the losses incurred as the result of the presence of rats in the warehouses of this port. At present, only poisons and viruses are employed in France. When a few rats have been killed the colony migrates, but it returns as soon as danger ceases. The majority of rats killed are males (131 out of 140 in one week), hence the reestablished colony does not diminish in number. Loir maintains that cats are the most efficacious agents against the rat menace in sea ports. It is unnecessary to attempt to breed a special rat catching cat. All that will take care of itself, because if the cats are protected and well fed they soon become powerful enough to attack rats. Loir did not belittle the value of bull terriers but thought their usefulness was lessened by the fact that the rats hear the noise made by dogs, whereas cats work much more quietly. The smaller the number of cats in a given space, the better the results. In Italy, when Mussolini ordered the drainage of the marshy regions near Rome, 3,000 cats were brought to destroy the rats so that they would not interfere with the raising of grain on the drained soil.

An Old Paris Hospital to Be Razed

A final gathering of notables in the Paris medical world was held in May at the Charité Hospital prior to turning it over to the contractors who are tearing the historic structure down. It will be replaced by laboratory buildings of the medical school. Thus disappears the first building in which courses in medicine were given in the eighteenth century. The hospital was founded in 1602 by a religious order, the Brothers of St. John, with the aid of Queen Marie of Medici, wife of Henry the Fourth. At that time Paris possessed only one other hospital, the Hotel Dieu. Buildings were added from time to time until in 1788 its capacity was 208 beds, arranged in large wards so that medical were separated from surgical cases.

The institution was particularly renowned for its lithotomists, especially Frère Jacques, who is shown in a painting dating back to 1697 surrounded by physicians and removing a vesical calculus through the perineal route. His mortality was so high that he was obliged to leave France.

Desault was a surgeon and Corvisart an internist at the Charité, when in 1789 they held clinics for the first time in French history.

Among other famous medical men who had services during the nineteenth century may be mentioned Potain and Lacnec.

The famous amphitheater in which Corvisart taught pathology has been visited by thousands of physicians from foreign countries.

The *Paris médical* devotes its August 3 issue to the history of this famous institution, and the illustrations show all the stages of its development and the part the Charité has played in French medicine.

Alcohol Injections of Phrenic Nerves in Bronchiectasis

At the May 10 meeting of the Société médicale des hopitaux, Chiray and Malinsky reported a case of cylindric dilatation of the bronchi with profuse purulent expectoration and high temperatures which did not improve during a month's stay in the hospital. Alcohol was then injected into the left and a few days later into the right phrenic nerve, to inhibit the movements of the corresponding halves of the diaphragm. The inhibition was verified by radioscopia. This treatment was followed by marked improvement in the amount of expectoration. Injection of the bronchi with iodized oil and subsequent radiography revealed bronchi of almost normal size. The patient can be considered clinically cured.

In the discussion, Rist stated that he had advocated phrenicectomy ten years previously for dilatation of the bronchi. He had some remarkable results. Rist has never been obliged to operate on both phrenic nerves.

Lereboullet reported a gratifying result in a boy of 9 with congenital bronchiectasis of the left lower lobe, profuse expectoration and clubbed fingers. The profuse expectoration ceased after a phrenicectomy, the diaphragm rising 4 cm. The fingers assumed their normal aspect rapidly. In other children, postural drainage, as advocated by Quincke, had been followed by marked improvement, hence operative treatment would be less often indicated in children.

Sergent believed that alcohol injections are preferable to phrenicectomy. He had never observed any benefit from phrenicectomy in chronic bronchiectases, but it was efficacious in cases following a bronchopneumonia with slow resolution. No single method can be considered as the choice in the treatment of bronchiectasis.

Recovery Following Mercuric Chloride Poisoning

Marchal, Soulie and Grupper reported a case of mercuric chloride poisoning with recovery at the April 12 meeting of the Société médicale des hopitaux. A woman of 28 swallowed 5 Gm of corrosive mercuric chloride dissolved in water. Three days later anuria appeared accompanied by a blood urea of 270 mg per hundred cubic centimeters, rising later to 535 mg. Following multiple transfusions of from 300 to 350 cc the anuria, which had lasted twelve days disappeared, the urinary output attaining as high as 3,500 cc. in twenty-four hours. The alkali reserve of the blood remained about normal throughout. The electrocardiographic changes included flattening of the T wave inversion of the latter and widening of the ST space, all of which indicated myocardial changes of a toxic character. The blood showed at the beginning a marked polymorphonuclear leukocytosis followed by a late aplastic anemia with progressive granulopenia as indicative of bone marrow involvement. The cardiac condition responded very well to digitalis in large doses. They believe that the blood transfusions and the frequent administration of salt solution to compensate for the loss of chlorides as shown by the blood examination are responsible for the favorable outcome.

BERLIN

(From Our Regular Correspondent)

July 22, 1935

Training School for Leaders in German Medicine

June 1, on a specially chosen area in a former village of Mecklenburg, in charming scenic surroundings, a training school for leaders (führer) in German medicine was opened with fitting ceremonies. According to the address of Dr. Wagner, the federal führer of the medical profession, the purpose of the school is "to open the mind of the future medical führer to the value and the blessings of the healing forces of nature and its elements. It is designed to help liberate him from the spirit of prejudice and dogmatic intolerance with which he may be inclined to view old school medicine, and to teach him to cooperate in a spirit of camaraderie with all those who, as his co-workers, are laboring to promote the cause of public health." In addition, candidates are expected to secure, through attendance on the organized courses, a knowledge of law, an intimate acquaintance with the mode of functioning of organized society, and a knowledge of the heredobiologic and racial principles governing the new policy of health culture in Germany. During the present summer about 600 local leaders connected with the public health service of the national-socialist party will receive special training in intensive fourteen day courses. Later on, six weeks' courses for the advanced training of a selected few will be organized.

Mortality from Circulatory Disorders

Disorders of circulation have been for some time the most frequent cause of death. In 1931 Germany's mortality from "diseases of the circulatory organs" and from cerebral hemorrhage amounted to 27.5 per 10,000 of population, which constituted 24.4 per cent of the total mortality. The mortality of diseases of the circulatory organs increases with the age of the patient. From about 1 death per 10,000 in childhood there is an increase to 400 per 10,000 in old age. Conclusions based on the statistics, Dr. Koller of the Kerckhoff Institute for Cardiac Research in Bad Nauheim brought out, are greatly impaired by their varying degree of reliability. More exact collection of statistics on the causes of death usually results in higher mortality rates for the diseases of the circulatory organs. Many cases of "senile weakness," if examined more in detail, would be found to be cases of circulatory disorder, while a somewhat smaller percentage of cases of "heart disease" might be more accurately diagnosed. In Saxony in 1922 about 89 per cent of all deaths ascribed to diseases of the circulatory organs were certified by physicians, as compared with only 81 per cent of the deaths due to all causes. With regard to infants, the reliability of the statistics on the causes of death was low, being estimated at 50 per cent. With the exception of the youngest age group deaths from diseases of the circulatory organs are certified with reasonable accuracy in the main.

Recent decades have brought a sharp increase in the mortality due to circulatory diseases. One of the main reasons for the increase is the upward shift in the average age of the population—the absolute and the relative increasing percentage of old persons. This explains only a part of the increase, for, in spite of the changes in the numerical representation of the older age groups the mortality in Prussia from 1905 to 1925 would have increased only to 22.3 for men and to 20.8 for women, and in Bavaria during the period from 1900-1901 to 1925, to 23.0 for men and to 24.0 for women. The actual increase, however, is much greater, so that only 88 and 44 per cent, respectively, of the increase in Prussia from 1905 to 1925, and 48 and 26 per cent, respectively, of the increase in Bavaria during this period may be explained by the shifting that has occurred in the population. The increase among the men is greater than

for the women. The difference is caused by the greater number of men who lost their lives in the World War, which increased the relative representation of the older age groups. Whether any other factors besides shifting in the relative representation of the age groups and improvements in diagnosis have contributed to the increased mortality from diseases of the circulatory organs appears doubtful.

While the mortality from diseases of the circulatory organs has increased in the older age groups, it shows a distinct decline in the younger and the middle groups. Here too an improvement in the quality of the statistics will play a part, chiefly through the turning over of a number of deaths to the brackets of various infectious diseases, as the fundamental disorders. It is quite possible that part of the reduction in mortality of the young is explainable by better therapeutic results. In infants, conditions are different. The improved classification of causes of death brought usually (particularly in Prussia) a marked decline in the figures for infants. In Bavaria however, the figures show an increase. The influence of the seasons on women is greater than on men. Persons of advanced age are more affected by the seasons than persons of the middle and the younger group. The course of the curve appears to justify the assumption that the increased mortality of the winter is due to the premature termination of a number of lives that would have continued only a few months longer at best and that the reduced mortality of the following summer is in the nature of a compensatory adjustment. If this assumption is true, a high winter peak would be followed by an exceptionally low summer mortality. A scrutiny of the statistics, however, revealed that, aside from the fact that the winter and the summer curves may reflect a common increase, the curves have no connection, the winter and the summer figures show a wide fluctuation independently of each other. The increased mortality of the winter does not therefore concern persons with an especially unfavorable prognosis. There appears to be no doubt that the winter's additional toll of diseases of the respiratory organs plays a part. It is well known that, associated with periods of influenza deaths from diseases of the circulatory organs show an immediate and marked increase. The greater menace to persons with disorders of the circulatory organs that accrues from the more frequent complications of winter does not however, explain entirely the seasonal differences. This is shown by a comparison of the weekly statistics of Germany's large cities for the winters of 1932-1933 and 1933-1934. In both years the winter peak for diseases of the circulatory organs reached a height hardly explainable by chance. In the winter of 1932-1933 the upward trend coincided with the wave of influenza. In the winter of 1933-1934, however, the influenza wave was not associated with any marked rise, so that other factors during this winter period must have influenced the high mortality from diseases of the circulatory organs.

Stomach Ulcer and the Kymogram

In roentgenologic examination of the stomach the use of the kymographic method is by no means a substitute for fluoroscopy or the ordinary film, as Cramer pointed out in a recent address before the Berlin Medical Society. Kymography, however, serves a special purpose—namely, the demonstration of a simple ulcer even though a tumor of the mucous membrane is absent. This is made possible owing to the fact that with the kymograph the functioning of the stomach, including the peristaltic waves, may be studied. Several important data have been discovered. Evacuation of the food from the stomach is not accomplished by peristalsis but rather by contraction of the stomach. During the contraction the food is pressed downward through the pylorus and upward toward the cardia. Likewise the lesser curvature executes peristaltic movements, although of a slighter degree. In the presence of an ulcer a typical manifestation is

the general hyperperistalsis of the whole stomach in contrast with the dynamic rigidity in the immediate vicinity of the ulcer. From this "aperistaltic" zone one can diagnose kymographically a simpler ulcer, also a bleeding ulcer. In extraventricular tumors, the kymogram was found useful also in establishing a differential diagnosis.

Medical Advisers in Shoe Establishments

For years, ethical German physicians have strongly deprecated the custom of large shoe establishments engaging physicians to serve as expert advisers to their customers in the purchase of suitable shoes. In this manner alleged orthopedic shoes were disposed of that did not meet the requirements of orthopedists. The medical court of honor for the Berlin district has now rendered a decision to the effect that physicians are prohibited from serving as medical advisers in shoe establishments. The physicians who have been serving in that capacity have been notified that they must terminate their contracts with shoe firms at the earliest possible moment. All physicians working under such contracts who do not announce within a few days their compliance with the law will be reported to the court of honor.

Industrial Accidents in 1933

Government authorities and private organizations are constantly calling attention to the menace of industrial accidents. In the official *Nachrichten für Reichsversicherung*, statistics were recently published showing that in 1933 in the industrial plants included in the 'gewerbliche Berufsgenossenschaften' 427,688 accidents occurred, 2,402 of which resulted fatally. In 1932 there were 461,682 industrial accidents, 2,311 of which proved fatal. The increase is due chiefly to the fact that the number of plants rose from 1,124,848 in 1932 to 1,145,026 in 1933, while the number of persons insured mounted from 8,280,075 in 1932 to 8,977,155 in 1933. As compared with 1913, the number of industrial accidents was 53,523, or 9.21 per cent lower while the number of insured was 15.5 per cent less. The maximal number of industrial accidents during recent years occurred in 1928, there having been 1,046,112 accidents with 5,252 fatalities.

Although the number of accidents compared with 1932 shows an increase, which is due to a great extent to the enrolment of a large number of unskilled workmen, it may be noted that the number of persons receiving accident compensation for the first time has declined by 4,554, or 14.37 per cent. Without doubt this good showing is the immediate result of accident prevention propaganda.

Decline in Suicide Rate

The statistical bureau of the city of Berlin has published a series of statistics on suicide in Berlin in relation to unemployment, during the decade 1925-1934. An examination reveals that the two curves show a surprising resemblance. When the unemployment increases the suicides increase although not to the same extent. When, during the years 1925 and 1926, the number of unemployed mounted rapidly (from 81,000 to 275,000), the suicides increased from 1,587 to 1,779. In 1927, when the unemployed in Berlin dropped to 209,000, the suicides declined to 1,687. The same observation was made in 1928, the number of unemployed numbering 183,000 and the number of suicides 1,481. Since 1928 unemployment has increased steadily and likewise the number of suicides. In 1932 the maximum was reached, the statistics showing 635,000 unemployed and 2,262 suicides. In 1933 the number of unemployed dropped to 611,000 and at the same time (and in almost the same proportion) the number of suicides fell to 2,136. In 1934 there were 417,000 unemployed and 1,811 suicides. As former observations have shown it is evident that the suicide rate is strongly influenced by economic conditions.

ITALY

(From Our Regular Correspondent)

July 15, 1935

International Congress of Hospitals

The fourth International Congress of Hospitals, organized by a committee on which the Spanish prefect served as chairman, was held recently in Rome. The first topic, which was covered by four speakers, was "The Hospital from the Standpoint of Public Health."

The first speaker, Professor Ronzani, director of the Hygienic Institute of the University of Milan, developed the subject from the point of view of general hygiene and demonstrated the need of coordinating the existing hospitals, by province or region, with relation to their equipment. He proposed the creation of provincial committees, whose duty it would be to coordinate the hospitals and promote the construction of new hospitals or the reorganization of existing institutions in accordance with the technical and hygienic standards established by the ministry having jurisdiction. In every hospital should be established consultation centers for the early diagnosis of disease and for the treatment of patients dismissed from the hospital proper. The program would be completed by the creation of professional schools for nurses and for hospital social workers. The latter would serve as mediators between the physicians, the welfare organizations, the insurance companies and other bureaus.

The second speaker, Dr. Browne of Scotland, treated the problem from the point of view of social hygiene and political economy. He emphasized that the constantly increasing number of patients makes necessary an increase in hospital services, which might become effective centers of public hygiene. The difficulties in the way of improvement in hospital services are due to the lack of a rational classification of patients, to defects of construction and equipment, and to an inadequate personnel.

The third speaker, Professor Rüdin of Germany, discussed the eugenic problem, pointing out that the activities of the hospitals in this field must be controlled by the central government, and that hence it is necessary for hospital physicians to know the scientific bases of eugenics, which is founded on the preservation of the health of the race, which includes protection against hereditary taints. The hospitals may render useful service by publishing detailed statements on hereditary diseases.

Hospital physicians should not confine themselves to collecting information on the patient but should extend their investigations to the members of his family.

The fourth speaker, Professor Sarraz-Bournet of France, took up the administrative side, and contended that the hospital should not be solely an institution for the treatment of patients but should also participate in social work, introducing, among other things, courses in sanitary instruction.

The second topic, "The Organization and the Technical Installations of Hospitals," was discussed by speakers representing respectively the United States, Poland and Switzerland. The first speaker, Schwittalla, spoke on the coordination of hospital activities to improve the quality of the aid rendered patients and expressed his regret that at present there are too many organizations in this field, while a fixed purpose is lacking. The work of the physicians, the nurses, the administrators and the various welfare organizations should be subordinated to the chief aim of the hospital—namely, furnishing the patient with the best care possible.

The second speaker, Professor Mogilnicki, spoke on the economic principles that should govern the technical organization of a hospital, emphasizing that all luxury should be suppressed and only those things done that improve the quality of the services.

Professor Van der Leen of the Netherlands explained a system of bookkeeping especially applicable to hospitals.

The question of eugenic sterilization was then taken up and gave rise to animated discussions. Dr. Schultze of Germany emphasized that the modern hospital, in addition to the positive task of restoring the patient to health and strength, must assume also a negative task, which consists in depriving of procreative power such patients as are affected with hereditary taints. In the opinion of the speaker, the regulations at present in force in Germany will be adopted by all civilized countries. This view was frankly opposed by Dr. Doherty of Ireland and Dr. Groonenberg of Amsterdam, who protested in the name of the Netherlands delegation. Likewise Professor Lepine of France declared that the problems of eugenics and of sterilization should be banished from congresses on hospital management, since the duty of the hospital is to promote the treatment of sick persons.

Tuberculosis of the Bones and Joints

Under the chairmanship of Professor Putti the second congress for the study of osteo-articular tuberculosis was held recently. The first topic was "Internal Localizations of Osteo-Articular Tuberculosis in the Child." The opening paper was presented by Professor Frontali, who emphasized that osteoarthropathy in the child is due in 84 per cent of the cases not to bovine tubercle bacilli, as has been contended by some, but to human bacilli, the first localizations of which are commonly found in the respiratory system. The speaker held that the diffusion of the tuberculous virus takes place from foci—usually intrathoracic—by way of the blood, giving rise to localizations also in the skin, which are frequent in children with osteo-articular involvement. Contrary to the general belief, children affected with tuberculous osteoarthropathy may spread contagion among children with whom they associate, because of localizations in the respiratory tract that are often overlooked. Sometimes the pulmonary focus exerts a decisive influence on the outcome of the orthopedic treatment. He opposed the conception of Marfan that osteo-articular tuberculosis furnishes increased resistance to pulmonary infection and demonstrated that tuberculous spondylitis, for example, gives rise to mechanical conditions that favor the evolution of pulmonary disorders.

The second topic was "Radiodiagnosis of Osteo-Articular Tuberculosis," which was opened with a paper by Professor Zanoli. He considered atrophy, which is neither characteristic nor constant in tuberculosis. In fact many other pathologic conditions are associated with atrophy. Osteosclerosis and osteophytic growths are more frequent than is supposed. The age of the patient is important in explaining the diverse behavior. Periostitis ossificans and diaphyseal localizations are characteristic of early years. The destructive phenomena are more frequent in the child than in aged persons, in whom the lesions are more circumscribed. There are diagnostic difficulties, for example, the radiographic interpretation of a cervical lesion is difficult, since, in the majority of cases, the more positive the roentgenogram is, the more certain it is a lesion in a reparative stage. The observations are uncertain also in sacrocoxitis which becomes manifest only when there are extensive lesions. The same may be said of costal and sternal caries. In tibiotarsal tuberculosis the evolution is similar to that observed in the knee. It is not clear why tuberculosis of the hip manifests itself nearly always in the form of destructive phenomena whereas in the knee and in the foot these are much less frequent. In general, the pathologic condition revealed by the roentgenogram appears to be less than it really is. Furthermore, roentgenograms are negative with respect to abscesses, except mediastinal, calcareous and occasionally psoas abscesses. Finally, diagnostic difficulties arise in the differentiation of syphilis from osteomyelitis. While the speaker admits that radiology has great merits, he concludes that the patient must be studied and judged chiefly by clinical aids.

Verdina spoke on the value of Meinicke's new serodiagnostic test for tuberculosis. The test is technically and biologically

similar to that proposed for syphilis, by the same author. In a series of 205 cases, the speaker secured only negative reactions in healthy persons. In persons known to be tuberculous he obtained 85 per cent of positive, 13 per cent of doubtful and 2 per cent of negative results.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 15, 1935

Treatment of Cutaneous American Leishmaniasis with Sodium Arsenite

Dr. Aguiar Pupo, director of the department of skin diseases of Santa Casa, a hospital for women in São Paulo, recently read, before the Sociedade de Medicina e Cirurgia of São Paulo, a preliminary report on the results of the injections of sodium arsenite in the treatment of cutaneous American leishmaniasis. The author has obtained satisfactory results, from January of the present year up to now, from the injections of sodium arsenite, prepared by the following formula:

Arsenic trioxide	
Neutral sodium carbonate	0.25 Gm
Sodium chloride	2.00 Gm
Distilled water	250 cc

The solution is placed in ampules of 2 cc and 5 cc capacity and sterilized. A cubic centimeter of the solution contains a milligram of sodium arsenite. The injections are given twice a week intramuscularly, beginning with 2 cc and increasing it after the first two weeks until 5 cc at each injection is reached. Improvement of the ulcerations is noticeable after the second week of treatment. By the end of the treatment, which lasts for thirty or forty-five days, the ulcers as a rule are entirely healed. The injections are well tolerated by the patients. The pain during the injection is slight and no local inflammatory reaction occurs. Some patients react with stomachache or headache, which lasts all the first day. The reaction is controlled either by reducing the dose or by increasing the interval between the injections. The treatment, in comparison with the administration of antimony and arsenical preparations, has the advantages of the use of sodium arsenite, a drug accepted by the international pharmacopeias, the simple technic for preparation and administration of the injections and the moderate expense. The specific action of arsenic trioxide and of its alkaline salts on certain organisms is proved by the results reported in the treatment of experimental trypanosomiasis, of cutaneous American leishmaniasis reported by the speaker, and of malaria, previously reported by Slevogt and Fricke of Germany (1700-1710), by Fowler, Frei, Wilan and Pearson of England (1786), by Boudin of France (1842) and more recently by Brera, Tommasi, Crudelli and Richi of Italy.

Encephalography in Schizophrenia

Drs. Fausto Guerner, J. Fajard, M. Jahn and Celso P. da Silva in a lecture recently delivered before the Sociedade de Medicina e Cirurgia of São Paulo reported the results of suboccipital injections of air in the treatment of schizophrenia at Juquery Hospital. The work of the speakers was based on that previously reported by Jacob and Jinkler, Jacobi, Moore, Nathan, Elliott and Laubach Foster. The age of the patients, four women and four men, ranged between 19 and 52. In the majority of the patients the mental condition was not complicated by any other disease. The mental disturbance had developed long before in two patients, recently in one, and it had been of moderate duration in five. The quantity of cerebrospinal fluid removed, prior to the injection of air, was 45, 80, 90, 110, 110, 125, 130 and 140 cc. The quantity of air injected was equal to that of cerebrospinal fluid removed in three cases and from 10 to 15 cc. less than that in five cases. For the

interpretation of the results the criterion established by the American Committee for Standardization of Encephalographies was followed, that is, the comparison of the encephalograms of schizophrenic patients with those obtained from patients with other diseases and from normal persons. The speakers conclude that the presence of atrophy of the frontoparieto-occipital zone of the cerebral cortex was detected by encephalography in a group of eight schizophrenic patients, intense in seven and moderate in one. The frontoparieto-occipital zone and more intensely the upper parietal lobulus were involved in cases of intense atrophy. Only the upper parietal lobulus was involved in the cases of moderate atrophy. There was ventricular dilatation in three cases, intense in two and moderate in one. The size of the cisterna basalis was much increased in three cases and moderately increased in two. The most advanced pathologic changes were seen in the two cases in which the disease had developed long before. Cortical atrophy was seen even in the case of more recent development, about one year, during a remission of the condition.

Virus in Trachomatous Tissue

Dr. A. Busacca recently reported to the Sociedade de Biologia of São Paulo that he obtained the development of trachomatous nodules in the choroids and the ciliary body of rabbits and chickens by the inoculation of fragments of tissues from human trachomatous eyes that have been kept in the icebox in 50 per cent glycerin from eight or fifteen days and then inoculated in the vitreous body of the animals. The material from the trachomatous nodules of the eyes of the animals was kept in glycerin for five days and then inoculated in the vitreous body of rabbits and chickens in a new lot, in order to obtain serial transmission of the virus. The development of trachomatous nodules has been proved by the histologic examination of the eyes of the animals up to the second serial transmission. The period of development of the nodules is about forty-five days after the inoculation of trachomatous tissues.

JAPAN

(From Our Regular Correspondent)

July 3, 1935

Measures to Combat Tuberculosis

The board of health is making efforts to combat tuberculosis under a ten-year plan. The first thing is to establish a "health center" in every city and town. At present there are only 115 health centers in the country. Practitioners will be obliged to report to this center the names and addresses and other necessary data about patients with tuberculosis. This compulsory report to the authorities was at first opposed by physicians on the ground of professional secrecy. The health center, however, will be in charge of medical officers, consequently, the patients' data will always be kept among physicians. The center will chiefly work for the early examination of suspects and the prevention of tuberculosis. The physicians at the center will first cooperate with the primary school teachers in finding tuberculous school children.

On the other hand, the board of health will soon give orders to schools, factories, dormitories, theaters, department stores and buildings where numbers of people assemble to the effect that they should have more sanitary equipment for combating this disease. Indigent patients and members of their families will be given aid.

The sickness insurance, which is also under the control of the home office, has decided to give a physical examination to any applicant from any factory that has joined the sickness insurance. At least twice a year, all employees will be examined. The panel physicians are required to report every person sick with tuberculosis.

One of the most urgent needs is to spread knowledge of the danger of tuberculosis among the people. The board is planning to hold an exposition in every large city.

The war office, which is obliged to invalid out of the army any tuberculous soldier, is reported to have planned a new measure to solve its problem. It will help the families of the invalided soldiers with money if possible.

The education office has put its hand to combating tuberculosis in teachers in primary schools. The new plan is to have a sanatorium in each of the fifty-six prefectures within the coming ten years. The initial expenses will be paid in part by the government and in part by the mutual aid association of the teachers organized in every locality, the rest will be paid by the local government. The cost of administration will be paid by the local government and by the association. In some prefectures this system is already working on a small scale.

Annual Examination of Primary School Children in Tokyo

The physical examination of all school children in the capital was recently done for this year. Those examined comprised 344,448 boys and 332,139 girls between 7 and 15 years of age in the primary schools, 56,710 children were found to be near sighted and 2,135 astigmatic, 26,964 suffered from trachoma and 5,756 from color-blindness, 3,585 children had some defects of hearing. Those who had inflammation or enlargement of the cervical glands amounted to 28,413, enlarged tonsils 132,768 and favus 35,064.

Dr Kanasugi Honored

The celebration of Dr Eigoro Kanasugi's seventieth birthday took place June 22 in Tokyo under the auspices of the Japan Medical Association. He is a member of the house of peers and an influential politician as well as an expert nose and throat specialist with a large hospital in Tokyo. On this occasion more than 600 prominent personages were present, including the prime minister and three other cabinet ministers. It was the most successful meeting held in several years. He was given an offering of 10,000 yen collected from the members of the Japan Medical Association in recognition of his services to medicine in this country and to the public. A bronze bust will be erected in front of the office of the association. He declared that he would retire from medical practice and politics, although he is now greatly needed when medicine has many important questions to be solved. He will remain as the president of the Jikei Medical College.

Prostitution in Japan

The unlicensed prostitutes throughout the country who were arrested in 1933 on the charge of being a social menace numbered 6,642, and numerous others escaped arrest. Of these, 6,374 were examined and 223 were found to be suffering from syphilis, 903 from gonorrhea, 209 from soft chancre and 134 from other venereal diseases. Of the licensed prostitutes, 49,302 were distributed among 509 licensed quarters, under the charge of 10,281 brothel keepers. The number of pleasure seekers who visited those prostitutes in 1933 was 24,922,504, a great increase as compared with previous years. The 'geisha girls,' who play the part of bar-maid, singer, waitress and sometimes prostitute if required, though unlicensed numbered 74,200 throughout the country in 1933. Their numbers are decreasing considerably, owing to the rapid increase of waitresses, but they are more or less a source of venereal diseases.

While the abolition of licensed prostitutes will be carried out in the near future as declared by the government the prevention of venereal diseases will remain a great social problem, in view of the unlicensed prostitutes. The delay in abolishing the licensed prostitute is due in part to this problem of the unlicensed prostitute.

MOSCOW

(From Our Regular Correspondent)

Aug 17, 1935

The Congress of Surgeons

The twenty-third All Union Congress of Surgeons was held in Leningrad June 25-30. Prof Nicolas N Bourdenko of Moscow read a paper on shock, which he considers the sum of reactions to different insults. Experimental shock can be studied in animals. Postoperative shock is much more amenable to study. The diminution of blood circulating in the vessels (as the result of operative intervention) gives a fall of venous pressure and a respective laxity of the work of the right side of the heart. Curative measures must aim at stimulating the vessel-moving center to augment the total mass of blood taking part in the circulation. In cases of grave losses of blood, transfusion must be used.

A L Polenov of Leningrad reported the results of 200 extirpations of cerebral tumors. Prof Jacob M Brouskin of Moscow spoke on the organization of anticancer campaigns. About 5,000 cancer patients were hospitalized in the Leningrad Oncologic Institute and twenty city hospitals in the last nine years. This number includes 2,937 cases of cancer of the stomach, 1,249 of the mammary glands, 337 of the rectum, sixty-two of the mouth and 422 of the lip. The third topic of the congress was abscess and gangrene of the lungs. Prof Serge I Spasocuczyk analyzed 312 cases of this disease that he observed at Moscow in the last eight years. Abscess and gangrene of the lungs were four times more frequent in men than in women. The fourth program topic of the congress was devoted to the evacuation of injured soldiers in military operations. There was read a series of reports by physicians from the Military Medical Academy, about the type of surgical work to be done at different stages of evacuation. The last program reports were devoted to pseudarthrosis. Papers were read by Professors Tourner, Sitenko and Chaklin. The next All-Union Surgical Congress will be held at Moscow in 1937.

The Kazan State Institute

On April 23, 1920, in Kazan, the Clinical Institute for Graduation of Physicians was opened. During the last fifteen years the institute has graduated more than 5,700 physicians. In 1934 the number of graduates was 1,073. A special group of student-managers of district health departments is taught how to organize soviet health care. They study organization, the planning of health care, medical economics, and so on. During the last fifteen years the institute has produced twenty-five professors, thirty-three dozenten and 211 assistants. The scientific research work of the institute is closely connected with its practical work. It has resulted in about 2,000 publications printed in the "volumes" of the institute, in the *Kazan Medical Journal* and other medical journals of the Soviet Union and foreign countries. About 10,000 patients are admitted every year by the clinics of the institute. All graduate students in the institute receive a scholarship which equals the salary they obtained when they are on duty. In many towns, especially university centers, institutes for graduation of physicians, as in Kazan, are formed.

Marriage and Divorce

The principal difference between soviet and capitalist legislation on marriage and divorce is that this important act can be done in our country without difficulties of a juridical or religious character. Marriage and divorce in the Soviet Union are much easier than in other countries, yet the population looks upon marriage with gravity. The Central Institute of Mother and Child Care studied 2,000 families of workers at Moscow. The results obtained by the institute are of interest. Before the October revolution, 78 per cent of women married

at an age younger than 20 years and 15.3 per cent married between 21 and 24. After the revolution the corresponding data are 44.4 and 36.6 per cent. The higher level of matrimonial age shows more seriousness about the question of family building. Of the prerevolutionary marriages, 53.9 per cent occurred after one month of acquaintance and 16.5 per cent after three to twelve months. At present the corresponding figure is 20.7 per cent and, after a six months acquaintance, 55.7 per cent. These data show that at present more discretion is observed in contracting a marriage. The number of divorces is higher than before the revolution. The initiative in divorces is taken mostly by the women. These figures show that soviet legislation helps to build a family on a more solid foundation than before the revolution.

The International Congress of Physiologists

The fifteenth International Congress of Physiologists was opened August 9 at Leningrad in the former state duma hall under the presidency of Prof. Ivan Petrovitch Pavlov. About 1,500 delegates from thirty-seven countries were present at the congress, the United States and Great Britain being represented by a delegation of 297 members. Three hundred and six papers were read by foreign guests and 169 by soviet scientists. Twenty-two scientific films were demonstrated. In the laboratories of the military medical academy twenty-four different experiments were demonstrated.

The congress was greeted at the opening meeting by the secretary of the Central Executive Committee of the Union of Socialist Soviet Republics, by the People's Commissar of Health, Kaminsky, and by others. The halls where the meetings of the congress were held have loud speakers arranged so it is possible to hear all the papers simultaneously in five languages—English, Russian, French, German and Italian.

In their leisure time, the delegates visited the town and suburbs, laboratories, clinics and scientific establishments, in particular Pavlov's laboratories at Coltush near Leningrad. The last plenary meeting of the congress was held at Moscow, August 17. In following letters will be given a report on the scientific work of the congress.

Marriages

CHARLES ROY HOSKINS JR. to Miss Virginia Eubank Segar, both of Saluda, Va., at Washington, D. C., July 1.

THEODORE F. HAMMERMEISTER, New Ulm, Minn., to Mrs. Pearl L. Rexford of Minneapolis, recently.

HUGH M. C. LINDER, Clifton Springs, N. Y., to Miss Eleanor Shelton of Nashville, Tenn., June 15.

RICHARD H. KIENE, Concordia, Kan., to Miss Edith Elizabeth Swing of Bryn Mawr, Pa., June 8.

ALFRED J. SILBIGER, Randolph, Ohio, to Miss Evelyn Cheswick of East Cleveland, June 16.

HAROLD J. KULLMAN, Detroit, to Miss Edna Mary Warner at Cheboygan, Mich., July 13.

ARTHUR B. RICHTER, Flora, Ind., to Miss Lyda Mary Fisher of Steubenville, Ohio, May 7.

SAMUEL R. KAUFMAN to Miss Martha Davidow, both of Wilkes-Barre, Pa., May 2.

NATHAN W. RUBIN to Miss Dorothy M. Moyer, both of Norristown, Pa., April 28.

ROBERT I. MCPHAIL to Miss Helen Bernice Ebersole, both of Arcadia, Ohio, May 10.

GEORGE E. MCGINNIS to Miss Margaret Dager, both of Norristown, Pa., May 4.

ALBERT HAROLD KEEFER, Marquette, Mich., to Miss Ruth Doolittle, June 27.

ADOLPH ALLAN SMOLEN to Miss Mildred Gerber, both of Chicago, July 7.

RUBIN M. LEWIS to Mrs. Elsie Finn, both of Philadelphia, May 21.

Deaths

Edwin P. Sloan, M.D., since 1932 a member of the Judicial Council of the American Medical Association and from 1924 to 1932 a member of the House of Delegates, died, September 13, at his home in Bloomington, Ill., of myocarditis. Dr. Sloan was born in Neosho, Mo., Feb. 13, 1878. He received his medical degree from the University Medical College of Kansas City (Mo.) in 1898 and later studied in Berne, Switzerland, and took graduate work at the University of Berlin, Chicago Polyclinic and the New York Post-Graduate Medical School. From 1898 to 1903 he practiced in Danvers, Ill. In 1905 he settled in Bloomington, where he specialized in the surgical treatment of goiter and diseases of the stomach. He was a founder of the American Association for the Study of Goiter and a former president of that organization. He was a founder also of the International Conference on Goiter in Berne, Switzerland, and several times served as a delegate. He was a member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, past president of the Illinois State Medical Society, and past chairman of the advisory board of the Illinois Department of Public Health. Dr. Sloan was surgeon-in-chief of the Sloan Clinic and on the staffs of the Menonite Hospital and St. Joseph's Hospital. He had written many articles on goiter, abdominal surgery and gynecology and had practically completed the writing of a textbook at the time of his death.

Charles Norris, M.D., New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1892, since 1918 chief medical examiner of New York, professor of forensic medicine, New York University College of Medicine, formerly instructor of pathology and assistant in bacteriology and hygiene at his alma mater, and instructor in pathology of infectious diseases, Cornell University Medical College, member of the American Association of Pathologists and Bacteriologists and the American Society of Clinical Pathologists, director of laboratories at Bellevue Hospital, 1904-1918, was decorated *Chevalier de la Couronne*, Belgium, in 1934 was awarded the gold medal of the New York Academy of Medicine for distinguished service in medicine was widely known as an expert on medical jurisprudence and was instrumental in the solution of a number of notorious medicolegal cases, aged 67, died, September 11, of coronary sclerosis.

Ross McPherson, M.D., New York, Harvard University Medical School, Boston, 1902, member of the Massachusetts Medical Society and the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, fellow of the American College of Surgeons, professor of gynecology and obstetrics, New York Polyclinic Medical School and Hospital, on the staffs of the United Hospital, Port Chester, Caledonian Hospital, Brooklyn, Dobbs Ferry (N. Y.) Hospital, Long Beach (N. Y.) Hospital, John T. Mather Memorial Hospital, Port Jefferson, N. Y., Hackensack (N. J.) Hospital and the Holy Name Hospital, Teaneck, N. J., aged 59, died, August 16, of cerebral hemorrhage.

William Walter Lewis, M.D., St. Paul, University of Minnesota Medical School, Minneapolis, 1902, assistant professor of ophthalmology, otology, laryngology and rhinology at his alma mater, member of the American Academy of Ophthalmology and Oto-Laryngology, past president of the Minnesota Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, served during the World War, on the staffs of the Charles T. Miller Hospital, St. Luke's Hospital, St. Joseph's Hospital and the Children's Hospital, aged 59, was found dead in the Mississippi River, July 29.

John Alexander MacIsaac, New York, Harvard University Medical School, Boston, 1896, member of the Medical Society of the State of New York, served during the World War, at one time acting assistant surgeon lieutenant, with rank of junior grade, in the U. S. Navy, fellow of the American College of Surgeons, instructor in otorhinolaryngology, University of Bellevue Hospital Medical College, on the staffs of the Children's Hospital and the New York Eye and Ear Infirmary, aged 61, died, August 16.

Robert Douglas Roller Jr., M.D., Charleston, W. Va., University College of Medicine, Richmond, Va., 1905, fellow of the American College of Physicians, served during the World War, past president of the Kanawha County Medical Society, medical director of the Hillcrest Sanatorium, on the staffs of the Charleston General Hospital and St. Francis Hospital, consultant to the Veterans Administration, aged 56, was killed, August 10, in an automobile accident.

Charles Willard Selover \oplus Canandaigua N Y, University of Buffalo School of Medicine, 1904, past president of the Ontario County Medical Society, served during the World War, medical director of the Oak Mount Sanatorium, Holcomb, on the staffs of the Veterans Administration Facility and the Frederick Ferris Thompson Hospital, aged 53, died, July 26, in the Clifton Springs (N Y) Sanitarium of heart disease

William Graves Phillips, Maysville Ky, Jefferson Medical College of Philadelphia, 1909, member of the Kentucky State Medical Association, past president of the Mason County Medical Society, fellow of the American College of Surgeons on the staff of the Hayswood Hospital, aged 52, died, July 5, in the Jewish Hospital, Cincinnati, of tumor of the brain

Abram Whittemore Mitchell \oplus Epping N H, University of the City of New York Medical Department, 1887, councilor of the Rockingham County Medical Society, past president of the New Hampshire Medical Society, at one time member of the state legislature, aged 73, died, July 31, in the Elliot Hospital, Manchester, following an operation for appendicitis

Milo Melville MacKellar, Loveland Okla., College of Physicians and Surgeons Keokuk Iowa, 1896, past president of the Tillman County Medical Society, director of schools on the staff of the Frederick (Okla.) Clinic Hospital, aged 61, died, August 18, in St. Mary's Hospital, Rochester Minn., following an operation for glioblastoma multiforme

Edwin Ellsworth Brophy, Meadville Pa, Western Pennsylvania Medical College Pittsburgh, 1907, member of the Medical Society of the State of Pennsylvania, served during the World War, formerly on the staff of the Meadville City Hospital, aged 62, died, July 26, of Parkinson's disease and coronary thrombosis

Roy Fallas Mills \oplus Kansas City, Mo., Rush Medical College, Chicago, 1912, associate in medicine, University of Kansas School of Medicine Kansas City, Kan., served during the World War, aged 55, on the staffs of the Kansas City General Hospital and the Bell Memorial Hospital, where he died, July 18, of endocarditis

Frank Amos Crosby \oplus Lockport, N Y, Niagara University Medical Department, Buffalo, 1896, past president of the Medical Society of the County of Niagara, formerly member of the board of education, on the staff of the Lockport City Hospital, aged 63, died, July 13, of heart disease and nephritis

Thomas Holmes Middlebro, Owen Sound Ont., Canada, University of Toronto Faculty of Medicine, 1892, M R C S England L R C P, London, 1899 and F R C S, England, 1900, fellow of the American College of Surgeons on the staff of the Owen Sound General Hospital, aged 70, died, July 16

John Mason Morris \oplus Louisville, Ky, University of Louisville Medical Department, 1887, fellow of the American College of Physicians, aged 74, on the staffs of St. Anthony's Hospital and the Kentucky Baptist Hospital, where he died, July 21, as the result of injuries received in an automobile accident

Balrd Urquhart Brooks, Durham, N C, University of Maryland School of Medicine Baltimore, 1905, member of the Medical Society of the State of North Carolina, served during the World War, aged 54, on the staffs of the Lincoln Hospital and the Watts Hospital, where he died, August 24

John Walter McMahan \oplus Alma, Ga., Tennessee Medical College, Knoxville 1900, at one time member of the state legislature of Tennessee and state senator, health officer of Alma, and formerly health officer of Alcoa, Tenn., aged 59, died, July 30, in a hospital at Waycross

Herman Martinson \oplus New York, Columbia University College of Physicians and Surgeons New York 1915, served during the World War, on the staff of the Sydenham Hospital, aged 44, died, August 19, in the Mount Sinai Hospital, of acute hepatitis and jejunal necrosis

John Briggs Hagey, De Kalb Ill., University of Louisville (Ky.) Medical Department, 1902, member of the Illinois State Medical Society, past president and secretary of the De Kalb County Medical Society, city health officer, aged 65, died, July 29, of cerebral hemorrhage

Louis Anthony Carlet, Washington Pa, Jefferson Medical College of Philadelphia 1924, member of the Medical Society of the State of Pennsylvania, on the staff of the Washington Hospital, aged 35, died, July 14, in Philadelphia of congenital polycystic kidney

Henry B Gaynor, Polk, Pa., Temple University School of Medicine Philadelphia, 1910, member of the American Psychiatric Association, clinical director of the Poll State Hospital, aged 65, died, July 21, in the Jeanes Hospital, Philadelphia, of malignancy of the bladder

Roderick Frederick McHugh \oplus Aitken, Minn., Milwaukee Medical College 1912, formerly mayor of Aitken, on the staff of the Beecroft Hospital, served during the World War, aged 45, died, July 31, in St. Joseph's Hospital, Brainerd, of a gunshot wound of the chest

Edward J. Dougher, Midland, Mich., Baltimore University School of Medicine, 1898, member of the Michigan State Medical Society, secretary of the Midland County Medical Society, aged 71, died, July 26, in the Mercy Hospital, Bay City, of carcinoma of the colon

William Harris, Mystic Iowa, Milwaukee Medical College, 1912, member of the Iowa State Medical Society, served during the World War on the staff of St. Joseph's Hospital, Centerville, aged 49, died, July 17, of heart disease and cerebral hemorrhage

William Joseph Condon, New Brunswick N J, Medico-Chirurgical College of Philadelphia 1899, member of the Medical Society of New Jersey, served during the World War, aged 56, on the staff of St. Peter's Hospital, where he died, August 2

Joseph Edward Windbiel \oplus Amsterdam, N Y, Albany (N Y) Medical College, 1908, served during the World War, on the staffs of St. Mary's Hospital and the City Hospital, aged 49, died suddenly, July 21, of acute dilatation of the heart

Samuel Townsend Cousins, Wetumpka, Ala., Birmingham Medical College 1910, member of the Medical Association of the State of Alabama, aged 49, died, June 21, in St. Margaret's Hospital, Montgomery, of coronary occlusion

Frank Herman Mohrman \oplus Cleveland, Cleveland College of Physicians and Surgeons Medical Department Ohio Wesleyan University, 1910, on the staff of St. Luke's Hospital, aged 48, died, August 2, of coronary thrombosis

George Norton Miller \oplus New York, Harvard University Medical School, Boston, 1882, aged 78, died, July 30, in the Vassar Brothers Hospital, Poughkeepsie, N Y, of injuries received in an automobile accident

Elihu P. Easley, New Albany, Ind., University of Louisville (Ky.) Medical Department, 1872, member of the Indiana State Medical Association, formerly member of the city council, aged 87, died, August 2, of bronchitis

William C. Griffin, Cartersville, Ga., University of Nashville (Tenn.) Medical Department 1878, member of the Medical Association of Georgia, aged 80, died, July 23, of chronic nephritis and uremia

Benedict F. Shanahan \oplus Chicago, Bennett College of Eclectic Medicine and Surgery, Chicago 1897, on the staff of the University Hospital, aged 63, died, August 2, in St. Luke's Hospital of uremia

Willis Le Baron Hale, North Attleboro, Mass., Jefferson Medical College of Philadelphia, 1901, served during the World War, aged 58, died suddenly, August 11, of chronic myocarditis and nephritis

Kenneth Marvin Adams, Gouverneur, N Y, Syracuse University College of Medicine, 1931, aged 30, on the staff of the Stephen B. Van Duzee Hospital, where he died, July 26, of pneumonia

Cornelius B. Durham, Pineville, La., Memphis (Tenn.) Hospital Medical College 1912, member of the Louisiana State Medical Society, aged 49, died, June 30, in the Baptist Hospital, Alexandria

Henry Laurence Shively, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1888, aged 71, died, August 10, of cerebral hemorrhage

Samuel Bernstein, Detroit, University of Oklahoma School of Medicine, Oklahoma City, 1916, aged 51, died, July 28, at Dunnville Ont. of injuries received in an automobile accident

Arthur Dunning Mansfield, Baltimore, University of Maryland School of Medicine Baltimore, 1890, aged 67, died, July 27, of cerebral hemorrhage, arteriosclerosis and hypertension

Samuel Ernest Parrott, Cordova, Tenn., Memphis Hospital Medical College, 1901, aged 61, died, July 2, in the Methodist Hospital, Memphis, following an operation for appendicitis

Henry Hiram Fuller, Hillsboro, Texas, (registered by Texas State Board of Medical Examiners under the Act of 1907), aged 68, died, July 25, of carcinoma of the face

Adam Sharpe Gibson, Craik, Sask., Canada, Queen's University Faculty of Medicine Kingston, Ont., Canada 1912, aged 54, was killed, June 27, in an automobile accident

William Holmes Ross ♂ Patchogue, N. Y., Columbia University College of Physicians and Surgeons, New York, 1904, aged 54, died, September 3, of coronary thrombosis

Arthur Ward Bowles, Detroit, University of Nebraska College of Medicine, Omaha, 1932, on the staffs of the Grace and Receiving hospitals, aged 26, was found dead, July 30

John Warren Gard, Genoa, N. Y., Albany (N. Y.) Medical College, 1914, health officer of the towns of Genoa, Scipio and Venice, aged 48, died, July 25, of acute myocarditis

Edward Beach Loomis, Oak Park, Ill., University of Vermont College of Medicine, Burlington, 1870, aged 87, died, July 28, of coronary thrombosis and arteriosclerosis

Henry Hall Dodd, Millsboro, Del., Baltimore University School of Medicine, 1897, served during the World War, aged 65, died, June 27, of carcinoma of the mouth

Lester M. Brooks, Milwaukee, Milwaukee Medical College, 1912, member of the State Medical Society of Wisconsin, aged 46, died, July 23, of pulmonary tuberculosis

William Daus, Cleveland, Western Reserve University Medical Department, Cleveland, 1884, aged 74, died, July 11, of cerebral hemorrhage and arteriosclerosis

Frank Walton Larrabee, Boston, Dartmouth Medical School, Hanover, N. H., 1897, aged 65, died, August 8, of arteriosclerosis and cerebral hemorrhage

Samuel Douglas, Indian Head, Sask., Canada, Victoria University Medical Department, Coburg, Ont., 1890, aged 75, died, in May, of abdominal hemorrhage

Heaton Grant Daughters, Los Angeles, Kansas City (Mo.) Medical College, 1904, aged 68, died, July 16, of cerebral hemorrhage, nephritis and hypertension

I. Clark Gary ♂ Chicago, Chicago Medical College 1889, aged 77, superintendent of the People's Hospital, where he died, July 4, of coronary thrombosis

F. E. Shannon, Lebanon, Tenn. (licensed in Tennessee in 1889), member of the Tennessee Medical Association, aged 76, died, August 4, of uremia

Joseph W. Propeck, Oak Park, Ill., American Medical College, St. Louis, 1882, aged 76, died, July 15, of chronic myocarditis and nephritis

Edward Cline Lidikay ♂ Ladoga, Ind., Medical College of Indiana Indianapolis, 1903, aged 58, died, July 18, of carcinoma of the liver and rectum

James Abston McFerrin, Mountpleasant, Tenn., University of Nashville Medical Department, 1904, aged 55, died, July 21, of cerebral hemorrhage

Joseph Raoul Richardson, Indianola, Miss., Tulane University of Louisiana School of Medicine, New Orleans, 1924, aged 36, died, July 12

P. B. Hall, Rush Springs, Okla. (licensed in Oklahoma under the Act of 1908), aged 76, died, July 15, in Marlow, of cerebral hemorrhage

Nathaniel S. Macdonald, Sydney Mines, N. S., Canada, Dalhousie University Faculty of Medicine, Halifax, 1906, aged 58, died, May 22

Frederick Hill Stanbro, Springville, N. Y., University of Buffalo School of Medicine, 1887, aged 69, died, July 21, of cardiac infarction

John Lewis Corum, West Chester, Ohio, Hospital College of Medicine, Louisville, Ky., 1904, aged 60, died, July 19, of heart disease

James Joseph Morrow, Toronto, Ont., Canada, McGill University Faculty of Medicine, Montreal, Que., 1900, died, July 11

D. Victor Desrosiers, La Sarre, Que., Canada, Laval University Faculty of Medicine, Quebec, 1902, aged 60, died in June

John Curtis Pickett, Caledonia, Miss., University of Nashville (Tenn.) Medical Department, 1905, aged 56, died, in July

Rufus Choate, Washington, D. C., Georgetown University School of Medicine, Washington, 1867, aged 88, died, July 26

Leo Munter, San Francisco, Cooper Medical College, San Francisco, 1904, aged 60, died, July 1, of angina pectoris

William Amos Dilts, Indianola, Iowa, College of Physicians and Surgeons, Keokuk, 1887, aged 75, died, July 8

W. B. Leake, Jacksonville, Fla., Atlanta Medical College, 1879, also a druggist, aged 78, died, June 1

Philip W. Hawk, Zaleski, Ohio, Columbus Medical College, 1892, aged 72, died, July 5

Correspondence

"REVERSED COLLES FRACTURE"

To the Editor—In THE JOURNAL, June 29, page 2324, there appeared an article by Drs. Webb and Shemfeld entitled "Reversed Colles Fracture, with Special Reference to Therapy," in which it was stated that no cases of successful reduction of this type of fracture by the closed method had been reported. I feel that I must take exception to this statement, since Dr. J. B. Roberts (Notes on the Modern Treatment of Fractures, New York, D. Appleton & Co., 1899, p. 134) showed the roentgenogram and reported such a case successfully treated by closed manipulation by his colleague Dr. M. J. Stern. Since the reason for the difficulty of closed reduction of this type of fracture is unexplained by the authors, it is of interest to recall the case presented before the New York Surgical Society by Dr. J. M. Hitzrot (*Ann. Surg.* 61:740, 1915) in which attempted closed reduction was unsuccessful, operative intervention revealing that this was due to the piercing of the sharp distal end of the proximal fragment of the radius into the annular ligament. Reduction was easily performed after the proximal fragment was disengaged.

SIDNEY S. GAYNOR, M.D., New York.

[This letter was referred to George Webb of Brooklyn, who writes.]

To the Editor—The case of a reversed Colles fracture successfully treated by closed manipulation by Dr. M. J. Stern was in a young boy. A prereluction roentgenogram showing the deformity is given in Dr. Roberts' book. However, there is no postreduction roentgenogram and the success of the reduction is merely gaged by the fact that the lad had "little or no" deformity after the reduction. This is not convincing evidence of a successful reduction, since it is well known that in early youth most deformities following fractures have a tendency to correct themselves. The fact that successful reductions of this type of fracture are made only in isolated cases seems to emphasize our statement that in the majority of cases satisfactory anatomic replacement of the distal fragment can rarely be accomplished other than by open operation.

SYMPATHECTOMY FOR THROMBO-ANGIITIS OBLITERANS

To the Editor—In THE JOURNAL, June 29, was an editorial on "Sympathectomy for Thrombo-Angiitis Obliterans." This editorial is timely. About a year ago an editorial appeared in THE JOURNAL in which it was stated that sympathectomy had no place in the treatment of Buerger's disease. What I wish to call attention to, however, is the statement in the last paragraph: "It must be further emphasized that the operation (lumbar sympathectomy) is not only technically difficult even for the expert neurosurgeon but likewise a formidable procedure for the patient. The most serious complication is suppuration of the wound, which is particularly frequent in cases complicated by gangrene. The mortality even in the hands of the expert is not less than 4 per cent."

For years I have been advocating the use of the extra-peritoneal approach to the lumbar sympathetics. Appearing in the July issue of the *American Journal of Surgery* was a description of this approach through a muscle-splitting incision. Perusal of this article will elicit the fact that I have performed in the neighborhood of 150 lumbar ganglionectomies, approximately thirty of which have been for Buerger's disease, and that the operative mortality is nil.

The operation performed in this manner is neither a tremendous operation for the surgeon nor is it a formidable one for the patient. Complications have been virtually absent.

The original retroperitoneal exposure was described by Royle. I have modified his operation several times until at last I have a muscle-splitting extraperitoneal approach in which it is possible to get the patient up on the third day and out of the hospital in less than a week. In other words, when there is need of operating on both sides it is still possible to do the operations either at one sitting or three or four days apart and still have much less hospitalization than is necessary in the transabdominal approach, not to mention the tremendously lessened mortality.

P G FLOTHOW, MD, Seattle

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

CALCIUM IN CHILD'S DIET

To the Editor—It is my understanding that a quart of cow's milk contains approximately a gram of calcium and that this is considered the desirable amount for a growing child. Kindly answer or discuss the following questions: 1. How much calcium does a liter of human milk contain? 2. At different ages or different periods of growth do children require different amounts of calcium? Specify. 3. Is the ratio between calcium and phosphorus the same in cow's milk as in human milk? In the following questions it is understood that the hypothetical child is receiving an adequate supply of all the known vitamins and especially vitamin D. 4. If a healthy normally growing child between the ages of 2 and 14 years drinks a pint of milk each day and eats a good general diet containing liberal amounts of green vegetables and fresh fruits is additional calcium indicated? 5. In the case of a healthy normally growing child who drinks only a few ounces of milk each day or even none at all but who eats well of a normal and well balanced diet, should additional calcium be prescribed? 6. When additional calcium is necessary or desirable should it be administered in a form in which the calcium-phosphorus ratio is the same as in human milk? Name one or more such preparations and their relative merits. Is the calcium of some preparations more readily ionizable than that of others? 7. Discuss the merits or demerits of dicalcium phosphate, tricalcium phosphate, calcium lactate, calcium gluconate and calcium carbonate. 8. Is there any advantage in incorporating a calcium salt with cod liver oil? If so which calcium salt should be preferred? In discussing the various calcium salts please state the comparative costs of the various preparations bearing in mind that a child with subnormal calcium intake in his diet might require medicinal calcium over a period of years. Please omit name.

MD Ohio

ANSWER.—1 A liter of human milk contains about 1.24 Gm. of calcium.

2. The only way that this question can be answered is by a study of calcium and phosphorus metabolism experiments. Sherman has summarized the data from the literature and his table is here given.

Average Calcium and Phosphorus Storage of Children in Grams per Kilogram Daily (Sherman and Hawley)

Age	Calcium				Phosphorus			
	No of Cases	In take	Out put	Bal. ance	No of Cases	In take	Out put	Bal. ance
1-6 months	32	0.090	0.063	+0.027	11	0.075	0.058	+0.017
7-12 months	14	0.137	0.098	+0.039	5	0.115	0.087	+0.028
1-2 years	5	0.089	0.070	+0.019				
3-8 years	13	0.039	0.028	+0.011	10	0.054	0.046	+0.008
9-14 years	14	0.027	0.018	+0.009	11	0.039	0.029	+0.010

From a perusal of this table it is evident that the ratio of retained calcium to retained phosphorus alters with age. In the young child calcium is retained in excess while in older children phosphorus is retained in excess. From such a table it can be further stated that it is difficult to define calcium requirement without defining phosphorus requirement. A third variable is the exact amount of vitamin D in the diet.

3. The ratio of calcium to phosphorus in breast milk is about 2, 2, in cow's milk, 1, 3.

4. No if his calcium metabolism is positive.
5. No if his calcium metabolism is positive. It might be added however, that absorption of calcium from milk is said to be greater than from other sources.

6. It has already been shown that as the child grows older the ratio of absorption varies and that therefore it would seem fair to say that the optimal calcium-phosphorus ratio would vary with age. The calcium of some preparations is more readily utilized than that of others.

7. From what has been said, the questioner should be able to draw his own conclusions as to the merits of the preparations mentioned. The various preparations are discussed in New and Nonofficial Remedies.

8. There is no advantage in incorporating a calcium salt with cod liver oil.

TREATMENT OF TUBERCULOSIS

To the Editor—Dr. A states that he has treated over a thousand cases of pulmonary tuberculosis by means of rest in bed, general hygienic measures, ultraviolet rays to the chest twice a week, and injections of tuberculin subcutaneously twice a week. He reports uniformly good results and states that this treatment is rendered in all cases irrespective of fever of 103 and 104 F. Dr. B holds that this treatment is not rational as both tuberculin and ultraviolet rays are contraindicated in cases showing any marked elevation in temperature. Will you please give me the latest medical opinions regarding the use of tuberculin particularly in the treatment of pulmonary tuberculosis? Please omit name.

MD Illinois

ANSWER.—Dr. A does not state just what he means by uniformly good results, that is, whether all patients showed some evidence of improvement or all were restored to good working capacities. If nothing more was done for his patients than rest in bed, general hygienic measures, ultraviolet rays to the chest twice a week and injections of tuberculin subcutaneously twice a week, his treatment is approximately that of two decades ago and does not offer to his patients the advantages of the more valuable methods of treatment, such as collapse therapy. Moreover, Dr. A does not state the type of pulmonary tuberculosis or its extent. If he has treated more than 1,000 cases of frank pulmonary tuberculosis of the true clinical type and has restored all his patients to good working capacities, he probably holds the world's record for the treatment of tuberculosis. Moreover, if he has carefully selected 1,000 cases, many of only childhood tuberculosis or nonprogressive disease, it is still difficult to understand how every one of the entire 1,000 patients will continue on full working capacity long. Doubtless, Dr. B's criticism is on the ground that many of these patients should have had the advantage of other standard and more effective methods of treatment and that tuberculin and ultraviolet rays should be administered only in carefully selected cases.

While the pendulum swung far in favor of heliotherapy a few years ago, it has now settled back to approximately its proper place. It is not looked on as a panacea in the treatment of tuberculosis, it is only an adjunct and even in this capacity is administered only in carefully selected cases.

After Koch recommended tuberculin as a therapeutic measure, the pendulum swung far in its favor. Later when the good results anticipated were not forthcoming, the pendulum swung equally far in the opposite direction. At present there is a small group of physicians in this country who use tuberculin in the treatment of pulmonary tuberculosis. Nearly every one looks on it as a preparation to be avoided when any significant elevation of temperature is present. However, it is still considered helpful by a few workers in cases presenting but few or no symptoms, in which pulmonary lesions apparently have reached a standstill, that is, cases which are not definitely progressive or well under control. It is thought that in such cases tuberculin may result in a slight reaction around the lesion which simulates the hyperemia seen around a positive intracutaneous tuberculin reaction and that this may suffice to stimulate fibrosis. Most physicians believe that in any progressive pulmonary lesion tuberculin is not indicated.

The question arises as to whether the good results reported by some physicians following the administration of tuberculin as a therapeutic measure in carefully selected cases are not due to a partial and temporary desensitization. The fact is apparently well established that allergy to tuberculin is responsible for the intense reaction about a focus of tubercle bacilli, which so frequently results in necrosis and cavitation. It is possible that tuberculin will be used much more extensively than at present, not to treat persons seriously ill with tuberculosis but to desensitize those who are highly allergic, in order to prevent intense reactions in case reinfection does occur. Partial desensitization has been found possible but, unfortunately, is only temporary. To insure against destruction, the tissues should be kept desensitized over a period of many years, that is, during those periods when tuberculosis approaches, reaches and descends from its mortality height. Obviously, this would be difficult to accomplish for many persons because of the long time necessary, as well as the expense. Tuberculin may still have an important part to play in tuberculosis, but at the present time this does not seem to be in the field of clinical, progressive disease with or without elevation of temperature.

AIR CONDITIONING NURSERIES

To the Editor—Our hospital has recently been air conditioned and the question arose as to whether or not the babies should be taken out of the nursery to their mothers in the cool rooms. We have been raising the windows and wrapping the babies in light blankets and so far have had no trouble. Do you know of any instances in which a baby has contracted a cold under these circumstances?

EDWIN C. McMULLEN MD Pine Bluff Ark.

To the Editor—I shall greatly appreciate a letter from you stating your opinion of the advantages of air conditioned infant nurseries over nurseries that are not air conditioned for both summer and winter months. We are located fairly well south but have extreme temperatures around 106 F in summer and some subzero in winter.

K C REESE MD Tulsa Okla

ANSWER.—Only a few hospitals have been air conditioned, consequently data are not available on which to base a reply. But if a common sense view of the situation is taken, it would not seem a hazard to take a normal nursing infant from the nursery to an air cooled room. The moment the baby leaves the nursery and is taken into the hall, he experiences at once a change of temperature. In the cooler season of the year, particularly in the winter, the baby is taken outdoors, where he is subjected to a decided change in temperature, which may amount to from 35 to 50 degrees F or more. Ordinarily the babies suffer no unfavorable consequences from being taken outdoors in the winter, particularly if they are properly clad and extreme chilling and high winds are avoided.

The answer to the question would seem to be that a baby may be carried into an air cooled hospital room if he is sufficiently protected by proper clothing or a blanket.

There can be little doubt that high temperatures of summer, reaching an extreme of 106 and heated hospitals in subzero weather are not conducive to the best of health, for either infants or adults. When the cold air of winter is heated in a building, it expands and becomes dry unless some device is provided to humidify it. It often requires a temperature of 80 F or more for heated dry air to be comfortable. During and following heat waves of summer, even with a maximum temperature of no more than 100, a good many deaths are reported among elderly and somewhat debilitated persons as being directly due to the heat. Doubtless, many others die from conditions that might be indirectly accounted for by high temperature. It would seem more than likely that there is considerable loss of life in infancy, either directly or indirectly, from the high atmospheric temperature.

The Chicago Ventilation Commission (Report of Chicago Commission on Ventilation, 1914) and the New York Ventilation Commission (Ventilation Report of the New York State Commission on Ventilation, New York, E. P. Dutton & Co., 1923) found that three physical qualities, namely, temperature, humidity and circulation of air, are important not only for comfort but also for the health of human beings. The temperature found best was approximately 68-70 F, with a relative humidity of from 40 to 50 per cent, with the air slowly circulating.

Blackfan and Yaglou (*Am J Dis Child* 46 1175 [Nov, part 2] 1933) made a careful study of atmospheric conditions on the growth and development of premature infants, using as controls normal, full-term infants. These workers had available unconditioned as well as conditioned nurseries, so that they could make comparisons of results in the two types. They found that in premature infants the heat-regulatory mechanism was not adequate to protect them against either too high or too low temperatures. A humidity of 65 per cent, with a temperature ranging from 75 to 100 F, was found best. Of course each premature infant had to be treated individually because of differences in body weight, fetal age, and so on. A humidity as low as 30 per cent often led to serious consequences. The net mortality for all weight and age groups was 28.9 per cent in the unconditioned nursery as compared with 7 per cent in the conditioned nursery. Infections both acute and chronic accounted for 70.3 per cent of the total number of deaths in the unconditioned nursery and 31.9 per cent in the conditioned nursery. They state that in the light of their study the importance of optimal temperature, humidity and ventilation conditions in the growth and development of premature infants is demonstrable.

Obviously the special air conditioning employed by Dr. Dafoe may have been helpful in saving the lives of the quintuplets. As the heat-regulatory mechanism is adequate to protect normal, full-term infants, they do not require the high degree of temperature or the high relative humidity that premature infants need. Therefore, in nurseries for such children ordinary air conditioning suffices. There is no question about the advantage of conditioning the air so that the temperature is held

constantly at that degree which has been found best for the body and with a relative humidity in which the body thrives best with a slow circulation of air and all dust and other contamination filtered from it.

SLIGHT FEVER DURING PREGNANCY

To the Editor—A woman aged 26 is pregnant the second time. With both pregnancies her temperature has been as high as 99.6 F. Apparently the elevation of temperature begins about six weeks after the onset of pregnancy. With the first pregnancy the fever stopped at about the sixth month. She is now in the third month of the second pregnancy and has a fever. At the first delivery, which was a very difficult one, I noted that the patient was almost without amniotic fluid. I was wondering whether the fever absorbed this fluid. The patient is a nurse and went through training without missing a single day. Her weight before marriage was 120 pounds (54 kg). It increased with the first pregnancy to 150 pounds (68 kg). From the genito-urinary standpoint she is normal. Nothing can be found to account for any elevation of temperature. The ears, nose, eyes and throat are normal, with the exception of the small deflected septum. The specialist says that this is not causing the fever. The tonsils have been removed. The teeth are in good condition. The patient began menstruation at the age of 14 years. Menstruation lasted for seven days up until the age of 18 years, when dysmenorrhea developed after which the duration gradually declined to about four or five days. She was married at the age of 24 after which menstruation was cut down to about three days which continued as such until three months before pregnancy and then became a day and a half. While in training the hemoglobin was from 80 to 85. At present it is between 70 and 80. With this temperature she does not have any night sweats. The physical examination of the chest apparently gives normal results. I have never roentgenographed the chest. When the patient is not pregnant she has a normal temperature. The urine has always been normal. The blood pressure is around 100 being a little low. The action of the bowels is satisfactory with an occasional dose of magnesia magma. She is said to have had an attack of appendicitis at the age of 15 but has had no further trouble. There have been no abdominal operations. She was told that she had a cardiac leakage but I cannot make out anything wrong with the heart. During her pregnancies I have kept her on a well balanced diet with a quart of milk a day. The patient presents a rather normal history all the way through but I am wondering if she has a mild toxemia of pregnancy which is manifesting itself through this slight elevation of temperature. She has an occasional headache. A Wassermann test was not made. I do not believe that chronic malaria would manifest itself as such in this way. The patient was born in the malarial belt. There is no tuberculous history in the family as far as she can recall. Please omit name.

MD Florida

ANSWER.—A slight degree of fever during pregnancy may be found in not a few cases in prenatal clinics and it is rare that any pathologic change is discoverable to account for it. Older writers mentioned a "fever of pregnancy," but modern investigations have shown that tuberculosis, pyelitis, appendicitis, allergy and other causes were operative. If the patient is well there is no reason for any concern on the part of the physician.

SYPHILITIC MENINGO ARTERITIS

To the Editor—A man aged 30 had a sore on the penis five years ago. Six weeks ago he had a sudden attack of severe headache and partial paralysis of the left arm. Today he is weak, very nervous, has a shaking of the left leg controlled by placing his foot on the floor and he can move the left arm fairly well. He had a positive Wassermann reaction and spinal puncture controlled the headache. Is it possible for syphilis to cause such an attack of the brain and cord system five years after the primary lesion? Would regular antisyphilitic treatment suffice? Please omit my name if printed.

MD Minnesota

ANSWER.—The patient is undoubtedly suffering from a syphilitic meningo arteritis, probably of a localized type and with sufficient extension to have caused pressure on important nerve paths following a localized hemorrhage. It of course is difficult to place this focus, but it probably is above the decussation on the right side.

It is unfortunate that the correspondent did not mention the condition of the spinal fluid. Undoubtedly the patient has a high cell count, a positive globulin increase in the central zone of the colloidal gold curve, and a positive Wassermann reaction on the spinal fluid. He should be put on antisyphilitic treatment at once. Potassium iodide in 0.5 Gm doses should be given after meals and for two weeks the intramuscular injection of the aqueous solution of sodium bismuth tartrate, 0.2 Gm., or of iodobismuto 2 cc., or of sodium bismuth thioglycollate, 0.2 Gm., every other day. The patient might then be started cautiously on neosarsphenamine injections intravenously, the first dose being 0.3 Gm., followed in five days with a dose of 0.6 Gm. and if the patient stands this all right, an injection of 0.75 Gm. every week until he has received a total of twelve injections of the arsenical. Following the last injection of the arsenical, the patient may be given an injection of one of the bismuth suspension preparations for example, bismuth salicylate or potassium bismuth tartrate, these injections

being given once a week for a series of ten injections, to be followed with twelve further injections each of 0.75 Gm of neoparsphenamine, this in turn to be followed by a further course of bismuth injections. If the patient stands this therapy well he should have three or four courses of the arsenical and of the bismuth preparation. A Wassermann test should be taken at the end of each course of treatment and a lumbar puncture every six months to observe progress. Certain cases of this type respond nicely to antisyphilitic therapy, though it is well to get the therapy started before the hemorrhage has had an opportunity to become too firmly organized, and in an important condition of this type, if there is any question as to the method of handling the patient, one should have the patient consult a well trained syphilologist. It may mean the difference between a permanent disability and complete recovery.

DOSAGE OF ROENTGEN RAYS

To the Editor—Please give me the number of roentgens required to give an erythema dose on a skin area of 10 by 10 cm with the following settings

100 kv	5 ma	no filter
100 kv	5 ma	1 mm of aluminum
125 kv	5 ma	no filter
125 kv	5 ma	1 mm of aluminum
125 kv	5 ma	3 mm of aluminum
160 kv	5 ma	0.25 mm of copper plus 1 mm of aluminum
175 kv	5 ma	0.25 mm of copper plus 1 mm of aluminum
200 kv	5 ma	1 mm of copper plus 1 mm of aluminum
200 kv	5 ma	0.5 mm of copper plus 1 mm of aluminum
200 kv	5 ma	0.75 mm of copper plus 1 mm of aluminum

At 100 kilovolts without filtration the skin will generally tolerate 350 roentgens with a hardly noticeable erythema on the tenth day. Recently I have seen recommended 900 roentgens as an erythema dose when 200 kilovolts is used filtered through 1 mm of copper plus 1 mm of aluminum. This seems to me to be too much. I shall appreciate a statement from you as to what is considered an average erythema dose with the foregoing factors.

G E HELSCHEN M D Sherman Texas

ANSWER.—Under exactly similar physical conditions the output of different generators of x-rays, measured in international roentgens, should be the same. In ordinary practice, however, exactitude of physical conditions seldom obtains. Moreover, erythema represents a biologic reaction of the skin and the tolerance of different skins varies considerably. For these reasons the dose in roentgens required to induce erythema depends on the generating apparatus and tubes, the conditions under which these are operated, the conditions of measurement, the tolerance of the subject's skin, and the degree of erythema taken to represent the erythema dose. Measurement of the x-ray output of different installations may vary within fairly wide limits. Also, measurement with an ionization chamber in air or with the chamber in contact with the skin gives widely different results. In the latter case the scattered radiation is included, whereas in the former it is excluded.

In all probability the erythema dose of 900 roentgens mentioned by the enquirer represented a dose measured with the ionization chamber in contact with the skin which would roughly be about 40 per cent greater than the number of roentgens registered by the ionization chamber if the measurement had been made with the chamber free in air. Measured in air, the average erythema dose with a peak voltage of 140 and with filtration of 6 mm of aluminum, should be from 550 to 600 roentgens. With higher voltages and greater filtration a somewhat larger dose may safely be given.

MALIGNANT GROWTHS OF ANTRUM

To the Editor—How frequently do malignant growths of the maxillary antrums occur as determined clinically and radiographically? References on epiphyseal development in standard anatomy textbooks do not coincide in all age periods as checked by roentgen examination. Have any comprehensive roentgen studies been made recently? Please omit name.

M D New York

ANSWER.—Malignant growths of the antrum are relatively infrequent. The number of this type of new growth as compared with the total number of patients frequenting several of the world's largest nose and throat clinics gives figures varying from 0.03 to 0.12 per cent.

Another source states that malignant neoplasms of the nose and its accessory cavities represent about 1 per cent of all malignant growths and about 1 in 800 of all cases of nasal disease.

A search of the literature does not reveal any roentgen studies of the maxillary sinus devoted solely to the discovery by this method of the incidence of carcinoma in this region.

Perhaps one answer to the question would be the statement of one authority (Oehngren), who feels that "a more widespread

use of x-rays for diagnosis in the case of pains in the trigeminal nerve area and a more general use of them in unilateral subacute rhinitis in those over the age of 50 would result in a smaller number of overlooked tumors of the antrum. Too many of them in the past have been going about for months with a diagnosis of neuralgia or toothache."

There is no exact agreement on the question of epiphyseal development because of normal variations. In general, the anatomists agree and their observations coincide more or less with those of the roentgenologists (Cohn Isadore Normal Bones and Joints, New York, Paul B Hoeber, Inc., 1924).

CONJUNCTIVAL IDIOSYNCRASY TOWARD ARSENIC AND BISMUTH

To the Editor—I am treating a messenger boy weighing about 121 pounds (55 kg) for syphilis. I began by giving him 0.45 Gm of neoparsphenamine every five days for six injections and then every seven days for another six injections. I followed with 0.2 Gm of sodium hyaluronate intramuscularly every seven days for twelve doses. Then I omitted treatment for three weeks and drew blood for a Wassermann test which was negative. I then began again on the same routine as before. The boy rode a bicycle every day except Sundays all through the winter. He is in excellent physical and mental condition and cooperates intelligently in every way. On the day after the first neoparsphenamine injection a slight conjunctivitis developed in both eyes with a marked increase in the flow of tears. The conjunctivitis subsided when the eyes were protected by goggles when he was in the open air but the flow of tears is so intense that often he will have patches of moisture covering nearly the entire front of his coat. There seemed to be no difference when he was treated with arsenic and bismuth compounds. After his three weeks rest period he was almost back to normal when on the day after the first injection of the second course the process appeared as violent as before or perhaps more so. I have never had this complication confront me before although I have treated many such patients in much the same way. What I wish to know is whether or not there is any possibility of real danger to the eyes and how to treat the condition so that he can keep at his job in the open air. Please omit name and address.

M D Illinois

ANSWER.—Without specific knowledge as to the appearance of the conjunctiva and cornea, it is rather difficult to answer the question. Apparently there does not seem to be any interstitial keratitis present but merely an epiphora consequent to the administration of arsenic or bismuth compounds. As there are remissions of the lacrimation in the rest periods, it is evident that dacryocystitis is not present. Consequently, this must be one of those extremely rare cases of a conjunctival idiosyncrasy toward arsenicals or bismuth. Reference to this can be found in the *Kurzes Handbuch der Ophthalmologie*, volume 7, Syphilis and the Eye, by Igersheimer, page 173 wherein cases reported by Simon Naegeli, Kleeberg and Kraus are cited. The only relief that can be obtained is to treat the syphilitic condition with mercury and iodides instead of arsenic or bismuth compounds.

DISCOLORATION OF HAIR AFTER PERMANENT WAVE

To the Editor—An unmarried woman aged 43 complains of a yellowish color beginning at the scalp line extending out on the shafts of the hair following permanent waves. She has been bothered with this condition for six years ever since receiving her first wave. The hair is healthy it is prematurely grayed and there are no scalp disturbances. Six years ago a total thyroidectomy was performed two years ago a suprapubic hysterectomy and some years ago a tonsillectomy. Physical examination and a complete laboratory check up are all negative. She further states that four years ago she reported to some physician who administered heavy doses of alkali which seemed to give relief for a while. The only other significant fact in the history is constipation which is not very marked. Examinations of the urine and the blood are all negative. The Wassermann reaction is negative. Can you give me some idea as to why this peculiar yellow pigment seems to be depositing in the hair shafts? I will appreciate any suggestions as to treatment.

M D New York

ANSWER.—Yellow hair is not uncommon in cases of icterus and has occurred after the use of resorcin lotions. No report of yellow hair after the permanent wave procedure has been found, but Philipsen (*Green Discoloration of the Hair After Permanent Waving*, *Ugeskr f Lager* 95 746 [June 29] 1933) reports green hair in seven of his patients after the permanent wave. All had previously used lotions containing mercury solutions. He remarks that it is no wonder that a mercurial solution in combination with an alkali under great heat should undergo a chemical reaction. So far as his experiments had been carried, he had found no other chemical that reacted under these conditions. The sulphur in the hair is, he thinks, in too firm a combination to cause any change of color.

In the case described the color is confined to the portion of the hair shaft next the scalp. This would suggest that the color was due to something on the scalp. Is the patient taking

iodine or bromine? The ammonia salts of these halogens turn yellow on exposure to the air. Has resorcin or naphthol been used on the scalp?

Unless some such cause can be found and removed, treatment must be limited to the substitution of milder methods of hair curling for the popular permanent wave.

ANTIMENINGOCOCCUS SERUM

To the Editor—I should like to know whether there is any value in a prophylactic injection of antimeningococcus serum given hypodermically on the day of exposure. Is any immunity conferred by such use of a serum supposedly adapted for intraspinal injection? Would intramuscular injection cause less reaction (anaphylactic) or more than hypodermic? Three years ago one brand was given hypodermically to two patients without any other ill effects than a sore arm temporarily. Recently, of three patients who received a different brand two suffered a severe urticaria a week after the injection while the other patient suffered a pyrexia of 101 F beginning two days after the injection and lasting ten days the latter's arm was very red and inflamed while the arms of the patients with urticaria suffered little pain at the site of injection. If the serum has a prophylactic value what amount should be given? Please omit name.

M D, California

ANSWER—There is ground for belief that antimeningococcus serum has prophylactic virtues. Ordinarily the preventive effect would last only three or four weeks. Practically the same preventive effect, or passive immunity, would result from intramuscular as from intraspinal injection. The danger of serum reaction would be about the same, no matter what the route of injection. Serum reactions depend on the sensitivity of the patient, the brand of serum and the age of the serum. Different brands of serum vary in their content of reaction-producing substance, and older serums are regarded as less dangerous than recent. No effective dose has been established for preventive purposes, it would seem reasonable to give at least a full therapeutic dose. The fact that such preventive injection may sensitize the subject to horse serum should be borne in mind.

UNDULANT FEVER AND PREGNANCY

To the Editor—I have a patient four and a half months pregnant, who has undulant fever. From her history I judge that she apparently has had the infection about twelve months. Should the infection fail to subside before her delivery is it most likely that the new born infant will be similarly infected? If so what line of treatment is recommended? At present the patient is being treated with Brucella melitensis vaccine (Lederle) tonics and general hygienic care. Any information relative to the handling of this case would be appreciated. The patient's general physical condition is not bad. She was not aware that she had any fever at any time until demonstrated by a thermometer. There is a small dental root abscess as shown by the x-rays. She has a slight anemia (erythrocytes 3,700,000 hemoglobin 65 per cent). The urine Wassermann and Kahn reactions blood urea and basal metabolic rate are all normal. The temperature fluctuates between 97 and 100 F and the pulse between 78 and 94 at complete rest in bed and 88 and 120 when up and about. The agglutination test is positive for undulant fever.

M D, Arkansas

ANSWER—It is quite unlikely that the child will exhibit evidence of undulant fever. This statement is based on the fact that calves born of cows with brucellosis rarely, if ever, show evidence of the disease.

AMINOACETIC ACID IN MYASTHENIA

To the Editor—I saw a case of pseudohypertrophic muscular dystrophy or myopathy in a child aged 7 years. Is there anything new in the treatment for such cases? Would the induction of artificial hyperpyrexia be of any benefit in a case of this kind? Is there any hospital or clinic to which I could send this child for further study?

J L. SNAVELY M D Sterling III

ANSWER—The administration of aminoacetic acid has been advocated in the treatment of myasthenia and myopathy, though the value and limits of its usefulness have not been determined. Many neurologists and most neurologic departments of university medical schools are interested in this problem.

GANGRENE OF UTERUS

To the Editor—At autopsy a uterus is found black and gangrenous. How long would this condition take to develop? (The case in question is a possible criminal abortion at approximately three months and I can find nothing in my reference books regarding it.) Kindly omit name.

M D California

ANSWER—It is not possible to answer this question satisfactorily without further information. All that can be said is that discoloration and gangrenous changes may develop in the course of a day or so after abortion.

Medical Examinations and Licensure

COMING EXAMINATIONS

- AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada Dec 7. Applications must be filed not later than Nov 1. Sec. Dr. Paul Titus 1015 Highland Bldg., Pittsburgh (6).
- AMERICAN BOARD OF OPHTHALMOLOGY St. Louis Nov 18 Sec., Dr. William H. Wilder 122 S. Michigan Ave. Chicago.
- AMERICAN BOARD OF ORTHOPAEDIC SURGERY St. Louis Jan. Sec. Dr. Fremont A. Chandler 180 N. Michigan Ave. Chicago.
- AMERICAN BOARD OF PROCTOLOGY Philadelphia Oct 10 and St. Louis Nov 20 Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka Ill.
- AMERICAN BOARD OF RADIOLOGY Detroit Dec 12 Sec. Dr. Byrl R. Kirklind Mayo Clinic Rochester Minn.
- ARIZONA Phoenix Oct 12 Sec. Dr. J. H. Patterson 876 Security Bldg. Phoenix.
- ARKANSAS Basic Science Little Rock Nov 4 Sec. Mr. Louis E. Gehauer 701 Main St. Little Rock.
- CALIFORNIA Sacramento Oct 21-24 Sec. Dr. Charles B. Pinkham, 420 State Office Bldg. Sacramento.
- COLORADO Denver Oct 1 Sec. Dr. Harvey W. Snyder 422 State Office Bldg. Denver.
- CONNECTICUT Basic Science New Haven Oct 12. Prerequisite to license examination. Address: State Board of Healing Arts 1895 Yale Station New Haven.
- GEORGIA Atlanta Oct 8-9 Joint Secretary State Examining Boards Mr. R. C. Coleman 111 State Capitol Atlanta.
- IDAHO Boise Oct 1 Commissioner of Law Enforcement Hon. Emmett P. Post 205 State House Boise.
- ILLINOIS Chicago Oct 22-24 Act. Supt. of Regis., Dept. of Regis. and Edu. Mr. Clinton P. Bliss Springfield.
- MICHIGAN Lansing Oct 8 Sec. Board of Registration in Medicine, Dr. J. Earl McIntyre 202-3-4 Hollister Bldg. Lansing.
- MINNESOTA Basic Science Minneapolis Oct 12 Sec. Dr. J. C. McKinley 126 Millard Hall University of Minnesota Minneapolis. Medical Minneapolis Oct 15-17 Sec. Dr. Julian F. Du Bois 350 St. Peter St. St. Paul.
- MONTANA Helena Oct 1 Sec. Dr. S. A. Cooney 7 W. 6th Ave. Helena.
- NEBRASKA Basic Science Lincoln Oct 12 Dir. Bureau of Examining Boards Mrs. Clark Perkins State House Lincoln.
- NEVADA Carson City Nov 4 Sec. Dr. Edward E. Hamer Carson City.
- NEW JERSEY Trenton Oct 15-16 Sec. Dr. Arthur W. Belting 28 W. State St. Trenton.
- NEW MEXICO Santa Fe Oct. 14 Sec. Dr. Le Grand Ward Sena Plaza Santa Fe.
- RHODE ISLAND Providence Oct. 3-4 Dir. Department of Public Health Dr. Edward A. McLaughlin, 319 State Office Bldg. Providence.
- WEST VIRGINIA Huntington Oct 28 State Health Commissioner Dr. Arthur E. McClue Charleston.
- WYOMING Cheyenne Oct 7 Sec. Dr. G. M. Anderson Capitol Bldg. Cheyenne.

Minnesota June Examination

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, June 18-20, 1935. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Forty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine	(1933)	90.1	
Yale University School of Medicine	(1932)	85.4	
Loyola University School of Medicine	(1934)	91.3	
Rush Medical College	(1934) 91.2	(1935)	84.1
Johns Hopkins University School of Medicine	(1933)	89.2	
University of Minnesota Medical School	(1930)	87.1	
(1933) 91.3 (1934) 80.3, 84.2, 86, 86.1, 87.3, 89.1, 90, 90.4, 90.5, 91.6, 94.2, (1935) 84, 85.1, 87.1, 88, 88.5, 89, 89.3, 89.3, 90, 90.1, 90.2, 91.2, 91.5, 92.1.			
Creighton University School of Medicine	(1935)	90.2	
Duke University School of Medicine	(1932)	89	
University of Virginia Department of Medicine	(1930)	89.6	
Marquette University School of Medicine	(1935)	89.2, 89.4	90.2
Rijks Universiteit te Leiden Faculteit der Geneeskunde	(1928)	87.5	
Netherlands			

* This applicant has received an M B degree and will receive an M D degree on completion of internship.

California Reciprocity and Endorsement Report

Dr. Charles B. Pinkham, secretary, Board of Medical Examiners of the State of California, reports 18 physicians licensed by reciprocity and 3 physicians licensed by endorsement from June 20 through Aug 1, 1935. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine	(1933)	Colorado	
Hering Medical College Chicago	(1897)	Illinois	
Northwestern University Medical School	(1924) Iowa	(1934)	Illinois
Rush Medical College	(1932)	Illinois	
State University of Iowa College of Medicine	(1927)	Washington	

Kansas City Hahnemann Medical College Missouri	(1909)	Kansas
Washington University School of Medicine	(1924)	Kansas
Creighton University School of Medicine	(1933)	Nebraska
John A. Creighton Medical College	(1917)	Nebraska
University of Nebraska College of Medicine	(1925)	Nebraska
Columbia Univ College of Physicians and Surgeons	(1916)	New York
Cornell University Medical College	(1932)	New York
Willamette University Medical Department Oregon	(1907)	Oregon
Temple University School of Medicine	(1932)	Penna
Vanderbilt University School of Medicine	(1931)	Mississippi
Universität Heidelberg Medizinische Fakultät	(1930)	Minnesota
School	LICENSED BY	Year Endorsement
	ENDORSEMENT	Grad of
Harvard University Medical School		(1930)N B M Ex
Marquette University School of Medicine		(1934)N B M Ex
University of Toronto Faculty of Medicine		(1929)N B M Ex

Book Notices

Backache. By James Mennell M A M D B C Medical Officer
Physio-Therapeutic Department St Thomas's Hospital Second edition
Cloth. Price \$3.50 Pp 227 with 59 illustrations. Philadelphia P
Blakiston's Son & Co Inc 1935

In this edition the author has added more than thirty pages and eleven illustrations. The book is ingeniously illustrated in red and blue, the former showing the patient and the latter the examiner or manipulator, presenting instructive outlines. The differential diagnosis and treatment of the various causes of backache have advanced remarkably. The book represents the work of eleven years, including his study during two visits to the United States. The author states that he has presented nothing that lies outside his personal experience. He deals with the simplest technic. He has been conservative and described only the more simple of the manipulations that can be put to daily use. He calls attention to the inadequacy of the routine examination of the back as generally practiced and the injustice of the opinion formed in the early period of his study of backache that all the patients grossly exaggerated the symptoms and that the symptoms themselves were to a considerable degree neurasthenic, often almost amounting to delusion. The author believes that it is only as a result of an adequate routine examination that one can arrive at a definite diagnosis. He has elaborated a complete method of examination. He believes that most of the pitfalls in the diagnosis of backache can be overcome or evaded by careful history taking. The book is to be highly recommended.

Entstehung und Funktion von Gefäßsystem und Blut auf cellular physiologischer Grundlage. Von Dr med Max Hausmann Paper Price 56 Swiss francs 44.80 marks Pp 704 with 207 illustrations. Basel Verlag Benno Schwabe & Co 1935

This volume is of especial interest to the student of zoology, anatomy and physiology. The author is a Swiss physician who in thirteen years of assiduous labor has found the time and energy for this extensive work. On the whole, the book represents an attempt to combine the views, theories and results of specialized research in the fields of zoology, embryology, physiology, hematology, pathology and clinical medicine. The author justly points out that intensive specialization has led too often to incomplete solutions of general biologic problems. The volume is essentially theoretical and contains no experimentally gained contributions by the author.

The vast literature pertaining to this field is critically reviewed. Throughout the book it is evident, however, that American literature has hardly been consulted by the author, a tendency that is all too common with European writers.

To the clinician the book will be of interest particularly in its chapters dealing with the reticulo-endothelial system, the origin of red blood corpuscles and of leukocytes, the hematopoietic organs, the physiology of capillaries and the physiology of the circulatory system as a whole.

The theoretical views of the author are expressed in the introductory chapter and are summarized in the final chapter. The body of the book represents mainly documentation for his deductively gained opinions and consists of three parts, each containing reviews of pertinent phylogenetic and ontogenic studies and theories of the circulatory system (part I, invertebrates,

pp 10-216, part II, vertebrates [early stages] pp 217-400, part III, vertebrates [later stages] and physiologic synthesis, pp 401-634).

The author's discussion of the morphogenesis of the vascular system is based on Arnold Lang's theory of the trophocoel. A summary of this theory and detailed discussion is given in chapters 2 and 3. Hausmann accepts Lang's views as a profitable and stimulating hypothesis although he recognized certain objections and finds it necessary to apply it less vigorously than its founder. Indeed, the author emphasizes that it is impossible to explain the origin of the vascular system by a general morphologic theory applicable to all classes of the animal kingdom.

The question of the origin of endothelium is recognized as a particularly difficult problem. With respect to endothelium in vertebrates, the author refers to the views of Fernandez and Näf former pupils of Lang, who accept its mesenchymal origins. Hausmann is disinclined to believe, however, that this is true for all metazoa. Important American contributions to this problem by Evans, Hockard and Reagan are not discussed. The work of Evans is merely referred to, indirectly from Ketbel and Mall's handbook. With regard to the local origin of endothelium, the author's discussion is centered on Hatta's work.

That the author is strongly influenced by Lang's theory, in spite of its admitted limitations, is evident by the fact that he sees no difficulty in considering the vascular endothelium of vertebrates as derived from separated coelomic elements. The endothelial linings would thus represent a secondary coelomic cavity. Similarly, Hausmann considers the blood islands of the yolk sac as emigrated coelomic elements which secondarily produce the capillary network. The theory of His of the parablaster is considered antiquated and has been abandoned.

In the introductory chapter the author states that a true lymphatic system with endothelial linings of its channels appears for the first time in birds. This statement reveals that the author has not looked deeply and widely into the literature pertaining to that system, for the unquestioned existence of such a system in the vertebrates below the birds—in fishes, amphibia and reptiles—has been accepted for a century. He accepts without discussion the direct origin of lymphatics by outgrowth from veins, a statement which shows again that he has not taken the trouble to acquire thorough information about established investigations in this matter (Huntington, McClure, Kampmeier).

The book contains no independent chapter on the lymphatic system, there are, however, subtitles dealing with lymphoid organs and lymphatics in chapters 23, 26 and 27. Although the author points out, in these summary discussions, the preeminence of American anatomists in this field, the only author indirectly quoted is Sabin, whose views he accepted without question. Hausmann passes over in silence the evidence contained in a great number of researches on the origin and development of the lymphatic system which refute the views of Sabin.

The author's main thesis centers in the consideration of the function of an organ or organ system not as a narrowly circumscribed partial function of the organism as a whole. Hausmann perceives an organ and, indeed, the entire organism as the result of a synthesis of cells which carry all primary functional characteristics and which gain their specific function only through influences of their particular environment. His views represent a closer correlation of phylogenetic and ontogenic origin with principles of general physiology of the cell. The analysis of the vascular system from this point of view was undertaken as an example and test for the validity of such an approach.

It may be questioned, however, whether the author has been successful in escaping the dangers that are innate in any such attempt to fit biologic facts and theories with deductively preconceived opinions. Modern biology is not being written in a study or in libraries. The author exhibits a tendency toward verbosity that does not add to the clearness of his argument.

The book is excellently printed. The illustrations are borrowed from original papers and credit is given to the respective sources. Fifteen diagrams are the author's own. A valuable feature of the large volume consists in marginal titles on every page. There is an excellent subject and author's index. The subject index gives helpful definitions for many zoological, anatomical and physiologic terms.

The Doctor's Bill By Hugh Cabot With an Introduction by A. Lawrence Lowell Cloth Price \$3 Pp 313 New York Columbia University Press 1935

The first three chapters survey general medical developments and resources in this country. They contain a description of the complexity in medical practice due to the development of hospitals and specialization. A chapter on the general practice of medicine conveys the idea that the general practitioner is being crowded out of the field a conclusion that is emphasized in the next chapter, on specialists and group medicine. In this the author argues the superiority economically and medically of group practice. This argument is continued in the succeeding chapters, in which he accepts without question the conclusions of the Committee on the Costs of Medical Care as to lower costs of group practice and endorses the practice of contract medicine by groups.

The author recognizes the abuses that have grown up under workmen's compensation but does not seem to recognize that these abuses are closely connected with some of the forms of contract practice associated with compensation administration.

There is a review of health insurance in continental Europe and the British Isles, in which these systems are presented from a much more favorable point of view than a wider knowledge of those systems would seem to justify. Nevertheless, the author concludes "I cannot convince myself that the conditions in this country can be satisfactorily met by transplanting plans which are at least apparently, satisfactory in other countries." He also says "Some study of the problems in Europe leads me to the opinion that a grade of medical service which is apparently entirely satisfactory, and probably fairly meets the demand in various of those countries, would fall short of the demand here and would prove unsatisfactory." He is under the impression that "the subdivision of the field of medicine and the development of specialization have on the whole gone considerably further in this country than abroad." Thus conclusion is not in accord with facts.

The author's discussion of medical needs in the United States again follows the conclusions of the Committee on the Costs of Medical Care and among "suggested methods of improvement" are various systems of voluntary insurance, especially medical insurance by private groups of physicians. In regard to the recent movement of county medical societies to organize medical service he says "If the medical profession can succeed in delivering a satisfactory article of medical service through the united efforts of organizations such as the county medical societies, it will have gone far to justify its claim of being capable to handle such problems on its own initiative." He enters into some controversial questions within the American Medical Association and accepts the purported statements of some of the critics of the American Medical Association but shows that he is thoroughly unfamiliar with many of the facts.

In his final chapter, "Where Do We Go from Here?" he criticizes the demand of the medical profession for free choice of physician and urges an expansion of public health work.

While the work as a whole represents a contribution in a much needed field, it is impossible to avoid the feeling that a wider and closer knowledge of recent developments in medical economics might have improved the work and enabled the author to avoid many inaccuracies. There is a bibliography attached with comments that clearly show the bias of the author.

Manual of Medicine By Sir Stanley Woodward CMG CBE MD Physician and Lecturer on Medicine Westminster Hospital Fourth edition. Cloth. Price \$5 Pp 618 with illustrations New York & London Oxford University Press 1935

The author in one small volume discusses the following general subjects: diseases of the alimentary system, diseases of the kidneys, diseases of the respiratory organs, diseases of the circulatory system, diseases of the blood, the deficiency diseases, diseases of metabolism, diseases of the nervous system, and infectious diseases. In view of the fact that the book is intended to be a manual of medicine, the author has succeeded very well. In this edition he has made eliminations and additions. Under the subject of obesity page 320, for example, he suggests the dietary treatment, pointing out numerous food articles that the patient should avoid, emphasizing regular systematic exercises, and closing with the statement that with due precautions thyroid,

from 3 to 5 grains (0.2 to 0.3 Gm) is given three times a day, especially if the basal metabolic rate is diminished. Fortunately, under the discussion of treatment he does not mention alpha dinitrophenol.

Human Physiology By F. R. Winton M.D. Reader in Physiology University of Cambridge and L. E. Bayliss Ph.D. Lecturer in Biophysics University of Edinburgh. Foreword by C. Lloyd Evans D.Sc. F.R.C.P. F.R.S. Jodrell Professor of Physiology and Fellow of University College London. Second edition. Cloth Price \$4.50 Pp 627 with 291 illustrations Philadelphia P. Blakiston's Son & Co. Inc. 1935

In this edition the same high standard of scientific accuracy and fundamental approach has been maintained as in the first. A good deal of material has been added, including many recent contributions to the subject. The sections on circulation, respiratory function of the blood, carbohydrate metabolism, muscle chemistry, the eye and the ear have been contributed to this edition by experts in these fields. Uniformity with the rest of the work has, however, been achieved, and there is a minimum of duplication. The bibliography is restricted to monographs and review articles in most instances. The book therefore is not of great use in looking up the literature of the subjects discussed. There is, however, an exceptionally complete index. Barring one or two of the more encyclopedic works, this is the most critical and reliable textbook now available for students of human physiology.

Die physiologischen und physikalischen Grundlagen der Hautthermometrie Mit einem Anhang über weitere physiologische Temperaturmessungen. Von H. v. Doz. Dr. med. H. Pfälderer und Dr. phil. K. Büllner. Mit einem Geleitwort von Prof. Dr. A. Schliötenheim. Paper Price 4.90 marks Pp 52 with 10 illustrations Leipzig Johann Ambrosius Barth 1935

In view of the increasing practical importance of measurements of skin temperature, it is useful to have available in monograph form a rather critical analysis of the various methods in use, and a discussion of the influence of various environmental factors on skin temperature in normal and pathologic individuals. In the short treatment given, the references to clinical literature have been made brief and, in some respects, inadequate. The important underlying physical and physiologic principles have, however, been carefully outlined. The monograph should therefore be of interest and value to any one undertaking practical work involving skin temperature measurements.

Maimonides (The Rambam) The Story of His Life and Genius By Dr. J. Münz. Translated from the German with an Introduction by Henry T. Schlinkkind Ph.D. Centennial edition. Cloth Price \$1.50 Pp 238 Boston Winchell Thomas Company 1935

This gives in an interesting manner the story of the life and genius of the twelfth century philosopher, scholar and physician. Born in Cordova in 1135, Moses Ben Maimon was at 13 exiled from Spain through anti-Jewish persecution and, after traveling for a number of years in northern Africa and Palestine, settled finally in Egypt, where he became famous as a philosopher, teacher, writer, scholar, judge, astronomer, scientist, statesman, rabbi and physician. This book treats principally of his contributions to philosophy and rabbinic literature. His principal works were "Mishneh Torah," a code and simplification of the Talmud, and "The Guide to the Perplexed," a philosophic treatise in which he aims to harmonize science, religion and philosophy. The chapter on Maimonides as a physician, although rather short, reveals to an extraordinary degree his thorough knowledge of the medical science of his time and deals with his contributions to dietetics, hygiene and treatment, many of which were far in advance of his time. The translator, as well as the author, have proved that the story of a medieval genius can be made as interesting as a present-day novel.

Précis d'histologie. La cellule les tissus les organes. Par A. Branca et J. Verne professeurs à la Faculté de médecine de Paris. Cloth Price 65 francs Pp 631 with 420 illustrations. Paris Masson & Cie 1934

This presents a concise description of the microscopic structure of the body. There are numerous black and white illustrations, the great majority being originals, some of which have been frequently borrowed by other authors from earlier editions of Branca's textbook. A better grade of paper would show them to better advantage. The text has been brought down to date and includes most of the important advances in histology and the attempts to correlate known functions with the minute

structure of the organs. Because of the relatively brief text, many questions are answered with a positiveness which does not reflect the actual state of existing knowledge. The new chapters on the living cell and the trends in histologic investigation are quite interesting. The volume constitutes a concise, accurate, modern textbook of histology.

Corazón y vasos. Por el Doctor Pedro Cosío. Jefe de la sección cardiología del Instituto argentino de diagnóstico. Biblioteca de semiología para médicos generales y estudiantes. Boards. Pp 385 with 266 illustrations. Buenos Aires. El Ateneo. Librería científica y literaria. 1933.

The textbook *Heart and Vessels* was written for the medical student and the general practitioner. It is well printed, is accurately indexed, and contains many illustrations. The introduction contains the system of diagnosis and classification of heart disease advised by the American Heart Association. The material covered includes cardiac anatomy, physiology, pathology, history taking, examination of the cardiovascular system and the various instrumental methods of cardiac investigation. The chapter on x-rays and electrocardiography are particularly well organized and illustrated. The material in the text is concisely and accurately written and meets the purpose for which the author designed the work.

Medicolegal

Malpractice Injury to Ureter During Hysterectomy, Privileged Communications Statute Applicable to Patient in State Institution.—The physician-defendant performed a supravaginal hysterectomy on the plaintiff, removing the upper two thirds of the uterus. During this operation the plaintiff claimed, the defendant negligently injured the left ureter, "resulting in causing an opening in said ureter above the bladder which now permits the urine to pass into the cervix stump where the injured portion of the ureter is now fastened, thence through the vaginal passage." Two operations performed by the defendant to correct the condition afforded no relief. In one of these operations, according to the plaintiff's charges, the intestine was lacerated, causing an opening through which gas and fecal matter passed uncontrolled into the vaginal passage and out with the urine. The patient sued the physician for malpractice. Shortly thereafter she was committed to a state institution for the insane and her guardian was substituted as party plaintiff. There was a judgment against the physician and he appealed to the Supreme Court of Kansas.

Evidence that shortly after the anesthetic was given in the first operation the physician-defendant threw a knife across the operating room was properly admitted, said the Supreme Court, as bearing on the question of negligence. During the trial a physician witness was asked whether, assuming certain facts to be true, the physician-defendant used the ordinary skill and care which surgeons practicing in the vicinity used in like operations. The witness replied, "Well, with these assumptions he did not." This testimony said the court did not trench on the province of the jury but was rather a statement of fact from which the jury might find negligence. The trial court did not err in refusing to permit two physicians on the staff of the state institution to testify. In Kansas, a physician may not testify without his patient's consent, concerning any communication made to him in his professional capacity by his patient or concerning any knowledge obtained by a personal examination of the patient. By the great weight of authority, said the Supreme Court, the fact that a patient is an inmate of a state institution does not deprive the patient of the protection of the privileged communications statute with respect to any information acquired by a member of the professional staff of that institution in treating the patient. The defendant contended that the privilege of the statute if any existed was waived when the husband testified concerning the physical and mental condition of his wife. In holding that there had been no waiver, the Supreme Court relied on the case of *Metropolitan St Ry Co v Jacoby* (C C A) 112 F 924, wherein it was held that the fact that the plaintiff in an

action for personal injuries introduces the testimony of physicians who attended him, with respect to the nature and extent of such injuries does not operate as a waiver of the right to object to the testimony of another physician, called by the defendant, who had attended him for the same injuries, but at a different time. In the present case, continued the court, with the exception of a statement in a hypothetical question, that the patient had been confined in the state institution, there was nothing in the record concerning anything that happened at the institution.

For the reasons stated, the judgment in favor of the plaintiff was affirmed.—*Linscott v Hugbanks* (Kan), 37 P (2d) 26

Autopsies Coroner's Right to Perform.—Kingsley was found dead in his car in a garage in Hennepin County, Minnesota. A deputy coroner of that county directed the undertaker, called by the deceased's wife to take charge of the body, to take the body to the county morgue. There the deputy coroner called a physician to perform an autopsy. The cause of death was found to be "monoxide gas poisoning." The wife was apparently not told that an autopsy was to be performed and did not learn of it until three weeks later. She then sued the deputy coroner, the undertaker, and the physician who performed the autopsy. A verdict was directed in favor of the defendants and from an order denying a new trial, the plaintiff appealed to the Supreme Court of Minnesota.

A wife said the Supreme Court, has a legal right to the possession of the dead body of her husband for the purpose of a decent burial and a wrongful mutilation of the corpse entitles her to damages against the wrongdoer. Her right, however, may be subjected to statutory regulation in the interest of public welfare. The coroner or deputy coroner of Hennepin county is required by statute to investigate all cases of "violent, mysterious and accidental deaths, including suspected homicides" and may order an autopsy when deemed proper. The death of the plaintiff's husband, said the court, undoubtedly came within the class of deaths the coroner was required by law to investigate and he had for the purposes of such investigation exclusive control of the body. The plaintiff contended, however, that an autopsy is authorized only as an incident to an inquest and that under the Minnesota law coroners may hold inquests "upon the dead bodies of such persons only as are supposed to have come to their death by violence." If on investigation, the coroner deems a death accidental, he cannot hold an inquest. But, said the court, an autopsy may be the surest and most satisfactory way of determining that the death was accidental and, since the law provides that the coroner "shall order an autopsy when and where he deems proper" the conclusion is inescapable that the coroner may, as an aid to his investigation, order an autopsy. Furthermore, a coroner is required by law to make out a death certificate and to state therein the cause of death. To do so accurately, he may consider it necessary to have an autopsy performed. He may not arbitrarily order an autopsy when a properly conducted investigation has disclosed the cause of the death. It cannot be made to satisfy an idle curiosity or for the information of some interested insurance company.

The fact that the plaintiff was not informed that an autopsy was contemplated does not tend to prove an arbitrary exercise of the coroner's discretion. A public official is entitled to the presumption that in the performance of his duties he acts in good faith according to his best judgment. In the opinion of the court, the plaintiff's evidence was not sufficient to support a verdict that there was abuse of discretion in ordering an autopsy. A verdict was properly directed, therefore, in favor of the deputy coroner. Likewise, the undertaker was rightly entitled to a directed verdict, for, in taking the body to the morgue, he acted for the deputy coroner. The defendant physician who performed the autopsy must also, said the court, be held free from liability. Although the plaintiff contended that the autopsy went further than was necessary, the testimony was to the effect that it was performed in the usual way. It is almost self evident, said the court, that a proper autopsy to establish a cause of death not only should show a cause but should exclude all other supposable or possible causes. The plaintiff proved no excess mutilation nor any failure to replace

all organs examined, and the burden was on her to sustain the allegations of the complaint in respect to these matters

The Supreme Court, therefore, affirmed the order of the trial court denying a new trial to the plaintiff—*Kingsley v Forsyth (Minn.)*, 257 N W 95

Malpractice Negligent Treatment of Fracture—The patient sustained a fracture of both bones of her right forearm, a comminuted fracture through the upper third of the ulna and a complete, oblique fracture through the neck of the radius. A deformity followed, with a 50 to 75 per cent limitation of motion in pronation and supination but with practically normal motion in flexion and extension. The patient sued the physician defendant, and from a judgment in favor of the plaintiff for \$5,950 the defendant appealed to the St. Louis court of appeals, Missouri.

The defendant complained of an instruction given by the trial court to the jury that the terms "carelessly" and "negligently" do not imply lack of skill or capacity but simply a disregard of ordinary care and caution, that if the jury found the defendant careless and negligent, the fact that the defendant may have been competent and skilful would not constitute a defense. This instruction, said the court of appeals, was correct. Malpractice may result either from injury occasioned by the physician's want of requisite knowledge and skill or from injury caused by the failure of the physician to exercise due care in the application of his skill and knowledge. The present case was founded solely on the theory of negligence and not on the theory of lack of knowledge and skill. Consequently, the question of lack of skill was not an issue in the case and his possession of the required skill, if he did not apply or use it, would constitute no defense.

During the trial the plaintiff called as an expert witness a physician whose office had been closed for twenty years but who had continued a small general practice. He had treated at least one fracture during that time. The defendant contended that this witness was not qualified to testify as an expert with respect to fractures. The court of appeals held that the witness was competent to testify, the limited scope of practice of the witness having a bearing only on the weight to be accorded his testimony.

In the opinion of the court, the verdict was excessive. A physician is liable only for the damage or injury caused by his malpractice and not for the results of the patient's original injury or illness. The plaintiff argued that if the fracture had been properly treated there would have been no ensuing impairment of function of the arm. There was medical testimony, however, that sometimes such fractures as those from which the patient suffered cannot be reduced regardless of the method of treatment adopted, and that such fractures are not commonly reduced in perfect apposition but only in useful apposition. In view of this testimony, the court believed that the verdict more nearly represented compensation for the patient's original injury than for the results of the physician's malpractice. Conditioned on the remittance by the plaintiff of the sum of \$2,950, the court reversed the judgment of the trial court and remanded the case with directions to enter a judgment against the defendant for \$3,000—*Gunter v Whitener (Mo.)*, 75 S W (2d) 588

Health Insurance "Continuously and Actually Confined Within the House" Construed—The defendant insurance company promised to pay certain benefits if the plaintiff suffered a confining illness, which required him to be "necessarily, continuously, and actually confined within the house, and therein regularly visited by a legally qualified physician." During the period from Jan. 20 to Dec. 3, 1931, the plaintiff underwent two operations to relieve a prostate involvement. He claimed that for the period named he was, within the meaning of the policy, continuously confined within his house. He obtained judgment under the policy in the trial court, and the insurance company appealed to the Supreme Court of Nebraska.

The insurance company conceded that the plaintiff had been continuously confined within his house from January 20 to March 26 but contended that thereafter he suffered a non-confining illness. In support of this contention, the company presented evidence that on March 26 the plaintiff had been taken from his home to a bank, at which he had been book-

keeper, to explain certain matters to a depositors' committee, and that on a subsequent occasion he had again been taken to the bank on another matter. There was no contention that the removal of the plaintiff to a hospital and back to his home, on two occasions, broke the continuity of his confinement "within the house." The cases directly in point, said the Supreme Court, are hopelessly in conflict. The court, however, expressed itself as impressed with the following language used in *Garvin v Union Mutual Casualty Co.*, 207 Iowa 977, 222 N W 25, 61 A L R 633:

Strictly and continuously confined within the house in its most literal interpretation would require that the injured stay constantly within the four walls of the house. Such an interpretation would prevent recovery if an emergency such as a fire should arise, and the insured be removed from the house. It would preclude recovery in the event of transportation in an ambulance to a hospital even for emergency treatment. It would bar recovery if the insured sat upon an uninclosed porch of the house or slept upon a sleeping porch that was not inclosed within the house. Such narrow and limited construction should not be adopted in the interpretation of contracts of this character.

In the present case, continued the court, the plaintiff was suffering from a serious illness. He suffered great pain, and hypodermics were frequently necessary during all this period. He was actually within the house except on the occasions noted and most of the time he was in a bed or on a couch. The seriousness of his illness is important only as throwing light on the question as to whether or not he was continuously confined. On the two occasions when the plaintiff was taken from the house, he performed no service except that of imparting to others information which was peculiarly within his own knowledge. The trips were made, not for his own interest or pleasure, but to assist others. To terminate his insurance under these facts would be to penalize him for making an extraordinary effort. The Supreme Court was unable to find any reversible error in the record and consequently affirmed the judgment of the trial court.—*Mackprang v National Casualty Co (Neb.)*, 257 N W 248

Society Proceedings

COMING MEETINGS

- American Association of Railway Surgeons Chicago November 13 15
Dr Louis J Mitchell 86 E Randolph St. Chicago Secretary
American Clinical and Climatological Association Princeton N J Oct.
21 23 Dr Francis M Rackemann 263 Beacon Street Boston,
Secretary
American College of Surgeons San Francisco October 28 November 1
Dr George W Crile 40 East Erie St Chicago
American Hospital Association, St. Louis Sept. 30-Oct. 4 Dr Bert W
Caldwell 18 East Division Street Chicago Executive Secretary
American Public Health Association Milwaukee Oct. 7 10 Dr Reginald
M Atwater 50 West 50th Street New York Executive Secretary
American Roentgen Ray Society Atlantic City N J Sept. 24 27 Dr
E P Pendergrass 3400 Spruce Street Philadelphia Secretary
American Society of Tropical Medicine St. Louis November 19 22 Dr
Alfred C Reed 350 Post Street San Francisco Secretary
Association of American Medical Colleges Toronto Canada Oct 28 30
Dr Fred C Zapffe 5 South Wabash Avenue Chicago Secretary
Association of Military Surgeons of the United States New York, Oct.
35 Dr H L Gilchrist Army Medical Museum Washington D C
Secretary
Delaware, Medical Society of Wilmington Oct. 8-9 Dr William H
Speer 917 Washington Street Wilmington Secretary
Indiana State Medical Association Gary Oct. 8 10 Mr T A
Hendricks 23 East Ohio Street Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America Detroit,
October 14-18 Dr W B Peck 27 E Stephenson St Freeport, Ill
Managing Director
Kansas City Southwest Clinical Society Kansas City Mo Oct. 7 10
Dr Ralph R Coffey 1103 Grand Avenue Kansas City Mo Secretary
Kentucky State Medical Association Louisville Sept. 30 Oct. 3 Dr A. T
McCormack 532 West Main Street Louisville, Secretary
Michigan State Medical Society Sault Ste Marie, Sept. 23 25 Dr
Burton R Corhus 313 Metz Building Grand Rapids Acting Secretary
Nevada State Medical Association Elko Oct. 25 26 Dr Horace J
Brown 120 North Virginia Street Reno Secretary
Ohio State Medical Association, Cincinnati, Oct. 2-4 Mr C S Nelson
Hartman Theatre Building Columbus Executive Secretary
Omaha Mid West Clinical Society Omaha Oct 28 Nov 1 Dr J D
McCarthy 107 South 17th Street, Omaha Secretary
Pacific Coast Society of Obstetrics and Gynecology Los Angeles Nov
6 9 Dr T Floyd Bell 400 29th Street Oakland Calif Secretary
Pennsylvania Medical Society of the State of Harrisburg Sept. 30.
Oct 3 Dr Walter F Donaldson, 500 Penn Avenue, Pittsburgh
Secretary
Southern Medical Association, St. Louis November 19 22 Mr C. P
Loranz Empire Building Birmingham Ala Secretary
Virginia Medical Society of Norfolk, Oct 15 17 Miss A V Edwards
1200 East Clay Street Richmond Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

24:255-506 (June) 1935

- Tumors of Neuromyo-Arterial Glomus. A. P. Stout. New York—p. 255.
*Spindle Cell Epidermoid Carcinoma. H. E. Martin and F. W. Siewart. New York—p. 273.
Phosphatase Activity of Tissues and Plasma in Tumors of Bone. C. C. Franseen and Regina McLean. Boston—p. 299.
*Clinical Value of Prolan A Determinations in Teratoma Testis. M. Cutler and S. E. Owen. Hines III—p. 318.
Successful Irradiation Treatment of Eight Cases of Inoperable Rectal Carcinoma. B. F. Schreiner. Buffalo—p. 326.
Delayed Metastatic Sarcoma of Pleura Illustrating Diagnostic Value of Artificial Pneumothorax. Case. W. Bromme, H. P. Nelson and T. Findley Jr. Ann Arbor. Mich—p. 334.
Primary Melanotic Sarcoma of Esophagus. Report of Case. T. C. Jaleski and P. V. Waldo. New York—p. 340.
Giant Cell Tumor of Sacrum Which Invaded Inferior Vena Cava. Case. A. C. Freeman, K. K. Kinney and M. R. Moore. Norwich Conn—p. 345.
Glioma in Dog and Pinealoma in Silver Fox (*Vulpes fulvus*). C. F. Schlotthauer and J. W. Kernohan. Rochester. Minn—p. 350.
Growth Promoting and Growth Inhibiting Substances Extracted from Normal Organs. Experimental Study of Diet in Tar Cancer. J. Maisin and Y. Pourbaix, Louvain Belgium—p. 357.
Telecurie Therapy. B. F. Schreiner, M. C. Reinhard and W. H. Wehr. Buffalo—p. 386.
Human Fibroblasts Grown for a Year in a Medium of Sheep Plasma and Two Solutions of Known Composition. Eleanor Erlichman. New York—p. 393.
Cancer of Cervix Uteri in Nulliparous Women. Report of Fifty Three Cases. P. Tompkins. Philadelphia—p. 397.
*Hormone Origin of Uterine Fibroids. Hypothesis. J. T. Witherspoon. New Orleans—p. 402.

Spindle Cell Epidermoid Carcinoma.—In the experience of Martin and Stewart, spindle cell carcinomas have not been radiosensitive. The heaviest doses of radon implants have failed to produce sterilization of the bed of the tumor and have permitted recurrences after the main bulk of the tumor has undergone radionecrosis. In many instances the local setting renders local excision by the scalpel a difficult or impossible procedure, owing to the scarred, inelastic and relatively avascular character of the tissues in which the tumors arise. In other cases the growth may be attached to underlying bone, and in these the actual cautery and endothermy at once suggest themselves as the most feasible method of surgical extirpation. In the authors' cases the use of these cautery methods has invariably been followed by local recurrence or by the development of a new tumor. It has seemed to them that, since the growth invariably arises in scarred tissues, any cautery method, by exciting the fibroblastic activity of the tissues, might be responsible for the development of an entirely new tumor in an area condemned to carcinogenesis, even though the one already existent has been destroyed. If the lesion is movable over underlying structures, surgical excision of the local tumor is undoubtedly the treatment of choice. All the patients now living and free of disease in the series of eight cases had wide local excisions. Local excisions failed to cure and were followed by repeated local recurrences in five cases and by metastases in three of these. If the growth infiltrates widely in the subcutaneous tissues the authors recommend a far wider local removal than would be considered necessary in other forms of epidermoid carcinoma. Block dissection of the regional lymph nodes should be done if there are palpable metastases although probably the procedure is of little value after metastasis has occurred. Prophylactic dissection of the regional lymph nodes seems to be both illogical and useless.

Follicle Stimulating Factor Determinations in Cases of Teratoma Testis.—Cutler and Owen made quantitative determinations of follicle stimulating factor (prolan A) on the

urines of sixty-six patients suffering from teratoma testis. The amount of the substance varied between 50 and 16,000 mouse units. Thirteen normal men and patients suffering from benign lesions of the testicle were examined for follicle stimulating factor excretion in the urine. In all the amount was below 50 mouse units per liter of urine. The evidence supports the view that patients suffering from teratoma testis excrete about 50 mouse units of follicle stimulating factor per liter of urine, giving to this test a diagnostic value. In general, a marked diminution in follicle stimulating factor excretion following irradiation is accompanied by pronounced regression of the disease and an improvement in the general condition of the patient whereas failure of the follicle stimulating factor to diminish or an increase in follicle stimulating factor excretion following treatment is paralleled by a failure to respond to therapy. Local recurrence is often preceded by a rise in the quantitative excretion of follicle stimulating factor in the urine, rendering the test of practical value in the follow-up control of this group of patients. The total twenty-four hour urine output should be determined and taken into consideration when the quantitative determination of follicle stimulating factor is estimated under conditions in which clinical conclusions are to be based on smaller variations, in order to avoid errors that might arise as the result of differences in fluid intake. A modification of Doisy and Katzman's benzoic acid method is presented, rendering the test more accurate in cases showing smaller quantities of follicle stimulating factor and preferable in cases in which the urine contains toxic products.

Origin of Uterine Fibroids.—Witherspoon offers pathologic and clinical evidence to support a hypothesis that there exists a cause and effect relationship between the unopposed and persistent action of the estrogenic principle produced by multiple follicle cysts of the ovaries, on the uterine endometrium and myometrium, and the production of (1) immediate endometrial hyperplasia and, provided the stimulation is sufficiently prolonged, (2) more latent uterine fibroids. Since this estrogenic principle affects the genital tract as a whole and also controls the development of the mammary glands, it would appear that this hormone stimulation is the initiating factor in the production of endometriomas and fibro-adenomas of the breast. He studied forty-four cases of endometrial hyperplasia. In each case a curettage was performed and the diagnosis made microscopically. In no case either by bimanual examination or with the curet, was a uterine fibroid observed. In addition, in twenty of the cases a laparotomy was performed for other reasons. In no instance was a fibroid found, but multiple follicle cysts of the ovaries were observed in every case. After varying intervals, an average of four years and nine months, all forty-four patients returned for a second operation, this time for multiple uterine fibroids. The histologic observations in the endometrium, myometrium and ovaries are offered as evidence of an interrelationship between the multiple follicle cysts of the ovaries, endometrial hyperplasia and uterine fibroids.

American Journal of Clinical Pathology, Baltimore

5:261-348 (July) 1935

- Certification of Clinical Pathologists. F. H. Lamb. Davenport. Iowa—p. 261.
Erythroblastosis in the New Born and in Early Childhood. A. Yaguda. Newark, N. J.—p. 266.
Oral Glucose Tolerance Test. Review of Literature. G. B. Myers and R. M. McKeen. Detroit—p. 299.
Simple Method of Supplying Carbon Dioxide in Jars for Bacteriologic Cultures. L. Thompson. Rochester. Minn.—p. 313.
Reform in County Government and the Coroner's Office. O. T. Schultz. Evanston. Ill.—p. 316.
*Standardizing Sickle Cell Method and Evidence of Sickle Cell Trait. J. S. P. Beck and C. S. Hertz. Philadelphia—p. 325.
Malignant Hemangioma. B. Markowitz. Bloomington. Ill.—p. 333.

Test for Demonstrating Sickle Cells.—Beck and Hertz describe a test for the demonstration of sickle cells, which consists of fixing the erythrocytes with formaldehyde after they have been allowed to assume their characteristic form in a test tube sealed with oil. It is also a convenient method for producing large numbers of sickle cells for demonstration purposes and for preparing permanent stained mounts. One or two drops of blood are collected in a test tube (4 by 1 cm.) containing physiologic solution of sodium chloride and 3 per cent solution of sodium citrate. The tube is inverted and the

mixture is shaken. It is covered with sufficient oil to make a layer 1 cm thick. The preparation stands at room temperature for twenty-four hours, whereupon from 0.2 to 0.5 cc. of formaldehyde solution is introduced beneath the oil layer by means of the formaldehyde pipet. This is thoroughly mixed by forcing the liquids in and out of the pipet several times. The oil layer should not be broken for fear of letting air in too soon. Two or three minutes or more should be allowed for fixation. After this period the suspension is mixed again with the formaldehyde pipet to ensure a uniform distribution of cells. A few drops are removed from the tube, the excess oil is wiped from the tip and a drop is placed on a glass slide, covered and examined. The percentage is calculated in the manner of the differential leukocyte count. Permanent preparations are made from the suspension on coverglasses like an ordinary fresh blood film. The smears are dried in air and fixed by flame. Thirteen individuals with the sickle cell trait were found in a group of 100 Negroes examined by the sealed tube method, while only nine were found by the sealed smear method. In the nine sealed smear preparations, no observations were similar. The proportion of sickle cells in the series varied from 3 to 85 per cent, with an average of 26 per cent. In the tube preparations there were five instances of 98 per cent sickling, and in eleven of the thirteen cases the number of sickle cells varied between 85 and 99 per cent. The total number was more than four times that found in the same group by the slide method. The average for the thirteen cases was 77 per cent. Indeterminate cells were found more frequently in the slide preparations than sickle cells, and commonly in greater numbers. They were found in ten smear preparations and in only two tube preparations. The total number obtained by the slide method is more than five times as great as that found by the tube method. In nearly every slide preparation the number of erythrocytes was greater than that in the corresponding tube preparation of the same blood. The total number of apparently normal cells obtained by the slide method is more than twice that found by the tube method.

American J Digestive Diseases and Nutrition, Chicago

2: 275-332 (July) 1935

- Recent Development in Study of Oral Bacterial Flora. L. Arnold and C. W. Stuart. Chicago—p. 275
- Gastroscopy Past Present and Future. E. Boros. New York—p. 280
- New Tube for Anesthetization of Hypopharynx. R. Schindler. Chicago—p. 281
- Symposium Concerned with Duodenal Factors in Neutralization of Acid Chyme. F. C. Mann and J. L. Bollman. Rochester. Minn.—p. 284
- Reaction of Content of Isolated Duodenum. P. R. Imes. Rochester. Minn.—p. 285
- Capacity of Duodenum to Neutralize Buffer and to Dilute Acid. G. A. Stevens. Rochester. Minn.—p. 288
- Reaction of Duodenal Content After Exclusion of Bile from Duodenum. J. W. McRoberts. Rochester. Minn.—p. 293
- Effect of Exclusion of Pancreatic Secretion by Evulsion of Pancreatic Ducts on Reaction of Duodenal Content. M. T. Hoerner. Rochester. Minn.—p. 295
- Effect of Exclusion of Pancreatic Secretion by Pancreatic Fistula on Reaction of Gastric Duodenal and Jejunal Contents. M. T. Hoerner. Rochester. Minn.—p. 298
- *Buffer Capacity of Pancreatic Juice. M. T. Hoerner. Rochester. Minn.—p. 300
- Peptic Ulcer Following Loss of Pancreatic Secretion Through Fistula. Experimental Study. M. T. Hoerner. Rochester. Minn.—p. 302
- Protection of Nutrition During Use of Elimination Diets. A. H. Rowe. Oakland. Calif.—p. 306
- Diaphragmatic Hernia. Report of Ten Cases of Esophageal Orifice Hernia. Katherine S. Andrews. Boston—p. 310
- Use of Metal Clips in Gastro-Intestinal Anastomosis. Experimental Study. R. B. Bettman and L. M. Zimmerman. Chicago—p. 318

Buffer Capacity of Pancreatic Juice—Hoerner experimented with the properties of the pancreatic juice collected from pancreatic fistulas. He titrated 1 cc. of the secretion with 1 cc. of tenth normal hydrochloric acid a drop at a time, and the change in pH with each minute addition was determined. Samples of pancreatic juice were collected at half-hour intervals during fasting and after the ingestion of protein, carbohydrate and fat test meals. The fluctuation in the buffering capacity during the eight-hour period of observation was determined. A continuous secretion of pancreatic juice was noted at all times, provided there was no infection or leakage present. Protein diets stimulated a greater flow of secretion than the other test meals used. The amount of secretion depended

largely on the size of the animal and the kind and quantity of food ingested. The buffering capacity of the pancreatic juice reached its maximum from one to three hours after the ingestion of food and gradually diminished as the acidity in the duodenum decreased. The secretion was always alkaline and possessed slight buffering power during fasting. When the buffering capacity was highest, 1 cc. of pancreatic juice was capable of practically neutralizing an equal quantity of tenth normal hydrochloric acid.

Journal of Experimental Medicine, New York

62: 1-128 (July 1) 1935

- Effect of Fasting on Serum Protein Concentration of Rat with Especial Reference to Question of Existence of Immediately Utilizable Circulating Protein Fraction. H. C. Torbert. San Francisco—p. 1
- Immunologic Specificity of Staphylococci. I. Occurrence of Serologic Types. L. A. Julienne and C. W. Wiegand. St. Louis—p. 11
- Id. II. Chemical Nature of Soluble Specific Substances. C. W. Wiegand and L. A. Julienne. St. Louis—p. 23
- Id. III. Interrelationships of Cell Constituents. L. A. Julienne and C. W. Wiegand. St. Louis—p. 31
- Degree of Dispersion of Bacillus as Factor in Infection and Resistance in Experimental Tuberculosis. R. M. Thomas and F. Durao Reynolds. New York—p. 39
- Immunologic and Chemical Investigations of Vaccine Virus. I. Preparation of Elementary Bodies of Vaccinia. R. F. Parker and T. M. Rivers. New York—p. 65
- Interstitial Bronchopneumonia. I. Similarity of Toxin Pneumonia to That Produced by Viruses. D. H. Sprunt, D. S. Martin and J. E. Williams. Durham. N. C.—p. 73
- Experiments on Epidemiology of Pseudorabies. I. Mode of Transmission of Disease in Swine and Their Possible Role in Its Spread to Cattle. R. E. Shope. Princeton. N. J.—p. 85
- Id. II. Prevalence of Disease Among Middle Western Swine and Possible Role of Rats in Herd-to-Herd Infections. R. E. Shope. Princeton. N. J.—p. 101
- Effect of Anaerobically Prepared Pneumococcus Autolysate Toxin on Mice and Evaluation of Pneumococcus Autolysate Antitoxin in Mice. Julia T. Weld and Anne Gunther. New York—p. 119

American Journal of Hygiene, Baltimore

22: 1-256 (July) 1935

- Influence of Solar Irradiation on Susceptibility of Mice to an Infection with Streptococcus Enteritidis. I. J. Kligler and L. Oltzki. Jerusalem. Palestine—p. 1
- Course of Trypanosome Infection in Irradiated Rats. I. J. Kligler and R. Comaroff. Jerusalem. Palestine—p. 11
- Culture of Mosquito Larvae Free from Living Micro-Organisms. W. Trager. Princeton. N. J.—p. 18
- Cultivation and Cross Infection Experiments with Balantidia from Pig Chimpanzee Guinea Pig and Macacus Rhesus. E. C. Nelson. Baltimore—p. 26
- *Study of Agglutinin Response to Typhoid Vaccine. Eugene Valentine. W. H. Park, K. G. Falk and Grace McGuire. New York—p. 44
- Immunity of Dogs to Ancylostoma Caninum. A. O. Foster. Baltimore—p. 65
- Standardization of Photochemical Methods for Measurement of Solar Ultraviolet Radiation. H. S. Mayerson. New Orleans—p. 106
- Calibration of Thermo-Integrator. C. E. A. Woslow, A. P. Gage, L. Greenburg, I. M. Moriyama and E. J. Rodee. New Haven. Conn.—p. 137
- Studies on Nature of Immunity to Intestinal Helminths. I. Local Nature of Immunity of White Rats to Nippostrongylus Infection. A. C. Chandler. Houston. Texas—p. 157
- Immunity Against a Cestode Parasite Cysticercus Parviformis. K. B. Kerr. St. Louis—p. 169
- Nose Opening Roys. L. Hill. London. England—p. 183
- Relative Precipitin Response of Various Breeds of Rabbits. Possibility of Genetic Factor in Antibody Production. J. T. Culbertson with assistance of J. F. Kent. New York—p. 190
- Observations on Enzootic Paratyphoid Infection in Rat Colony. L. Buchbinder, L. Hall, S. L. Wilens and C. A. Slanetz. New York—p. 199
- Role of Glycemic Response to Nicotine. Tobacco Smoking and Blood Sugar. W. J. McCormick. Toronto—p. 214
- Purification and Culture of Tritrichomonas Foetus (Riedmuller) from Cows. R. W. Glaser and N. A. Coria. Princeton. N. J.—p. 221
- Diphtheria Antitoxin in Milk of Highly Immune Mother. J. Y. Suggs. New York—p. 227
- Chicken Blood as an Immunizing Agent to Transplantable Rat Tumors. R. E. Gardner and R. R. Hyde. Baltimore—p. 233
- Studies on Nature of Immunity to Intestinal Infections. II. Study of Correlation Between Degree of Resistance of White Rats to Nippostrongylus and Interval Between Infections. A. C. Chandler. Houston. Texas—p. 243

Agglutinin Response to Typhoid Vaccine—According to Valentine and her associates the rise in the agglutinin titers of the blood serums of rabbits and human beings, following the percutaneous administration of typhoid vaccine, paralleled the number of treatments and the size of the dose. The human subjects gave small rises in agglutinin titer after a large num

ber of rubbings, the rabbits with a greater number of rubbings, larger doses and a relatively greater rubbing area gave good agglutinin titers. Intracutaneous injections of typhoid vaccine in weekly doses of 50, 100 and 150 million bacilli produced as great an agglutinin response as subcutaneous injections of 100, 200 and 300 million or 250, 500 and 1,000 million bacilli. Intracutaneous injections of 25, 50 and 100 million bacilli produced slightly less response. No appreciable systemic reactions and only slight to moderate local reactions followed the intracutaneous injections. Subcutaneous injections in doses of 100, 200 and 300 million bacilli, even 250, 500 and 1,000 million produced some local and constitutional reactions, but much less than is commonly found with the standard subcutaneous doses of 500, 1,000 and 1,000 million. Oral administration of three different preparations of mixed typhoid-paratyphoid vaccines without preliminary bile treatment produced no significant rise in agglutinin titer when tested one month after ingestion. The results suggest the greater use of the intracutaneous method to obtain immunization.

American Journal of Surgery, New York

20: 171-336 (Aug.) 1935

- Liver Abscess. Part I. Amebic Abscess. Analysis of Seventy-Three Cases. A. Ochsenr. and M. DeBakey. New Orleans—p. 173.
Congenital Nonparasitic Single Cyst of Liver. E. A. Vander Veer. Albany, N. Y.—p. 195.
Neostomy. D. P. MacGuire. New York—p. 199.
Congenital Absence of Gallbladder. M. Danz, Newark, N. J.—p. 202.
Mesenteric Thrombosis (Arterial and Venous Types as Separate Clinical Entities). Clinical and Experimental Study. J. K. Donaldson and B. F. Stout. San Antonio, Texas—p. 208.
Maternal and Fetal Mortality in the United States. H. J. Stander. New York—p. 218.
Support of Pelvic Viscera and Mechanism of Prolapse. H. Koster. Brooklyn—p. 226.
Complete Procidentia in the Aged. Operative Treatment by Modified Lefort Technique. W. T. Liccione. Mount Vernon, N. Y.—p. 236.
Study of Diagnostic Errors in Four Years of Admissions to Gynecologic Service. M. J. Schreiber. New York—p. 239.
Extra Uterine Pregnancy Following Injection of Iodized Oil for Luterography. Etiology and Prevention Suggested. Report of Case. D. Polow, Paterson, N. J.—p. 244.
Experimental Transplantation of Ovary Autotransplants and Homotransplants of Dog Ovary into Omentum (Preliminary Report). G. H. Romberg. White Plains, N. Y.—p. 249.
Plastic Operation for Congenital Absence of Vagina. W. F. Wells. Atlanta, Ga.—p. 253.
Outline of Treatment for Various Types of Uterine Abortions. J. T. Witherspoon. New Orleans—p. 256.
Primary Carcinoma of Lungs Combined with Pulmonary Tuberculosis. B. M. Fried. New York—p. 261.
Fatty Infiltration of Urinary Bladder with Spontaneous Rupture. O. Saphir and I. J. Shapiro. Chicago—p. 263.
Fractures of Bones of Forearm. Discussion of Nonoperative Treatment and Report of One Hundred and Fifty Consecutive Recent Cases. V. Mooney. Pittsburgh—p. 268.

Mesenteric Thrombosis.—Donaldson and Stout confine their remarks to the less clearly understood venous type. Since venous mesenteric thrombosis may occur as a complication of various conditions, the picture may be complicated by various pathologic elements. Generally, however except in that type of venous mesenteric thrombosis initiated by sudden volvulus or intussusception the onset and course would seem to be relatively slow and initiated by pains of a colicky nature. A striking symptom is the disproportion of the abdominal tenderness and the duration of symptoms to the abdominal rigidity. The abdomen is usually widely and definitely tender to deep palpation and the abdominal rigidity is not nearly as marked when the possible duration of the complaint and the definite tenderness are considered. The normal leukocyte relationship is moderately disturbed in the early stages but is markedly distorted later. An engorged intestinal wall may or may not be felt as a palpable mass. Occult blood is uniformly present in the stool and bowel movements continue, dark and soft to liquid in nature. Coffee ground-like vomitus may supervene. The temperature range in the uncomplicated picture is low. Intestinal obstruction, appendicitis, peritonitis, peptic ulcer, lead colic, simple enteritis, cholecystitis, gastritis and typhoid are among the diseases most likely to be confused by the expert. Arterial thrombosis is much more rapidly fatal than the venous type, which is probably compatible with recovery without surgery in a certain percentage of cases. The authors believe it is possible in a goodly number of cases to recognize mesen-

teric thrombosis and that the type, venous or arterial, may be identified at times preoperatively. They feel that a better understanding and closer inspection by the pathologist and the surgeon of cases of venous mesenteric thrombosis will lead to the more frequent pathologic diagnosis of hemorrhagic infarction of the intestine rather than to the diagnosis of "gangrene."

Complete Procidentia in the Aged.—Liccione is of the opinion that for complete procidentia in the aged no operation is as successful as that of Lefort. The prolapse must be reducible. If reducible, bed rest and topical applications will so soften the presenting mass as to reduce it. It is imperative to clear up all decubitus ulcers prior to operation so as to ensure primary union. Local or spinal anesthesia is preferable. The principle involved is the denudation and subsequent coaptation of rectangular areas on the anterior and posterior vaginal walls, respectively, thus creating a wide median supporting bar, above which rests the cervix. This bar is about 4 by 8 cm. in the average case and forms an effective support for the cervix and uterus. To each side of this median bar is a small canal, which is completely invested by vaginal mucosa and which carries off any cervical secretion. A high perineorrhaphy completes the operation and is a necessary part of it. A preliminary curettage is done to preclude fundal malignant changes. Erosion or ulcer of the cervix is taken care of by cautery or amputation.

Fatty Infiltration of Urinary Bladder.—Saphir and Shapiro observed fatty infiltration (lipomatosis) of the urinary bladder during the histologic examination of a patient who had died as a result of spontaneous rupture of this organ. The histologic sections revealed that muscle bundles had been replaced by fat tissue. The fatty infiltration was characterized by the formation of an abundance of subperitoneal fat, which extended into the musculature of the urinary bladder and occupied the usual position of the muscle fibers. Apparently the urinary bladder that is the seat of fatty infiltration may carry on its function as well as the normal urinary bladder but has little reserve power. The urinary bladder that is infiltrated by fat may rupture as a result of apparently insignificant causes. Fatty infiltration of the urinary bladder was found twice among thirty bladders examined.

Annals of Internal Medicine, Lancaster, Pa.

9: 111-114 (July) 1935

- The Thyroid Stimulating Hormone of the Anterior Pituitary Gland. L. Loeb. St. Louis—p. 13.
Present Status of Artificial Pneumothorax in Treatment of Lobar Pneumonia. S. S. Leopold and L. M. Lieberman. Philadelphia—p. 19.
Agranulocytosis. H. Jackson Jr. Boston—p. 26.
Cyclic Agranulocytic Angina. D. J. Stephens and J. S. Lawrence. Rochester, N. Y.—p. 31.
Etiology and Prevention of Anemia in Pregnancy. M. B. Strauss. Boston—p. 38.
Study of Nine Cases of Bronchomonilliasis. J. W. Flinn, R. S. Flinn and Z. M. Flinn. Prescott, Ariz.—p. 42.
Treatment of Acute Mercuric Chloride Poisoning. E. Hull and L. A. Monte. New Orleans—p. 54.
Eventration of Right Diaphragm. Report of Case with Review of Literature. Chiefly from Standpoint of Etiology and Diagnosis. L. Feldman, I. M. Trace and M. I. Kaplan. Chicago—p. 62.

Cyclic Agranulocytic Angina.—Stephens and Lawrence discuss a case of agranulocytic angina manifested by recurrences at the time of the menstrual cycles. Following bilateral oophorectomy there was a slight change in the picture during a period of one year, after which time no further recurrences occurred. Amidopyrine was taken at times by the patient, but the data do not allow any positive statement as to any causal relationship between it and the cycles of granulopenia. In order to determine whether menstrual periods in normal young women were associated with any comparable changes in the blood picture, the authors investigated the total and differential white blood cell counts of six women over a period of two months including two menstrual cycles. No variation greater than normal was present in the white blood cell counts. The bone marrow manifestations are of interest, since they presented a normal picture. The patient was able to respond to operation by the usual postoperative leukocytosis.

"Eventration" of Right Diaphragm.—Feldman and his associates add a case of right-sided "eventration" to the literature, thus raising the number of reported cases to ten. The diagnosis in the case was made because of the (1) high posi-

tion of the right diaphragm, (2) regular contour of the arched line as seen in the anteroposterior and lateral views, (3) definite, although limited, excursions of the elevated diaphragm, (4) roentgen observations after an opaque meal and after a barium sulphate enema, with the patient in the recumbent position, showing that the arched line was the dome of the diaphragm and not the outline of a distended intestine, and (5) evidence of inactivation of the right half of the phrenic leaf (Hoover's sign). The extruded intestine was situated between the right diaphragm above and the liver below. In this respect the case differs from the reported ones, in which it has been more usual to find the liver high up under the eventrated diaphragm. The patient has no intestine in the right side of the abdomen. Should she ever develop an attack of appendicitis, the symptoms would certainly be atypical and the method of surgical approach would have to be extraordinary indeed. The patient has been under observation for the last few years. She feels quite well. Should she become pregnant again, an abdominal section will be strongly urged before labor sets in.

Archives of Dermatology and Syphilology, Chicago

32 181-362 (Aug.) 1935

- Unusual Cutaneous Symptoms Associated with Retention of Arsenic. B. Throne and C. N. Myers. New York—p. 181.
Lymphogranuloma Inguinale. Report of Case with Involvement of Retroperitoneal Lymph Nodes and Probable Involvement of Hip Joint, Adrenals and Kidneys with Autopsy. H. S. Reichle and W. H. Connor. Cleveland—p. 196.
Treatment of Paraffinoma. Report of Case. H. L. Baer. Pittsburgh—p. 204.
Generalized Pustular Psoriasis. Report of Case. T. N. Graham. New York—p. 208.
*Arsenic as an Etiologic Agent in Certain Types of Epithelioma. Differential Diagnosis from and Further Studies Regarding Superficial Epitheliomatosis and Bowen's Disease. H. Montgomery. Rochester, Minn.—p. 218.
Folliculitis Barbae Traumatica. S. S. Greenbaum. Philadelphia—p. 237.
Vereury Inunctions. T. Sollmann, H. N. Cole and N. E. Schreiber with collaboration of H. F. De Wolf and J. V. Van Cleave. Cleveland—p. 242.
Eyelash Dye. III. Effects and Some Problems Evoked by Them. H. Goodman. New York—p. 258.
*Factors Affecting Color of the Skin. Their Significance in Berlock Dermatitis. J. R. Rogin and C. Sheard. Rochester, Minn.—p. 265.
Modified Composition of Iodohismitol. Results on Local Irritation. P. J. Hanzlik, C. W. Barnett and A. P. Richardson with assistance of P. S. Pouppirt and M. R. Somers. San Francisco—p. 284.

Arsenic and Epithelioma.—Montgomery states that arsenical keratosis must be regarded as potentially malignant and hence should be included among the precancerous types of dermatosis. Epitheliomas precipitated by arsenic are usually squamous cell epitheliomas, often with microscopic features simulating Bowen's disease, but usually the condition is graded 2 or 3, although clinically the course may not be as malignant as with ordinary squamous cell epitheliomas graded 2 or 3. Superficial epitheliomatosis is a relatively benign disorder, usually having a relatively benign course as compared with ordinary basal cell epithelioma. The treatment is surgical excision or excision by cautery. The lesions are prone to recur following radiotherapy.

Factors Affecting Color of Skin.—Rogin and Sheard made spectrophotometric analyses of the changes in color that took place in three areas of the skin which had been exposed to the same amount of irradiation from an air cooled quartz mercury vapor arc lamp. One area was moistened with oil of bergamot before being exposed to ultraviolet radiation, the second area was moistened with a 10 per cent alcoholic solution of oil of bergamot before irradiation, and the third was treated only by irradiation and thus served as a control. The area used as a control also gave information regarding the course of erythema and pigmentation in the normal skin after ultraviolet irradiation. They found that the use of the spectrophotometer affords an accurate method of recording the changes of color in the skin after ultraviolet irradiation. The initial erythematous reaction of the skin is generally crisis-like in form, but it may also be plateau-like or double crisis-like. The course of the erythema is rhythmic or wavelike in nature and persists over a period of weeks. In the same subject the amount of pigment formed after ultraviolet irradiation is proportional to the degree of the preceding erythema. This statement cannot be made, in the light of the data at hand, when

erythema and pigmentation are compared in different patients after ultraviolet irradiation. The changes in pigment follow a rhythmic course, apparently independent of the course of erythema. There are marked individual variations in the chronology of the waves, which appear during the course of erythema and pigmentation. The hue of the skin after ultraviolet irradiation remains constant. The changes in the redness of the skin after ultraviolet irradiation are due to changes in purity (saturation) of the hue. The presence of chlorophyll in solutions of oil of bergamot was shown by obtaining curves for spectrophotometric transmission that are characteristic of chlorophyll. There was a decrease in the spectrophotometric transmission of solutions of oil of bergamot after ultraviolet irradiation. Oil of bergamot and a 10 per cent alcoholic solution of oil of bergamot applied to the skin before ultraviolet irradiation diminish the effects of such irradiation. Ultraviolet irradiation following applications of oil of bergamot and a 10 per cent alcoholic solution of oil of bergamot to the skin did not produce dermatitis or increased pigmentation in any of the cases studied. The authors suggest that berlock dermatitis belongs to the group of cutaneous reactions of the venenata type and that it is due to an individual hypersensitivity to chlorophyll or adulterants found in the perfume or toilet water that has been applied to the skin.

Archives of Neurology and Psychiatry, Chicago

34: 243-480 (Aug.) 1935

- Juvenile Dementia Paralytica. IV. Syndromes of Cranial Nerves and Motor System. W. C. Menninger. Topeka, Kan.—p. 243.
Insulin in Catatonic Stupor. Charlotte Munn, Orangeburg, N. Y.—p. 262.
Perceptual Basis of Somatic Delusions in Case of Schizophrenia. A. Angyal. Worcester, Mass.—p. 270.
Some Signs of Organic Disorder in Schizophrenia. P. B. Marquart. Lane, Kan.—p. 280.
Method for Investigating Fantasies. Thematic Apperception Test. Christiana D. Morgan and H. A. Murray. Cambridge, Mass.—p. 289.
Psychologic and Physiologic Phenomena During Prolonged Vigil. S. E. Katz and C. Landis. New York—p. 307.
Involuntary Graphic Sprawl. Motor Phenomenon Related to Mirror Writing and Modified by Factor of Handedness. C. Quinlan. San Francisco—p. 318.
Observations on Experimental Neurosis in Sheep. O. D. Anderson and H. S. Liddell. Ithaca, N. Y.—p. 330.
Monilages. Their Preparation and Service to Neuropathologist. J. H. Globus. New York—p. 355.

Arkansas Medical Society Journal, Fort Smith

32: 47-60 (Aug.) 1935

- Fractures Involving the Elbow Joint. V. Parmley. Little Rock—p. 47.
Goster a Preventable Disease. Short Review of Its Medical and Surgical Aspects. E. M. Holder. Memphis, Tenn.—p. 51.

Canadian Medical Association Journal, Montreal

33 1124 (July) 1935

- The Breath of Life. J. C. Meakins. Montreal—p. 1.
Nutrition and the Future of Man. J. S. McLester. Birmingham, Ala.—p. 6.
Vagal and Phrenic Impulses and Respiration. Ruth C. Partridge. Toronto—p. 11.
Maduromycosis. Report of Case Due to Monosporium Apiospermum. R. M. Shaw and J. W. Macgregor. Edmonton, Alta.—p. 23.
*Monosporium Apiospermum Fungus Causing Madura Foot in Canada. Eleanor Silver Dowding. Edmonton, Alta.—p. 28.
Focal Epileptic Discharge in Case of Tumor of Posterior Temporal Region. W. Penfield. Montreal—p. 32.
Bronchial Stenosis in Pulmonary Tuberculosis. C. H. Andrews. Prince Albert, Sask.—p. 36.
Early Protected Weight Bearing in Treatment of Fractures of Foot, Ankle and Leg. F. B. Gurd. Montreal—p. 41.
*Comparative Tendency of Kraurosis and Leukoplakia of Vulva to Become Malignant. P. J. Kearns. Montreal—p. 48.
Clinical and Pathologic Features of Series of Twenty Cases of Hodgkin's Disease. E. S. Mills and J. E. Pritchard. Montreal—p. 50.
Acute Cholecystitis. J. McKenty. Winnipeg, Manit.—p. 59.
The Antipyretics. V. E. Henderson. Toronto—p. 64.
Physiopathology of Simultaneous Bilateral Pneumothorax. A. M. Cholette. Montreal—p. 67.

A Fungus Causing Madura Foot in Canada.—Dowding has grown *Monosporium apiospermum*, which has been isolated for the first time in Canada, on culture mediums and has made a comparison with cultures of the same fungus obtained from Europe. In addition to characters described previously she has observed the following features: 1. The cultures darken from white to cinnamon drab. Unlike the strains obtained in the

United States, they produce no sclerotium. They frequently exhibit a growth of short dark brown aerial hyphae. 2 The mycelium is characterized by terminal and intercalary swellings and "racquet hyphae" resembling the growth forms of many dermatophytes. 3 The form of the conidiophores depends on their habit of growth, when they are submerged in the medium they are undifferentiated from the other hyphae when they are growing in the air they become erect, tapering and dark colored. 4 The sterigmas sometimes occur on the conidiophores in whorls of from two to five. 5 The spores are normally borne singly, but sometimes they collect in groups, when a sterigma produces several spores in succession. *Geomyces* sp., isolated from Alberta soil, resembles certain fungi causing maduromycosis, but it was found not to be pathogenic to an experimental guinea pig.

Kraurosis and Leukoplakia of Vulva—During the last eight years Kearns observed seventeen cases of carcinoma of the vulva, fourteen of which were sectioned and treated. Four of these showed a definite origin in leukoplakia. The chief clinical symptom in all cases of leukoplakia was pruritus whereas in kraurosis the chief complaints were of dyspareunia, soreness and bleeding, and in carcinoma of a tumor of the vulva with pain and bleeding. It is his belief that all cases of kraurosis vulvae have a previous hypertrophic or leukoplakic stage and if this hypertrophy is prolonged a progressive leukoplakia will develop, which will go through the stages of metaplasia and cancer formation. If, however, atrophy ensues the leukoplakia progressively gives rise to kraurosis, and the involved skin becomes thinner and thinner, resembling parchment. The surface becomes dry, scarlike and brittle. The shrinkage in this cicatricial sclerotic tissue produces a stretching of the skin over the nymphae. The latter may entirely disappear, as may also the frenulum of the clitoris. The vestibule of the vagina becomes funnel shaped and narrow, causing dyspareunia and pain on examination, because the diseased skin is easily torn and fissured. Histologically, kraurosis shows an atrophy in all layers of the epidermis especially of the horny layer and the lowest layer. A complete loss of the papilla of the cutis occurs allowing the epidermis and cutis to lie in flat adjacent layers. In the outer and reticular layers of the corium in contrast to the edema of leukoplakia, a homogeneous hyalinized material is seen, which spreads diffusely throughout the subcutaneous tissue, fat, elastic fibers, hair follicles, glands of the hair follicles, sebaceous glands and sweat glands. These structures gradually disappear. If large sections are taken through the vulva these atrophic changes can be seen and connected with remnants of leukoplakic areas. In the hypertrophic or leukoplakic stage pruritus is a common symptom, but in the atrophic stage or kraurosis, soreness and bleeding are the troublesome features. The symptoms of pruritus may be relieved by resection of the perineal nerves in the vulva causing anesthesia of the part but this may obscure hypertrophic changes developing. Painting the surface with a 5 per cent solution of silver nitrate often gives relief. The administration of ovarian extract may help. If the leukoplakic stage persists, resection of the vulva should be done, as from 20 to 25 per cent of persistent leukoplakias will become malignant.

Canadian Public Health Journal, Toronto

20: 315-366 (July) 1935

- Provision of Medical Care in Western Canada. F. W. Jackson. Winnipeg. Manit.—p. 315.
Evaluation of Health Hazards in Industry. F. M. R. Bulmer. Toronto.—p. 321.
Basis for Control of Tuberculosis in Defined Area. C. G. Shaver. St. Catharines, Ont.—p. 329.
Contributions to Laboratory Diagnosis of Amebiasis from the Chicago Outbreak of 1933. F. O. Tonney, Marian McIlhenny, G. L. Hoeft and C. H. Koonz. Chicago.—p. 335.

Colorado Medicine, Denver

32: 593-688 (Aug.) 1935

- The Common Cold. C. E. Harris. Woodmen.—p. 604.
The Apple Diet in Treating Diarrhea in Infants and Children. H. B. Stein, Denver.—p. 608.
Automobile Injuries and Comparative Death Rates with Some Suggestions as to Their Treatment in Traumatic Surgery. C. W. Streamer. Pueblo.—p. 612.
Value of Red Cell Sedimentation Test with Especial Reference to Pulmonary Tuberculosis. A. R. Masten. Wheat Ridge.—p. 615.

Endocrinology, Los Angeles

19: 383-508 (July-Aug.) 1935

- Clinicopathologic and Experimental Study of Functional Structural Relationship of Gouter. J. Rabinovitch, J. R. Pearson and H. W. Louria. Brooklyn.—p. 383.
Some Factors Influencing Lengths of Survival Following Bilateral Suprarenalectomy. E. D. Sisson and B. March. Minneapolis.—p. 389.
Cow's Milk as Possible Excretory Source of Anterior Pituitary like Hormone. A. I. Weissman, I. S. Kleiner and E. Allen. New York.—p. 395.
Idiopathic Hypoparathyroidism and Tetany in Fowl. F. B. Hutt and W. L. Boyd. St. Paul.—p. 398.
Endocrine Origin of Primary Dysmenorrhea and Its Hormone Treatment. Preliminary Report. J. T. Witherspoon. New Orleans.—p. 403.
Corpus Luteum of Pregnancy in Relation to Anterior Pituitary Gland. M. Feresten. New York.—p. 407.
Study of Effects of Intermedin and Injury of Hypophysis on Traumatic Corneal Melanophores in Goldfishes. G. M. Smith, H. S. Barr, R. S. Ferguson. New Haven, Conn. and New York.—p. 409.
Effects of Pregnancy Urine Administration to Female Swine. E. P. Tschernozatenskaja. Moscow. U. S. S. R.—p. 413.
Effect of Injection of Residual Ovarian Extracts. H. W. Marlow and F. Grootsema. Manhattan, Kan.—p. 415.
Relation of Contracture and Tetany to Experimentally Produced Calcium Deficiency in Cats With and Without Lesions of Cortical Motor Areas. Helen C. Coombs, F. H. Pike and D. S. Searle. New York.—p. 421.
Diuresis Associated with Direct Stimulation of Hypophysis. W. R. Ingram and R. W. Barris. Chicago.—p. 432.
Castration Atrophy and Theelin. Effect of Theelin on Atrophic Uteri of Castrated Albino Rats. B. L. Robinson and W. C. Langston. Little Rock, Ark.—p. 441.
Study of Response of Heart to Pitressin Following Administration of Thyroid Extract. C. M. Gruber, V. H. Moon and E. Sufrin. Philadelphia.—p. 447.
Relation of Diet and Serum Calcium to Tetany in Parathyroidectomized Rat. Margaret M. Hoskins. New York.—p. 453.
Studies in Thrombo-Angiitis Obliterans (Buerger's). Reduction in Blood Volume Following Bilateral Oophorectomy. Mae Friedlander, N. Laskey and S. Silber. New York.—p. 461.
Experimental Hypertrophy and Atrophy of Prostate Gland. D. R. McCullagh and E. L. Walsh. Cleveland.—p. 466.
Quantitative Studies on Reaction of Anterior Pituitaries of Immature Female Rats to Extracts of Pregnancy Urine. J. M. Wolfe. Nashville, Tenn.—p. 473.

Endocrine Origin of Primary Dysmenorrhea—Witherspoon points out that the most recent explanation of primary dysmenorrhea is an endocrine imbalance. Reynolds has shown that uterine rhythmic contractions become increasingly more active as the graafian follicle develops. After rupture of the follicle and corpus luteum formation, the uterine contractions are inhibited. The pain of primary dysmenorrhea can be explained by the withdrawal of the progestin influence, which results in whipping into marked activity, by the action of the follicular hormone, a uterus that has been lying in a quiescent state for from ten days to two weeks. The rationale of treatment in this condition is to counterbalance the follicular hormone activity by administering the luteinizing principle found in the urine of pregnant women. The method of treatment employed was to inject intramuscularly and daily 250 rat units of gonadotropic principle of pregnancy urine (folliculin-Squibb) from three to four days previous to the expected flow and from one to two days during the flow. Thirteen of seventeen patients so treated for dysmenorrhea experienced relief.

Thrombo-Angiitis Obliterans—Friedlander and her associates determined the significance of the blood volume in thromboangiitis obliterans in twenty-five patients who had had a surgical removal of both ovaries and the uterus and a control group of twenty-one patients. In addition a number of female cats were subjected to bilateral oophorectomy. The cholesterol, fibrinogen and viscosity were selected as factors that might have a bearing on the greater tendency to thrombosis. The average blood volume in the oophorectomized cases showed a reduction of about 25 per cent from the normal. This change became more striking after the first few months. Coincident with this there was an elevation of the cholesterol and fibrinogen of the plasma and an increase in viscosity of the blood. There was a consistent tendency for the cholesterol figures to be higher and they were supported by a diminished blood volume. A normal blood volume was obtained in only one patient who had had a bilateral oophorectomy, who presented a definite clinical picture of hyperthyroidism with a basal metabolism of plus 47 per cent. In the control group all the blood volume figures

were within normal limits and the cholesterol, fibrinogen and viscosity were correspondingly lower. This group included eleven patients with normal menopause and artificial menopause produced by radiotherapy. It would appear, therefore that some substance capable of influencing the blood volume is produced by the ovaries even after other physiologic functions have ceased. The cats subjected to operation showed a consistent tendency toward a reduction in blood volume after bilateral oophorectomy. In one animal, in which only a single ovary was removed, there was no reduction in volume.

Florida Medical Association Journal, Jacksonville

22:148 (July) 1935

- *Friedman Test for Pregnancy. Report of Two Hundred and Thirteen Cases. H. R. Mills. Tampa—p. 11.
Tuberculosis and the General Practitioner. W. A. Claxton. Jacksonville—p. 22.
Proper Evaluation of Psychic Element in Medical and Surgical Practice. S. A. Shoemaker. Orlando—p. 24.

Friedman Test for Pregnancy—Mills presents 213 cases in which the Friedman test was used, of which 96.7 per cent have been proved correct by subsequent clinical events. His experience shows that a certain number of false positive results can be avoided by not using rabbits that gave positive results before. A certain number of false negative results can be avoided by not laparotomizing the rabbit but by killing the animal and exposing the ovaries with wide dissection. A certain number of false negative reactions can be avoided also by obtaining a concentrated first morning voiding. If a test should prove negative in a patient who has passed a regular menstrual period only a day or so, it must be borne in mind that the patient may be less than two weeks pregnant and the test should be repeated at a suitable interval. A certain number of errors can be avoided also by examining the ovaries of the rabbit by microscopic section. The test has proved useful in the diagnosis of early pregnancy and differentially in fifteen cases of menopause, seven ovarian cysts including one dermoid cyst, one lutein cyst, one endometrial cyst or chocolate cyst, two pseudomucinous cystadenomas and two cysts of unknown type, two cases of acute pus tubes, three myofibromas of the uterus, and one case of chronic epididymitis (all of which were negative) also in suppressed, delayed and irregular menses, fear of pregnancy, and one case of attempted blackmail. One case of chorionepithelioma was positive. The Friedman test like all other single diagnostic methods should not be relied on exclusively in the diagnosis of pregnancy or other conditions but should be employed only in correlation with a careful physical examination and clinical history of the case.

Johns Hopkins Hospital Bulletin, Baltimore

57:146 (July) 1935

- Role of the Nurse in the Control of Tuberculosis. W. H. Welch—p. 1.
*Effects of Intravenous Administration of Hypertonic Solutions of Sucrose with Especial Reference to Cerebrospinal Fluid Pressure. J. H. Masserman. Baltimore—p. 12.
Syphilitic Myocarditis. T. P. McGill. Baltimore—p. 22.
Studies on Virus Problems. III. Elementary Bodies in Virus Infections and Filtrable Avian Tumors and Their Etiologic Significance. Outlook for the Future. J. C. G. Ledingham. London, England—p. 32.

Hypertonic Solutions of Sucrose—In an attempt to find a nontoxic substance the osmotic action of which in the circulation would not be complicated by adverse sequelae, Masserman investigated the physiologic effects of the intravenous injection of hypertonic solutions of sucrose in thirty-five human subjects. He found that a 50 per cent solution of sucrose is satisfactory for clinical use. When from 300 to 500 cc of this solution is administered intravenously the initial rise of cerebrospinal fluid pressure is of lesser degree and duration than is the case with the dextrose or the electrolytic solutions. Subsequently the desired diminution in intracranial tension is greater and more prolonged. Corresponding to the relative impermeability of the blood-cerebrospinal fluid barrier to sucrose there is only a slight and transient intracranial hypertension as the final hydrodynamic effect of its intravenous administration. In contrast to this, dextrose and most of the physiologic solution of sodium chloride pass readily from the blood into the central nervous system and

the cerebrospinal fluid and thereby induce a marked and prolonged increase in spinal fluid pressure and possibly also an edema of the central nervous tissues. The 50 per cent solution of sucrose when administered intravenously does not cause an overt phlebitis in the injected vein and induces only a mild reaction if allowed to escape in small amounts into the subcutaneous tissues. Comparatively large amounts of sucrose in the circulation are apparently not toxic and cause no serious disturbances in the chemistry or cytology of the blood. Being a disaccharide and foreign to the blood stream, sucrose induces a marked diuresis and is eliminated rapidly in the urine. Since sucrose is thus either completely eliminated or else metabolized in the body only in small amounts, repeated injections may be given when necessary without cumulative adverse effects. As to the clinical use of hypertonic solutions of sucrose for the purpose of reducing the intracranial hypertension in patients with cerebral concussion, in meningitis, and preoperatively in cases of brain tumor, the author states that it must be recognized that the disturbances in cerebral circulation and tissue permeability that obtain in these conditions might modify the osmotic and dynamic effects that he reports in normal subjects. Nevertheless, in view of the ready availability and apparent lack of toxicity of the solutions their administration for their demonstrated decompressive and diuretic effects seems to deserve a careful clinical trial.

New England Journal of Medicine, Boston

213:91-134 (July 18) 1935

- Dislocations. W. E. Gallie. Toronto—p. 91.
Reticulocyte Response in Guinea Pigs Following Oral Administration of Certain Antianemic Substances. D. K. Miller and C. P. Rhoads. New York—p. 99.
Early Classification and Early Diagnosis of Cancer of Bronchus, with Analysis of Thirty-One Case Reports Including Three Pathologic Diagnostic Errors. M. S. Lloyd. New York—p. 101.
Combined Extra Uterine and Intra Uterine Pregnancy. Report of Two Cases. R. J. Hefferian. Boston—p. 120.
Case Report. Bronchial Asthma Due to Paper Sensitivity. T. Bennett. Boston—p. 121.

213:135-194 (July 25) 1935

- Sensitivity to Environmental Allergens in Infantile Eczema. L. W. Hill. Boston—p. 135.
Traumatic Chondromalacia of Patella. Report of Two Cases. F. A. Slowick. Pittsfield, Mass.—p. 160.
Recent Advances in Treatment of Rectal Diseases by Injection Methods in Ambulatory Patients. I. Use of Gabriel's Modified Solution in Treatment of Fissure-in-Ano. N. Steinberg. Boston—p. 162.
Etiology of Congenital and Hereditary Deformities. S. M. Fitchet. Boston—p. 164.
*The Phthalein Test of Kidney Function in Anemia. E. M. Chapman. Boston—p. 166.
Jacob Zabalon and His Book. The Treasure of Life. H. A. Savitz. Boston—p. 167.
Low Back Pain Caused by Lumbosacral Abnormalities. M. A. Bellerose. Rutland, Vt.—p. 177.

Phenolsulphonphthalein Test of Kidney Function in Anemia—Chapman investigated eleven cases of severe anemia that showed no signs of cardiovascular or renal disease. The urine in each case was normal. A fractional phenolsulphonphthalein test of kidney function was done on each patient. The patient emptied the bladder and drank 400 cc of water, and half an hour later 1 cc of phenolsulphonphthalein was injected intravenously. Specimens of urine were then obtained fifteen, thirty, sixty and 120 minutes after the injection. The first two collections show the high initial output of dye, which is the significant feature of phenolsulphonphthalein excretion. The curve of elimination of dye was normal in each case. Anemia alone does not affect the excretion of phenolsulphonphthalein by the kidney.

New Orleans Medical and Surgical Journal

88:172 (July) 1935

- 1934-1935 Memorial Address of the Louisiana State Medical Society. J. T. Nix. New Orleans—p. 1.
Louisiana System of Hygienic Public Education. F. J. Mayer. Opelousas—p. 10.
Importance of Mental Hygiene to the General Practitioner. T. J. Perkins. Simmesport—p. 16.
Effectiveness of Typhoid Vaccine in Control of Typhoid Fever. R. W. Todd. New Orleans—p. 19.
Who Is to Blame for Cancer Deaths? W. H. Perkins. New Orleans—p. 25.
Toxoid Immunization. New Orleans Campaign for Diphtheria Eradication. J. Signorelli. New Orleans—p. 30.

Public Health Reports, Washington, D C

50: 891 908 (July, 5) 1935

Malaria Epidemic in Aurora Ohio R N Hoyt and R D Worden —
p 895

50: 909 922 (July 12) 1935

Tularemia Observations on Strain of Low Initial Virulence from
Rabbit Ticks C B Philip and C E Davis —p 909

50: 923 948 (July 19) 1935

Bubonic Plague on the West Coast of South America in 1934 J D
Long —p 923

Rhode Island Medical Journal, Providence

18: 93 110 (July) 1935

Address Early Medical History in Rhode Island and the Rhode Island
Medical Society W L Munro Providence —p 93

18: 111 128 (Aug) 1935

Electrocardiogram in Diagnosis of Heart Disease F B Curtis Provi-
dence —p 111

Surgery, Gynecology and Obstetrics, Chicago

61: 145 288 (Aug) 1935

Irregular Shedding and Irregular Ripening of Endometrium H F
Traut and Alberta Kuder New York —p 145

*Fundusotomy in Treatment of Peptic Ulcer Experimental Study
H Seely and R Zollinger, Boston —p 155

Peptic Ulcer and Anxiety Complex Failure of Pharmacologically Sus-
tained Hypersecretion and Hypermotility of Stomach to Produce
Chronic Gastric Ulcer in Dogs J R Orndorff G S Bergh and
A C Ivy Chicago —p 162

Röntgenkymograph as New Aid in Diagnosis of Adhesive Pericarditis
S E Johnson Louisville, Ky —p 169

*Evidence for Placental Origin of Excessive Proliferation of Late Pregnancy
Toxemia and Eclampsia G Van S Smith and O W Smith Brook-
line Mass —p 175

Lateral Approach for Operating on Diverticula of Bladder D R
Melen Rochester N Y —p 184

Treatment of Congenital Clubfoot J H Kite Decatur Ga —p 190

Congenital Deformities of Face Types Found in Series of One
Thousand Cases W B Davis Philadelphia —p 201

Foreign Bodies in Stomach Removal by Peroral Endoscopy L H
Clerf, Philadelphia —p 210

Thrombo-Angitis Obliterans (Buerger) XI Treatment of Five Hundred
and Twenty Four Cases by Repeated Intravenous Injections of Hyper-
tonic Salt Solution Experience of Ten Years S Silbert New York
—p 214

Jejunal Diverticulosis R S Rosedale, Buffalo —p 223

Primary Neoplasms of Female Urethra J G Menville Rochester
Minn —p 229

Knee Flexion Contracture Treated by Skeletal Traction G E Haggart
Boston —p 239

Granulosa Cell and Brenner Tumors of Ovary Report of Case with
Review of Those Cases Already Recorded P B Bland and L
Goldstein Philadelphia —p 250

Fundusotomy in Treatment of Peptic Ulcer—Seely
and Zollinger resected the gastric fundus from four dogs, leav-
ing a tube about 3 cm in diameter from the esophageal opening
to within 6 cm of the pylorus This tube was made up chiefly
of gastric mucosa, smooth and free of rugae An immediate
postoperative drop of both free and total acidities was found
as compared to the preoperative levels There was a gradual
return of the free and total acid, reaching preoperative levels
by the end of eight months The stomach at necropsy showed
hypertrophy to normal size and outline, without reproduction of
rugae Microscopic examination of the postoperative stomachs
showed a rich distribution of active acid bearing cells, especially
along the greater curvature Histologically these cells were
filled with secretory granules and vacuoles, suggesting that they
were actively forming hydrochloric acid The experimental
studies agree with the clinical observation that the gastric
acidity cannot be permanently lowered regardless of the amount
of acid bearing tissue removed Fundusotomy has little to
offer as a means of permanently reducing gastric acidity and as
a possible therapeutic measure in the control of peptic ulcer

**Origin of Excessive Anterior Pituitary-like Principle
of Eclampsia**—The Smiths' quantitative analyses of the serum
and urine for anterior pituitary-like principle and estrogenic
substance in a series of sixty-eight women in the second half
of pregnancy have shown that late pregnancy toxemia and
eclampsia are characterized almost without exception by a
marked excess of anterior pituitary-like principle as compared
with normals A low level of estrogenic compound in a large
proportion of these patients has also been found, but the quan-

titative abnormality of this hormone is less striking and less
consistent than that of anterior pituitary-like principle Both
the placenta and the anterior lobe of the hypophysis are known
to contain gonadotropic factors The authors' experiments were
carried out for the purpose of determining which of these two
sources is responsible for the excess found in late pregnancy
toxemia and eclampsia The serums of women with late preg-
nancy toxemia and eclampsia have been found to have the same
effect on the ovaries of hypophysectomized rats as the serums
of normally pregnant women An extract of human placenta
also had this effect, while hypophyseal anterior pituitary-like
principle caused a follicular and luteal activity not caused by
any of the other materials tested The placentas of toxemic
and eclamptic patients contain excessive amounts of anterior
pituitary-like principle and tend toward low levels of estrogenic
material as compared with the placentas of normal pregnancies
Control tissues from two women who died of eclampsia and
one who miscarried at five months have shown that the liver,
spleen kidney and fetus contain almost no anterior pituitary-
like principle or estrogenic material The authors concluded
that the excessive amounts of anterior pituitary-like principle
previously reported by them in the blood and urine of toxemic
and eclamptic women as well as the tendency toward low levels
of estrogenic substance, have their origin in the placenta They
suggest that a continued overproduction of anterior pituitary-
like principle by the placenta is probably a related factor and
possibly causal in the etiology of late pregnancy toxemia and
eclampsia

Granulosa Cell and Brenner Tumors of the Ovary—
Bland and Goldstein review the available literature regarding
granulosa cell tumor of the ovary and the Brenner tumor
Individual summaries of 160 cases of the granulosa cell tumor
and sixty cases of the Brenner tumor are tabulated These,
together with eighty-five cases of granulosa cell tumor reported
in groups make a total of 311 cases Clinically, the granulosa
cell and Brenner tumors are relatively benign Only occa-
sionally do they break through the capsule, recur or metastasize
The granulosa cell tumor occurs most frequently after the
menopause Seventy of the growths reported developed in
women aged 50 years or more Likewise, it was noted that
the Brenner tumor occurred in thirty-six women well past the
menopausal years Seven cases of granulosa cell tumor, how-
ever occurred in children less than 10 years of age Uterine
bleeding (menorrhagia, metrorrhagia) was the most common
symptom manifested by patients with the granulosa cell tumor
Of the 117 patients in whom symptoms were described, 60 per
cent complained of this symptom The Brenner tumor does not
seem to be associated with conspicuous symptoms Granulosa
cell tumors occurring in children are prone to induce precocious
sexual development A personal case of a granulosa cell tumor
arising in a child 7 years of age, who underwent marked sexual
development is presented Data concerning the final outcome
were available in ninety-six cases of the granulosa cell tumor
and in thirty-nine cases of the Brenner tumor Forty-two
patients with the granulosa cell tumor were reported well for
periods varying from one to ten years after operation, while
twenty patients died at varying periods following operation
Four of these patients succumbed from metastases within one
year after removal of the neoplasm Twenty-seven patients in
whom the Brenner tumor was found were known to be well at
varying periods following operation Six died within one year
after operation One patient of this group died from metastases

West Virginia Medical Journal, Charleston

31: 293 340 (July) 1935

Management of Psycho-neurotic by the General Practitioner M I
Mendeloff Charleston —p 293

Relationship Between Urinary Pathology and Abdominal Symptoma-
tology E Hess Erie Pa —p 296

The Osteochondritides H A Swart Welch —p 304

Meaning of Hallucinations J K Hall Richmond, Va —p 306

Reduction of Premature Infant Mortality S H Clifford Boston —
p 311

Postoperative Pulmonary Complications W V Wilkerson Highcoal
—p 315

Neoplasms and Cysts of Dorsum of Nose Case Report E C Hart
mao Parkersburg —p 322

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

52 83 142 (Summer) 1935

- Men Midwives of the Past M H Phillips—p 83
Eczema and Dermatitis N Burgess—p 103
Medical Treatment of Hyperthyroidism J I Noble—p 113

British Journal of Radiology, London

8: 403 466 (July) 1935

- Cholecystography Review in Full A C Mooney—p 403
Measurement of Dosage and Intensity Distribution in Radium Teletherapy Unit at Westminster Hospital H T Flint and C W Wilson—p 426
Upright Radiography with Especial Reference to Investigation of Accessory Nasal Sinuses H E Yorke—p 439
Deep Effect and Localization in Short Wave Condenser Field F Nagelschmidt—p 449
Chondro Osteo Dystrophy F C Golding—p 457

British Journal of Tuberculosis, London

20: 127 190 (July) 1935

- Is the Delicate Child More Likely Than the Strong One to Grow into the Adult Consumptive? E Ward—p 128
Tuberculosis in China G A M Hall—p 132
Distribution and Comparative Morbid Anatomy of Tuberculosis in Captive Animals A E Hamerton—p 145
BCG Vaccine and Its Practical Application K N Irvine—p 152
Some Reflections on Thoracoplasty W Jullien and F C Ecot—p 159
Value of Triboulet Reaction in Intestinal Tuberculosis H J Robinson and D B Crulshank—p 164

British Medical Journal, London

2 99 146 (July 20) 1935

- *Acute Rheumatism and Its Results K D Wilkinson—p 99
Healing of Tuberculous Cavities L S T Burrell—p 102
Temperament and Digestive Disorders M Culpin—p 102
Industrial Dermatoses with Especial Reference to Sociological Aspects E Graham Little—p 107
*Clinical Interpretation of the Arneth Count C J Youag—p 109
Anesthesia for Tonsillectomy A P Gorham—p 112

Acute Rheumatism and Its Results—Wilkinson states that rheumatic inflammation, whenever it appears, produces a characteristic microscopic lesion—the submiliary focus. It is common in cardiac muscle, pericardium, endocardium, synovial and subcutaneous tissues and is found in the adventitia and media of arteries in all parts of the body. The typical focus shows four distinct points in its structure: a fibrinous matrix, certain large multinucleated cells, plasma cells or fibroblasts and an aggregation of leukocytes—darkly staining mononuclear cells. At first the nodule shows an aggregation of lymphocytes and plasma cells, later the characteristic multinucleated cells appear, and finally the lesion is replaced by a patch of fibrous tissue. These foci are always accompanied by more or less marked changes in the parenchyma of the tissue invaded and produce a considerable degree of vascular proliferation and hyperemia. In the more chronic forms of acute rheumatism the degree of fibrosis of the myocardium may be truly astonishing. It is of the greatest importance to realize that even in the mildest case in which the myocardium is involved the endocardium may escape, when it is damaged, with consequent valvular defect, the lesion is preceded by changes in the valve leaflets, and the valves are not directly infected from the blood in the chambers of the heart. The mitral valve is most frequently, and the aortic valve quite commonly, damaged, while the tricuspid and pulmonary valves are relatively seldom attacked. Damage is the result of both stresses and vascularity. The relatively avascular pulmonary valves, which sustain comparatively little stress, escape, while the vascular and heavily stressed mitral valve is most seriously and most often involved. Newman has calculated that 0.8 per cent of all elementary school children have rheumatic cardiac disease. Coombes showed that about 40 per cent of all heart disease was rheumatic, that the average rheumatic cardiac patient lived to 28½ years and that only 7 per cent of such patients attained the age of 50. He also showed that nearly half the children who acquire rheumatism before the age of 5 years develop serious cardiac damage, while only a fourth of those who develop rheumatism after 10 years of age become cardiac patients.

Clinical Interpretation of Arneth Count—While it is well established that infections tend to produce a shift to the left in the Arneth count, Young observed in the course of clinical work that the count sometimes fails to show this shift in acute infections and that it may show a left handed shift in the absence of infection. Such exceptions to the rule detract considerably from its clinical utility. His observations indicate, however, that the apparent failure to conform to expectation is to be associated with the percentage method of recording the count and that, by expressing it in absolute figures per cubic millimeter of blood, errors in its clinical interpretation can generally be avoided. A normal polymorphonuclear output may occur in the presence of infection, notably in undulant fever. In addition to infections, left handed percentage counts may occur in agranulocytosis and in hypersplenism. Right handed percentage shifts may occur after inflammatory reactions, as well as in certain other conditions. An absolute increase in the polymorphonuclear output is necessary for the interpretation of a count as evidence of infection. An absolute increase in output and an absolute reduction due to accelerated removal are the best evidences of inflammatory activity, but the latter change is not always present.

East African Medical Journal, Nairobi

12 99 126 (July) 1935

- Some Sidelights on Early Medical History in East Africa H A Boedeker—p 100
Human Incidence of Brucella Infections in Cattle Bearing District of Tanganyika Territory as Determined by Agglutination Tests D E Wilson—p 108
Advance Stage of Complete Inversion of Uterus in Kikuyu Woman R H Wiseman—p 111

Edinburgh Medical Journal

42 393-444 (Aug) 1935

- Sir Edward Sharpey Schafer and His Contributions to Neurology C S Sherrington—p 393
Observations on Blood Pressure in Healthy Adult Males P L McKinlay and A B Walker—p 407

Journal of Physiology, London

84 367-468 (July 24) 1935

- Reflex Regulation of Cerebral Blood Flow and Cerebral Vasomotor Tone J J Bouckaert and C Heymans—p 367
Observations on Binocular Fusion and Rivalry R S Creed—p 381
Effect of Hemorrhage of Varying Degree on Blood and Plasma Volume on Blood Sugar and on Arterial Blood Pressure J D Robertson—p 393
*Some Immediate Effects of Reduced Cooling Powers on Water Balance and Related Effects in Human Subjects D H K Lee and A G Mulder—p 410
Relation Between Metabolic Processes and Ventricular Electrogram A S Dale—p 433
Effect of Liver Feeding in Relation to Oxygen Want H B Parry—p 454
Elimination of Xylose Creatinine and Urea by Perfused Mammalian Kidney A Hemingway—p 458

Effects of Reduced Cooling Powers on Water Balance—Lee and Mulder kept male subjects who had refrained from taking food or water for twelve hours at rest during a period of some six and one-half hours on each of three occasions in a room with different atmospheric conditions. A standard meal and a standard amount of water were administered at stated times. A "basal level" of urinary volume of from 15 to 30 cc an hour was reached during the ensuing three hours in a normal environment. In a hot environment this "basal level" was lowered to from 8 to 15 cc an hour. This is taken to illustrate the limitation of the concessions allowable to hydration functions at the expense of excretory functions. It was possible to differentiate two fairly constant variations in sweat excretion: (1) a low initial rate and (2) a burst of sweating after water consumption. Psychic factors exert a strong influence on sweating. There is a definite burst of sweating, often profuse in amount, when water is swallowed. This appears to be partly reflex, partly absorptive in origin. The total amount of sweat lost bears a marked relationship to the humidity of different environments of fairly equivalent "effective temperature." The difference in dehydrating power of the dry and humid environments was reflected in the maximal change in serum protein percentage, which in the hot wet room was little more than half (77 per cent) that in the hot dry room (113 per cent).

The blood serum among other body fluids bore a disproportionate amount of the total dehydration (i. e., after six hours of exposure). This disproportion was greater in the hot wet than in the hot dry environment. There was some confirmation of the observation that the cutaneous chloride excretion increases with the length of the exposure, at least during the first four hours. The average concentration in the sweat was low (from 0.2 to 0.25 per cent). Under the conditions of these experiments there was no inability on the part of the body to retain a liter of administered water.

Lancet, London

2: 173-232 (July 27) 1935

Infection and Its Control in Children's Wards E. H. R. Harris—p. 173

Depression of Muscle Tonus as Cause of Atelectasis Failure of Circulation and Other Postoperative Sequels Y. Henderson—p. 178

Torsion of Spermatic Cord in Infancy G. F. Langley—p. 181

Squint Training Clinic of the L. C. C. M. Thorntott Johnson—p. 183

Alkalosis Arising in Treatment of Peptic Ulcer W. Oakley—p. 187

Alkalosis Arising in Treatment of Peptic Ulcer—Oakley believes that alkalosis often passes unrecognized. He has collected from the wards of a general hospital seven cases in which treatment was being given for peptic ulcer which show the necessity of keeping in mind the possibility that alkalosis may develop in any patient taking alkalis regularly even in moderate doses. Although the dosage of alkali does not vary greatly in the different wards, five of the cases were diagnosed by one physician or his assistants. It is therefore probable that many cases pass undiagnosed either to recovery or (more probably) to death. Six of the patients were men. Symptoms are numerous and varied, the most characteristic are anorexia, headache, irritability and changes in mentality, nausea, vomiting, aching pains and twitching in the muscles of limbs and weakness, which may amount to prostration. Flushing and perspiration may be present, in severe cases slow respiration rate, rapid pulse, tetany and even fits may precede the onset of coma, which is usually fatal the patient dying uremic. The tongue is dry and furred, and apart from muscular tenderness and urinary changes, the principal signs are those of increased neuromuscular excitability, these include brisk reflexes, muscular twitchings and occasionally latent or frank tetany with carpopedal spasms. Incontinence may complicate severe cases. The urine is typically increased in amount and alkaline in reaction and contains protein and granular and hyaline casts, red and white blood cells being observed less constantly. The urine may resemble that of acute nephritis. In any suspected case all alkalis should be withheld and the alkali reserve and blood urea estimated. If these are raised acid should be given in the form of ammonium chloride (from 1 to 1.3 Gm.) or acid sodium phosphate (from 2 to 2.6 Gm.) three times a day after food, until the alkali reserve which should be estimated daily, has returned to normal limits. The protein intake should be limited to about 40 Gm a day and all food given should be in fluid or semisolid form, careful attention being paid to the condition of the mouth and intestine. When treatment is given along these lines, recovery should occur in all but the most severe cases, but symptoms such as pains in the legs, may persist for several weeks. It is unwise to perform any operation until the blood urea has been normal for some days.

Medical Journal of Australia, Sydney

1: 793-822 (June 29) 1935

Some Early Medical Men of Western Australia F. I. Bray—p. 793

The Autonomic Nervous System H. J. Wilkinson—p. 801

2: 1-132 (July 6) 1935

Premedication for Local Anesthesia C. E. Corlette—p. 1

Premedication in General Anesthesia W. I. T. Hotten—p. 5

Use of Numbotal in Childbirth W. J. Rawlings—p. 12

Pathogenicity of *Dermatophytus Aium* et *Gallinae* and of Trichomes in the Human Being H. Lawrence—p. 16

2: 33-68 (July 13) 1935

The Hospital Problem in Western Australia R. H. Crisp—p. 33

Remarks on Pylorus and Its Medical Treatment A. R. Southwood—p. 35

Gastric Ulcer from the Surgical Point of View H. Bullock—p. 40

Journal de Chirurgie, Paris

46: 1-160 (July) 1935

Robert Proust A. Gosset—p. 3

*Urgent Indications for Operation in Recent Closed Traumatic Lesions of Skull and Brain A. Jentzer—p. 23

Intercostal Radicular Anastomosis to Vertebral Traumatism with Section of Lumbar Medulla A. Chiasseroni—p. 54

Traumatism of Skull and Brain—Jentzer discusses the effect of operation in cranial traumatism based on the records of 837 cases from 1914 to 1934. There were 366 patients with cerebral contusion who recovered under nonoperative treatment. Seven died in spite of conservative treatment and two in spite of operative intervention. Two hundred and thirty-three patients with cranial fracture recovered under conservative treatment, thirty-nine with fracture recovered after operation, thirty-five died in spite of operation and seventy-three died without operation. There were eighty-two cases of fracture which could not be used for various reasons. From the study of these cases he concludes that the anamnesis can never be sufficiently complete to dictate the therapeutic procedure. In more than 50 per cent of the fractures, some of a severe character, such as slow pulse and hyperpyrexia, recovery occurred without intervention. Indications for operation are given by the succession of physiopathologic phenomena rather than by any one set of signs. In the severe cases, immediate operation is indicated. This is based on the enormous anatomic lesions observed in 117 necropsies. Such lesions could not be expected to heal without surgical help. In some microscopic traumatism develop toward neurologic sclerosis. The changes in the choroid plexus, the different effects of hemorrhage, the sympathetic disorders (congestion edema, anemia) and the silent lesions might all be helped by early trephining. The author concludes that death is not produced by lesions of the hemispheres alone, of the protuberance of the peduncle or of the bulb and by hemorrhages, but that cerebral edema, pulmonary lesions and emboli are common fatal complications.

Schweizerische medizinische Wochenschrift, Basel

65: 693-716 (Aug. 3) 1935

Heredity Race Hygiene and Eugenics A. Werthemann—p. 693

Causes of Death in Sepsis Lenta M. From—p. 698

Improvement of Cultural Examination of Blood R. K. Crilichess—p. 699

*Relation of Nodose Rheumatism to Juxta Articular Nodules S. Bollag—p. 702

Hypertension in Disorders of Adrenals G. Piotrowski and F. Ody—p. 704

Consumption of Alcoholic Liquors in Switzerland V. J. Steiger—p. 706

Relation of Nodose Rheumatism to Juxta-Articular Nodules—According to Bollag nodose rheumatism is characterized by painless, easily recognizable subcutaneous nodules that vary in size from a lentil to a pea and occasionally are somewhat larger. Though most reports agree that these nodules are usually near the joints similar formations have been observed also on tendons cranium, ribs tibia and pelvis and in other locations. Moreover, nodules on certain internal organs such as the myocardium and the pericardium, have likewise been brought into relation to nodose rheumatism. In this connection the author calls attention to Aschoff's nodules which are found in rheumatic myocarditis but which, according to some investigators may also be classified with nodose rheumatism. In studying the problem of nodose rheumatism, it will be noticed that in the dermatologic literature, or in the literature on tropical diseases, juxta articular nodules are likewise described. The author points out that in recent years it has been discovered that the so-called tropical juxta-articular nodules are really not a tropical disorder but are of syphilitic nature. The clinical aspects of these syphilitic (dermatologic) juxta-articular nodules do not differ greatly from those of the nodules that are characteristic for nodose rheumatism, but most investigators agree that the two conditions have to be differentiated. The author gives the clinical history of a woman, aged 28 who suffered from recurrent swellings of the joints and in whom nodules were detected on both wrists and behind the ear. The patient had typical Hutchinson's teeth and the Wassermann reaction was once weakly positive, while

later controls were negative. Later, nodules were detected also on other parts of the body. Treatment with a gold preparation improved the articular function and reduced the pain in the joints, and the nodules gradually disappeared. The author points out that the differential diagnosis is extremely difficult in this case, for the nodules may be a manifestation of nodose rheumatism in a person with congenital syphilis or they may be juxta-articular nodules. He emphasizes that, in studying juxta-articular nodules, dermatologists should not overlook the possibility of a nodose rheumatism and internists should not disregard the possibility of a syphilitic nature of the juxta-articular nodules.

Riforma Medica, Naples

51 1087 1124 (July 20) 1935

*Antimony Stimulation of Reticulo-Endothelial System in Estivo-Autumnal Malaria R. De Nunno—p. 1087

Prophylactic Value of Antisyphilitic Ointments A. Oro—p. 1092

Postoperative Contralateral Phlebitis Due to Intervention on Right Side of Abdomen Four Cases V. Bernabeo—p. 1093

Antimony Stimulation of Reticulo-Endothelial System in Estivo-Autumnal Malaria—In a preliminary report, De Nunno concludes that the intravenous injections of antimony and potassium tartrate, given to rabbits in doses corresponding to those used in human beings, provoke a stimulation of the reticulo-endothelial cells that is more marked if the animals are given the largest therapeutic doses that can be given to human beings. Tartarated antimony has the same action on the reticulo-endothelial cells of human beings, as proved by the author by the examination of the splenic pulp before and after its administration. The treatment consists in intravenous injections of a 1 per cent solution of antimony and potassium tartrate given every other day in increasing doses of from 1 to 14 cc of the solution up to a total quantity that varies, according to the more or less rapid disappearance of the plasmodium in the splenic pulp, between 175 and 213 cc for the two courses of injections. The first few injections are followed by a mobilization of plasmodia, which appear in the blood in endoglobular and crescent forms and provoke the development of more or less typical malarial febrile spells. The size of the spleen diminishes from the third or the fourth injection and is normal at the end of the treatment. In fourteen adult patients suffering from estivo-autumnal malaria that had resisted quinine, plasmochin and atabrine treatments, the antimony treatment resulted in the recovery of thirteen. All were carriers of plasmodium praecox, which disappeared from the spleen after the treatment. One patient discontinued the treatment because of intolerance when he had received 162 cc of the solution. By that time the size of the spleen was reduced and recovery occurred three weeks later by the administration of plasmochin and quinine as complementary treatments. The intravenous injection of antimony and potassium tartrate, if given before or during the development of a malarial spell does not control its development. The therapeutic effect of the treatment is due to the action of antimony and potassium tartrate on the reticulo-endothelial system, both by stimulating the proliferation of phagocytes and by acting, after its accumulation in the cytoplasm of the reticulo-endothelial cells, on the phagocytized plasmodia. The author advises the treatment in chronic malaria in order to ascertain its indications and efficacy from its results in groups of patients larger than his group.

Semana Medica, Buenos Aires

42 149 224 (July 18) 1935 Partial Index

Systolic Murmur of Third or Second Left Intercoastal Space in Hyperthyroidism P. Cossio E. B. del Castillo and O. Fustinoni—p. 149

Clinical Prognosis of Myocardial Infarct G. Bosco—p. 158

Esthetic Phrenicectomy G. H. Dickmann—p. 160

Abortion Following Sexual Trauma P. E. Borrás—p. 172

*Rheumatic Fever in Etiology and Pathogenesis of Painful Valgus Talipes G. Costa Bertani—p. 176

*Effect of Magnesium Chloride Intravenously Injected in Cases of Venereal Papilloma and Warts A. A. Fernandez and J. Capurro—p. 192

Lipoid Nephrosis Case A. N. Accinelli—p. 196

Rheumatic Fever in Painful Valgus Talipes—According to Costa Bertani there is a type of painful valgus talipes of rheumatismal origin that occurs in patients regardless of age. The author reports fifteen cases in which the rheumatismal

etiology was indubitable. The patients ranged in age between 8 and 43. This explanation of the pathogenesis of the condition is the theory of an infectious (rheumatic) arthritis at the tibiotarsal and metatarsal joints, followed by distention of the deltoid and calcaneoscaphoid ligaments and of the muscles and tendons of the internal edge of the arch of the foot, which result in relaxation of Chopart's joint and collapse of the internal edge of the arch. These changes determine the rupture of the normal relations of the joints of the foot and, if the factors of standing or walking are added, a traumatic arthritis develops. Traumatic arthritis is the cause of the contracture and secondary changes that follow. Rheumatic painful valgus talipes may occur from a primary localization of the virus of rheumatic fever exclusively at the heel and the joints of the foot, or as the secondary phase of a painless valgus talipes of rheumatic origin. In either case the mechanism of its production is the same. The author does not believe that standing or walking alone causes painful valgus talipes. Neither does he agree that this type of talipes should be termed "flat rheumatic talipes," because the occurrence of painless flat valgus talipes is frequent, while the feet are never flat in cases of rheumatic painful valgus talipes. By the use of orthopedic arch supports as soon as talalgia (the first symptom of painful valgus) appears the pain disappears, the patient regains his functional capacity and further deformity of the foot is prevented.

Magnesium Chloride in Treatment of Venereal Papilloma and Warts—Fernandez and Capurro advise the administration of intravenous injections of magnesium chloride in the treatment of venereal papilloma and warts. They used a 40 per cent solution of anhydrous magnesium chloride in water or in physiologic solution of sodium chloride, that is, a solution in which each cubic centimeter of the solvent contained 0.4 Gm of the solute. They begin with injections of 0.05 or 0.1 Gm and increase the dose according to the age and tolerance of the patient, if possible, up to 1 or 2 Gm. for each injection in adults. The number of injections varies with the evolution of the disease during the treatment and the reaction of the patient to the drug. After a number of injections, which in the cases of the authors varied from ten to forty, an interval of rest without injections is allowed. Improvement manifests itself during the treatment and generally recovery is completed during the period of rest. This is due to the cytophylactic properties of the drug, which last for some time after the injections are given. If satisfactory results are not obtained from the first series of injections, the treatment may be repeated. The authors report the results of the treatment in a group of twenty-four patients suffering from venereal papilloma or warts. In fifteen patients complete recovery was obtained, five were improved, in four the condition remained unchanged and the rest of the patients did not report for further observation after having received one or more series of injections. Because of the cytophylactic effects of the drug and of the improved condition of the patients when they discontinued the treatments, the authors believe that their recovery was probable.

Klinische Wochenschrift, Berlin

14 1089 1128 (Aug. 3) 1935 Partial Index

Diparametric Consideration of Pathergic Process and Principle of Pathergometry F. von Gröber—p. 1094

Action Mechanism of Estrogenic Hormone Clinical Observations on Position of Hypophysis P. Hauptstein—p. 1103

*Disturbances in Water and Mineral Exchanges in Addison's Disease G. Marañón and J. A. Collazo—p. 1107

Circulating Quantity of Blood Before and After Mercury Diuresis S. Goldammer G. Leiner and D. Scherf—p. 1109

Water and Mineral Exchanges in Addison's Disease—Marañón and Collazo investigated the following problems in patients with Addison's disease: the content of the blood, the water content of the muscles, the ion content of the blood, the action of adrenal cortex extract on the water and electrolyte content of the blood, the water elimination and the value of sodium chloride in the treatment. They found that in patients with chronic adrenal insufficiency there exists a more or less pronounced dehydration, which is demonstrable in the blood plasma as well as in the muscular tissues. They are convinced

that this dehydration plays an important part in the terminal manifestations of the disease, for it is connected with the severe acidosis that is typical in the last stages of the disease. The causes of the dehydration are supposedly quite complicated. They are doubtless influenced by the loss of glycogen from the liver and also by disturbances in the mineral exchange, the most noteworthy sign of which is a disturbance in the potassium sodium equilibrium, namely, an increase in the potassium ions and a relative decrease in the sodium ions. The injection of adrenal cortex extract produces in these patients an increase in the water retention and aids in reestablishing the disturbed potassium sodium equilibrium. The effect of sodium chloride on adrenal insufficiency in adrenalectomized animals, as well as observations on patients with Addison's disease, induced the authors to give sodium chloride in connection with adrenal cortex extract. The authors found that the addition of sodium chloride counteracts the dehydration, reduces the severity of the symptoms and improves the general condition of the patients with Addison's disease.

Münchener medizinische Wochenschrift, Munich

82: 1185 1224 (July 26) 1935 Partial Index

Remarks on Treatment of Hypertrophy of Prostate M. Kirschner — p 1185

*Cause of Arteritis W. Braeucker — p 1186

*Scarlet Fever Blanching Phenomenon—Calcium Blanching Phenomenon —Pseudoblanching Phenomenon F. Gerth and F. Trautmann — p 1188

Management of and Fatalities in Delivery of Twins in Home C. Holtermann — p 1191

Anesthesia in Small Interventions on Female Genitalia Vilma Janisch Rasković — p 1195

Cause of Arteritis — Braeucker points out that the first detailed description of an arterial inflammation was given in 1879 by von Winwarther, who designated the conditions as endarteritis obliterans. Later several other investigators corroborated the observations made by von Winwarther. Buerger studied vascular inflammations on a large material. He did not place the same stress on the changes of the intima as von Winwarther had done but designated the disorder as thrombo-angitis obliterans because in the beginning stage of the disorder there exists only an inflammation of the vascular wall which is later followed by a thrombosis. The author discusses the histologic aspects of thrombo-angitis obliterans (Buerger's disease) and mentions the various theories that have been advanced regarding the pathogenesis of this disorder. Several investigators have stated that thrombo-angitis obliterans is related to infectious rheumatism, but this theory has been rejected by leading pathologists and clinicians. Some authorities think that the disorder may be caused by different factors, while Buerger believed that it is an infectious disease. To be sure, Buerger did not succeed in finding the causal organism but he succeeded in transmitting the disease and, at any rate, he thinks the disease occupies a unique position, and a number of clinicians are inclined to agree with him. The author points out that from Buerger's disease in the restricted sense of the word there can be differentiated a number of other vascular inflammations, such as those developing in typhus, cholera, scarlet fever and other infectious diseases, as well as those developing after frost bite and traumas. He gives the detailed description of a case in which a vascular inflammation developed after a trauma. The inflammation was localized especially in the external layers of the artery. Thus the anatomic pathologic aspects were not those characteristic for Buerger's disease. Moreover, the clinical symptomatology was not like that of thrombo-angitis obliterans. In addition, the author observed two other cases in which vascular inflammations developed after traumatic injuries. He considers it unjustified to ascribe such posttraumatic forms of arteritides chiefly to constitutional factors. He concedes that such factors may be involved but he emphasizes that the trauma is the most important factor, just as the infection is the most important factor in the forms of arteritides that develop after infectious diseases.

Scarlet Fever Blanching Phenomenon — Gerth and Trautmann, in their discussion of the scarlet fever blanching phenomenon, show that this sign is produced by injecting intracutaneously from 3 to 5 cc. of blanching serum at a

suitable site within the region of the scarlet fever exanthem and watching the results after from six to eight hours. If the outcome is positive, the exanthem disappears over an area varying in size from that of a quarter dollar (24 mm) to that of the palm of the hand. There is evidence that the scarlet fever blanching phenomenon is caused by an immunologic property of the injected blood serum. Although the specificity of the scarlet fever blanching phenomenon is generally accepted there are nevertheless certain aspects that induced the authors to make further investigations of its mechanism. They discuss the so called calcium blanching phenomenon and Glanzmann's assertion that the blanching phenomenon may be positive in exanthems that are not due to scarlet fever. The authors studied the phenomenon in fifty-eight cases, employing blanching serum as well as calcium and giving their attention also to the so-called pseudoblanching phenomenon. In summarizing their opinion of the present status of the scarlet fever blanching phenomenon they state that 1 The scarlet fever blanching phenomenon is a specific reaction. 2 The calcium blanching phenomenon is the result of vasomotor actions of the calcium salt, it is not suited to replace the serum blanching phenomenon. 3 In some instances, undesirable secondary effects of the blanching serum may produce a pseudoblanching phenomenon, that is, a nonspecific reaction in the form of a centrally slightly elevated erythema with a lighter peripheral zone. The authors describe a case in which a pseudoblanching phenomenon developed. In this woman scarlet fever could be excluded on the basis of the anamnesis, the onset and the course of the disease, and the absence of eosinophils from the blood at the most severe stage. The fact that the patient's serum produced blanching phenomena in scarlet fever exanthems was a further proof that the disorder was not scarlet fever; it was found to be a mercury dermatitis.

Zentralblatt für Gynäkologie, Leipzig

59: 1809 1872 (Aug 3) 1935 Partial Index

Pregnancy and Delivery in Hypophyseal Obesity K. Hejrowsky — p 1810

Spondylolisthesis and Course of Delivery (Case of Spontaneous Delivery in Case of Spondylolisthetic Pelvis) H. Kirchhoff — p 1813

*Intra Operative and Postoperative Circulatory Weakness Following Lumbar Anesthesia E. Preissecker — p 1819

Casustics on Enormous Loss of Blood W. Jelinek — p 1824

*Improved Method of Artificial Detachment of Placenta R. Budimih — p 1827

Circulatory Weakness Following Spinal Anesthesia

Preissecker points out that, although great care is taken to detect an impairment of the heart before spinal anesthesia is decided on there occur nevertheless cases of collapse. This type of collapse is not the result of cardiac failure but is caused by deficiencies in the peripheral circulation, that is it is a vascular shock. The author shows that this vascular shock is probably the result of sensitization to protein, for in women with diseased genitalia, parametritis, tumors of the adnexa, carcinoma or bleeding myomas, protein decomposition takes place, and sensitization and then an impairment of the peripheral circulatory system is quite likely. In such sensitized persons spinal anesthesia may prove to be too much of a tax on the circulation, particularly if in the course of the operation more decomposition products of protein enter the circulation. The author gives his attention to the forms of collapse that develop a number of hours or even several days after the operation. This form of collapse is not the result of the spinal anesthesia as such, for the effect of the anesthesia has completely disappeared after a few hours. He emphasizes that this type of collapse is the result of auto-intoxication or of an allergic condition. An increase in the temperature after operation indicates that decomposition of protein is taking place. That a collapse does not result in all cases the author ascribes to the fact that the sensitivity for parenteral protein digestion varies in the different patients; it is determined not only by the patient's constitution but also by the preoperative condition. The author shows that gynecologic operations more than most other interventions, involve the decomposition of enormous quantities of protein (great vascularity of the region, bruising of tissues with large clamps, ligation of stumps and so on), which enter the circulation

To be sure, he admits that other forms of anesthesia will probably not reduce the danger of a peripheral circulatory shock, but he thinks that the incidence and mortality of this type of shock might be reduced if there were a method for the early recognition of a latent tendency to collapse. He thinks that the preoperative determination of the amount of protein cleavage products in the blood, or the determination of the reaction capacity of the organism by means of the cantharidal blister, might be of value. He emphasizes that preoperative digitalization of the patients is without avail, for the prevention of central collapse does nothing to prevent peripheral collapse. He thinks, however, that the use of vascular tonics that favor a backflow to the heart will be of help. He warns against protein shock therapy in patients in whom a later operation is probable and he also advises that alkaloids and barbituric acid preparations should be used sparingly. It is essential that in the course of the operation bruising of tissue be avoided as much as possible.

Artificial Detachment of Placenta—Budimlic injected into fresh placentas through the umbilical vein solutions of various astringents and watched their action on the placenta. He obtained the best results with a 0.45 per cent solution of alum. He describes the method as he employs it to effect detachment of the placenta. In 1 liter of boiling distilled water he places 45 Gm of crude alum, lets the solution cool to 39 C and then injects at once 300 cc of this solution into the umbilical vein after it has been closed with a Péan clamp. If detachment of the placenta does not follow within fifteen minutes, which is rarely the case, an additional 50 or 80 cc of the solution is injected. As a rule it is possible to wait for an hour or even longer for the complete detachment of the placenta, because the uterine hemorrhage usually ceases following the injection. The author made the injection into the umbilical vein as a rule forty-five minutes after the delivery, but, in cases in which the hemorrhage threatened the mother's life, the injection was made immediately after the delivery. He employed the method successfully in nineteen cases, in eight of which manual detachment had been necessary in previous deliveries. He points out that if manual detachment becomes necessary in spite of the injection, the difference in the consistency of uterus and placenta (the placenta is harder as the result of the injection) facilitates the manipulation considerably. He emphasizes that the method is quite helpful for the practitioner, for all that is needed is a supply of 500 cc of alum solution, a syringe of 150 cc capacity and a Péan clamp. Because the solution is hypotonic, the injection is without danger and he considers it superior not only to the manual detachment but also to Crede's manipulation for the latter method may be followed by inversion of the uterus or by collapse.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

79: 3827-3938 (Aug. 10) 1935

Ulcerous Tuberculids E. Zurhelle—p. 3828

*Hypochromatic Anemia with Symptoms in Ocular Fundus A. P. Daniels and C. O. Roelofs—p. 3835

*Hirsau Treatment of Parkinsonism J. J. Wuite—p. 3849

Surgical Treatment of Trigeminal Neuralgia C. Klein—p. 3855

Difficulties with Acid Fast Saprophytes in Cultures of Tubercle Bacilli A. Charlotte Ruys—p. 3859

Vegetative Syndrome During and After Influenza A. M. Meerloo—p. 3863

Malignant Hypertension with Cerebral Complications A. M. Meerloo—p. 3868

Hypochromatic Anemia with Symptoms in Ocular Fundus—Daniels and Roelofs describe two cases of secondary hypochromatic anemia. Symptoms common to the two patients were inflammation of the optic papilla, temporary disturbances of voluntary movement, migraine and vomiting. The patients also showed marked changes in the fundus of the eyes resembling those found in brain tumor. The neurologic symptoms coincided with a symptomatic migraine and were considered the consequence of a spasm of the blood vessels caused by the anemia. The changes in the fundus of the eyes were explained as resulting from contractions of the retinal vessels owing to the direct influence of the anemia. The literature concerning similar cases is discussed and in many respects confirms the

hypothesis. The success of treatment of the anemia on the other symptoms supported the theory that the anemia alone was the primary cause.

Treatment of Parkinsonism—Wuite describes the technique of the Hirsau sanatorium treatment of parkinsonism as reported by Anna Kleemann. The patient is placed in a luke warm bath in the morning, during which time passive movements are made with the limbs. After the bath, the limbs are massaged and the patient rests. In the evening he is given 0.25 mg of atropine sulphate in 0.5 per cent solution. The second day the dose is doubled and the third day tripled. After the third day the dose is given every three hours, preferably at 6 a. m., 2 p. m. and 10 p. m. Dryness in the throat is no contraindication to an increase in dosage. If disturbances, such as vertigo, sensations of heat, palpitation of the heart and gastric complications, occur, the dosage remains the same until these symptoms disappear. The maximal dose varies according to the individual. When the limit of tolerance has been reached it is indicated by such symptoms as dulness, headache, apathy and sleeplessness. Physical treatment simultaneously administered consists in daily baths, massage, active and passive movements of the limbs and physical labor. The first symptoms to disappear during treatment are vegetative symptoms, such as excessive salivation, tear flow and secretion of sebum, along with disturbances of the muscular tonus, such as stiffness, slowness and defects of speech and ambulation. The last to disappear are the involuntary movements (tics and tremors) and the psychic disturbances (slowness, apathy, blocking of thought and depressive psychoses). According to the author the optimal atropine dosage should be determined by the disappearance of the symptoms of the motor sphere, particularly those of the muscular tonus. Treatment should be administered in an institution with all facilities at hand.

Ugeskrift for Læger, Copenhagen

97 747-768 (July 18) 1935

*Experiences with Treatment of Diabetes with Insulin-Epinephrine V. Clausen and M. C. Lottrup—p. 747

*Insulin-Epinephrine Treatment According to Clausen T. T. Andersen—p. 751

Tabetic Arthropathy of Column Two Cases C. Krebs—p. 752

Treatment of Diabetes with Insulin-Epinephrine—Clausen and Lottrup, who found that the addition to insulin of minimal amounts of epinephrine causes a protracted resorption of insulin injected subcutaneously without otherwise changing the effect of the insulin and without unpleasant by-effects, illustrate the advantages of the method in five of the twenty-five cases in which this treatment was used. The first two patients, whose blood sugar varied greatly with two injections of insulin daily and who were often at the point of hypoglycemia, improved on the use of insulin epinephrine 1:50,000 for both injections and still more when insulin epinephrine 1:25,000 was used for the evening injection. For such patients the authors give most of the carbohydrate from three to four hours after the morning injection and a moderately small amount with the evening meal. So far as is feasible an interval of twelve hours between injections is advised. The next two cases show that with insulin epinephrine it may in some instances be possible to change from two injections to one daily. As little carbohydrate as possible is then given with the evening meal. The fifth case shows that with insulin epinephrine good results may sometimes be attained in a few days.

Insulin-Epinephrine Treatment According to Clausen—Andersen says that of seventeen diabetic patients under ambulant treatment since January 1935, all given insulin epinephrine, four are unchanged and thirteen improved. In seven of the thirteen glycosuria has largely or wholly disappeared, nine patients, who before the treatment had hypoglycemic attacks, have since the start of this treatment been free from hypoglycemic symptoms. The only patient still presenting symptoms of hypoglycemia is suffering from epilepsy. The author considers Clausen's method advantageous and well worth using until slowly resorbable insulin is available, and possibly even then if the new insulin proves too expensive.

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FUNCTIONAL NEUROSES AS COMPLICATIONS OF ORGANIC DISEASE

AN "OFFICE" TECHNIC OF APPROACH, WITH
SPECIAL REFERENCE TO THE NEURO-
DERMATOSES

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For the past fifteen years a special interest in the functional neuroses and in behavior problems has led me to develop, from a variety of sources, a technic of "office" analysis and treatment of this now recognized element among the many causes of cutaneous disease. A sufficient number of patients have considered this feature of the management of their cases at my hands as an important element in their permanent recovery or satisfactory adjustment to encourage me to present the mode of approach for trial in cases in which circumstances do not permit or justify the calling of a neuropsychiatric consultation and special or sanatorium treatment. With apologies, under the pressure of condensation, a highly didactic form is used, without citation of case illustrations or discussion of percentage results.

DERMATOSES

The dermatoses to which the technic is applicable include neurodermitis in the broad sense and special forms of this disturbance, such as cervical erythema and acute exudative neurodermitis, flexural neurodermitis, prurigo of Besnier, the cutaneous phase of the eczema-asthma-hay fever complex and extensive lichen simplex chronicus, chronic urticaria, the rosacea complex, "neurogenous" pruritus, cutaneous infections showing a close relation to the sweat-vascular mechanism, such as "dyshidrotic" eruptions of the hands and feet, and the mycotic-pyogenic-allergic syndromes, such as the "levarids" and "eczematids" and the psoriasiform parakeratosis of Brocq. The principles outlined are applicable also to the neurogenous phase of asthma and to the neurogenous aspect of the allergic background in general and to dermatoses complicated by excoriative injury.

THE PERSONALITY TYPES INCLUDED

It is not intended that the method here presented shall apply to the pronounced grades of warping of the personality amounting to actual hysteria or the recognized psychoses, as an office procedure for patients with neurasthenic and psychasthenic collapse, for malingerers, or for patients with severe grades of conduct disorder demanding the use of the full psychoanalytic

procedure. This is essentially a plan of assisting the patient who is "up and around" to recognize and correct the functional nervous background of his dermatosis. The nervous states susceptible of benefit by this form of management are the so-called vagus-sympathetic imbalance, especially "vagotonia", neuro-circulatory instability of Becker, the "tension frame of mind" of my own writings, and the simpler personality disturbances, including elementary sex problems, exclusive of homosexuality and actual perversions, such as sadism or masochism, the commoner maladjustments of the personal life under the strain of domestic load and incompatibility, finance, relatives-in-law, employment and the like, and anxieties, simple phobias, fixations, repressions and exhaustion.

RECOGNITION OF THE NEUROGENOUS SUBSTRATE, ESTIMATION OF THE PERSONALITY

The following steps and earmarks are employed in recognizing the type of patient and of situation in which the subsequently described methods are applicable. Some experience with the etiologic analysis of urticaria and the rosacea complex has led to the belief that the type of personality rather than the adventitious circumstances is the essential factor underlying the cutaneous outbreak. The isolated circumstance merely pulls the trigger, so to speak. The discharge comes from the gun and its load. Hence, first, an estimation of the personality is necessary. This requires the taking of a routine history of the hereditary elements, not alone of insanity, neuroticism and breakdown, irritability and eccentricity, though these are essential but also of allergic trends, urticaria, the eczema-asthma-hay fever complex, vasomotor reactivity, migraine and hyperthyroidism, which are all closely related phenomena. An understanding of the personality background of the family and relations is at times a necessity. Occupation or occupational predisposition furnishes clues to the personality make-up, as for example in the trend toward excessive altruism seen in members of the medical, teaching ("a hereditary neurosis"—Plummer), nursing and social service professions, the identification of trouble bearers and responsibility hounds, the dray horses of their families and communities, and those engaged in or yearning toward highly competitive careers with marked "spotlight" leanings, such as literature, drama and public speaking (das liebe Ich). Achievement also requires early appraisal for its outlet value, the completeness with which it satisfies or the degree to which it has overrewarded or overstimulated the personality trend. Leaders, drivers, tyrants and hypereffectives in general explode into the cutaneous neurogenous field under stress, excess or frustration. Stability, reactivity and stamina must be estimated by the history of ability or inability of the whole personality and of the individual organic systems, such as the

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gastro-intestinal tract, to perform continuously and effectively under load. The patient whose eyes give out, whose stomach fails him, who has an "American bowel" (mucous colitis) falls within this field quite as much as the chronic changer of occupation or the too persistent essayer of one goal. Becker insists that an inborn inadequacy akin to the probable basis of neuro-circulatory asthenia underlies the collapse of the neuro-vascular mechanism in the skin of many of these patients. They are the subjects of a perpetual disposition to exceed the speed which their chassis will permit without rattling to pieces. For the appraisal of these elements, two sessions may be required.

THE RECOGNITION OF TENSION

As far as the identification of something with a large intuitive element can be reduced to words, the estimation of the tension of the individual involves these elements. One must learn early to differentiate the open and the closed types (not necessarily extrovert and introvert), the former in a constant tremulous flutter, the latter seen from behind a mask, darkly—the "poker face" of American parlance. An early opportunity should be taken to appraise the neuromuscular state by carefully but unobtrusively observing the posture, movement and enunciation. Almost perfect imitations of relaxation in pose may be observed in the closed or repressed type, but the intent gaze and occasional betraying diaphragmatic sigh as an unconscious release may disclose the internal tension. The mobile or open type is easily recognized by the fidgets, constant movement and jerkiness of action and enunciation, but it may be necessary to have the less obvious type of patient lie on the examining table to observe the elevation of the chin, the thrown-back tendency and rigidity of the neck, the tense abdominal wall, the arched lumbar spine and the thrust-out feet. I have even had reason to suspect the unwillingness of a woman to lay both buttocks on the table as suggesting a sex substrate or repressive trend. The clipping enunciation and heightened tone of voice of the vagotonic type and the jerk that he gives to his shoes and shoestrings are evidences of the high output of central energy that is constantly bombarding his peripheral structure, so to speak. The facies is a material aid in estimating tensions. The veil of impassiveness of the closed type may be lifted by the eyes, which have an intentness, a dark reserve or a birdlike alertness combined with impenetrability. The open type of patient blinks, shies, suffuses, or simply looks about. Unwinking eyes may express an excessive internal pressure under excessive control, while "blinkers" have at least discharge, but not release of tension or relaxation. The eyebrows and forehead are of interest, the brows lifted toward the hairline mean anxious concern—either the situation has overwhelmed the patient or he fears that it will. This is a totally different state of tension from that of frowning preoccupation, in which the patient still feels himself in command of the problem. The behavior of the small muscles about the lips and chin is a very sensitive index of inward tension, and the twisting lip, the wry smile, the tremor, lip licking and biting and the tremulous or puckered chin under questioning should be closely watched.

I have thought that the characteristics of sleep or sleeplessness assisted materially in gaining insight into the nervous state. The late retiring hour of the person too tired to make the effort to undress, who simply goes on and on and on, the patient who lies awake after

going to bed, a victim of too much thought and too little exercise, the insomnia of the small hours, due to worry and characterized by the revolving wheel or cycle of recurring small problems or minor crises and vexations overlying either hunger or some great unrecognized lack or strain, the early rising of the sex hungry with its burst of morning walking or calisthenics. The respiration of patients should be watched not only for rate and depth but also for the characteristic instinctive release of diaphragmatic tension already mentioned—the full breath and sigh interpolated into a period of sitting inactivity. The reactions of patients in all these particulars should be watched during routine questioning as well as during the "cathartic" approach to be described. Often a verbal description of the sensation of being wound up at the back of the neck and of carrying the diaphragm high in the chest brings an instant confirmatory reply from the patient, who there upon, recognizing your comprehension of his state, proceeds to "open up." Finally, a sixth sense, gained by experience must be brought to bear on these patients, an instinct which, after about so long a period of failure to reach a result by attention to the ordinary medical considerations, tracks directly toward a sensed psychogenous factor and by an intuitive touch directs the shaft of a question straight at the heart of the matter.

APPRAISAL OF THE VASOMOTOR STATUS

The come and go of color, the flushing of the dermatologically involved area under observation and stress of waiting, questioning or examination, the bluing of the hands and feet in a dependent position or when the circulation is at all impeded, as on sitting over an edge (table, toilet seat or bathtub edge), the striking blanching of the flushed hand on elevation, the occurrence of acroparesthesias and the prickling of "going to sleep" when the arms are raised above the shoulder level in bed, "dead finger," the vasomotor blanching of one or more fingers without apparent cause, the flushing of the rosacea area are all useful indexes of the reduction of vasomotor tone, resilience and response that accompanies prolonged stress and seems at times to have a relation to the state of the intestinal tract, perhaps with respect to histamine or acetylcholine-forming flora. In this connection patients will often notice that their shoes or wrist watch straps have become tight even before the circulatory stasis becomes visible as a result of a change in color. Dermographism should always be tested but will vary from the pale stich to wheal formation without necessary correlation with a mental state. Vagotonic persons show preponderantly marked red dermographism, however.

THE SWEAT MECHANISM

Anomalies of sweating are not usually recognized as having specific application to the state of mind, though Brill¹ mentions the views of Schwenkenbecher and Spitta. I have, however, seen enough examples of palmar hyperhidrosis associated solely with the meeting of strangers, with sex neuroses and with office visits or school examinations to recognize the profusely sweating palm as a warning sign of a neurogenous substrate. To a lesser degree this applies to axillary, vulvar and scrotal sweating as well as to the sweating of the elbow flexure observed in neurodermitic patients under stress. The whole problem of flexural, palmar

¹ Brill, E. Die experimentellen und klinischen Grundlagen zum neuropathischen Typ des Ekzems. Arch. f. Dermat. u. Syph. 150: 580 1926.

and plantar sweating as a functional neurosis providing part of the background, together with vasomotor changes, for the cutaneous mycoses, surely deserves the most serious study

THE GASTRO-INTESTINAL SYMPTOMATOLOGY

In cases of neurocutaneous functional disease the symptoms tend to follow the hypochlorhydric rather than the hyperchlorhydric pattern. The physiologic decline, so to speak, of hydrochloric acid secretion in later years the nervous irritability associated with accumulated load and stress and the depressant effects of chronic worry and shock on the gastro-intestinal secretion all tend to make the patient with a cutaneous accompaniment of a functional neurosis the victim of (1) pain due to spasm, (2) spastic constipation often alternating with periods of diarrhea or fermentative reaction due to a relatively undefended intestinal tract (3) aerophagia with eructation of relatively nonacid material, (4) flatulence associated with a gas-producing flora of the Welch and *Bacillus mucosus* types, encouraged theoretically by a high intestinal p_H , (5) low blood pressure, flushing of the face depression and peripheral vasodilatation, as parts perhaps of a histamine and acetylcholine absorption syndrome and (6) a tendency to urticarial and other ingestion allergic manifestations from abnormal split product absorption secondary to the deficiency of hydrochloric acid and a tendency to chronic low grade gastro-enteritis. This semicharacteristic symptomatology should be elicited by much more detailed questioning than is usually employed, and a mere test meal is no substitute for such an inquiry. The correction of the underlying neurosis as well as of the physiologic changes is a necessity for lasting therapeutic results.

TREATMENT OF THE NEUROGENOUS FACTOR, RAPPORT

The establishing of a proper but not excessive or relaxed degree of intimacy with the patient is the first and a generally familiar essential to command of the psychoneurogenous situation. Contrary to a common impression, physical surroundings need not be—in fact should not be—too impressive. Intellectual and professional prestige is more useful, even the psychotherapy of warts was said to be more effective in Bloch's hands as professor than in those of physically more impressive associates. Age is only superficially important at the outset, but there can be no substitute for an extended and well digested life experience. Without it, it seems to me, psychiatric effort tends to be directed by the head without the heart, a skeleton science of mind without flesh of human nature. The degree with which the examiner shares himself and his own life experience with the patient varies from case to case and should not be overdone. Resort to the third person and the citation of parallel cases may give the necessary detachment, but at critical moments the confessor who is not too afflicted with the self-confessional impulse will know by instinct how to make the patient understand that his physician knows too, and not from books. De Schweinitz has very skilfully brought out this sharing aspect of the constructive act of helping a person out of trouble. I am satisfied that there are occasions when no degree of serene detachment takes the place of an ability to make the patient feel, even though by indirection that his guide has personal knowledge of the trouble he is seek-

ing to adjust. As physical surroundings for the examination, almost anything will be usable by the expert, and even the interruptions of an office staff serve a purpose in reminding all concerned that time flies and that the examiner is in demand. On the other hand, complete relaxation on the part of the examiner during the conversation is absolutely essential. His grasp of the situation vanishes the moment the patient senses that his new friend is in a hurry, troubled, preoccupied, tense, rushed or disturbed. Even the informal attitudes of the examiner, stretched out in his chair, hands in hair or draped over some convenient standing object, may open a whole path of investigation in some cases, while a little more form, but never pose, is useful in others. Finally, a sense on the part of the patient that he has been completely examined is essential. It is difficult as well as unwise to impress the claim of the mind until the body has had its due.

Stripped examination provides the often invaluable posture relation of the patient lying on the examining table, helpless and disrobed but covered, in imitation of the bedside tradition, while the physician in office regalia performs both his medical and his priestly function. Twilight, quiet and a fixation equipment of

Commoner Nervous Factors

	Urticaria 100 Cases	Rosacea 81 Cases	Controls Psoriasis 100 Cases
High tension (tension frame of mind)	41		13
Overwork excessive mental exertion being driven late hours	33	25	2
Neuroticism (neurasthenias breakdowns hypochondriacal and the like)	24	10	2
Chronic worry	19	43	4
Insomnia		16	
Family trouble	13	14	4
Shock	12	2	1
Financial worries bad business conditions	11	5	3
Emotional stress	8		
Marked repressions and inferiorities	3	4	1

sounds and lights are not called for in the technique I have employed. The estimation of the case and a certain matter-of-factness in the approach, devoid of mystical trappings, have seemed sometimes to be better secured in the purely technically equipped dermatologic examining and treatment room than in the carpeted, book and diploma lined office. Perhaps the surprise with which the patient finds his spiritual troubles being taken into account in the midst of desiccating machinery, x-ray tubes and lamps has a shock therapy value in breaking down his reserve. A good light too is necessary for an accurate appraisal of the mental as well as the physical status.

CATHARSIS AND THE CONFESSIONAL APPROACH

After the identification of a neuropsychogenous substrate has been accomplished in one or several inspections and interviews, an effort may be made to relieve the patient of his load. This does not necessarily call for a forced confessional or even for a directly answered question. An understanding glance of the eye and a hint may be quite enough to open the way for therapeutic suggestion. Getting the patient to talk, while tempting as an evidence of one's gift and flattering to one's ego, is often followed by a reaction against the whole situation and a sense of shame on the part of the patient, which ends one's usefulness in the case. Extended confession is a morbid desire in some patients

and a needless time consumer in others. Studies of the rosacea² and urticarial³ complexes have suggested a pattern of common factors as a guide to intuition in psychoneurogenous cases, which with the relative weights of the items is given in the accompanying table.

The direct question is often necessary and must be made matter of fact on sex matters, relatives-in-law, finance, defeat, antagonisms, conflicts and fears, among which last "marriageability," the threat or approach of old age and domination by another or by a situation (the Watsonian basic fear of being bound or helpless?) seem quite as common as fear of illness, incapacity or death. I have also found useful, as a species of outline both for questioning and for describing to the patient his own plight, the following insight leads along which the troubles that underlie cutaneous explosions seem to concentrate.

THE COMMON INSIGHT LEADS

What to Look for in the Patient's State of Mind

- 1 The sense of "must" or obligation, the unending stretch of things ahead that simply have to be done.
- 2 The impasse or "insoluble" problem, most often somebody who won't die.
- 3 The conflict of duty and desire. Often it is the family "midchannel."
- 4 The sense of absolute contradiction—the impossible has happened, water has run uphill, the dykes have failed, our trust is betrayed—the beginning of the buried complex and hysteria.
- 5 The last straw. "I stood it until that."
- 6 "Defeatism"—the mental attitude of "it can't be done," sometimes a combination of constipation and exhaustion.
- 7 Self pity.
- 8 The "might have been." The backward looker.
- 9 The sense of futility and uselessness, of being no longer needed, of being set aside, superseded, passe, especially important in persons over 50, mothers of families with grown children, men who have "retired" without cultural resource.
- 10 The reaction to domination. This is the "electric relation" between the prurigo or diathetic eczema personality and the antagonistic parent, teacher or relative.
- 11 Fear, fixation (the blaming of the body for a mental pain), inferiority, repression and defense. These are the psychiatric *grenzgebiete*.

By direct question, by skilful inference, but always with a certain shrewdness, one may with these guides feel oneself into the depths of a personality with a surprising degree of success. It is important not to make too many misses, a tendency to which is the commonest result of hurry or pressure and of failure to consider the history and personality "front" of the patient carefully in its entirety before attempting to open the door.

REASSURANCE AND READJUSTMENT

Having formed by the foregoing methods a picture of the patient's problems and of his spontaneous reaction to them, one is wise first of all to resist the desire to give direct personal advice or to enter into a discussion of specific courses of action, especially those that are past. The position of detachment, which is after all the controlling one here and which it is wished the patient himself should attain, is not favored by a rostrum delivery of advice. To overcome this tendency, to broaden the base and to impersonalize the

myopic egocentricity of the patient's outlook, I have found it worth while to present to him, perhaps better to remind him, somewhat in the manner of the Greek chorus chanting the flow of life from the wings, of some further general principles which he can use in relieving the tension and conflict within him. Not necessarily in the order of their exposition in the particular case, the patient is to be told or reminded

1 Of the assurance of recovery, optimistically but not unqualifiedly presented.

2 Of the remarkable self-righting power of the mind and of the mechanism of mental recovery by bringing the problem to the surface and naming it, frankly and straightforwardly. Several sessions may be needed to teach him this "fishing and labeling" process.

3 Of his right to a legitimate self confidence and self esteem. "Never blame unless you also praise."

4 Of the influence of the "stream of consciousness," the self conducted mental commentary that, for good or ill, gathers our rills of thought into the river of personality. "What you call a thing it is—what you let your mind say about it, you do."

5 Of the resolving power of time. No lesson is harder to learn, but none more salutary than that all things, and above all peace, come to those who know how to wait.

6 Of getting around what one cannot get through or over, some suggestions for a technique of evasion or sidestepping.

7 Of the serenity of the mature. "Not as good, or as evil, but as life." Hyperreaction is childish.

8 Of the value of detachment and the power of noninterference—especially important to impress on the overzealous parent confronted by the rebellious child.

9 That "It won't last—nothing does"—an impression of the mutability and transience even of the worst.

10 Of the vice of continuous effort even in a good cause and the exhaustion that comes to the perpetual striver who never grants a moratorium to himself or others or indulges in purposeful uselessness, masterly inactivity or conscientious laziness.

11 That he is not alone—a need of human beings voiced in the range of expressions from "Misery loves company" and the "Somebody cares" of the relief campaigns to the unforgettable. Not a sparrow falleth.

12 Of the relief of large thoughts—a looking out over the universe a hilltop perspective. In this form of impersonalization a planetarium, a volume of popular astronomy and an opera glass may be life saving.

13 What to do about solitude, isolation and companionship.

14 What to do about a change of scene.

15 What to do about drugs.

16 What to do about rest.

It must be evident that a purely homiletic delivery of these parcels of worldly wisdom and spiritual admonition may deservedly fall flat. None the less, it is remarkable how a sorely pressed and battered individual rallies at the sound of some seemingly commonplace slogan uttered by his physician or moves forward behind some more stirring, white-plumed symbolic thought. One is often astonished at the regained self possession, lessened pruritus and decreased vasomotor irritability that follow a single session based on stereotyped patterns such as these. The problems involved in solitude and isolation, companionship and change of scene are contrary to common conception, highly individual. In general, solitude builds the stronger and sounder recoveries but is the harder medicine to take. Change of scene is invoked too much in a routine way but is life saving for major troubles in strong personalities. I am a determined opponent, within my field of observation, of the too ready resort to sedative drugs, except atropine and calcium. The problem of rest is so important as to absorb the remainder of this paper.

2 Stokes, J. H. and Beerman, Herman. Effect on the Skin of Emotional and Nervous States. IV. The Rosacea Complex. A Reappraisal with Special Reference to the Constitutional Background and the Rationale of Treatment. Arch. Dermat. & Syph. 26: 478-494 (Sept.) 1932.
3 Stokes, J. H. Kulchar, G. V. and Pillsbury, D. M. Effect on the Skin of Emotional and Nervous States. V. Etiologic Background of Urticaria with Special Reference to the Psychoneurogenous Factor. Arch. Dermat. & Syph. 31: 470-498 (April) 1935.

A TECHNIC FOR REST THE SIX-POINT ATTACK

It is understood that this paper is concerned with those who must keep going, it describes an office, not a sanatorium, approach, though perhaps applicable in "rest house" conditions too. As I present it to the patient, the method revolves about six principles as follows:

1 A temporary repudiation of responsibility and a defense against overload obtained by one or all of four methods:

(a) The adopting of a DGAD (don't-give-a-damn) attitude. To those who find this way of phrasing it unpalatable, other angles or alternatives may be offered, ranging from "Let the other fellow do the worrying," and the conscious shifting of the burden of the seemingly unadjustable on to the shoulders of the Infinite, as in the "Divine Mind" of certain religious groups. The release of some forms of prayer may be a proper variant on this mode of tension reduction, the upper end of the spectrum of *Fiat lux*, so to speak.

(b) The sloganization of the casual and the ephemeral as opposed to the enduring and purposeful, a temporary fatalism expressed in the phrase "A hundred years, ten years from now, what will this matter?"

(c) An attack on the procession of "musts" by an outright resigning from blocks of obligations and the temporary repudiation of others. Only the completely egocentric person suffers from the delusion that his world cannot go on without him.

(d) An attack on "destinationism," the worship of the goal and disregard of the method, the excess purposefulness, usually competitive and designed to beat the other fellow, which marks the pillar and victim of our American type of civilization. This is the distinctive inability to play for the sake of the game instead of the victory that mars our sport and makes our virulently score-counting golfer quite as much as our business man an object of pity rather than respect.

2 A discipline in objective self analysis by the deliberate division of the personality into overmind and undermind. This is sloganized as the "Big and Little Mary" device, in which the wiser oversoul talks soothingly and illuminatingly to Little Mary, the perverse and mischievous sprite whose rebellious leavings and gyrations keep the personality in a state of turmoil.

3 A reeducation in impersonal detachment by an attack on *das liebe Ich*, the "Beloved I" of the competitive egocentric striving, achieving personality, which cannot bear defeat or brook second place. The sense of the personal unjustness of life and fate is an often unrecognized phase of this personality trend.

4 A technic of neuromuscular tension detection and release. Even so-called rest in bed may fail to provide it unless special instruction is given.

5 A technic of neuromuscular tension discharge. This is the objective of occupational therapy broadly conceived.

6 Invocation of the sense of the ridiculous. Like love and hate, anger and laughter are the obverse and reverse of the same discharge pattern, so to speak. The conception is valuable in detoxifying chronic or recurring as well as acute exasperations. It acts, as has been said, through the sense of the ludicrous which even a hard-pressed personality is slow to lose. "Smile, damn you smile."

The aggregate effect of bringing several of these conceptions to bear on the patient's problem is to put a disturbed personality to rest, and I believe that valuable though physical or bed rest when ordered may be its usefulness is often defeated by insufficient attention to the detail of mental and nervous rest. My earlier experience with hospitalization and the later need for producing the same results under ambulatory and office conditions in patients who positively could not without financial and personal disaster seek their beds or submit to a full neuropsychiatric procedure have convinced me not only of the very fair proportion of effectiveness but also of the positive advantages of this approach in the dermatoneuroses. The patient recovers

by a positive process of adjustment to his environment rather than by isolation and segregation from it. It is, of course, granted that there are patients who cannot recover in their usual environment, but they are fewer than is generally conceived. The patient managed by this technic is, moreover, armed in a positive way by reeducation for the future, rather than merely tided over the present situation by his rest.

It may be argued that there is a positively unmoral quality to the fatalism and repudiation, the outright enjoyment of irresponsibility to be taught the patient under caption 1. Patients will usually make this objection to the view advocated. They may be assured of the harmlessness of the procedure for their type, which is so constructed at birth that it can never adopt hedonism as a lifelong philosophy. They will return to their responsibilities all too soon and all too personally, for their egocentricity will propel them willy-nilly. They should be told of the analogy of muscular fatigue and the delayed recovery after once passing the fatigue limit, and impressed with the four thousand year old words of the Ancient Wisdom attributed to Ptah Hotep, whose couplets should be on the desk of every neurodermotic subject:

The archer striketh the target,
Partly by pulling, partly by letting go,
The boatman reacheth the landing,
Partly by pulling, partly by letting go.

It is a test of nonreception by the patient and his need to profit by this point of view, when, after its presentation he replies eagerly "Doctor, I'll try to do what you say!" He is at once reproved for again bringing effort to bear on what can and should be done only by a shrug, a gesture of dismissal. The rapidity and extent of the relief of mental tension afforded by the question "A hundred years from now" is a constant surprise. It is grasped like a straw by a drowning man, and often nothing more than a little training in the Jacobson technic of relaxation is necessary to start recovery. The attack on the procession of "musts" can well begin with the order to stay in bed for breakfast and to have the telephone answered by some one who will say in almost joyous accents "The doctor says Mrs. X is ill and must not be disturbed. She regrets that she must present her resignation, under his orders from your committee." This invocation of the sickness defense, perhaps dangerous when self adopted, is quite harmless under supervision, in my experience. The cancellation of the business lunch, a device of the devil in the American technic of living, reading at the table instead of correcting the children or being agreeable and the noonday break and rest on a couch while the telephone is plugged are useful details that are much more practical than the taking of long vacations away from home. The mere description of destinationism usually suffices to induce the patient to try the casual and episodic as a relief. He can appreciate the reminder of his bent-pin fishing days when a subsistence catch or less was enough, and the surroundings, not the fish alone, made the fishing memorable. Stopping all forms of score counting is literally the first step in this readjustment and often requires the withholding of daily papers, business reports and visits from partners, wives and husbands. The discipline in objective self analysis sounds like child's play, but it is not. Its systematic practice leads to a remarkable recovery of balance and perspective. The turbulent, weak and unstable elements in anything approaching a normal personality, secrete-

gated in this way, slowly become controllable rather than merely stamped on and suppressed. This is decidedly preferable to the false front of the "poker face," hiding a scratching, kicking child beneath her apron, so to speak. It disarms Little Mary to view her sympathetically but with detachment as a brat common to all of us. To the charge of egocentricity most human beings react instantly with a defense, followed by retreat and readjustment, so that it is comparatively easy to get the patient to see the point in caption 3. This is notably an element in the prurigo-asthma-hay fever personality in which intense egocentricity appears now in competition for marks in school, now in violent antagonism to a particular teacher, now in conflict with a "don'ting" parent and again in an impenetrable *chevaux de frise* of negativism and inaccessibility. The guidance of these patients into outlets in which their best finds expression with comparative smoothness of flow, instead of a perpetual clatter over stones, is a task for the behavior specialist and the mental hygienist.

A distinction is drawn between neuromuscular tension release and neuromuscular discharge by muscular work. It is explained to the patient that all thought translates itself instinctively into one or another form of muscular effort which, if it does not result in gross movement, at least puts muscles under tension, exhausts energy, heightens irritability and makes constant demands on the nervous, endocrine and vasomotor systems. A reversible relation exists in the equation representing this process ("no affect without effect"), so that it is possible to reduce the activity of the mind, calm it, rest it, by learning to recognize the tension of groups of muscles and by issuing to them an order to relax. To train himself in letting go, the patient must, as Jacobson⁴ has so beautifully pointed out, learn to detect the feel of tension in his back, his neck, his arms, his diaphragm, his fingers and feet, his very supra-orbital and ocular muscles. In the technic that I describe to the patient, he begins on retiring. As he lies with his eyes closed, he makes the round of his musculature, like Diogenes with his lantern, looking for a tight member. When found, the muscle group is ordered to let go. In a surprising way, when it is part of the general reassurance and adjustment process that I have described, patients learn to transfer the ability to detect tension and to give the order to relax, to the conditions of their working and, what is more important, their worrying day. In the midst of pre-occupation they can thus introduce periods of invisible rest, calming the mind, reducing the stream of motor impulse and the needless friction of conflict to a minimum. By a process of reversal, the ordering of the discharge pattern of a laugh to replace the contorted visage and tense muscles of rage unblasts the lightning, so to speak, and, though the laugh may in its incipience be a risus sardonicus, practice in time makes it a genial saver of the day.

As I have observed it, tension release is not usually sufficient. A technic of motor discharge devoid of the defects incident on the competitive, the destinational and the obligatory must be taught. To secure this essential point of view toward the matter, the patient is told to make craftsmanship, the well doing of some work for its own sake, his motive, rather than success involving comparisons. Thus, in a way, an artist loses

caste in this field if he exhibits or tries to sell, the poet if he seeks publication, the woodcarver if he calls in all his friends to sit or see. Excess routinization and mechanical performance of the selected work must be difficult or impossible, hence the worthlessness of mechanically performed housework and dishwashing as relief or discharge. Use of the small muscles of the hand and the eye in movements of precision gives the patient his sense of personal achievement. Of all commonly available devices the cross-country walk, the swim and the handicraft (which includes household tinkering) seem most available and serviceable. The essential in these discharge devices is, as I have said, a lack of specific time of completion, of destination and of stereotyped method. They must have a wandering casual quality, enjoyment for the present without thought of the past or future, without scheduled arrival, departure or route. The eyes, mental if not physical, must be on distant, impersonal gods, clouds, trees, the contest with and adaptation to the primitive—water, sun, wind, the earth. I have had diathetic persons repeatedly tell me that they have recovered while strolling in this way over hills that must have been green with the very plants to which they were cutaneously sensitive. Thus lowering of the threshold of nervous, perhaps sympathetic, irritability is a now recognized aid in the treatment of allergic processes, including asthma, and can very properly be applied to the treatment of the skin. We are all, and our patients too, familiar in theory with its virtues. The neurodermitic often only need to be reminded, albeit repeatedly, of its worth to them.

The use of the sense of humor or, better, of the ludicrous is more widely applicable than one is apt to believe as one views the dour or despairing countenance of the scratcher before him. The habit of taking himself seriously, the mistake of expecting personal justice and recognition in a world only a minute sector of whose horizon he is capable of perceiving, to say nothing of interpreting, accentuates, acutely or chronically, the vexation and irritability that underlies the cutaneous neuroses. By a flick as of an electric switch many patients can be brought to see the joke of it all, the scurvy joke, to be sure, but none the less the ludicrousness of expecting the universe to tune in on them and their miseries. Once convinced that, as with Will of the Mill, the stars do not jiggle at his shout, he settles down to something outside himself as more interesting and laughs off his itch. This is, in all seriousness, an important step in the recovery from and the prevention of secondary lichenification in the urticarial and neurodermitic subject. If, when the patient feels the peculiar pinging itch of which he complains, he can be induced to shrug and laugh and say "Hello, old boy, back again, sorry, too busy," and turn away amused, instead of digging in in rage and fear, half the battle is won.

CONCLUSION

The concluding paragraph of this presentation should be one of caution. This has been a description of a method for dealing with one factor, under everyday conditions, in the clinical background of the neurodermatoses. It is not offered as a substitute for a proper testing for allergic excitants, for focal infection studies, for the icterus index or for the numerous other avenues of approach to the multiple causal background in each case. It simply presents a technic of neuropsychiatric reeducation in the environment, usable by

⁴ Jacobson Edmund. *Progressive Relaxation. A Physiological and Clinical Investigation of Muscular States and Their Significance in Psychology and Medical Practice.* Chicago: University of Chicago Press 1929.

the humanely interested and reasonably experienced physician in his office. Of its worth in displacing phenol, menthol, the barbituric acid derivatives and expensive and unattainable rest prescriptions from dermatologic practice, I can personally testify

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ABSTRACT OF DISCUSSION

DR. EARL D. BOND, Philadelphia. I am glad that dermatologists do not think that they have to take over psychiatric terms in dealing with the practical emotional problems that occur in practice. Dr. Stokes has used his own original, practical methods, but he has worked on correct psychiatric principles. It has been recognized that the mental factors in most diseases are best handled by the doctor who gets there first; he has a chance to turn back the nervous symptoms when they are forming. With the right word or the right attitude he can discourage unwholesome emotional expression. The psychiatrist, keeping on his intensive treatment of difficult cases in his own field, can get ideas and learn lessons from his patients which he can pass on to practitioners in other fields. The dermatologist must often be the second doctor, the case being passed on to him by the family physician. For that very reason he must lose some chances for early recognition and the easiest treatment of mental and other factors, but he can much more easily than the psychiatrist, who must at the very best be the third consultant in the case, open wide the consideration of the patient's whole personality. The thing that psychiatrists have learned to do lately (and it has helped them more than anything else) is to listen. I often hear patients tell me "The other doctor just as soon as I opened my mouth to tell him how I felt put a tongue depressor in it." When advice and reassurance are needed Dr. Stokes gives six points which are effective and which are also general. This is supportive treatment. It doesn't take the place of the other pharmacologic and dietetic treatments. He avoids the danger of giving definite advice, of entering too much into the specific mental problem that the patient has. He leaves the patient to work out much of his own salvation. It is good for physicians to be told often how much "the skin is a loudspeaker of the soul."

DR. S. WILLIAMS BECKER, Chicago. The author's method of approach is ideal and will produce a high percentage of favorable results in skilled hands, but, like the teaching to patients of Jacobson's progressive relaxation, may not be efficiently utilized by the average physician. I have evolved a method of approach by the average practitioner the simplicity and applicability of which make it the most valuable part of the therapeutic armamentarium. I wish to emphasize the author's insistence on the avoidance of all semblance of hurry, since it is obviously difficult for a rushing physician to convince a patient that she must slow down, and this type of therapy requires longer sessions than are necessary in other instances. With the patient draped on the examining table, the physician fortified by physical observations, quietly informs the patient that she has a common, harmless condition that is rather easy to remedy, provided her cooperation can be obtained. The physician thus capitalizes on the marked suggestibility of these patients. She is told that the simplest, most easily understood explanation is that the dermatosis represents perverted fatigue. Instead of her feeling tired, her skin has broken out. Treatment will be followed by an appreciation of a feeling of fatigue and the dermatosis will improve. Therapy is directed first toward predisposing factors, such as overwork and disagreeable surroundings, and secondarily toward relief of the underlying exhaustion, by daily naps, daily sunshine exposure and temporary sedation by phenobarbital which I consider indispensable in children and temporarily advisable in adults. I have obtained almost unbelievable improvement by hospitalization and sedation similar to that used in treating the psychoses. The patient must learn the virtue of patience, tolerance and selflessness. Attention must be directed toward the sensory portion of the high-powered brain by telling the patient that she is the victim of exaggerated impulses, especially initial impulses which exert greater power over her than the precipitating causes warrant. While certain parts of this simplified procedure may require special ability, insistence on a daily nap and daily sunshine

exposure, along with temporary sedation by phenobarbital, can be prescribed by any physician and literally save the patient from herself.

DR. ELMORE B. TAUBER, Cincinnati. There is one thought that should be brought out here that is very pertinent and germane in these times of laboratory stress. This is a return, to clinical medicine, and Dr. Stokes has laid a splendid foundation to the pioneer back-trail to the art of medicine.

DR. JOHN H. STOKES, Philadelphia. It is a pleasure to hear Dr. Becker's simplification of the technic. In Chicago probably they don't have the desperations that they have in Philadelphia. My situation has been unfortunate in that I have had to deal with desperate men and desperate women who could not possibly take a daily sun bath or allow any time for a lamp treatment, or at least by no amount of mere argument could be led to believe that they could. That being the situation, I was forced to do it all in my office and this is the result of fifteen years of it.

FAT EMBOLISM

CANADIAN CHAIRMAN'S ADDRESS

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Fat embolism is one of the tragedies that haunt the efforts of the orthopedic surgeon. True, it occurs but rarely, but the dramatic suddenness of its onset and the fatality of its outcome create a profound impression.

Fat embolism occurs when fluid fat occludes the capillaries of important organs. The fat may come from any of the fat depots of the body, but for mechanical reasons, which will be discussed later, the fat contained in bone marrow is the commonest source. Normally, fat is stored in the form of globules, fluid at body temperature, within the cell envelopes of fat cells. Before fat embolism can occur, this fat must be set free by rupture of the cell membranes. Accidental or operative trauma is the usual agent that ruptures the cell membranes and sets free a quantity of fluid fat. Since bone marrow is the common source of the fat that gives rise to fat embolism, fractures and, to a less extent, orthopedic operations on bones are the usual antecedents of fat embolism. Though it is a rare complication of orthopedic operations, it probably is more frequent than is realized, since it is not readily recognized. This fact, in addition to its serious nature, justifies consideration of it on this occasion.

MECHANISM WHEREBY FAT EMBOLISM ARISES

It seems curious that such a normal constituent of the body as fat can give rise to fatal embolism. Some consideration of the complex mechanism whereby it occurs is essential to a clear understanding of the lesion. In lipemia, fat may be present in the blood stream in large amounts without embolism occurring. Lipemic fat, however, is finely emulsified and the finely divided particles easily pass through the capillaries. In fat embolism the fat is present in globules sufficiently large to fill the capillaries completely. Once this has occurred, the viscosity of the fat may be so great as to prevent the blood pressure behind from driving it through the capillaries. It is evident that fat embolism can occur only when fluid fat is set free in considerable amounts and under circumstances that will permit its easy entrance into the blood stream.

The cell membranes of fat cells are easily ruptured. Any trauma that involves adipose tissue results in the

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freeing of considerable quantities of fat, which at body temperature is quite fluid. The briefest observation will reveal how surprising is the amount of fluid fat that may be set free during an operation. From such a simple procedure as removal of a bone graft from the tibia there may accumulate as much as an ounce of fluid fat. When bones are injured, therefore, there is no lack of free fat for the potential production of emboli.

The mechanism whereby this free fat enters the blood stream is less evident. Though veins may be cut across or torn by operations or trauma, which at the same time free fat from its cell envelop, it is unusual for fat to enter the venous system. The sectioned veins collapse and the pressure of venous blood causes slow outpouring from the veins until such time as spontaneous clotting occurs. Fat can enter the venous system only under circumstances that will prevent the open ends of the veins from collapsing and permit the fluid fat to accumulate at a pressure greater than venous pressure. Three things are necessary before fat embolism can occur: (1) free, fluid fat, (2) accumulated under a tension that is greater than venous pressure and (3) open veins, the open ends of which do not collapse. Only under very special circumstances, fortunately, may one expect to see fat embolism.

Injuries to bones provide exactly the factors necessary for the production of fat embolism. There is abundance of fat in the bone marrow, readily set free by trauma or operation. The veins are held open by their attachment to the bony Haversian canals in which they run. It is not difficult for the wound exudate to accumulate under considerable tension. In operations on soft tissue the reverse is the case. Though there is abundance of adipose tissue and though much fat may be freed, entrance into the venous system is prevented by collapse of the veins. Wound exudate is less likely to accumulate under tension, more often it seeps out along the line of suture. There is less opportunity for the application of firm dressings than in operations on the extremities and hence less sealing of the exudate within the wound. Hence fractures and orthopedic operations constitute the most frequent antecedents of fat embolism.

PATHOLOGY OF FAT EMBOLISM

Once the fluid fat has been forced into the venous system, it is carried by the blood stream to the capillaries of the lung. The extent of the pulmonary embolism that thus arises is dependent on the amount of fat which enters the blood stream and the length of time during which entry is occurring. A large amount of fat forced rapidly into the venous system will produce the maximum effect, while a small amount, especially if forced in slowly, may cause no symptoms whatever. Extensive pulmonary embolism with fat gives rise to a definite clinical picture, the outcome of which is often fatal. Obstruction of the pulmonary capillaries interferes with oxygenation of the blood, hence cyanosis is a prominent symptom. The peripheral blood pressure falls from failure of an adequate amount of blood to reach the left side of the heart. Damming back of the pulmonary circulation results in great dilatation and ultimate failure of the right side of the heart.

If the right side of the heart is sufficiently powerful it may force some of the fat emboli through the pulmonary capillaries into the peripheral circulation. There it again comes to rest in the capillaries of any part of the body. The resultant symptoms are dependent on the nature and importance of the organ involved. Cere-

bral embolism is the most common, most important and most serious manifestation. This occurs, naturally, at a time subsequent to the pulmonary manifestations and it also is often fatal. The cerebral lesions that result are focal areas of necrosis, centered on the occluded artery and surrounded by a zone of hemorrhagic exudate.

Though the cerebral lesions are the most important of the peripheral manifestations, emboli may occur in any organ. Of the fat emboli that reach the kidney, a considerable quantity are excreted in the urine. This is of importance, since it constitutes one of the few exact means by which the condition can be recognized.

CLINICAL MANIFESTATIONS

From a consideration of the pathology of fat embolism it is evident that the lesion will manifest itself clinically in two principal ways, corresponding to the involvement of lung and of brain. Though many other organs than these may be involved, the conspicuous symptoms are related to the pulmonary and to the cerebral lesions.

Pulmonary Form—Symptoms of pulmonary fat embolism appear shortly after the fracture or operation. They may be so severe as to cause death in a few hours, or so mild as not to be recognized. It is obvious that the severity of the symptoms will depend on the amount of fat that has occluded the pulmonary capillaries. Within a few hours the patient becomes cyanosed, complains of a sense of constriction about the chest and suffers air hunger. The pulse becomes rapid, feeble and irregular. The blood pressure falls. Death occurs from cardiac and respiratory failure. As Warthin¹ pointed out in his classic monograph, the distended capillaries may rupture and pour into the alveoli some of their contained fat. The sputum then contains free fat globules and fat-containing alveolar endothelial cells.

Cerebral Form—This appears later than the pulmonary form, usually after the lapse of two or more days from the accident. In this interval the patient is free from any cerebral symptoms. Then follow restlessness, delirium, drowsiness and coma. Death may follow but recovery may take place. As this is a manifestation of systemic fat embolism, the evidences of involvement of other organs may be present. Most important of these, from the point of view of diagnosis, is the presence of fat in the urine as the result of kidney involvement.

DIAGNOSIS

The diagnosis of fat embolism is not easy. Since most cases occur in patients who have suffered severe injuries or have undergone extensive operation, it is not unnatural to regard their symptoms as due to cerebral concussion or shock. Even at postmortem recognition may be difficult, since the emboli are dissolved by the ordinary preparation of specimens in graded alcohols. Fat emboli can be demonstrated only by fat stains on frozen sections. It is altogether likely that mild degrees of fat embolism are common. An appreciation of this will be the most important aid to diagnosis. The knowledge that fractures and orthopedic operations are frequently followed by fat embolism will lead one to regard any pulmonary, cardiac or cerebral symptoms that may supervene as possible evidences of the condition. Definite and certain tests to determine the presence of fat embolism are lacking.

¹ Warthin, A. S. Traumatic Lipemia and Fatty Embolism. Internat. Clin. 4: 171, 1913.

Warthin, who first noticed the fat in the sputum, was inclined to think it was present in every case, but many writers have not been able to confirm this. The presence of free fat in the urine, when it occurs, is an extremely valuable aid to diagnosis. It cannot occur, of course, until systemic invasion has occurred, and sometimes is not then present. To date the diagnosis of most of the cases is based on postmortem evidence. With increasing recognition of the importance of fat embolism, more cases are being diagnosed on the basis of clinical symptoms.

FAT EMBOLISM COMPLICATING ORTHOPEDIC SURGERY

The occurrence of fat embolism as a complication of orthopedic operations is a matter worthy of serious consideration. Many fatal cases, proved by postmortem, have been reported in the literature. It is more than probable that many fatal cases have occurred without the true diagnosis being made and that recovery has occurred in innumerable milder cases without the suspicion of fat embolism. As Bissell² observes the falling arterial pressure and rising venous pressure of fat embolism closely resemble postoperative shock, and not unnaturally the death of a patient within a day or two of operation with a rapid feeble pulse is usually attributed to shock. The usual methods of examining tissues removed at postmortem fail to reveal fat embolism. Frozen sections and fat stains are necessary. Hence many cases almost certainly are missed. An interest in the problem frequently reveals a series of cases that otherwise would not have been recognized.

My own interest in fat embolism commenced with the loss of a patient following an operation for arthrodesis of a tuberculous hip.

A. G., a French-Canadian boy, aged 17 years was admitted to Weston Sanitarium June 27, 1934, for the treatment of tuberculosis of the hip. The history was characteristic and the physical and roentgen examinations gave equally characteristic results. November 22 an operation for arthrodesis of the hip was performed. This involved exposure of the hip through a Smith-Peterson incision, the removal of carious bone and the placement of a large graft across the line of the joint from the acetabulum to the neck of the femur. The operation was expeditiously performed and did not give rise to shock. A transfusion of 500 cc. of blood followed the operation as a routine measure. Two hours after the operation the boy was in good condition except for a rapid pulse. Six hours after the operation he became cyanosed and complained of a sense of constriction about the chest. The cyanosis steadily increased, the pulse became rapid and feeble, and the temperature rose to 103. He died twenty hours after operation. Postmortem examination revealed extensive fat embolism of the lung and slight fatty infiltration of the heart muscle.

I am indebted to Dr. K. G. McKenzie for the opportunity of reporting the following case.

H. L., a man aged 35, sustained a fracture of the tibia April 2, 1935. There was no head injury and he was not unconscious. The fracture was treated by open reduction and plating on April 3. He remained conscious and perfectly clear mentally until April 5. April 6 he became restless and would not respond to questions or cooperate in examination. Though he had had no sedative, he could be roused only with difficulty. He would not talk. There was no paralysis. Lumbar puncture revealed a clear fluid under increased pressure (17 cm.). The pupils were equal and small. There was early choking of the disks. On this day he commenced to cough up some frothy, bloody sputum. The temperature was 102 F and the pulse 120. The succeeding day he remained stuporous with intervals of restlessness. He remained restless and irrational until April 12 and then slowly improved. By April 19 he had apparently

recovered completely from the cerebral lesion. The urine collected on April 7 contained fat. The sputum was not examined for fat. April 16 he developed a patch of pleurisy on the right side, which cleared up in two days, and on April 23 a similar transient pleurisy occurred on the left side.

This is a clear example of cerebral fat embolism with recovery. The history of fracture and operation, the late appearance of cerebral symptoms and the presence of fat in the urine are all characteristic features. The late pleurisy probably represents the cyclic embolism of the lung described by Warthin.

The following two cases are included as probable examples of fat embolism, though definite evidence is lacking.

A boy, aged 10 years, was operated on for the removal of sequestra from osteomyelitis of the tibia. Toward the end of a rather long operation his respiration became embarrassed, cyanosis supervened and he stopped breathing. After an interval of artificial respiration, respiration recommenced but was irregular. Finally death occurred in half an hour. Postmortem examination failed to reveal any clear reason for death. Fat embolism was not suspected and was not specifically sought.

A man, aged 40, was operated on for the purpose of fusing a tuberculous hip. As the operation was being completed his respiration became embarrassed. In spite of artificial respiration he died on the table. Postmortem examination did not reveal any clear cause of death. Fat embolism was not suspected and not sought for.

These two cases resemble closely the proved cases quoted by Timmer³ in which death followed operation and postmortem examination revealed fat embolism of the lung and the brain. They are unusual in the rapidity of onset and the severity of the symptoms and the early death. They suggest that sudden death during operations may sometimes be caused by fat embolism.

TREATMENT OF FAT EMBOLISM

Unfortunately there is no adequate treatment of fat embolism. Much can be done to prevent it by the careful handling of fractures. The more the site of fracture is traumatized by unnecessary handling, the greater will be the amount of fat set free and the greater will be the tendency to drive it into the venous system. It may well be that fat embolism following orthopedic operations might be prevented by draining the wound for twenty-four hours. This would permit any free fat to drain away and would prevent the accumulation of wound secretions under the tension necessary to drive them into the veins. Ryerson's suggestion that a tourniquet will prevent the occurrence of fat embolism is probably a valuable one. Certainly while the tourniquet is on no embolism can occur and during this interval the opened veins have an opportunity to develop occluding thrombi.

Once established, fat embolism can be treated only by symptomatic measures. Venesection to relieve the distended right heart is probably of value. The administration of saline solution intravenously may facilitate the passage through capillaries and aid in freeing some of them of their fatty emboli. An oxygen tent should be used for the treatment of cyanosis.

CONCLUSIONS

1. Fat embolism is a serious complication of injuries to and operations on bone.
2. Its occurrence is probably more common than is realized, since the symptoms may easily be mistaken

² Bissell, W. W. Pulmonary Fat Embolism Surg. Gynec. & Obst. 23: 8 (July) 1917.

³ Timmer, H. Epileptiform Convulsions and Fat Embolism After Nonsurgical Orthopedic Intervention. Nederl. tijdschr. v. geneesk. 2: 173 (July 19) 1919. abstr. J. A. M. A. 73: 1403 (Nov. 11) 1919.

for shock and the lesion will not be found post mortem unless special methods of examination are used

3 Clinically it manifests itself in a pulmonary and a cerebral form

4 The occurrence of fat in the sputum and in the urine are valuable diagnostic signs

5 The possibility that pulmonary embolism may complicate orthopedic operations should be borne in mind and such preventive measures taken as seem valuable. A tourniquet should be used in operations on the extremities. Drainage of wounds of bone for twenty-four hours probably would prevent at least some cases of fat embolism

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THE PEDIATRIC VIEW OF OTOLARYNGOLOGY

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The pediatrician has been defined as a general practitioner who limits his field of practice within the boundaries of the ages of childhood

Pediatrics has been defined as that branch of medicine which has as its purpose the making of a better next generation. Infancy and childhood constitute the period of rapid growth, of perfect or imperfect development, of habit formation. Metabolism differs in the child. The reactions to various stimuli are intensified. Not only must the pediatrician be a well trained doctor but for the reasons mentioned special training is deemed necessary for proper diagnosis and the care of the child. The particular preparation necessary for the pediatrician is that of a specially trained "internist" with an age limitation. In actual practice his responsibilities extend from the birth of the baby until the child has reached the age of puberty and are all inclusive not only of illnesses and accidents but also of diet, prophylaxis and general care. In these responsibilities and relationships the pediatrician more closely than any other medical specialist approximates the varied practice and independence of the "old family physician."

Although the pediatrician thus accepts responsibility for the well being of the child, he often finds himself in need of advice and assistance by specialists. The most frequent and continuing necessity for such consultation and assistance is dictated by the dominant role of the upper respiratory tract in the early life cycle of the child. It is the relationship between pediatrician and otolaryngologist that I shall undertake to analyze. Four considerations are of primary concern.

First, and possibly most important, the care and immunization of the well child.

Second, acute conditions involving the upper respiratory tract.

Third chronic infection that affects nutrition and general health.

Fourth, coordination in study for the advancement of mutual knowledge. Physicians, particularly specialists, are too often satisfied with, and rely too largely on, their own experience. One of our medical philosophers, Dr. Abraham Jacoby has said "A man may do the same thing wrong for fifty years and call it experience."

THE CARE AND IMMUNIZATION OF THE WELL CHILD

(a) *Heredity*—Many of the mental and physical characteristics that affect the life of the child are inherited. Shea¹ believes that the sinuses follow closely, not only in conformation but also in their life history, the developmental cycle of the sinuses of the parent the child most resembles facially. Heredity is also a considerable factor in the shape of the bones of the face, particularly the dental arches. Allergy, another hereditary character, is increasingly important. Of the various allergic manifestations seen in the infant and child, from 75 to 80 per cent are now thought to be hereditary.

(b) *Antepartum Care*—The care of the child should begin with the care of the mother during, and even before, pregnancy. Numerous considerations dictate the importance of such antepartum control. For example, fetal rickets with its deformities is now recognized as a well defined entity. Calcification of the teeth begins about the one hundred and fortieth day of life, and at birth the deciduous teeth are fully calcified and the permanent teeth partially so. What is true of the teeth is true of the entire bony structure of the body. Again contagious and infectious conditions occurring during the fetal period may be responsible for deformities that materially influence function throughout postnatal life. With syphilis, if treatment is begun immediately after conception and continued throughout pregnancy, the course of the disease will be favorably influenced even if a cure is not accomplished. A careful family history and thorough physical examination are the first essentials.

(c) *Management of Nutrition*—The undernourished child is less resistant to infection and fails to grow and develop normally. The child whose parents are weaklings, who has a bad home environment or is poorly fed is sometimes described as constitutionally inferior, for want of a better term. This is the type so commonly seen in free clinics. In many such cases the nutrition problem is the only one to be solved.

Pediatricians have long recognized that breast milk is generally the optimum food. However, even breast milk sometimes does not serve all the requirements, depending often on the diet and habits of the mother. There is no uniformly perfect food. Each child is a separate problem. As a growing organism that doubles in weight during the first six months, triples in weight in one year and continues to grow rapidly until after puberty development must keep pace with growth. If certain fundamental nutritional factors are kept in mind and carefully and conscientiously observed, with proper care good results may be had with almost any rational food mixture. The young infant must have sufficient of the energy producing and structure forming foodstuffs, that is, carbohydrates, fats, proteins, mineral salts, and water. Its diet must also include the accessory foodstuffs the vitamins. Plenty of sunshine, fresh air and proper clothing must be provided. Elementary as these requirements may appear, they must be strictly observed to avoid imperfect nutrition and development with resultant deformities. No matter how well balanced the diet, proper nutrition cannot be accomplished without normal assimilation and metabolism. At no other period of life do the secretions from the ductless glands play so important a part.

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Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

¹ Shea, J. J. Normal and Pathologic Development of the Sinuses. Pennsylvania M. J. 37: 270 (Jan.) 1934.

Much has been written about the benefits of special diets for the so-called lymphoid type of child. It has been claimed that a high carbohydrate intake predisposes to hypertrophy of the lymphoid tissues of the upper respiratory tract. The scope of this paper will not permit further discussion than to reiterate that the diet should be balanced in respect of all known nutritional essentials and then fitted to the individual child, frequently by the method of trial and error.

(d) *Immunization*—Since whooping cough, diphtheria and scarlet fever are responsible for many otolaryngologic complications, immunization of the normal child against these three diseases will be discussed.

Whooping Cough There is probably no inherited immunity to whooping cough. It occurs even in the extremely young child. Within the last two or three years immunization against whooping cough has been increasingly undertaken. Sauer² has recently attempted the immunization of a series of young infants at the Cradle, in Evanston, with seemingly good results. Sufficient time has not yet elapsed to permit a conclusive opinion. This method is not dangerous, appears to have considerable value, and deserves further trial.

Diphtheria There is a natural immunity to diphtheria, which seems to persist until about the sixth month. If all infants are immunized at this age and controlled by the Schick test, diphtheria may be eradicated as effectively as yellow fever.

Scarlet Fever Much has been written by the Dicks and others concerning active immunization to scarlet fever. The present general opinion is that scarlet fever immunization is not as effective as is the toxoid for diphtheria.

ACUTE INFECTIONS OF THE CHILD INVOLVING THE UPPER RESPIRATORY TRACT

Brennemann³ has written

Why should a pediatrician, who is a general practitioner to the young, presume to discuss a subject that might seem to belong to a regional specialist? The answer is evident. In the first place, it is because he is a general practitioner and must therefore be usefully informed on one of the most common and most important diseases of childhood. The pediatrician as a rule sees the patients for the underlying throat infection before the ear is involved. If he is a good pediatrician he has long ago found his otoscope as indispensable as his stethoscope and in some cases even more so. By examining all ears in as routine a fashion as he does the chest, he becomes familiar with the normal and with the abnormal through all the stages from the simple redness and congestion, which accompany nearly all nasopharyngeal infections, to the bulging ear that cries for surgical relief. Finally, he is in a position that the otologist cannot occupy—that of being able to size up the whole clinical setting, of which the otitis may be only a very minor part.

On the other hand, in the fully developed otitis and in all complications the otologist has a technical knowledge and skill that the practitioner does not possess. The practitioner must acquire the ability to examine and to evaluate with reasonable accuracy an ordinary otitis media. He will treat it so long as he feels sure that surgical measures are not indicated. If the drum has ruptured and there is free discharge, the experienced pediatrician will not worry because of that fact. Rather, he will be happy to be able to spare the child the pain and psychic trauma of a paracentesis, without adding to the hazard. If the paracentesis seems indicated I have myself always called in an otologist, both as a matter of protection in case of a subsequent serious complication and to give the parents the benefit and the solace of a specialist.

Brennemann has summed up this phase of the subject admirably. A pain in the ear does not necessarily mean suppurative otitis media. The younger the child, the greater the likelihood of infection of adenoids and sinuses with ear involvement. As the child grows older, the tonsil is more frequently involved.

An adequate paracentesis seems to me to be not altogether a minor procedure. Some paracenteses never require repetition, in others, repetition is regularly necessary. Free and proper surgical drainage is essential. Considerable difference of opinion exists as to whether early paracentesis prevents or increases the incidence of mastoid complications. In 1922 I visited two European clinics, in one of which it was the practice to open no acutely involved ears, in the other, paracentesis was performed early. The mastoid incidence was somewhat lower in the clinic where the ears ruptured spontaneously. Whether this fact was due to differences in infection cannot, of course, be stated, but, undoubtedly infection is spread and prolonged in some instances by opening drums unnecessarily, and particularly if aseptic technique is not employed.

Brennemann has also said

In recent years the mastoid antrum without external evidence of involvement but with otoscopic evidence of "sagging of the posterior wall" of the canal has been advanced as a common cause or initiator of severe gastro-intestinal symptoms and intoxications, with striking and fairly constant therapeutic results from antrotomy. That some including myself, have failed to get that therapeutic result may be the result, in part, of timidity based on a priori incredulity, or of a strange vagary of that ever varying and fickle thing we call the genius epidemicus of disease which may have led to a peculiar heaping of favorably reacting cases in one locality or another.

My experience does not agree with that of Brennemann. I have had many cases in which antrotomy has produced definite results.

Recently, a child was admitted to the Baptist Memorial Hospital with a marked condition of pyloric stenosis. A Ramstedt operation was performed. Vomiting stopped. The child began to gain weight. Just about the time the patient was to be discharged an infection of the upper respiratory tract with vomiting developed. The condition became quite precarious. A double otitis media now developed. Roentgen examination of the mastoids showed that both were cloudy. They were drained surgically under local anesthesia. Considerable pus was found. Recovery was prompt and complete.

That the condition of the mastoid as a focal infection of the upper respiratory tract may be very difficult to diagnose is evidenced by the following case.

A boy, aged 2½ years, was admitted to the Baptist Memorial Hospital with from twenty-five to fifty bloody stools daily, marked dehydration, vomiting and high fever. The interesting feature of this case was that it came from the town of Osceola, Ark., from a levee camp where there were at this time numerous cases of true Shiga dysentery. There had been one death in the family, and two others in the family were suffering with dysentery. At the time the child was admitted to the hospital a diagnosis of Shiga dysentery was made clinically and treatment was instituted. Stool cultures sent to the laboratory were negative on three occasions. On the fourth day after admission the child showed a red pharynx and increased nasal discharge. Examination of the ears showed both drums bulging. The mother then on being questioned stated that six months previously the child had had double otitis media following what was called "flu". Roentgen analysis showed both mastoids involved. The mastoids were drained. The child was put on a full diet. No further treatment for the bowel condition was instituted. The child recovered rapidly and gained 9 pounds (4 Kg.) in nineteen days.

² Sauer, L. W. Immunization Against Whooping Cough, *Am J Dis Child*, 49: 69 (Jan.) 1935.

³ Brennemann, Joseph. Otitis Media as a Pediatrician Sees It, *J. A. M. A.* 87: 449 (Aug. 15) 1931.

In a survey of the acute illnesses in the Memphis General Hospital, both in the new-born and in the children's services, covering a period of three years, it was demonstrated that 65 per cent of the infections were upper respiratory in type. A recent epidemic in the new-born service of this institution was characterized by coryza, swelling of the mucous membrane of the nose and throat, marked dehydration, and death in several cases. The portal of infection was undoubtedly the nose. The organism demonstrated was *Streptococcus haemolyticus*. Similar epidemics have been reported in other cities.

Vaccines—Before the discussion of the acute infections is closed, a word may not be amiss as to the value in children of vaccines that are used by some with reported good results in both the acute and chronic types of infection. The value of the vaccines, both autogenous and stock, has been exploited. I believe that an autogenous vaccine is of greater value than stock vaccines. I am using a vaccine designated as the seasonal vaccine. The laboratory isolates the predominating organism from the culture of the infection current in our city. The vaccine prepared from this organism is added to an autogenous vaccine, the mixture being administered in exceedingly small doses. In the chronic cases, vaccination is repeated three times during the year, in the fall, winter, and spring seasons. Five injections constitute a series. In the severe cases of acute and chronic infections, in which the hemoglobin and red cells are low and the child seems to lack resistance, transfusion of fresh blood is indicated, particularly in those instances in which operative procedure is imminent. Comparative results over a period of several years convince me of the value of this procedure in my practice.

CHRONIC INFECTIONS AFFECTING NUTRITION AND GENERAL HEALTH

(a) **Tonsils and Adenoids**—Opinion has changed within the past few years as to the status of the tonsils and adenoids. Only a few years ago I heard a prominent member of this section state that the only good tonsil was the tonsil in the bottle. Since then he has retracted that opinion. Twice within the last year I have heard Dean express the belief that the tonsil has a function, which possibly is to act in some manner not yet demonstrated as a barrier against infection. The life cycle of the tonsil supports this concept of function in that the adenoid or pharyngeal tonsil is most active in the infant, as evidenced by its hypertrophy during this period. Later the faucial tonsil takes over the burden and is most hypertrophied during the period of childhood. The lingual tonsil plays a minor rôle until adult life. The fact that first the pharyngeal and later the faucial tonsil atrophies in the normal child is also significant.

If the tonsil has the suggested function, its removal when healthy in the young child is contraindicated. It has been the experience of Shea and Mitchell that paranasal sinusitis has been much more frequent and more severe in the child who has been tonsillectomized early in life.

Dean⁴ states that the removal of the tonsil should be decided by a history of repeated attacks of tonsillitis or based on definite evidence that the tonsil is acting as a focus of infection, that hypertrophied tonsils and adenoids should be removed only when they obstruct

breathing. A thorough physical examination should be made, including blood clotting time, red blood cell and hemoglobin estimation, and urinalysis. Many bad results will be avoided by this routine. No child should be operated on who shows any evidence of acute infection, whose clotting time is not normal or who evidences any severe degree of secondary anemia. It has been my practice in recent years to give a fresh blood transfusion before operating on a child whose hemoglobin is 65 per cent or less and in whom the indications are that not sufficient time can be allowed to build up the blood condition by other means. I have followed the same procedure prior to operating on chronically infected mastoids in patients who exhibit anemia.

Postoperative Care—Care during convalescence prevents complications. All tonsillectomized children are kept in bed for one week. Kaiser⁵ has shown that the sedimentation time is markedly increased following tonsillectomy.

(b) **Paranasal Sinuses**—Paranasal sinus infection is a condition that interests the pediatrician as much as the otolaryngologist. Most of the chronic sinus sufferers, indeed, are not examined for conditions referable to the upper respiratory tract; the sinus condition is disclosed only in the course of a thorough physical examination. The question may be asked "How is the differentiation made between acutely and chronically infected sinuses?" It has been demonstrated that the paranasal sinuses in a healthy child have a regular cycle of development. I believe that disease inhibits this growth, that chronically infected sinuses do not develop until proper treatment is instituted, that diagnosis of chronic paranasal sinusitis depends on the topography of the sinuses rather than on the degree of cloudiness disclosed by the x-rays. I believe that the child with chronically diseased sinuses is a sinus sufferer throughout life, that unless these sinuses are influenced by proper treatment to grow the individual never becomes entirely normal. I believe further that even up to the age of 9 years, chronically affected sinuses when properly treated will grow and become entirely normal by young adult life. These observations are based on clinical investigation continued over a period of twenty years. If these convictions are true, the time to effect a complete cure is during the period of childhood, that is, the growing period.

My experience has been that the diseased paranasal sinuses do act as foci of infection which are responsible for many chronic complications and that often failure to improve after tonsillectomy is attributed to sinuses that were diseased at the time or subsequently became diseased.

(c) **Allergy**—Allergy undoubtedly plays a prominent rôle in paranasal sinus disease. The allergic individual may have poorly developed sinuses without evidence of other pathologic conditions. In many instances the sinuses of an allergic individual have been drained unnecessarily when the removal of the offending allergic factor would have benefited the patient. On the other hand, in some cases removing the allergic substance alone has not been sufficient to clear up the condition. I have improved the patient only after the infected sinuses were drained in addition to proper allergic treatment.

It has long been recognized that in many children allergy appears after infectious diseases when the resistance of the patient is low. For the same reason, raising

⁴ Dean, L. W. The Tonsils Their Function and Indications for Their Removal. J. A. M. A. 103: 1044 (Oct. 6) 1934.

⁵ Kaiser, A. D. The Relation of the Tonsils and Adenoids to Infections. Am. J. Dis. Child. 41: 568 (March) 1931.

the resistance of an allergic patient suffering from an additional chronic infection will undoubtedly assist in clearing up the allergic manifestations

The father of a boy, aged 8 years, was a sufferer from hay fever, the grandmother on the maternal side had asthma. The child had eczema when an infant. He began asthmatic attacks at the age of 4 years. These attacks were more severe during the spring and summer months. An allergic survey showed that the child was sensitive to all the spring grasses and particularly both types of ragweed. The pollens of several trees also produced a mild reaction. He was likewise sensitive to quite a number of foods, particularly milk, wheat and eggs. An extract was made of the offending pollens. The articles of diet to which he was sensitive were also eliminated. This treatment was continued for three years with little or no improvement. He was first seen by me last winter, when he developed a mild case of scarlet fever followed by one of the most severe attacks of asthma he had ever had. His tonsils had been removed at the age of 3 years. Following his attack of scarlet fever, a roentgenogram of the paranasal sinuses was made. The ethmoids and maxillary and frontal sinuses were found to be poorly developed. The maxillary sinuses were cloudy. A diagnosis of chronic paranasal sinusitis was made. The sinuses were drained in February of this year. The pollen injections and diet regulations were continued as previously. The mother stated that the child has had no asthma since the drainage of the sinuses, and he is in better health now than he has been in years.

Dr J. C. Price,⁶ chief of the tuberculosis service of the institutions connected with the University of Tennessee, states that by far the larger percentage of children diagnosed as having pulmonary tuberculosis are not tuberculous but are chronic sinus sufferers wrongly diagnosed and can be cured only by proper attention to the paranasal sinuses.

(d) *Chronic Mastoid Infection*—This is of particular importance because the presenting symptoms are not always referable to the mastoid. In many instances even a history of mastoid involvement is denied or forgotten. There is no tenderness behind the ear. The canal shows a droop. The drum has a dull, parchment-like appearance. Disease can best be determined by comparison of the two ears when only one is involved. Examination is verified by roentgenology.

In September of last year two brothers, one 14 and the other 9 years of age, were admitted to the charity service of the Baptist Memorial Hospital. The older child was very edematous, with marked ascites. The urine showed four plus albumin and a variety of casts. The blood nonprotein nitrogen was normal, and the blood pressure was not elevated. The child was very anemic. A diagnosis was made of chronic nephritis of the parenchymatous type, or nephrosis. The history was of an otitis media two years previously, and a chronic discharging ear since that time on one side, the other ear suppurated whenever the child developed a cold. The paranasal sinuses were cloudy and poorly developed. The tonsils had been removed. Roentgen examination showed marked involvement of both mastoids. The mastoids were drained and marked destruction found. The child did not improve. This was a case in which neglected diagnosis of the upper respiratory tract as a focus of infection was undoubtedly responsible. The younger brother had had scarlet fever two months prior to coming to the hospital. His face was swollen and edematous, there was no ascites, some puffiness and edema of the extremities were present. The urine was bloody and much reduced in amount, with many red cells and pus cells. The blood pressure and blood nonprotein nitrogen were elevated. The tonsils were enlarged. The paranasal sinuses were poorly developed and markedly cloudy. A diagnosis was made of acute glomerular nephritis with pyelitis. The kidney condition was treated. The child improved, and the amount of urine increased. It was decided to drain the paranasal sinuses and to postpone tonsil-

lectomy. After drainage of the sinuses the child returned home in good condition. Following a second cold some months later he returned to the hospital with a recurrence of the kidney condition. When the acute infection had subsided the tonsils were removed and his condition improved. Undoubtedly in this case the upper respiratory tract was responsible for the kidney infection, and the focus was eradicated in time, before the kidney substance was destroyed.

These two cases are typical of a very large number that could be cited to support my thesis.

COORDINATION IN STUDY FOR THE ADVANCEMENT OF MUTUAL KNOWLEDGE

A recent survey disclosed that 90 per cent of the children in the state of Tennessee were being treated by the general practitioner. I do not have statistics to show what proportion of infections of the upper respiratory tract are being handled by the family physician; undoubtedly, the proportion is large. In somewhat smaller degree the same conditions prevail in the North, East and other sections.

The general practitioner cannot be blamed entirely for the poor pediatric and otolaryngologic care frequently provided. The tendency in recent years to specialize without proper general medical training and experience is largely at fault. With establishment of the National Board of Medical Examiners to qualify specialists and to inform both the profession and the public of those qualified, improvement in this condition may be anticipated.

The general practitioner welcomes the round table discussions conducted by men who are competent because of their clinical experience. The public is now greatly interested in all phases of the care and well being of the child. It is receiving much misinformation, and, in its zeal to do something, is sponsoring movements and programs that are not only useless but actually detrimental.

A campaign of education outlined and conducted by men of standing and experience would be acclaimed and would displace propaganda which the medical profession is now criticizing. As physicians we indict outside organizations for usurping what we consider our privileges. In many instances we have only ourselves to blame for lack of interest and energy. The public has been educated to the point that it now demands certain information, advice and care. In addition to a campaign of education, the medical profession should certainly supervise operative and nutritional clinics for the child. At least one prompt result would be elimination of mass tonsillectomies done without reason and often productive of harm.

CONCLUSION

As a pediatrician, devoted to that branch of medicine which has for its ideal the making of a better next generation, I have often needed, and shall often need, the help of the otolaryngologist.

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ABSTRACT OF DISCUSSION

DR PERCY WRIGHT, Montreal. Children of the wealthy and of the indigent who become hospitalized receive the best that medical science offers. Those of the middle classes are often denied consultants in protracted cases. With the hospitalized child, intimate correlation of work between the pediatrician and the specialists is maintained. Regarding the four classifications for the first, the otologist is little concerned, for the last three, intimately so. My experience with blood transfusions is good, my vaccine experience is not outstanding. I classify as urgent and give precedence to patients presenting

⁶ Price, J. C. Personal communications to the author.

large infected tonsils, when associated with complications. The hypertrophic tonsil patient and the class referred from routine examinations, with little to warrant tonsillectomy from the laryngologist's point of view, report at intervals for check-up. Confinement of three days for the healthy child is sufficient after tonsillectomy, for the debilitated child, a week may be too short. Paranasal sinus infection and pulmonary disease may have the closest relationship and demand strict coordination between the pediatrician, the surgeon, the radiologist and the bronchoscopist. That the condition of the mastoid and middle ear as a focal infection of the upper respiratory tract is difficult to diagnose is evident. The pediatrician and the otologist must be dependent on each other. Note the cases of improvement after simple myringotomy, and, conversely, the disappointment after a mastoidectomy. No dogmatic rule can be laid down for performing myringotomy, each case should be studied from the pediatrician's and the otologist's point of view better in consultation. I am opposed to incising the injected drum head and to temporizing with a bulging drum. Hospitals demand bacteriologic examination in every case of myringotomy, owing to the prevalence of pneumococcus type III. Cholesteatomatous ears are not infrequent in children.

DR H MARSHALL TAYLOR, Jacksonville, Fla. Dr Mitchell lays special emphasis on the importance of antepartum care and its relationship to the normal development of the child. I predict that within the next few years the subject of antepartum influence and antepartum care will receive more attention than ever before for the profession seems to be awakening to the fact that too many things happen to the unborn child. I agree that the care of the child should begin with the care of the mother during or even before pregnancy. Dr Mitchell says that rickets in the fetus with its deformities is now a well defined entity. From the dentists it is learned that, if there is a deficiency of calcium at the time the tooth buds are formed in the fetus, the teeth will rapidly decay in early childhood and no amount of good dentistry will stop it because the foundation was not properly laid for good teeth before birth. Many of the research workers in the field of otosclerosis are of the opinion that it develops during intra-uterine life owing to deficiency in the food of the mother and to various toxemias and focal infections in the pregnant mother yet up to this time little attention has been paid to the prospective mother who has otosclerosis with the idea of preventing otosclerosis in the offspring. Dr R A Hetler has written about the interrelationship between the concentration of minerals, vitamins and proteins of the diet and its influence on the metabolic normality. The sooner the pediatrician and the otolaryngologist pay due attention to this line of thought in relationship to the mother and the unborn child the sooner may some light be thrown on the dark chapter of otosclerosis. It now seems to be recognized that much of the thyroid dysfunction most often called goiter, in many regions of this country, is due to a dietary deficiency of iodine on the part of the mother before the birth of the child. The conditions that have been mentioned seem to call for a closer cooperation between the pediatrician and the otolaryngologist. If more attention is focused on the diet and care of the prospective mother, steps will be taken toward the laying of the proper foundation for the various structures before birth. If this is done in years to come less may be heard of rickets, dental caries, sinus disease in infants and the lymphoid tendency that predisposes to aural disease.

DR SIMON L. RUSKIN, New York. Children, particularly those who lose a great deal of nasal secretion or any secretions from the mucous membranes, lose nucleoproteins primarily and after a period of time this loss of nucleoprotein manifests itself in the form of a disturbance of water metabolism. Whether it is a nephrosis or an allergy, there is a pronounced influence on the water metabolism through these losses of nucleoprotein. They manifest themselves primarily as a loss of nucleic acid. The protein elements are apparently restored readily, but the nucleic acid elements are not restored except through the diet. In children in whom there is a deficiency of nucleic acid in the diet, disturbances in water metabolism, such as nephrosis and allergy apparently appear. Possibly one of the reasons why patients are seen who do badly after tonsillectomy and adenoidectomy or who develop severe attacks of sinusitis after the removal of tonsils and

adenoids may be bound up with nucleic acid loss. Deficiency of nucleic acid must be considered before tonsillectomy. Since one of the functions of the reticulo endothelial system, the lymph glandular system, the spleen and the thymus is apparently the production of an adequate amount of nucleic acid for the growth and development of the child, it appears important to investigate carefully the question of the loss of nucleic acid prior to any surgical attack on the tonsils or adenoids and to consider this loss carefully in all cases in which there is a continuous secretion of mucous membrane, such as sinusitis, chronic nasopharyngitis, rhinitis, an already established allergic condition or gastro intestinal condition.

DR. EDWARD CLAY MITCHELL, Memphis, Tenn. Regarding the controversy on paranasal sinus infection when I was in the army I had a soldier who persistently stated that the rest of the company was out of step. Perhaps Dr Shea and I resemble that soldier, but our experience obtained by following closely some of these cases for twenty years still leads us to believe that we are right, at least until more definite proof to the contrary is obtained.

GIANT-CELL BONE TUMOR OF COSTAL ORIGIN

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AND

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Since reference to only nine cases of giant-cell tumors of the rib has been found, the following additional case of this relatively rare lesion is being reported.

C S, a white woman aged 31, admitted to the University of Michigan Hospital in February 1934, complained of an enlarging tumor of the second rib close to the right costochondral junction. Two years previous to admission, the patient noticed a small hard nodule in this region. The tumor slowly progressed in size and became more prominent, especially during the six months prior to admission. There was no history of trauma and there had been no pain or tenderness. Examination showed a hard, nodular tumor, 2.5 cm. in diameter, involving the second rib immediately lateral to the costochondral junction and extending into the first and second intercostal spaces. The overlying skin was elevated about 0.5 cm and was not fixed to the mass. There was no tenderness or redness.

The routine laboratory examination gave normal results and the Kahn test was negative. Detail roentgenographic studies of the rib were reported by Dr Carleton B Perce: "Expanding tumor of second rib, right, proximal to costochondral junction. This proximity suggests probable osteochondroma. Trabeculation and the persistent differentiation of the chondral junction indicates the possibility of a giant-cell bone tumor" (fig 1).

February 28, the tumor was completely excised under local anesthesia. The costal cartilage was divided 1 cm mesial to the tumor, and the rib 1.5 cm lateral to the tumor. The adjacent intercostal muscles were removed with the mass. The tumor was hard and encapsulated and measured 2 by 3.5 cm (fig 2). Convalescence was uneventful. Postoperative irradiation was not given, because the excision was considered complete.

A microscopic examination of the tumor was made by Dr C V Weller. He reported: "After decalcification. Benign giant cell tumor with marked formation of atypical fibrous connective tissue and osteoid tissue. Many multinucleate giant cells of the usual type. This new growth does not invade the costal cartilage and is not sufficiently cellular to be considered sarcomatous. The cartilage itself shows some proliferation which is probably not neoplastic. The adjacent muscles and fascia show no neoplasm. If there is any doubt as to the complete removal of the tumor, irradiation is advisable" (fig 3).

A physical examination and a roentgenogram were made ten months after operation. There was no evidence of recurrence.

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PREVIOUSLY REPORTED CASES

Only nine other cases of giant-cell tumor of the rib have been collected. Six of these have been reported by the surgeons or physicians in whose clinics the patients were treated.¹ Christensen² has collected seven cases, of which three are included among the nine known cases. Two of these three cases are on file



Fig. 1—Roentgen appearance of expanded tumor of second right rib just lateral to the costochondral junction

with the Registry of Bone Sarcoma³ (the unreported cases of Neil, and of the Memorial Hospital Clinic New York), and one is reported only as a listed case, since the record has been lost. Two of Christensen's collected seven cases are those of Fort and of Gatewood; the remaining two were subsequently reclassified as osteogenic sarcoma.⁴ Geschickter and Copeland have mentioned two

cases of giant-cell tumor of the rib, one being the case of Fort and the other that of Hedblom. Clinical abstracts of seven of the nine cases were available and are summarized in the present report.

CASE 1⁵—A B, a white boy aged 11 years, had an eight months' history of tumor of the first left rib and clavicle. The tumor had been previously partly excised. July 23 1913, the first rib, clavicle and a portion of the sternum were removed. Recovery was uneventful. The boy, at the time of the report, had been free from evidence of recurrence for a period of seven years.

CASE 2¹—S M, a white boy, aged 9 years, had a small tumor near the angle of the fourth left rib. There was a history of trauma, and a persistent aching pain had been present in the left shoulder for two months. June 13 1923, exploratory operation and biopsy were done because the neoplasm was believed to be malignant. Postoperatively a "total of 20 gram hours of radium" is said to have been applied within and outside the wound. The patient was examined eleven years after operation and no evidence of recurrence was found.

CASE 3⁶—C H, a white girl aged 14 years had a left posterior subcostal pain for one year. A scoliosis had recently developed. A tumor of the left twelfth rib was palpable. Roentgenograms showed an oval enlargement of the rib with

central destruction and thinned cortex. Oct. 11, 1921, the entire twelfth rib was removed. Radium was placed in the incision and over the skin for a total of 1,800 milligram hours. The patient showed no signs of recurrence when examined thirteen years after operation.

CASE 4⁹—H M, a white girl aged 16 years had had dull pain in the left shoulder for one year. On examination there was dullness at the left apex. Roentgenograms showed an enlarged cystic first rib from the undersurface of which a bony tumor appeared to extend into the thorax. The treatment consisted of three applications of "radium packs." Coley's toxins were injected. Subsequent roentgenograms revealed progressive diminution in the size of the rib and tumor, and recalcification, all active destruction of bone ceased. The patient was examined seventeen years later and was symptom free. No tumor was palpable.

CASE 5¹⁰—Hedblom has cited a single personal case in his collected series of tumors of the bony thoracic wall. The abstract was furnished posthumously through the courtesy of his associate Van Hazel.¹¹ Sister A. white, aged 38, had had severe intercostal pain on the right side for three years, only temporarily relieved by resection of the eighth intercostal nerve. Roentgenographic examination showed a localized destructive lesion of the proximal end of the eighth rib. May 19 1922, a portion of the rib including the tumor was removed. There was no evidence of recurrence after eleven years.

CASE 6⁷—Peirce¹ of the University of Michigan Hospital, has reported the only case in which there was an apparent malignant change in a giant-cell bone tumor of the rib. H N, a white youth aged 17, was struck in the left lower part of the chest posteriorly while playing basketball nine months before admission. One month after the trauma there were increased swelling and pain. Later there was a loss of 20 pounds (9 Kg.), and a dry cough developed. A tumor was palpable over the tenth and eleventh ribs posteriorly. Roentgenograms showed a destructive lesion of the tenth left rib. Irradiation totaling 600 roentgens was given during a four-day period and was repeated one month later. Two weeks after the last treatment the tumor was widely excised, together with the posterior portions of the eighth to the twelfth ribs inclusive and a portion of the lung which had become adherent to the tumor. Death occurred forty hours after operation. Necropsy showed no evidence of metastases. The pathologic diagnosis was given

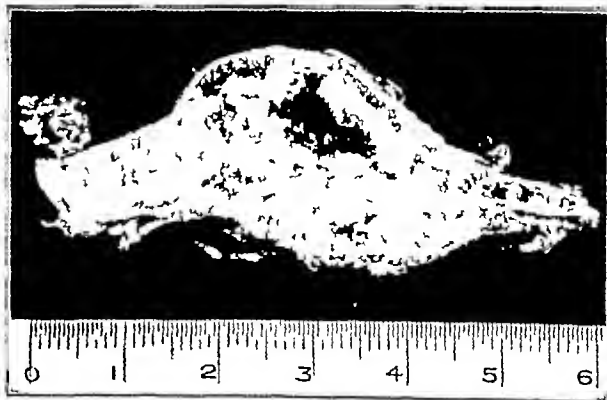


Fig. 2—Longitudinal section of the tumor removed at operation in author's case. The costal cartilage is at the cipher end of the centimeter scale. The costal cortex is thinned but intact. The central portion of the tumor is soft and glistening in appearance and contains small irregular calcified islands.

by Dr. A. S. Warthin: "A combination of osteogenic sarcoma and giant-cell sarcoma arising in a giant-cell tumor. After decalcification, chondro-osteogenic sarcoma arising in a giant-cell tumor of the rib infiltrating surrounding tissue."

1 Fort R. E. Excision of the Clavicle and First Rib for Malignant Disease. *Surg. Gynec. & Obst.* 18: 696-698 (June) 1914. Gatewood Sarcoma of the Twelfth Rib. *S. Clin. North America* 2: 811-819 (June) 1922. Hedblom C. A. Tumors of the Bony Chest Wall. A Study of Twenty Two Personal and Seventy Eight Collected Cases Since 1921. *Ann. Surg.* 98: 528-545 (Oct.) 1933. Holland C. T. The Benign Giant Cell Tumor of Bone. *Brit. J. Radiol.* 7: 227-232 (April) 1934. Peirce C. B. Giant Cell Bone Tumor. A Consideration of the Morphology of This Neoplasm, the Response to Surgical and Radiation Therapy and Report in Detail of Two Apparently Malignant Cases. *Am. J. Roentgenol.* 28: 167-188 (Aug.) 1932. Codman E. A. Personal communication to the authors, Dec. 15 1934.

2 Christensen F. C. Bone Tumors. Analysis of One Thousand Cases with Special Reference to Location, Age and Sex. *Ann. Surg.* 81: 10, 4: 1092 (June) 1925.

3 Abstracts of these cases were furnished through the courtesy of B. C. Crowell, registrar, Registry of Bone Sarcoma, 40 East Erie Street, Chicago.

4 Bone Sarcoma Registry³ cases 125 and 373. Geschickter C. F. and Copeland M. M. Osteitis Fibrosa and Giant Cell Tumor. *Arch. Surg.* 19: 169-271 (Aug.) 1929.

5 Registry of Bone Sarcoma³ case 70. Fort¹ Christensen² Geschickter and Copeland⁴.

6 Registry of Bone Sarcoma³ case 307. Neil. Unpublished data. Christensen².

7 Registry of Bone Sarcoma³ case 338. Gatewood¹ Christensen².

9 Registry of Bone Sarcoma³ case 346. Memorial Hospital Clinic, New York City. Unpublished data. Christensen².

10 Hedblom⁵ Geschickter and Copeland⁴.

11 Van Hazel¹¹ Personal communication to the authors Jan. 22, 1935.

CASE 7¹²—O B, a man, aged 48, had noticed a hard painless swelling of the fifth rib at the costochondral junction six months before examination. Roentgen studies showed an expanded tumor with a well defined thinned cortex. The density was not uniform. The mass was completely excised at operation. There was no evidence of recurrence eleven years later.

CASE 8—Codman¹ has reported the presence of a specimen of giant-cell tumor of the rib in the Warren Museum, Harvard Medical School. The diagnosis was made by microscopic examination. No history is available.

CASE 9—The original record of Christensen's seventh case has been lost and so no details are available.

COMMENT

Clinical data on only eight cases including the present report are available for discussion. Geschickter¹³ has suggested that the rarity of giant-cell tumors of costal origin is perhaps due to the extremely small and relatively inactive epiphyses of the ribs. Giant-cell



Fig. 3—Microscopic appearance of the tumor. Section shows the costochondral junction. The cartilage with a proliferating border is seen at the right. The neoplasm shows a fibrous stroma rich in spindle cells. Osteoid tissue is present. Many large irregular deeply staining multinucleate giant cells are seen at the periphery of the tumor. (Hemalum eosin stain. Zeiss Planar 20 mm lens.)

tumors of the vertebrae are also apparently rare, a total of only twenty-three cases in all having been collected by Lewis¹⁴ and Santos¹⁵. In the majority of the vertebral cases, cure has followed partial excision. The average age in the rib and vertebra groups is less than that of giant-cell tumors in other localities. Five of the eight patients with costal giant-cell tumors (62.5 per cent) and eleven of the twenty patients with vertebral giant-cell tumors (55 per cent) were less than 20 years of age. Geschickter and Copeland⁶ reported that 37 per cent of all their giant-cell tumors in various parts of the body occurred in persons less than 20 years

of age. 34 per cent of Coley's¹⁶ patients were less than 20 years of age, as were 31 per cent of Christensen's and 23 per cent of Gross's¹⁷.

In the group of giant-cell tumors of the rib, diagnosis was made by microscopic examination in seven of the eight cases reviewed. In case 4 the diagnosis was made by roentgen examination and by the response of the tumor to irradiation.

In four cases the tumor was posterior to the costal angle. In two the entire first rib was apparently involved and in two the tumor was at the costochondral junction.

Treatment has been by complete surgical excision in six cases, irradiation in one case, and partial excision and irradiation in one case. The one operative death followed an extensive resection of the thoracic wall for a malignant neoplasm, which apparently arose in a giant-cell tumor. No recurrences have been noted in any of the eight cases, regardless of the type of treatment, the patient with a frank sarcoma, however, died before a possible recurrence could have occurred.

A possible explanation for the absence of recurrence may lie in the histopathologic changes of the neoplasm. Microscopic examination in four cases including our own has shown a fibroblastic stroma predominantly spindle-cell in type. Geschickter and Copeland⁶ have found the predominance of such cells to be usual among giant-cell tumors occurring in the small flat bones, they have designated the type as the "spindle-cell variant." Explaining this stroma as the result of a heightened defense reaction on the part of cortical bone, they point out that it occurs early and nearly circumferentially in the small and flat bones. In giant-cell tumors in various other locations, Geschickter and Copeland⁶ have reported 20 per cent recurrences.

Opinions differ as to the choice of treatment. If a presumptive diagnosis of giant-cell tumor can be made on the history and roentgen examinations, a carefully regulated series of radiation treatments is perhaps the method of choice¹⁸. The restraint of growth rather than the complete destruction of the tumor by lethal irradiation is desirable. Such treatment has usually been successful with giant-cell tumors in other locations. Roentgenograms taken during the course of treatment will usually show a decrease in the size of the tumor, cessation of active bone destruction, and recalcification.

Operative intervention may be indicated if the diagnosis remains in doubt or if the prominence of the tumor is sufficiently deforming to require its removal. Chondromas should, if possible, be completely removed since they usually do not respond to irradiation and since they may become sarcomatous. There is no agreement as to the best treatment of primary sarcoma of the rib. Many roentgenologists believe that irradiation is the method of choice. Many surgeons (Hedblom¹ among others), however, believe that a sarcoma should, if possible, be removed. In three of the cases of benign giant-cell tumor of the rib (Gatewood, Fort, Neil), a malignant growth had been diagnosed before operation. In our case the preoperative diagnosis was "probable chondroma," although the possibility of giant-cell tumor was suggested. Operation was undertaken because of

16. Coley, W. B. Prognosis in Giant Cell Sarcoma of the Long Bones. *Ann. Surg.* 79: 321-357 (March) 1924. 561-595 (April) 1924.

17. Gross, S. W. Sarcoma of the Long Bones. Based on Study of 165 Cases. *Am. J. M. Sc.* 78: 17-57 (July) 338-377 (Oct.) 1879.

18. Pehce, Herendeen, R. E. Roentgen Ray in the Treatment of Giant Cell Tumors. *Am. J. Roentgenol.* 12: 117-125 (Aug.) 1924. Pfahler, G. F. and Parry, L. D. The Treatment of Giant Cell Bone Tumors by Roentgen Irradiation. *Am. J. Roentgenol.* 28: 151-166 (Aug.) 1932.

12. Holland¹

13. Geschickter, C. F. Personal communication to the authors. March 8, 1935.

14. Lewis, Dean. Primary Giant Cell Tumors of the Vertebrae. *J. A. M. A.* 83: 1224-1229 (Oct. 18) 1924.

15. Santos, J. V. Giant Cell Tumor of the Spine. *Ann. Surg.* 91: 37-43 (Jan.) 1930.

the likelihood of future sarcomatous degeneration of the presumed chondroma and because of the disfigurement caused by the enlarging tumor

SUMMARY

Giant-cell tumors are much rarer in the ribs than in other bones. Only ten cases, including our own case, are known to us. At present it appears that irradiation is the treatment of choice if the diagnosis can be established with certainty. Conspicuous deformity may indicate the surgical removal of the tumor. In the reported series no case of recurrence has been found whether treatment was by surgical excision, irradiation or both. The prognosis for cure should therefore be good.

THE HAZARD OF THE AUTOMOBILE DOOR HANDLE

REPORT OF SIX SERIOUS INJURIES

SAMUEL McLANAHAN, M.D.

BALTIMORE

Motor vehicles and their annual toll of injuries to pedestrian and passenger alike have received widespread attention. Drastic means have been and are being employed to remedy the many traffic hazards that have in the past contributed so largely to such accidents. Less attention, however, has been paid to the individual vehicle and the mechanism of each injury as it actually occurs. It is true of course that such a thing as "breakable glass" has received legislative condemnation in many states and is rapidly being supplanted by the more dependable "safety glass" and that emphasis has been placed on the use of "blow out-proof" tires. It is also true that attention has been directed in the medical literature toward certain specific fractures, and that these fractures have been named for their association with the automobile. Most noteworthy is the "chauffeur's fracture" of the radius, less often seen in these self-starter days. In addition, reference is occasionally made to the "bumper fractures" of the tibia and fibula sustained by the pedestrian, and two years ago an article appeared by Topping¹ reporting a number of cases of "traffic fracture of the elbow," a serious injury usually befalling the driver whose protruding left elbow is struck by a passing vehicle.

While attention has been directed occasionally to the types of injury just enumerated, little emphasis has been placed on another group of injuries, those resulting from the hazard of projecting objects on an automobile. Such objects include certain types of lights, ornaments, license plates and, most serious of all, the door handles. Most physicians who have attended numbers of people injured by automobiles can readily recall instances of injury caused solely by these objects, and especially by the door handles. It is my purpose in this communication to direct attention to the present automobile door handle as a very real factor in producing serious and often fatal injury, and to make a plea in the interest of public safety and accident prevention that the automobile industry adopt such changes as may reduce this hazard to a minimum. I report briefly six rather striking cases that have come to my immediate attention, four of which have at some time been under my care. In each instance it is to be noted that the door handle of an automobile has been the agent finally responsible for the gravity of the trauma.

REPORT OF CASES

CASE 1—J. F., a white man, aged 25, was admitted to the Union Memorial Hospital on the night of May 1, 1930, seriously injured. While riding a motorcycle he had collided with an automobile, and the door handle of the car had been driven through his skull, burying itself within his head. It had broken off cleanly from its attachment at the door. When examined, he was conscious and mentally alert. There was a wound in the left frontal region from which could be seen to emerge the end of a shiny piece of metal. There was some bleeding from the wound. The left eyeball was ruptured and there was marked extravasation of blood beneath the lids. Roentgenograms (figs 1 and 2) showed the door handle lying almost completely within the cranial cavity. Operation was performed by Dr. J. A. Weinberg, at that time resident surgeon. The foreign body was extracted and the wound was thoroughly irrigated, debrided and closed with drainage. On the following day, enucleation of the left eye was performed by Dr. Cecil Bagley. The post-operative course was uneventful except for some elevation of temperature during the first week and prolonged drainage of serous material from the scalp wound. The patient was dis-



Fig. 1 (case 1).—Position of automobile door handle after it had been driven through the frontal bone.

charged June 23 with the wound completely healed. There were no neurologic changes. Today he is living and able to work regularly, though, of course, markedly disfigured and without the sight of one eye.

CASE 2—M. S., a white girl, aged 11 years, while at play Sept. 16, 1934, rushed out into the street and collided with the side of a passing taxicab. She was thrown to the ground and both she and the cab driver believed that the door handle was responsible for the long deep gash across her chest. A short time later at the Union Memorial Hospital a long wide-open deep laceration was found extending from the left border of the sternum at the level of the third rib across the left side of the chest into the upper portion of the axilla. Wide flaps had been raised on each side. The laceration not only extended through the skin and subcutaneous tissues but included the pectoral muscles and fascia down to the ribs. There was considerable bleeding. Under general anesthesia the wound was thoroughly cleansed and then closed in three layers. Healing was delayed by some slough in the devitalized tissues at the ends of the wound but after four weeks was practically complete. There has remained a rather wide disfiguring scar (fig. 3), which can eventually be excised.

¹ Topping, M. C. Traffic Fracture of the Elbow. J. Indiana M. A. 26: 609-611 (Oct.) 1933.

CASE 3—J C, a white man aged 52, was admitted to the Union Memorial Hospital during the night of Aug 29, 1932 complaining of an injury to his right elbow. He had been walking along a highway on the left side of the road facing traffic. A car passed him traveling at rapid speed, and as it did so the door handle alone struck him, embedding itself in his arm and, needless to say, breaking off from its attachment at the door. Examination at the hospital revealed the right arm in semiflexion and the door handle projecting from the anterolateral surface. It was apparently firmly embedded in the elbow joint. Roentgenograms showed the foreign body wedged between the humerus and the ulna (fig 4). Subsequent films demonstrated a fracture of the internal condyle of the humerus with some displacement. Under general anesthesia the handle was extracted from the elbow but not without the application of considerable force, illustrating well the force that must have placed it there and caused the steel to break off. The wound was closed with drainage. Convalescence was complicated only by considerable swelling and return of function was slow but steady. There remained finally some limitation of flexion at the elbow.

CASE 4²—P K, a Negro aged 28 was crossing the street when he was struck by a passing car. He believed that the door handle of the car caught him in the upper part of the abdomen and tore his flesh. He was taken at once to the accident department of the Johns Hopkins Hospital, where examination revealed a laceration 7 inches long situated in the upper left quadrant of the abdomen. In depth it extended through the skin and subcutaneous fat exposing the thick fascia beneath. The wound was repaired by Dr Erle Henriksen by means of buried sutures of plain catgut and silk in the skin. Some infection occurred in the wound and drainage persisted for several months. At the conclusion of this time the patient was reported as healed and well.

CASE 5²—K B, a white man, aged 22, and a resident of West Virginia was admitted to the Johns Hopkins Hospital April 2, 1935, complaining of a nerve injury in his arm. Nov 23, 1934, while walking in the street he was struck by a passing car, which knocked him over and at the same time

the lower portion of his arm. Examination of the right arm showed muscle atrophy throughout. The hand was rather cyanotic. There were two large scars along the dorsal and ulnar aspects of the forearm, the latter extending down to the ulnar styloid, where the bone was markedly thickened. There was a paralysis of the posterior portion of the deltoid and of



Fig 3 (case 2)—Appearance of scar on chest resulting from laceration by door handle.

all the muscles of the upper arm, forearm and hand. The biceps, triceps and finger reflexes were lost. Sensation was completely gone below the middle of the deltoid on the outer aspect of the arm, and below the elbow on the inner aspect. A diagnosis was made of brachial plexus injury, involving all the roots but sparing the cervical sympathetic nerve. No operative treatment was deemed advisable at this time. The patient had sustained an injury that may well mean the permanent loss of the use of his arm.

CASE 6—W T V, a white boy, aged 16 years, was injured May 12, 1935, while crossing a roadway on a bridge. He was sideswiped by a passing automobile, and his right hand was badly torn by some sharp object. Blood was subsequently noted on the door handle of the car. He was taken at once to the Union Memorial Hospital. Examination of the right hand showed an extensive laceration running from the base of the palm at the wrist throughout the length of the palm and on the middle finger. Two shorter lacerations extended from the original point one running up on each side of the hand. Large flaps were raised between these lacerations exposing the tendons, but no tendons were seen to be cut. Repair was carried out under general anesthesia by Dr A C Dick. After a week there was some slough at the base of the hand because of deficient circulation in the points of the flaps. By June 8 the granulating wound at this point was ready for small deep grafts, which were placed on it. There had been a marked tenosynovitis throughout which caused rather acute pain and limitation of motion. With the aid of physical therapeutic measures, function is gradually being restored, and it is anticipated that the boy will have a useful hand, though a markedly disfigured one.

COMMENT

These six cases illustrate well the bizarre possibilities of such injuries, and the disfigurement and disability that are possible. Ogilvie³ has recently reported six other cases of door handle injuries, two of them fatal puncture wounds of the skull. He has well pointed



Fig 2 (case 1)—Lateral view.

injured his right arm. He was unable to move the forearm or the wrist of the right arm and found that the door handle of the car had torn two gashes in his forearm, probably wedging itself between the bones temporarily. The wounds were sutured at once by his physician, who also splinted his wrist, which was said to be fractured. The laceration and the wrist healed satisfactorily, but the patient was still unable to move his forearm or hand. In addition he had lost sensation, he said, over

² I am indebted to Dr. Dean Lewis for permission to report cases 4 and 5 from the Johns Hopkins Hospital.

³ Ogilvie H. H. Automobile Door Handle Injuries. Texas State J. Med. 31: 910 (May) 1935.

out that the elimination of this one source of danger might reduce materially the annual toll of 35,000 deaths caused by automobiles in this country. A casual glance at a row of passing cars cannot but convince one of the potential danger of this projecting piece of metal. In the recent streamlined models it is to be seen many a door handle that is little short of a spear—truly a vicious weapon—directed toward any victim who may chance to be in its path. The possibilities of mutilation are easily imagined. It is true that many of the handles are directed toward the rear of the car, because the hinges of the door lie in that direction and are thus rendered less menacing though still dangerous projections. Improvements must finally come from automotive engineers. However, there seem to be two requisites for safety: first, a handle (if there must be a handle) without sharp projections, as instanced in the oval ones on certain obsolete models and second a



Fig. 4 (case 3).—Door handle forcibly wedged into elbow joint and broken off from its attachment at the door.

handle that lies either close against or is countersunk within the side of the door. The whole matter has recently been brought to the attention of executives of one of the large automobile manufacturing companies, who have expressed a deep interest and promised earnest consideration. The safety of the person inside the car has been repeatedly emphasized. Now it is time to think more seriously about the person outside the car.

108 East Thirty-Third Street.

Cardiac Patients—Syphilis should be considered in any case of aortic insufficiency or of heart block developing in an adult. It is not good practice willingly to allow a cardiac patient to call forth his full reserve and consequently to suffer from undue breathlessness or fatigue. Those acts, strenuous or leisurely, which bring distress are to be condemned. A cardiac patient is unfit to be on his feet if, when up, he becomes breathless. Lewis, quoted by Fisher, Alexander. Aphorisms in Clinical Medicine. *Canad J Med & Surg* 77:166 (June) 1935.

ACUTE SUPPURATIVE GONOCOCCIC TENOSYNOVITIS

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AND

C. LATIMER CALLANDER, M.D.

SAN FRANCISCO

Gonorrhea manifests itself in many sites remote from its usual portal of entry, the genito-urinary tract. In the literature there are reports of cases of gonococcal thyroiditis, infection of surgical wounds, laryngitis tonsillitis, otitis media, dacryocystitis, parotitis and other conditions. One of the most common focal involvements is that of the joints and less frequently of the related bursae and tendon sheaths.

The only references in English to suppurative gonococcal tenosynovitis, especially that involving the flexor tendons of the hand, are brief notations in textbooks. The condition is recorded by Keen,¹ Howard and Perry,² Da Costa,³ Graham,⁴ Boyd,⁵ and others merely in its relation to inflammation of the tendon sheaths in general. There are a few articles in German⁶ and in French.⁷

Kanavel⁸ has seen only the two patients with gonococcal tenosynovitis mentioned in his book, but he has expressed the opinion that many cases are not recognized or, if diagnosed, are not reported.

It is our purpose in this paper to review the literature concerning acute suppurative gonococcal tenosynovitis and to report two cases. One of these cases was proved and the other was probably of gonococcal etiology.

ETIOLOGY

The primary foci of infection may be the urethra, Bartholin's or Skene's glands, the cervical glands, prostate, seminal vesicles or conjunctiva. It is impossible to determine which of several primary foci acts as the source of dissemination into the blood stream. Focal sepsis without a clinically generalized infection of the blood stream is very characteristic of gonorrhea, the commonest focal infection being so-called gonorrheal rheumatism.⁹ This term includes arthritis,

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¹ Keen, William. *Keen's Surgery*. Philadelphia: W. B. Saunders Company, 1922.

² Howard, Russell, and Perry, Alan. *Practice of Surgery*, ed. 4. Baltimore: William Wood & Company, 1933.

³ Da Costa, J. C. *Modern Surgery*, ed. 9. Philadelphia: W. B. Saunders Company, 1925.

⁴ Graham, E. A. *Surgical Diagnosis*. Philadelphia: W. B. Saunders Company, 1930.

⁵ Boyd, William. *Surgical Pathology*. Philadelphia: W. B. Saunders Company, 1929.

⁶ Dupré. *Vulvovaginitis kleiner Mädchen*, 1888, quoted by Jundell. *Reinzucht des Gonococcus Neisser* in zwei Fällen gonorrhöischer Metastase. *Arch. f. Dermat. u. Syph.* 30:195, 1897. Aehman, G. *Zur Frage von der gonorrhöischen Allgemeininfektion*, ibid. 30:323-343, 1897. Meyer, Fritz. *Verein für inn. Med.* 50:1051, 1903. Hocheisen. *Ein Fall von Gonokokkämie bei einem Säugling mit Blennorrhoe*. *Arch. f. Gynaek.* 79:414, 1906. Hecht, H. *Ein Fall von Tendovaginitis gonorrhöica*. *Dermat. Wchnschr.* 50:1351, 1913. Duncker, F. *Ein Beitrag zur Tendovaginitis gonorrhöica*. *München med. Wchnschr.* 70:1250 (July 26), 1929. Nobl, G. *Schneidenerkrankungen in Alexander, G. Handbuch der Geschlechtskrankheiten*. Vienna: A. Holder, 1912, vol. 2, p. 172. Hayward. *Chirurgisches Konsilium*. *Med. Klin.* 27:1683 (Nov. 13), 1931. Rauschenberger. *Ein Fall von Tendovaginitis gonorrhöica*. *München med. Wchnschr.* 60:1828, 1913. Jacobi, E. and Goldmann, E. *Tendovaginitis suppurativa gonorrhöica*. *ein Beitrag zu der Lehre von den gonorrhöischen Metastasen*, *Beitr. z. klin. Chir.* 12:827-838, 1894.

⁷ Pollosson, Maurice. *Synovite tendineuse blennorrhagique*. *Mem. et compl. rend. Soc. d. sciences méd. de Lyon* 28:58-59, 1888. 1899. Tollerer and Macaigne. *Remarques sur un cas de synovite tendineuse suppurée des gonocoques*. *Rev. de med.* Paris 13:991-1001, 1893. Macaigne and Finet. *Synovite gonococcique secondaire à une balanite sans blennorrhagie*. *Bull. Soc. anat. de Paris* 69:383-387, 1894. Villard, H. *Dejean, C. and Duponnois, J. Conjunctivite et tenosynovite blennorrhagiques métastatiques*. *Arch. Soc. d. sc. med. et biol. de Montpellier* 11:181 (April), 1930.

⁸ Kanavel, A. B. Personal communication to the authors.

⁹ Horder, T. *Metastatic Gonorrhea*. *Lancet* 1:1304 (June 30), 1923.

fibrositis, tenosynovitis, bursitis, myositis and perineuritis. By careful technic the gonococcus in many cases can be isolated.¹⁰ In chronic cases, however, it may be so difficult to isolate the gonococcus that the rheumatic condition may be attributed to a so-called gonococcotoxic manifestation, as described by Villard⁷ and his associates.

Fritz Meyer⁶ cultured gonococci from a flexor tendon sheath of a finger which had been directly infected. The portal of entry was a traumatic lesion.

Acute tenosynovitis may arise also from the direct invasion by many organisms other than gonococci, overaction in working or in sports, metastatic pyogenic infection, influenza, some of the long continued fevers, syphilis, tuberculosis and gout.

More men are affected by this disease than women, the ratio being three to one (Rauschenberger⁹), cases

threads. The walls of the sheath were covered with fungous granulations. A similar case was observed by Macaigne and Finet⁷ in 1894.

Gonococcic tenosynovitis may occur in either acute or chronic forms. Acute gonococcic infection in the tendon sheaths usually is characterized by a mild inflammatory reaction with or without effusion. The severe forms produce frank suppuration. With the production of an exudate, an elongated fusiform swelling of the tendon sheaths may appear.

Jacobi and Goldmann⁶ and others found that the tendon sheaths were filled with thick hemorrhagic pus. The parietal sheaths were red, moist and velvety. Microscopically there was complete absence of the endothelial layer, in its place was a purulent hemorrhagic network that reached to the tendon. Near the inner surface of the sheath was an areola of blood-filled capillaries. There was diffuse infiltration of the synovial membrane by polymorphonuclear leukocytes and intensive proliferation of various connective tissue elements. The gonococci were found only in the phagocytes close to the inner wall of the sheath.

The tendons may show punctate hemorrhages but rarely are destroyed, as they may be in streptococcic and staphylococcic infections. Complete absorption, formation of adhesions and deformation as well as severe disturbances of function may occur following the serous, seropurulent or phlegmonous processes of the inflammation.

DIAGNOSIS

The diagnosis of gonococcic tenosynovitis is made on the basis of a history of venereal disease and the clinical and laboratory observations. It may be difficult to obtain a history of venereal disease because the patient is unable to appreciate any connection between a venereal infection and a distant manifestation. Kanavel¹¹ stressed the importance of considering a hematogenous gonococcic infection in cases of tenosynovitis of obscure origin.

The signs of acute suppurative tenosynovitis are essentially the same as those found in staphylococcic and streptococcic infections: swelling, redness, tenderness along the course of the tendon sheath and limitation of motion. Usually neither the local symptoms (such as pain) nor the general reactions (such as fever and leukocytosis) are as great as in the pyogenic type. In all cases spontaneous or provoked pain is extreme and voluntary movements are difficult or impossible. In our cases there was not the board-like rigidity of the affected fingers, but a five to ten degree range of motion was possible before pain was elicited.

In mild cases without evidence of bacteremia it is so difficult to isolate the gonococci that the question arises as to whether the organism is present in a focal lesion or whether the reaction is toxic. The organisms may be present in the recesses of the joints or tendon sheaths and not be obtained by diagnostic puncture.

Twenty-four hours after the onset of tenosynovitis it may not be possible to demonstrate the gonococci by direct smear, but a positive culture may be obtained. After a few days even a culture may fail to show gonococci. Immediate bacteriologic examination is therefore imperative.

Jundell⁶ of Stockholm in 1894 investigated an infection involving the extensor tendons of the wrist and ankle. He made a diagnosis of gonococcic teno-

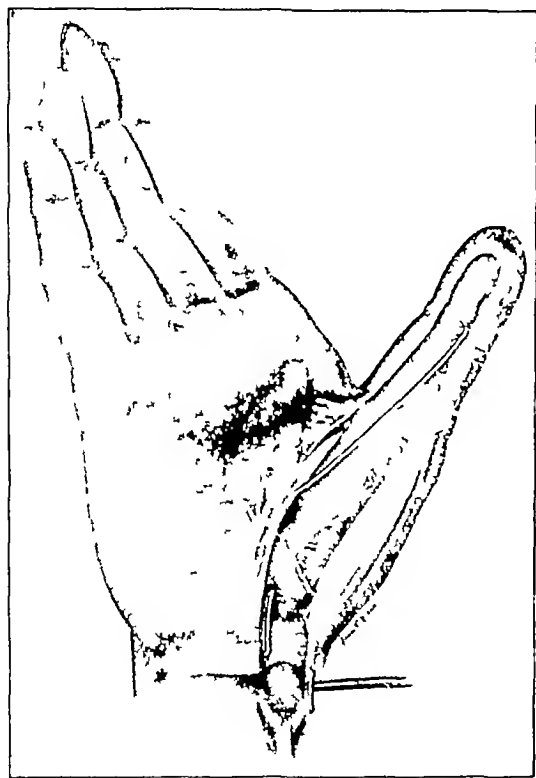


Fig. 1 (case 1).—The infected tendon sheath. The tense swelling of the sheath, the lines of incision and the branch of the median nerve supplying the adductor muscles of the thumb are shown.

in children are rare. Dupre⁶ in 1888 reported the case of a 2½ year old girl with gonococcic vaginitis and infection of the extensor tendons of both hands. Diagnostic puncture yielded intracellular diplococci which failed to grow on ordinary culture mediums. Hocheisen⁹ isolated gonococci from the joints as well as from a purulent exudate in the tendon sheaths of an infant with gonococcic ophthalmia.

PATHOLOGY

The sheaths of the extensor tendons, especially those of the common extensor tendons of the fingers, thumbs and toes, are affected most frequently. Pollosson's⁷ case in 1899 was one of gonococcic tenosynovitis of a tendon sheath in the ankle. There the exudate consisted of a purulent discharge in which floated mucous

synovitis by cultivating gonococci obtained from the affected site. He proved it by introducing some of the material into the navicular fossa of the penis of a patient with a brain tumor, thereby producing gonococcal urethritis. A similar procedure was carried out by Aehman⁶ in 1897. Blood from a girl suffering from purulent gonococcal tenosynovitis of the anterior tibial tendon sheath was injected into the urethra of a healthy young man. Not only gonorrhea but also gonococcal arthritis of the left foot and right wrist and tenosynovitis of the common extensor tendon sheath of the toes resulted. The pus obtained from this sheath contained many gonococci.

TREATMENT

The treatment of acute suppurative gonococcal tenosynovitis is surgical and consists of establishing adequate drainage. The reports in the German literature of successful results with vaccines and Bier's hyperemia do not warrant withholding surgical treatment. Hecht⁶ reported a probable case of gonococcal tenosynovitis in which surgical treatment was not given and healing occurred after injections of vaccine. Duncker⁶ presented eighty cases of gonococcal infection of the joints in which there were two infections of the tendon sheaths. These infections were acute and were treated successfully with vaccines. The histories are convincing as to the origin of the tenosynovitis but neither case was proved.

REPORT OF CASES

Two patients with acute suppurative gonococcal tenosynovitis were treated in the University of California Surgical Service of the San Francisco Hospital. Unfortunately, we were unable to obtain complete cultural studies in either case.

CASE 1—F O., aged 20 years, was seen on Dec 31 1933. One week before admission she began work as an usherette in a local theater. This entailed the constant use of a flashlight during working hours so that she repeatedly flexed the right thumb in pressing the lever. Three days before admission she had progressively severe pain and tenderness in the thumb. On the day of entry the thumb became markedly swollen.

Examination showed swelling of the right thumb, the thenar eminence and the radial side of the wrist. These areas were exquisitely tender to the slightest pressure. Motion of the thumb produced pain, extension more than flexion. The tip of the thumb was not tender. The lumbrical spaces were not swollen. Extreme extension of the other fingers caused some pain. There was no evidence of involvement of the ulnar bursa or of the midpalmar space. The dorsum of the hand was edematous. There was no evidence of the presence of a lesion of the skin.

The patient's temperature was 102 F. The white blood cell count was 13,200 with 85 per cent polymorphonuclear cells. An acute hematogenous infection producing acute tenosynovitis was suspected.

After the application of a tourniquet an incision was made as shown in the accompanying drawing (fig 1). When the tendon sheath was opened, about 15 cc. of cloudy, thin, purulent material spurted from it. Cultures were taken but became desiccated before bacteriologic studies could be made. An incision was made on the radial side of the wrist, and more purulent material was found. Petrolatum packs were inserted and a plaster splint was applied.

Later a pelvic examination was made for the first time and revealed the presence of urethritis, Bartholinitis and endocervicitis. The cervical and urethral smears were loaded with typical gram negative intracellular diplococci. The patient had an uneventful postoperative course in the hospital and left with the wound granulating well. She received physical therapy over a period of about two months since which time she has

not reported for treatment. A recent letter informed us that she had regained complete function of the thumb.

CASE 2—E F., aged 23 years, entered the hospital on May 25 1934. Five days before entry the lid of a cake box had fallen on her right index finger but had caused no external lesion or any particular pain at the time. Two days later the proximal phalanx became painful and swollen. Later the dorsum of the hand became edematous, and shortly before entry the right arm up to the elbow became painful and showed lymphangitic streaks.

On examination the proximal phalanx of the index finger was found to be swollen, red and tender, but the middle phalanx appeared normal. The lumbrical space proximal to the index finger was swollen and tender. Slight motion of the finger was possible without pain but further motion caused great distress. Pelvic examination revealed the presence of moderate endocervicitis with evidence of a pathologic pelvic condition on the right side. The urethral smear was positive for gonococci. The patient's temperature ranged from 101 to

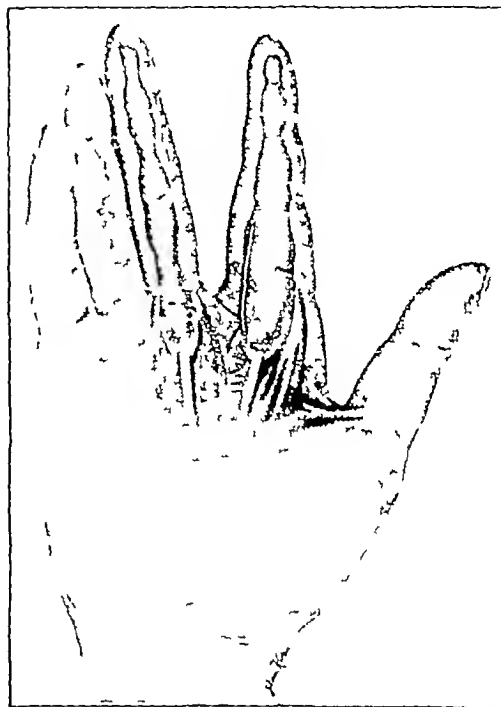


Fig 2 (case 2)—The infected tendon sheath of the forefinger. The fusiform swelling and the line of incision are shown. The arrows represent the paths of the pus as it escaped through the perforations in the tendon sheath.

102 F., and the white blood cell count was 11,000 with 88 per cent polymorphonuclear cells.

After the application of a tourniquet an incision was made as shown in figure 2. When the lumbrical space was opened about 3 cc of greenish yellow pus was found. At the proximal end of the tendon sheath were small perforations. Smears and cultures were taken. The smears were positive for gonococci.

The postoperative course was uneventful. The patient was discharged from the hospital four days after entry. In about two weeks the wound had healed completely. The patient because of some legal entanglement, did not have the benefit of physical therapy. When she was seen on July 23, 1934, the wound was healed there was a firm scar and the finger was held in rigid extension with almost no active or passive motion obtainable.

SUMMARY AND CONCLUSIONS

Acute suppurative gonococcal tenosynovitis is one of the less frequent metastatic complications of gonorrhea. It is probable, however, that many cases are not reported.

The infection usually is hematogenous and the possibility of a gonococcic origin should be considered in a case of tenosynovitis of obscure origin

The clinical manifestations are similar to those of the common pyogenic type except that the tendon itself usually is not destroyed

450 Sutter Street

THE MEDICAL TREATMENT OF EARLY PELLAGRA

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Great interest has been centered in the etiology and treatment of pellagra since its initial description some 200 years ago. Literally dozens of specific materials have been recommended as definite cures for this disease, but through the years there has been no uniform agreement as to either its cause or the best method of treatment. There are two main theories of the cause of pellagra. First, that pellagra is caused by a bacterium. However, no one has been able to isolate any specific bacterium and reproduce the disease. The second theory is that it is caused by the lack of a specific chemical substance present in food. Again, no one has been able to isolate this substance and show its lack to be the cause of the disease. One fact, how-



Fig 1—Well demarcated characteristic pellagrous lesions of the hands. Note swelling areas of desquamation and higher extension of the lesions along the radial portions of the forearm.

ever, is generally accepted, namely, that the mortality rate of severe pellagra is extremely high. For instance, in the Lakeside Hospital, from 1926 to 1930, 54 per cent of seventy-three pellagrins died despite the fact

that they were given the best of hospital care.¹ This high death rate is consistent with reports from other hospitals admitting the severe cases.

During the past five years my associates and I have found certain methods which, when rigidly applied, will reduce the mortality rate in severe pellagra to 5 per cent or less. In deriving this percentage we counted a patient as having died of pellagra even though, in addition to the pellagrous lesions, he had bilateral lobar



Fig 2—Pellagrous dermatitis over the fingers and knuckles and around the vulva and anus. Note the symmetry, clear demarcation of the lesions from the adjacent normal skin and the characteristic roughening of the skin in the lesion.

pneumonia, uremia, carcinoma or some other usually accepted fatal disease. A description of these methods of treatment has recently been published and, while they are effective for the mild or moderately severe case, they are very time consuming and expensive. Here I shall confine my discussion to the treatment of the less severely diseased individual, that is, one without intractable diarrhea, central nervous system changes, or persistent vomiting. After all, the very severely diseased pellagrin is not often seen, for if the disease is recognized early and treated properly it rarely becomes severe. Lay persons must learn that loss of weight and appetite, insomnia and the symptoms of neurasthenia are sufficient grounds to bring one so affected to the physician. At that time the doctor may or may not be able to find diagnostic skin or oral lesions, but an adequate diet, supplemented preferably by at least an ounce of dry brewers' yeast, liver extract or 2 ounces of wheat germ daily, is excellent treatment. These medications, given by mouth, are easily taken and definitely shorten the period of convalescence. It is essential to realize that the yeast and liver extract preparations may vary tremendously in therapeutic efficacy, and for that reason I recommend only the highest grade brewers' yeast purified, assayed, and made highly

From the H. K. Cushing Laboratory of Experimental Medicine, Western Reserve University School of Medicine, and the Medical Service, Lakeside Hospital.
Read before the Section on Pharmacology and Therapeutics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1 Spies T. D. and DeWolf H. F. *Am J M. Sc.* 186: 521 (Oct) 1933.
2 Spies T. D. *The Treatment of Pellagra* J. A. M. A. 104: 1377 (April 20) 1935.

palatable and digestible by reputable laboratories. Likewise, the liver extract should be of known strength made and assayed by reputable concerns. The use of an inferior therapeutic material may fail to remit the disease. Prompt treatment of prodromal symptoms is followed by a desire to eat, the ability to sleep and a general feeling of well being.

Oftentimes, however the patient is not seen by the doctor until definite lesions of pellagra are obvious. Some of the early cutaneous manifestations of the disease can be seen in the accompanying illustrations. As I have shown, early recognition of such lesions, good general care of the patient, and the specific use of antipellagic agents produce rapid amelioration of the signs and symptoms. Patients whose symptoms have been progressing for some time but who have not developed the persistent vomiting, the intractable diarrhea or the central nervous system changes of severe pellagra can be treated effectively by a well balanced diet of 4,000 calories or more each day and adequate rest. At times such patients recover with this care alone but it is always wise to supplement the diet with a good brewers' yeast, wheat germ or liver extract. Each must be given in large doses, and only the good products should be used. The wheat germ and yeast have the advantage of being much cheaper than the liver extract. The various yeast products are not equally efficacious, some of them being more potent and more palatable than others. Any one of these agents is best given in doses of from 10 to 20 Gm in a glass of iced milk or iced eggnog, at intervals of three or four hours until the patient receives a total of 75 to 100 Gm daily. The specific care of pellagra is most successful when one resorts to parenteral injection of liver extract, from three to five doses of 20 cc daily, and the simultaneous oral administration of large amounts of brewers' yeast or wheat germ. When stomatitis and glossitis are present and adequate therapy has been administered the condition of the mouth rapidly improves.

Although tincture of opium, 2 cc up to 5 or 6 cc daily may be used in the treatment of diarrhea it is not usually efficacious. Diarrhea ceases only when the patient is cured of pellagra. Treatment must be carried on despite abdominal pain or vomiting. Sometimes a large sedative relieves these conditions and enables the patient to rest better. If the disease has not progressed too far, the involvement of the nervous system is relieved without specific therapy. The skin lesions of pellagra improve rapidly whenever suitable general therapeutic measures are applied. Mild antiseptics, such as potassium permanganate in 1:5,000 solution, used as soaks are often beneficial.

When the patient looks and feels better, gains weight, has a desire to eat and ingests a large and well balanced diet he is on the road to recovery. It is important, however that he be watched for a period of at least two to three weeks to make certain that there is not a relapse. Even after that, special attention must be given to afford protection to these patients, who have such predisposing conditions as poverty, chronic alcoholism, acute and chronic infectious diseases, poor teeth, diabetes, dietary idiosyncrasies, and diseases of the gastrointestinal tract.

SUMMARY

I have shown some methods that have been proved effective in the treatment of mild and moderately severe pellagra. For the best results it is essential that the

physician pay careful attention to the general hygiene and food intake of the patient, and that he employ judicious care in the selection and use of specific therapeutic agents.

2065 Adelbert Road

ABSTRACT OF DISCUSSION

DR. HENRY L. BOCKUS, Philadelphia. In the few cases of pellagra that I have seen in Philadelphia there is usually evidence of some other deficiency in addition to the pellagroid syndrome. I have reviewed the last six cases admitted to the Graduate Hospital. The common factor was alcohol and a pellagroid syndrome. Three of these patients had a true achylia after a histamine test meal, two an achlorhydria without histamine and one a marked hypochlorhydria, so that in the alcoholic pellagrins a deficiency in gastric secretion is to be expected and may be partially responsible for the multiple manifestations of deficiency so often present. In one case there was an associated scurvy, in another extreme hypoproteinemia and polyneuritis. The onset in a third case was ushered in with gastro-enteritis and there was a concomitant hypochromic anemia and portal cirrhosis. The fourth case presented dysphagia, hypochromic anemia and achylia, closely resembling the so called Plummer-Vinson syndrome. The initial phenomena in the fifth case were extreme diffuse inflammation of the mucous membranes and nervous manifestations. The sixth case was complicated by an alcoholic neuritis and wrist drop. A survey of this small series of alcoholic pellagrins indicates a difference in the character of onset and in the systems primarily involved, although the pellagroid syndrome eventually emerged and seemed predominant. I would make a plea for individualization in management, supplying in each case ample utilizable agents to bolster up the various deficient factors that are encountered—vitamin, liver, desiccated hog stomach, hydrochloric acid, proteins, calcium, iron, and so on. Large doses of liver parenterally, as recommended by Dr. Spies and blood transfusions seem to be of most value in the extremely ill patient. A final word of caution concerning the development of pellagra in a nonalcoholic patient outside the pellagra belt: one must be sure to eliminate obstructing and ulcerating lesions in the gastro-intestinal tract.

DR. W. H. SEDRELL JR., Washington, D. C. It was first demonstrated in the laboratory in which I work, in experiments on dogs that liver extract contained the pellagra-preventive factor. There have been several workers in this country who have reported almost uniformly successful results with the use of liver extract in the treatment of pellagra. I think, however, that Dr. Spies has studied this phase of the subject more thoroughly perhaps than any other man in the country. There are just one or two things that I should like to emphasize about the treatment of pellagra with liver extract. One is the cost of treatment by using the large amounts of liver extract recommended by Dr. Spies. That is a factor to be considered. I do not mean to say that one should not use liver extract. If the patient can afford it, it is very good to use. However, dried yeast is very effective and relatively cheap and should I think be given serious consideration. In addition to this as Dr. Spies himself has emphasized, the diet should be improved at the same time. After all, that is the essential point. If the patients leave the hospital and go back to the deficient diet on which they develop pellagra, they will more than likely have pellagra again the next year. The individualization of treatment is another very important point, which Dr. Spies also mentioned. The patient must be watched closely and the physician himself must see to it that he actually gets the prescribed diet and medication.

DR. L. K. RIGGS, New Brunswick, N. J. There seems to be rather a wide margin between the observations of the experimental laboratory and the clinical application. I think that the reason for this is the rather sudden, dramatic effects that can be obtained in all sorts of deficiency conditions which are produced in the laboratory, because the essentials in the laboratory experiment are generally controlled, while various clinical factors which are contributing to the laxness of certain vitamins are frequently due to the fact that the controlling

factor has been either neglected or forgotten, the great factor of the otherwise adequate diet. I don't suppose that any subject of vitamins has been given more general discussion or more conflicting opinions than the so-called vitamin B or vitamin D. This whole thing has been made cloudy by the too general use of the word pellagra. To evaluate clinically or otherwise one of the vitamins, there is one great, important thing which must be taken into account, the remainder of the diet. It has recently been shown in my own laboratory that animals which develop vestibular disturbance due to lack of vitamin B₁ are readily cured by doses of a certain amount of a vitamin B₁ preparation. If, however, those animals were previously on a very low, minimal amount of vitamin B or B₁, it takes a larger amount of vitamin B to cure that condition. But if the reverse is true, that amount of the animal fat which is necessary to effect amelioration depends on the remainder of the dietary requirements.

DR. A. A. HEROLD, Shreveport, La. I am glad to hear Dr. Bockus refer to the "syndrome of pellagra," in Louisiana where a great deal of it existed a number of years ago, it came to be called a "symptom complex" rather than a disease, by that I mean that some patients have one manifestation and some another while others have several, and I have seen it develop as a terminal stage of wasting diseases. It is known that through the education which has been carried on, if the milder cases are treated with the proper food, including the vitamins that are missing they can be cured easily. But what is one going to do for the patient who is bedridden, whose tongue looks like raw beef whose saliva is constantly dribbling because the throat is so swollen that he cannot swallow, and whose bowels are acting twenty, thirty or forty times a day? There were many such cases as these about twenty years ago in our territory comprising certain portions of Louisiana. At that time the late Dr. Goldberger of the U. S. Public Health Service was making his investigations; he told me that there was something lacking in the diet. He did not know exactly what it was, but he thought that it was of a protein nature. About that time I had such a case. The patient wouldn't or couldn't swallow, she was practically hopeless. I figured that there was something needed and needed quickly. Investigators had shown that the coagulation time of the blood is lengthened in pellagra. In trying to find something that would supply protein quickly and at the same time accelerate the coagulability of the blood I decided to use normal horse serum which can always be readily secured. I obtained surprisingly favorable results in this and other cases and I reported this method, which is now used in some hospitals, in a paper read before the Louisiana State Medical Society. I do not claim that this is a specific for pellagra but I do claim that it will tide over patients who are severely ill.

DR. RUSSELL L. HADEN, Cleveland. Dr. Spies has shown me from time to time his interesting patients discussed here today, so I can testify from first-hand observation as to the dramatic results he has obtained. I should like to emphasize that Dr. Spies has dealt with these patients in large numbers and has reduced the mortality in one single hospital from 54 per cent to 5 per cent. Nothing could prove better the value of the treatment that he has instituted.

DR. TOM D. SPIES, Cleveland. I have nothing to add to what has been said. I think that probably one of the most significant things, from the standpoint of the future in the work, is brought out in the statement by Dr. Riggs about the difference between the laboratory observations and the clinics. I hope I did succeed in what I am trying to portray today. I trust that it will be accepted as something worthy of consideration and that these methods will be applied to the mild cases. In regard to the severe cases, I would appreciate very much having a reprint of Dr. Herold's article, for I don't know whether horse serum is better or not, I have never used it. If it is better I am all for having it.

Materials Rich in Vitamin B—Wheat germ and yeast are perhaps the richest in vitamin B of the materials ordinarily available.—Sherman, H. C. Food and Health. New York: Macmillan Company, 1934.

Clinical Notes, Suggestions and New Instruments

A NEW METHOD OF STAINING BLOOD PLATELETS

R. B. H. GRADWOHL, M.D.
Pathologist to St. Louis County Hospital
St. Louis

The method described here is a modification of that described by Fonio. Reagents used in the technic are as follows:

Fourteen per cent magnesium sulphate solution. Dissolve 14 Gm. of chemically pure magnesium sulphate in enough distilled water to make a total of 100 cc. Filter through filter paper.

Methyl alcohol. Uniformly good success has been obtained with the methyl alcohol furnished by the National Aniline Company, and other brands now on the market have failed to give equal success. It is for that reason that I specify the use of National Aniline Company methyl alcohol. The alcohol used in fixing blood platelet smears should be labeled "for blood platelet counting." It must not be used for fixing blood films.

Giemsa stain. I recommend the Giemsa stain that the Gradwohl Laboratories have prepared for this purpose, following Professor Giemsa's original formula.¹

Neutral distilled water. For the testing of neutral distilled water the following method is advised:

Pick up a few crystals of hematoxylin with a pair of metal forceps and place in a glass test tube. The tube should be neutral and contain no traces of acid or alkalis.

Add about 5 cc. of the distilled water to be tested to the hematoxylin crystals.

The water will turn yellow, pink, or a deep purple.

If it turns to a pink color between two and five minutes, the water is neutral.

If it becomes pink before one or two minutes, the water is alkaline.

If it remains yellow for five minutes or longer, it is acid.

In neutralizing acid water use 1 per cent sodium or potassium carbonate solution.

In neutralizing alkaline water use 1 per cent hydrochloric or acetic acid solution.

The neutralizing agent is added to the water a drop at a time, the mixture is shaken after the addition of each drop, and then the water is tested with hematoxylin crystals.

About 2 liters of water may be neutralized at a time.

It is well to test water each day since sometimes it becomes acid or alkaline on standing.

Fresh distilled water should be prepared every few days to insure good results.

Rubber connections on the water bottle should not be used since the rubber from the tubing causes changes in the water that interfere with the staining.

TECHNIC

Immerse the patient's hand in a pan of hot water to produce hyperemia. Wipe the skin dry with a clean piece of sterile gauze. Place 1 drop of magnesium sulphate solution on the end of the finger and puncture through the drop. Allow the blood to ooze through the magnesium sulphate solution until there is a mixture of about 1 part of blood and 9 parts of magnesium sulphate. Mix with the needle point. Pick up a drop of the mixture and place on a fat-free slide. Smear with a cover glass as for a blood film. The cover glass should be narrower than the slide so as to obtain margin-free smears. Fix in methyl alcohol for five minutes (in a Koplun jar).

Wash thoroughly in neutral distilled water to remove any remaining traces of magnesium sulphate solution.

Prepare diluted Giemsa stain by adding 5 drops of Giemsa stain to 5 cc. of neutral distilled water, shaking slightly after the addition of each drop. Do not shake too vigorously.

Flood the slide with the stain on a staining bridge for thirty minutes.

Wash in neutral distilled water
Flood the slide with dilute fresh Giemsa stain and restrain
for thirty minutes
Wash in tap water, dry and examine

METHOD OF MAKING COUNT

Count all the erythrocytes and blood platelets in consecutive fields until 250 erythrocytes have been counted. Count four such fields after the four-field meridian method.

Calculate the number of blood platelets in 1 cu mm of blood by the following formula:

$$\frac{\text{Patient's red count}}{1000} \times \text{number of blood platelets counted} = \text{number of blood platelets in 1 cu mm of blood}$$

EXAMPLE

One thousand red blood cells are counted. Sixty-five blood platelets are counted. Patient's erythrocyte count 5,000,000.

$$\frac{5,000,000 \times 65}{1,000} = 325,000 \text{ blood platelets in 1 cu mm of blood}$$

Normal, from 250,000 to 300,000 per cubic millimeter.

With the Fomo method there is often precipitation of the Giemsa stain, which constitutes a confusing factor in making this count. With the method described, I have eliminated this precipitate and have no difficulty in making a blood platelet count.

This method of staining also gives a deeper stain of the blood platelets, which is highly advantageous in this procedure.

3514 Lucas Avenue

TRAUMATIC FRACTURE OF PENIS

HAMILTON W. MCKAY, M.D. AND G. AUDREY HAWES, M.D.
CHARLOTTE, N. C.

In reviewing the literature of penile injuries, one is greatly impressed with the paucity of case reports, which indicates that either the penis is seldom injured or that physicians do not consider such cases important enough to report. In the World War Young recorded only forty-three penile wounds among the American forces. This is an astounding statement when one considers the exposure of the penis to accidents, vicious attacks, and occasional perversions. Many of the recent text books on urology merely refer to fracture of the penis without discussing its diagnosis, treatment and prognosis. Traumatic rupture of the corpora cavernosa is considered ridiculous and unheard of by many members of the medical profession. Rupture is rare but can cause serious complications. The gravity of the injury depends on whether the urethra is injured or compressed by a blood clot causing urinary retention, or whether extensive rupture of the erectile tissue has taken place. If the rupture is extensive, the resultant scar tissue and contraction may cause a lateral deformity of the penis which causes pain and interference with coitus.

PATHOLOGY AND ANATOMY

The lesion consists of a tear in the fibrous sheath of the corpora cavernosa. The tunica albuginea is a tough dense fibro-elastic sheath, which encircles the corpora cavernosa. This sheath is composed of two layers of fibers: an inner concentric layer and an outer longitudinal layer. From the inner layer arise numerous fibrous septums forming irregular spaces or areolae, which form the supporting framework for the blood vessels. The erectile tissue of the penis is known as the corpus spongiosum and consists of the bulb body and glans. External to the corpora cavernosa is Buck's fascia which binds all the structures together.

DIAGNOSIS

Diagnosis is not difficult as a rule. The patient usually gives a history of an unusual penile injury during erection. On physical examination there is marked edema and bluish discoloration, which extends to the scrotum and a lateral deformity of the penis opposite the injured side. One can usually palpate the tear in the fibrous sheath.

TREATMENT

The consensus is that conservatism rather than radical procedures should be employed. First the patient should be catheterized to determine whether the urethra has been injured and if so, whether a blood clot has occluded the lumen. If the urethra is injured, one should proceed in the usual manner for treatment of urethral trauma, which is not considered in this report. On the other hand, if a blood clot is obstructing the lumen of the urethra a small incision should be made, the clot removed and the bleeding points ligated.

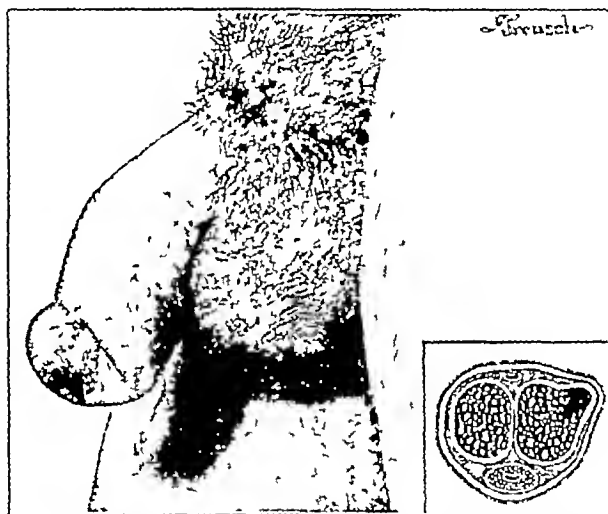
When the urethra is not injured, either cold or hot compresses and sedatives usually suffice. If the effusion continues, the bleeding vessels should be ligated and the sheath sutured.

PROGNOSIS

The prognosis depends on the extent of the rupture. If the urethra is not damaged and the rent in the sheath is small, the parts usually return to normal. If more extensive, the prognosis should be guarded, in view of the resultant cicatrix and deformity.

REPORT OF CASE

C. G., a white man, aged 30, married, was seen Nov. 3, 1934, in an excited, worried state. At 7 a. m. he awoke with an erection of the penis. When he turned over in bed, the penis stuck in the mattress and he thought that it "broke" because



Reproduction of drawing from photograph as the penis and scrotum appeared when patient was first seen showing marked edema of the entire penis especially the foreskin also the firm swollen area on the left lateral surface of the base of the penis. The inset is a cross section through the fracture area showing the accumulation of old blood in the left corpus cavernosum.

it sounded like the breaking of a corn stalk and was followed immediately by severe pain. The entire penis soon became edematous and assumed a bluish red discoloration, which extended throughout the scrotum. There was no history of gonorrhea or syphilis.

Physical examination was essentially negative, except for the external genitalia. The penis was enormously swollen and edematous and was bent to the patient's right. The organ was bluish red, which coloration had extended throughout the entire scrotum, owing to the escape of blood into the subcutaneous tissue.

The patient voided urine with some difficulty but no macroscopic or microscopic blood was present, indicating that the urethra was intact. On palpation one could feel a hard nodular mass unquestionably a blood clot, located in the left corpus.

Examination of the urine gave negative results throughout. Blood counts gave normal results except that the leukocytes numbered 11,250. Hemoglobin was 95 per cent.

Since the patient was able to void urine and there was no hematuria present, catheterization was not deemed necessary. For the first two days, treatment consisted of hot boracic acid steams to the penis and scrotum. On the third day a small incision was made over the blood clot and the clot partially

removed. During the next week the treatment consisted of hot boric acid steams for thirty minutes twice a day.

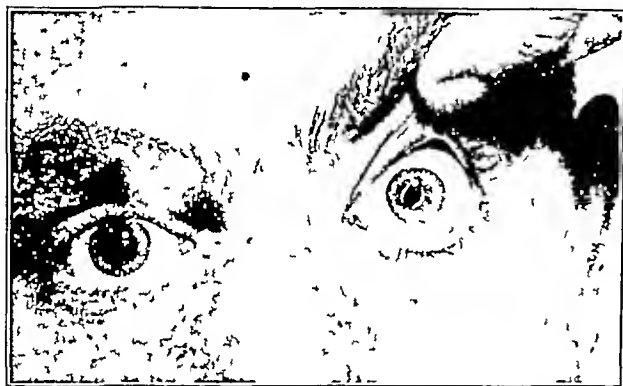
Ten days after the patient was first seen the penis and scrotum had practically returned to normal, only a slight bluish discoloration remaining. He states that when an erection occurs there is no lateral deformity and very little pain at the site of injury.

201 Medical Arts Building

NONSURGICAL REATTACHMENT OF IRIS IN A CASE OF TRAUMATIC IRIDODIALYSIS

VIRGIL J. SCHWARTZ, M.D., MINNEAPOLIS

S. K., a boy, aged 12, suffered an injury to the left eye on July 4, 1929. A small torpedo exploded, causing a large iridodialysis above. The iris was torn from its attachment superiorly to the ciliary body for a distance of 6 or 7 millimeters forming the customary D shaped pupil the flat side being, of course, above. There was some blood at the bottom of the anterior chamber. The fundus was not visible and the visual acuity was reduced to light perception. Instillations of atropine 0.15 Gm., cocaine 0.5 Gm., in distilled water 15 cc., were given. In addition, the eye was bandaged, the patient was put to bed and warm applications were ordered. The pupil responded promptly by dilating well, the iris being pushed well toward the periphery of the anterior chamber immediately. After



Iris completely reattached to ciliary body. The separation extended a distance of 6 or 7 mm across the upper part of the anterior chamber.

forty-eight hours the dilatation was not so complete as desired, therefore, a 2 per cent solution of atropine was substituted for the first, and this was used only twice a day, because the patient was having considerable pain and the instillations aggravated this discomfort.

On the night of July 7 the patient experienced a sudden severe pain in the left eye and on inspection it was found that a fresh hemorrhage had filled the anterior chamber. It was a question whether or not there was a hemorrhage in the posterior segment, since it was impossible to see behind the lens from the beginning. For this reason it was not known whether there was a hemorrhage into the vitreous, a detachment of the retina, or whatever else may have transpired. July 8 the blood in the anterior chamber became largely absorbed, and during the succeeding week all the extravasation disappeared. A red reflex began to appear in the interior of the eyeball on illumination although the fundus could not be distinctly made out. Some days later the patient was able to count fingers but it was also becoming apparent that one edge of the lens had been ruptured by the original injury and that opacification was beginning. This gradually increased. July 30 it was possible to make out a fairly large dark hemorrhagic mass below and nasally in the vitreous. This probably represented the remains of a former vitreous hemorrhage. August 23 long after atropine had been discontinued it was evident that the iris had become completely reattached where it had been torn away from the ciliary body above. This condition has not changed since that time. It might be well to mention, although it is not pertinent to the subject in question, that a complete cataract

developed. This was needed in July 1934, and the patient now has a clear pupil, clear media and a normal fundus.

Considerable importance attaches to this case because of the fact that reattachment of an iris once torn away from the ciliary body has usually been regarded impossible. Fuchs and other authorities have held this view. Operations have been devised for drawing the torn iris margin outward and suturing it in such a manner as to reunite the separated edges, but I believe this is a difficult and not altogether satisfactory procedure. However, I can readily see how it might sometimes be advisable if spontaneous reattachment does not occur, and if the dialysis is in a zone that is not covered by the lids when the eyes are open. Monocular diplopia is apt to be a very distressing symptom in such conditions, and for this reason some operative procedure may have to be attempted. A few years ago Shedlov¹ reported a similar case of spontaneous reattachment. Aside from this I know of no other authentic instance, although there may be some.

617 Medical Arts Building

CINCHOPHEN POISONING WITH AUTOPSY

REPORT OF A CASE DUE TO CINSAVESS

SAMUEL PELUSE, M.D., CHICAGO

Fatal cinchophen poisonings due to various proprietary preparations have been reported quite extensively by Johnson,¹ Weir and Comfort,² Parsons and Harding,³ and others in the recent literature. The case I am reporting is prompted by the peculiar circumstances involved in the patient's death, and by the fact that the preparation consumed is a rather recent addition to the proprietary cinchophen compounds.

Cinsa-Vess, an effervescent tablet containing as its essential ingredients 5 grains (0.3 Gm.) of cinchophen and $\frac{1}{200}$ grain (0.0003 Gm.) of colchicine, appeared for the first time on record in the files of the Council on Pharmacy and Chemistry in November 1930.⁴ The patient consumed thirty tablets of this product over a period of three months prior to the first signs of jaundice, a quantity equivalent to 150 grains (10 Gm.) of cinchophen and one-sixth grain (0.01 Gm.) of colchicine.

REPORT OF CASE

History—Mrs. N. B., aged 37, white, widowed, was admitted to the Mother Cabrini Hospital, Oct. 9, 1934, accompanied by her family physician, Dr. Salvatore Mirabella. The following history was obtained. For the past five weeks she had experienced cramplike pains in the right upper quadrant of the abdomen, and these attacks had become increasingly severe. Four weeks previously she became aware of a yellowish discoloration of her skin and this had progressively deepened in intensity. Her stools were gray at the time of admission, and the urine was very dark brown.

The past history was essentially negative, except for repeated attacks of epigastric distress, especially after eating fatty foods. The physical examination revealed that the patient was well developed and well nourished, and intensely jaundiced with icteric sclerae, and that there was marked tenderness in the upper right quadrant of the abdomen on palpation. The temperature was 97.6 F., the pulse 92 and the respiration rate 24.

The routine laboratory work done on admission was as follows: hemoglobin, 80 per cent, erythrocyte count, 4,210,000, color index, 0.9, white blood count, 12,000, differential white count: small lymphocytes 10 per cent, large lymphocytes 2 per cent, and polymorphonuclear leukocytes 88 per cent. Coagulation time, with a modified Sabrazes method, revealed no coagulation in sixty minutes. Bleeding time, with Duke's method, was complete in thirty minutes. The van den Bergh test resulted in an immediate indirect positive reaction. The blood

¹ Shedlov, Abraham. Traumatic Iridodialysis with Complete Reattachment of the Iris. *J. A. M. A.* 83: 1507 (Nov. 8) 1924.
From the Department of Surgery, University of Illinois College of Medicine.

² Johnson, E. T. Cinchophen Poisoning. Report of a Fatal Case. *J. Missouri M. A.* 3: 22-24 (Jan.) 1933.

³ Weir, J. F. and Comfort, M. W. Toxic Cirrhosis Caused by Cinchophen. *Arch. Int. Med.* 52: 685-724 (Nov.) 1933.

⁴ Parsons, Lawrence and Harding, W. G. Fatal Cinchophen Poisoning. Report of Six Cases. *Ann. Int. Med.* 6: 514-517 (Oct.) 1932.

⁵ Communication from the Council on Pharmacy and Chemistry and the Bureau of Investigation.

Wassermann reaction was negative. The urine showed a moderate amount of albumin, bile was present in large quantities there were many pus casts, many pus cells and many renal epithelial cells.

The treatment instituted was symptomatic with the addition of intravenous administration on alternating days of calcium gluconate 10 cc of a 10 per cent solution, and 50 cc of a 50 per cent solution of dextrose. Under this regimen after a period of four weeks, the coagulation time had dropped to fifteen minutes and the bleeding time to twelve minutes.

Clinical Course—During the first week in the hospital the patient was seized with daily paroxysms of pain in the right upper quadrant of the abdomen, associated with abdominal distention but these were relieved readily by the usual therapy. The jaundice progressively increased in intensity.

In the second week definite signs of ascites were elicited. The jaundice at this time, when viewed in good daylight took on a peculiar, golden yellow shade, quite different from any jaundice with which we were familiar. This golden tint was most pronounced on the forehead and upper eyelids.

During the third week a progressive edema of the lower extremities developed, extending to the hips, this persisted to the end.

In the fourth week the ascites was marked, causing the patient respiratory distress, while the paroxysms were more intense and increasing in number. In this week on November 6, we were accompanied by one of our colleagues, Dr Andrew Sullivan, on our ward-walk, and he immediately recognized the patient's clinical picture as one due to cinchophen poisoning.⁵ The patient admitted, for the first time, that she had consumed Cinsa-Vess, giving us our first clue to the possible etiologic factor.

On November 11, in the fifth hospital week I gave the patient a transfusion of whole blood, using the Scannell apparatus. After 200 cc had been administered the patient started to cough and showed signs of distress. The transfusion was stopped immediately. The patient, however, became practically pulseless almost at once and failed to rally in spite of the stimulants and restoratives administered.

Autopsy—On examination the body was about 5 feet 2 inches (157.5 cm.) in length, weighed about 140 pounds (63.5 Kg.), and was not in rigor mortis. There was hypostasis in the dependent portion and pitting edema of the lower extremities up to and including both hips.

In the chest there was found about 1 quart of heavily bile-stained, serous fluid in each pleural cavity. In the abdominal cavity there was about 10 quarts of a similar fluid.

The liver weighed 580 Gm. On gross examination the external surface was irregular, due to variously sized elevated yellow brown nodules. A cut section showed variation in color, periphery of yellowish brown and central portions of purplish red. Microscopic examination showed a marked absence of hepatic cells, the areas being replaced by a granular debris, in which were interspersed many biliary ducts. There was a general invasion of the tissue by polymorphonuclear leukocytes and lymphocytes. Areas of small nests of hepatic cells in various stages of degeneration were noted. Retention of bile pigment was present. Other areas showed a tendency of beginning fibrosis. The laboratory diagnosis was acute yellow atrophy of the liver.

COMMENT

The immediate cause of death in this case was, no doubt the effects of the blood transfusion. Clinically the patient presented the picture of "anaphylactoid shock" most likely due to the inability of the damaged liver to handle the serum protein of the donor.

The files of the Council on Pharmacy and Chemistry as well as those of the Bureau of Investigation⁴ up to the present time contain no record of any fatalities caused by Cinsa-Vess. This death, in all probability, is the first recorded from the effects of this compound.

1200 Gilpin Place

⁵ Dr Andrew Sullivan had recently survived a toxic jaundice due to cinchonism and was thoroughly conversant with the signs and symptoms of cinchonism poisoning as well as with the cinchonin proprietary preparations.

HEMOLYTIC ACTION OF CEVITAMIC (ASCORBIC) ACID

HAMILTON H ANDERSON M D AND C D LEAKE PH D
SAN FRANCISCO

It has been recommended¹ that cevitic acid, when administered parenterally be dissolved in distilled water and neutralized with one-half its quantity of sodium bicarbonate in order to avoid tissue sloughing. Another note of caution appears to be warranted in connection with its intravenous use. A patient was given 100 mg of cevitic acid N N R dissolved in 10 cc of sterile distilled water by vein and had a chill immediately after the injection, followed by fever and general discomfort. The reaction was thought to be due to the hemolytic effect of the acid, since blood aspirated into the syringe containing the drug solution was laked immediately. This prompted an inquiry into the hemolytic action of neutralized and unneutralized cevitic acid dissolved in either physiologic solution of sodium chloride or distilled water.

Briefly it was noted that concentrations of 1:1,000 or stronger of natural or synthetic cevitic acid in physiologic solution of sodium chloride or water cause human blood cells to hemolyze at once. Within thirty minutes acid hematin forms in these concentrations, which are acid to litmus. No hemolysis occurs within forty-eight hours in dilutions of 1:5,000 or weaker of the acid in 0.9 per cent sodium chloride solution. Red cells do not break down when in contact with 2 per cent or less sodium cevitamate dissolved in physiologic solution of sodium chloride. Water solutions of the sodium salt less than 3 per cent are hypotonic and thus may cause hemolysis.

On the basis of these observations it is suggested that for intravenous use solutions of the sodium salt of cevitic acid (ascorbic) acid approximate isotonicity, i. e., 1 per cent of the salt dissolved in physiologic solution of sodium chloride or 3 per cent in distilled water. If only the acid is available it should be neutralized with one-half its weight of sodium bicarbonate (sterile) in physiologic solution of sodium chloride or water before it is injected.

Parnassus and Third avenues

CLINICAL COMPARISON OF DRUM AND SPECIAL ETHERS

M S DOOLEY M D C J WELLS M D J C FREY M D F H
KNOFF M D W J GABEL M D J S MORDELL PH G J J
BUETTNER M D C E McELWAIN M D AND C D
BENTLEY M D SYRACUSE N Y

The Golds¹ have recently supplied data controverting the tradition that U S P ether undergoes rapid deterioration when exposed to the air. More recently, Hediger and Gold² have secured data from 702 clinical anesthetics substantiating the earlier laboratory results. These were given in routine manner except that the anesthetists were unaware of the type of ether given ("blind test"). Bulk (drum) ether U S P, freshly opened quarter pound cans of ether U S P and quarter pound can "special" ethers from different manufacturers were used. The only assurance the anesthetists had was that the presence of the supposedly deleterious substances (acids, aldehydes and peroxides) were always within the limits of tolerance of the U S P X. Such assurance was based on U S P and other tests (Nessler and potassium iodide) on each lot on the day used.

These results were of interest to us because our own experience had led us to the suspicion that in some cases at least

From the Pharmacologic Laboratory of the University of California Medical School.

¹ Fisher B H and Leake C D. The Parenteral Administration of Cevitic Acid (Ascorbic Acid) Solutions J A M A 103:1556 (Nov. 17) 1934.

This research was aided by a grant from the Hendricks Research Fund.

From the University Hospital of the Good Shepherd (Drs. Dooley, Wells, Frey, Knoff and Gabel and Mr. Mordell) and the Syracuse Memorial Hospital (Drs. Buettner, McElwain and Bentley).

¹ Gold Harry and Gold David. Stability of U S P Ether After the Metal Container Is Opened J A M A 102:817 1934. The Stability of U S P Ether After the Metal Container Has Been Opened With Preliminary Results of a Clinical Comparison of U S P Ether in Large Drums with Ether in Small Cans Labeled For Anesthesia, Anesth & Analg 14:92 (March-April) 1935.

² Hediger Ella and Gold Harry. U S P Ether from Large Drums and Ether from Small Cans Labeled For Anesthesia J A M A 104:2244 (June 22) 1935.

different brands of ether from the same manufacturer differed only in packaging, advertising and pricing

We were therefore interested in making independent clinical tests ("blind tests") at the suggestion of Dr Gold, using the same tests of purity as were employed by the Golds.¹ The small cans of "special" ethers were opened as usual at the time used, whereas some samples of bulk ether U S P were used one month after the container was first opened, so that any advantages of freshness were in favor of the former. The tests were in no way unlike the usual routine ether anesthetics of the hospital, save that the anesthetists filled in the special blanks provided for the tests and were ignorant of brands of ether involved. The blanks used were the same as those used by Hediger and Gold² with minor additions. The accompanying table shows the condensed results of 143 anesthetics.

Summary of One Hundred and Forty-Three Anesthetics

Type of Ether	Number of Cases	Male	Female	Anesthesia		
				Satisfactory	Fair	Unsatisfactory
Mallinckrodt for anesthesia 1/4 pound can (white label)	49	24	25	41	1 + 1 (no record) uneven (alcoholic)	0 2 uneven suffocation (1 alcoholic) 2 uneven coughing (1 neurotic) 1 uneven slow induction 1 uneven coughing partial suffocation (alcoholic obese)
Mallinckrodt U S P 1/4 pound can (blue label)	19	8	10	17	1 + 1 (no record) uneven at first periods shallow breathing and dusky color—atelectasis (nervous)	0
Mallinckrodt U S P bulk	63	16	47	3	3 + 1 (anesthetic chloroform ether ethyl chloride mixture) 1 respirations shallow 1 uneven dusky color 1 uneven (large amount 120 cc from 9 to 10 to 11 50 removal of tonsils and adenoids)	2 + 1 (no report) 1 uneven coughing tendency to vomit 1 induction difficult 1 coughing spasm cyanosis 1 induction difficult carbon dioxide oxygen ethyl chloride 1 coughing and suffocation
Merek for anesthesia 1/4 pound can	1		1	1		
Squibb 1/4 pound can	11	6	5	4	1 uneven induction suffocation (210 cc used)	0 5 uneven coughing anesthetic—chloroform ether ethyl chloride mixture 1 uneven anesthetic—chloroform ether ethyl chloride mixture
Totals	143			116	0	18

We are indebted to the surgical and nursing staffs of the University Hospital and the Syracuse Memorial Hospital for their cooperation during these tests.

The results show that bulk ether was satisfactory in 84.1 per cent, and quarter pound cans of ether in 78.7 per cent, any advantage shown being in favor of bulk ether. These results are confirmatory of the recent results of Hediger and Gold.²

No unusual complications were observed. There was one case of postanesthetic massive collapse of the lung (atelectasis). Reference to the table shows that not drum ether but U S P quarter pound can ether was employed in this case. No significance is attached to this happening, since it occurs about as often during intraspinal as during inhalation anesthesia and is apparently due, in both types to very shallow breathing.

From these results it seems evident that small can special ethers at a high cost offer no advantages over bulk ether U S P either in safety or in efficiency.

Special Article

THE FOUNDATIONS OF DIET THERAPY

CLINICAL LECTURE AT ATLANTIC CITY SESSION

L. H. NEWBURGH, M.D.

ANN ARBOR, MICH.

Unlike the machine, the activity of the living organism is regulated from within. Its metabolism from hour to hour and from day to day proceeds in a manner largely independent of the supply of nutritive materials. Because of this inherent quality of the organism, its structure is injured when it is unable to obtain materials at the rate at which they are utilized or excreted. It may also be harmed when the intake of certain materials is excessive. But the degree of injury and the rate of its development vary greatly with the type of deprivation or excess.

It is a matter of only half a century since the importance of this point of view began to be realized. Then abruptly under the leadership of Carl Voit there was initiated a detailed study of the dietary requirements of the normal adult. Even though the problem is complicated, the knowledge already at hand is sufficient to inform us of most of the minimal requirements of the normal adult. In the case of the child much less has been established. Here an additional complexity is introduced by the necessity to provide for the formation of new tissue of ideal composition at an ideal rate. More recently realization has come that the diet of the pregnant woman, because of its effect on the fetus, needs a most careful consideration. During the first year the infant grows so rapidly that it cannot absorb from its digestive tract enough of the essential materials to produce new tissues of normal composition. As an example, certain facts concerning the growth of bone of small infants may be used, since they illustrate so vividly the dependence of normal skeletal development on the supply of calcium and phosphorus available to the fetus. At birth the bones of full term infants are filled with trabeculae. These trabeculae are absent from the bones of premature infants. Bauer and Aub,¹ working with kittens, observed the rapid disappearance of the trabeculae during the first weeks of extra-uterine life. McCollum and Simmonds report on experience from the Children's Hospital in Vienna, which leaves no doubt concerning the importance of the fetal store of calcium. Two full term infants were born on the same day, the first one of a healthy mother, the second of a woman whose bones were osteoporotic. Both infants were nursed by the healthy mother and each was given supplementary feedings of the same amount of cow's milk. Nevertheless, the infant of the woman who had received too little calcium during pregnancy developed severe rickets within six months while the other infant remained well. Nor does the inclusion of vitamin D in the diet guarantee normal growth of bone. Shohl² has given a clear demonstration of this fact. He writes "Rats on a normal diet retained about

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¹ Bauer, Walter, Aub, J. C. and Albright, Fuller, J. *Exper. Med.* 49: 145 (Jan.) 1929.

² Brown, Helen B., Shohl, A. T., Chapman, Edna E., Rose, Catharine S. and Saurwein, Esther M. *J. Biol. Chem.* 98: 207 (Oct.) 1932.

three times as much calcium and five times as much phosphorus as those on rachitogenic diets. This was true whether vitamin D was administered or not. The absolute amounts retained are dependent primarily upon the amounts in the diet.³

I hope that these few experiences give a conception of the goal sought by those workers who are striving to delineate the normal diet. Familiarity with the many facts already accumulated must be obtained by use of appropriate textbooks.²

But dietetics did not develop against such a background. The idea that disease could be ameliorated by forbidding the use of certain foods was acceptable to the physician from the earliest times. He unconcernedly omitted one food after another wholly oblivious of a far more important fact, namely, that the sick man should receive a sufficient amount of each of those substances which every normal person must have to avoid disease. The first requirement for the physician who proposes to employ diet therapy is a familiarity with the needs of the normal organism. In no other way can he assure himself that he is not producing a new disability or retarding recovery from the original one.

Next he must ask himself a second searching question. Does the disease under consideration make it necessary to increase or decrease the quantities of any of the constituents of the normal diet. For example, hyperthyroidism and fevers increase the expenditure of energy. The diet should accordingly contain increased amounts of fats and carbohydrates. Because of curtailment of activity, certain disabling diseases such as cardiac failure, act in the opposite direction. The work of the heart is proportional to the total metabolism. Therefore a sharp reduction of the energy value of the diet will lower the metabolic rate significantly. The burden on the incompetent heart may thus be lightened.

The diabetic patient can oxidize less dextrose than the normal person. In an effort to bring the dietary carbohydrate within the patient's capacity the error recently witnessed should not be repeated. A boy, aged 6 years, was brought to me because he was stunted, weak and irritable even though the urine was continuously free of sugar. The physician who had been in charge of the diet for several years had omitted all milk, because it contains sugar. In so doing he had also deprived the child of his chief source of calcium without making any other provision for the growth of bone. Rearrangement of the diet to include a pint of milk daily quickly caused a most gratifying improvement in the boy's general condition.

Students of nutrition have obtained much information concerning the requirement of protein, vitamins and inorganic salts, but it is often forgotten that water must be included among the essential dietary constituents. In the case of the normal individual one may usually rely on thirst to insure a sufficient intake, but in many abnormal states the physician either has curtailed the amount that the patient would otherwise drink or has failed to supply what the patient could not drink because of his disability. Such a restriction might have jeopardized even the health of a normal man.

Since no systematic study of water requirements had been made, my associates and I undertook such an

investigation. Some of our observations will be reported, because they are in sharp conflict with present beliefs.

In order to appreciate the water requirements of the human body, the physician must acquire some familiarity with the quantitative aspects of the loss of water. It is often forgotten that water vapor is continuously passing away from the skin and lungs as one means of carrying off the heat produced by the oxidative processes of the body. The normal adult of quiet occupation, living in a comfortable atmosphere, will lose from 900 to 1,400 Gm of water in that way each twenty-four hours. Either hot weather or muscular work may double or treble the output. The combination of the two, when the temperature is over 100 F and the air is dry, is sufficient to cause the evaporation of 10 liters of water a day. The other important loss of water is as urine. One of the major functions of the kidneys is to excrete in solution the solid end products of the metabolism. But the kidneys are sharply limited as to the amount of these products which they can excrete per unit of water. (This capacity may be expressed as the specific gravity of the urine, which in the case of healthy kidneys rises to 1.030 when the intake of fluid is sharply limited.) Appropriate studies⁴ have shown that normal kidneys need at least 500 Gm of water each twenty-four hours in order to eliminate the usual solid wastes of the period. When the water vapor is added to the urinary output and a small additional allowance is made for feces, it is seen that the normal man loses upward of 1,500 Gm of water daily. What will happen if his total intake of fluid is restricted to half that amount? Such studies⁵ have demonstrated that the loss by evaporation has a prior claim over the kidneys. The former is not lessened even though the water left over for the formation of urine is inadequate to prevent retention of wastes. The degree of the retention is, however, mitigated through a limited contribution of water by the body itself. Normal persons were subjected to the restricted intake of fluid for three or four days. During that interval the body grudgingly gave up from 3 to 4 liters of its own water. Then the symptoms of dehydration had become so disturbing that the experiments had to be stopped. Such observations have impressed us with the grave import of dehydration.

This minimal normal requirement of 1,500 Gm of water every twenty-four hours may be far too little to supply the demands of several pathologic states. None is more significant than nephritis, for diseased kidneys suffer a diminishing ability to form concentrated urine. In advanced stages of chronic nephritis it may take three times the normal amount of water to remove each gram of urinary solid. Under these circumstances the minimal intake that will prevent retention and dehydration is 2,500 Gm of water daily. Nevertheless the restriction of fluids in the management of nephritis is a widely spread practice based on the erroneous belief that diseased kidneys have difficulty in excreting water. In fact, it has been almost universally taught that blockage in the kidneys is the cause of nephritic edema. According to that doctrine, to get rid of the edema one must remove the water by other routes and at the same time one must permit as little water as possible to enter the body. Only a few simple experiments were needed

³ The book recently published by the author in collaboration with Frances Mackinnon (*The Practice of Dietetics* New York: Macmillan Company 1934) was designed to meet the practitioner's needs in this respect.

⁴ Lashmet F. H. and Newburgh L. H. *J. Clin. Investigation* 11: 1093 (Sept.) 1932.
⁵ Newburgh L. H. and Lashmet F. H. *Am. J. M. Sc.* 186: 461 (Oct.) 1933.

to show the utter fallacy of these earlier beliefs and to indicate the shocking amount of harm that their acceptance had worked

Examination of the accompanying table shows that the kidneys of the edematous subject were able to secrete a very large amount of urine containing a normal amount of solids as soon as he was permitted to drink a sufficient amount of water. The failure to

Water Requirements of Nephritic Patients

Subjects	Water Restricted for 24 Hours		Water as Desired for 24 Hours	
	Water In Urine Gm	Solids In Urine, Gm	Water In Urine Gm	Solids In Urine Gm
Normal	500	35	577	37
Nonedematous hypertensive nephritis	1,804	33	4,922	38
Edematous chronic nephritis	210	12	3,948	35

prevent retention on the preceding day could have been due only to insufficient water. Had he been able to mobilize body water on the day of restriction as the nonedematous nephritic patient did, he would have been able to avoid serious retention but at the expense of dehydration. One hesitates to make a choice between the two evils.

The recent studies of Maddock⁶ in a totally different field also emphasize the necessity of getting a sufficient amount of water into the bodies of certain patients. He writes:

A consideration of the sources of water and all the channels of its excretion is of incalculable value to the surgeon. Many diseases under his care are complicated by an interference with the normal intake of fluids and by abnormal outputs. Under these circumstances an adequate supply of water must be secured by parenteral administration. The problem is to know how much is needed. The administration of what seems to be a large amount may nevertheless fall far short of the needs, as the following experience illustrates. A youth entered the hospital with acute intestinal obstruction. Four hours later a colostomy was done. For several days after the operation he had rather persistent vomiting, watery diarrhea and moderate drainage from the colostomy tube. In order to meet these losses of fluid he had been given 3,500 cc. of fluid intravenously every day. However, in a few days the volume of urine had fallen to 250 cc per twenty-four hours. He was drowsy and the nonprotein nitrogen of the blood had risen to 57 mg per cent. A calculation of all the losses of water from the body was then made and it was found that the total amounted to about 4,500 cc each twenty-four hours. He had been dehydrating at the rate of 1,000 cc daily. The administration of sufficiently large volumes of fluid caused a rapid disappearance of symptoms, a great increase in the amount of urine and a return to normal of the blood N P N.

The diminishing output of urine was direct evidence of the inadequacy of the supply of water.

When man is studied as a mechanism he is found to obey the fundamental laws that govern the universe. His response to the energy of his environment is in no way different from that of an inanimate object. However, the physician appears to be less familiar with the significance of this relationship than with many other fields of nutrition. This is strange, because the transformation and expenditure of energy by mammals was the first phase of nutrition to be searchingly investigated. The great master Max Rubner built a solid

foundation for all subsequent studies of energy relations by demonstrating that the first law of thermodynamics, namely, that energy can neither be destroyed nor created, holds as rigidly for mammals as it does for the physical universe. This first principle may be recast into more familiar language by stating that all the energy released by the oxidations within the body will be dissipated at the rate at which it is produced, provided the internal temperature does not change. With the calorimeter this fundamental fact has been repeatedly confirmed and greatly elaborated in New York by Lusk and his pupils and in Boston by F. G. Benedict. Unfamiliarity with these fundamental laws has made the physician more willing to accept vitalistic explanations of disease. There could not have been the widespread acceptance of the contentions of several German professors if it had been generally known that man is an integral part of the universe and constrained to obey its basic laws. These men stated that there were two kinds of fat people: a small group that had become obese by merely eating too much, and a larger group of persons who were supposed to have laid down an increasing amount of adipose tissue without regard to what they had eaten. The latter statement was a flat denial of the law dealing with the conservation of energy. Attempts of many sorts were made to overcome this primary difficulty by offering bizarre and complicated metabolic abnormalities as causes of the adiposity. One such claim that has given satisfaction to many minds postulates that the fat man converts too much of the food to adipose tissue. Let us examine this statement. It is assumed that an obese individual of that hypothetical type who is not overfed receives daily 150 Gm of protein, 100 Gm of fat and 500 Gm of carbohydrate, making a total of 3,500 calories. The protein is utilized and thus yields 600 of the 3,500 calories expended. All the fat is deposited and all the carbohydrate is converted to fat and deposited. The total deposition of fat will then be the sum of the food fat (100 Gm) plus the fat derived from the carbohydrates (222 Gm), or 322 Gm. The subject will in that way have added 322 Gm daily to his weight. But, having stored the major portion of his diet, whence will he derive the 2,900 calories that he dissipated in addition to those afforded by the oxidation of protein? There can be only one answer: by oxidizing 322 Gm of body fat.

It seems to me that these false prophets made their mistake by paying too little heed to the self-regulatory nature of the living organism. They never recorded the total expenditure of energy of the individual under observation. They fed him a known amount of food and compared its calorific value with what they guessed he was expending. If he did not lose weight according to the expectation, it was assumed that he was the victim of some peculiar disease that made it possible for him to evade the laws that govern normal persons and the universe in general.

When, however, we had devised a technic⁷ that permitted us to record the expenditure of energy over long periods of time, we were gratified to find that the earlier conclusions concerning the energy relations of normal men applied in detail to all obese persons. There is but one fundamental cause⁸ of obesity. It is an inflow of energy that exceeds the outflow. The

⁶ Collier, F. P. and Maddock, W. G. *Internat. Clin.* 3:191 (Sept.) 1934.

⁷ Newburgh, L. H., Wiley, F. H. and Lashmet, F. H. *J. Clin. Investigation* 10:703 (Oct.) 1931.
⁸ Newburgh, L. H. and Johnston, Margaret Woodwell. *J. Clin. Investigation* 8:197 (Feb.) 1930.

outflow may be large or small. If the latter, a small amount of food may still contain as much energy as that expended by the patient. All adiposity can be reduced by a properly constituted diet.

SUMMARY

This paper consists of a plea to put diet therapy on a rational basis. Attempts to alleviate disease by manipulation of the intake of food are as old as medicine itself, but systematic efforts to discover the nutritional needs of man are very modern. In the absence of this new knowledge, the physician accomplished little through diet because he centered his attention on the omission of foods. He is urged to acquaint himself with the quality and quantity of the constituents of the normal diet. This is his only assurance that he will not prescribe for his patient a diet that is deficient in any respect. He must then decide whether the condition of the patient requires an increase or a decrease of any one or several of the dietary constituents so that he may modify the normal diet to meet the new requirements.

University Hospital

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

PAUL NICHOLAS LEECH, Secretary

SHOTGUN VITAMIN THERAPY

The American people have been made "vitamin-conscious." Clever advertising emphasis on the infinitesimal and not easily detectable amounts in which the vitamins occur in ordinary foodstuffs and further play on the startling results that appear in animals deprived of even these small amounts have stimulated a popular romance and mystery.

This popularization of the comparatively recently acquired and constantly growing knowledge of the various vitamins has resulted in many errors and misconceptions, largely to the benefit of the unscrupulous but sometimes also of the well intentioned manufacturers of products offered to the public. Among these misconceptions are the ideas that everybody needs to take supplements of all the vitamins all the time and that it is both therapeutically and chemically advisable to combine all or some of the vitamins, perhaps with some mineral or minerals, in one preparation. It has apparently been forgotten that no necessity has been found for administering preparations containing complex combinations for effective maintenance of health when a well balanced diet is taken. Clinically recognizable multiple vitamin deficiency diseases are certainly rare in this country.

It has been stated that about thirty-seven elements or substances are necessary in a complete diet; among these are vitamins. That they are grouped together under this name does not indicate that they are closely related chemically. For instance, vitamin C is closely related to the sugars while vitamin D is one of the sterols. From a physiologic standpoint it is just as irrational to prescribe a mixture of a number of the vitamins as a combination consisting of cystine, iodine, iron, and linoleic acid or any other combination of dietary essentials.

At the present time there seems to be no more logical basis for including all or a number of vitamins in one preparation than there is for combining a number of the other known dietary essentials in any one pharmaceutical product. The functions of the vitamins are as diverse and independent as their chemical constitution would indicate.

It is not perhaps surprising that efforts have been made to supplant the use of the various natural vitamin containing substances by preparations of highly potent concentrates either

singly or in combination, and also by their combination with minerals in mixtures, in tablets and in capsules. Having prepared such combinations, it is of course natural that manufacturers propagandize information regarding their need extensively to the medical profession through scientific journals and also to the lay world through the radio, the press and the mails. At first sight the combinations of vitamins offer the obvious advantage of simplicity of administration from the point of view of both the patient and the physician. From the standpoint of the manufacturing pharmacists they have the added advantage of ease of preparation, wide demand and ready marketability.

The fact that the vitamins are chemically active substances essential in all probability, for maintaining normal cell metabolism makes it necessary here to consider the bearing of the pharmacologic incompatibility of mixtures of drugs and their possible antagonistic action in the body. Sufficient attention perhaps has not been paid to the physiologic action of potent vitamin concentrates when they are combined and taken by man into the body in fixed amounts, that is, as to whether the action is the same as when the vitamins in their natural state are supplied to the organism, or whether it is different.

The voluminous literature reveals little information dealing directly with the subject of polypharmaceutic mixtures of vitamins. A few studies in which a combination of physiologically active concentrates has been administered indicate significant interactions between the vitamins and fail to show the anticipated beneficial results. There should be borne in mind the paucity of information in this field, and firms marketing such products should be reminded that the burden of proof for claims made for such mixtures rests entirely on the firms making them.

The question arises as to whether there may be an enhancing action of one vitamin concentrate when combined with another. There is practically no reference in the literature to such a phenomenon when the absence of a multiple deficiency disease is excluded critically. The impression is gained that, at best, the action of combined concentrates of vitamins would be the sum of the effects of each vitamin constituent. Commonly, the potency used of each concentrate for prophylaxis is that which has been adopted as the protective amount which, it should be remembered, has been determined according to its effect in different species of animals. The argument that certain vitamins exist together in nature is no guaranty that the action to be expected from these is brought about by administration of potent concentrates in which they are combined by various processes. When a specific vitamin in its natural state is administered, utilization in the normal human body is adjusted according to a nicely regulated mechanism, but when the vitamins are extracted or concentrated and given together in different mixtures in tablets and in capsules, it may be questioned whether or not there is an interference or enhancement of the specific effect of the different vitamin concentrates so combined. So far as can be found there is in the literature very little reference to that question.

Even if no harm results, it should not be forgotten that the giving of combined vitamin concentrates unnecessarily often proves to be an economic wastage. This is so especially in the use of such combinations in the treatment of a specific deficiency disease, when the better practice of medicine indicates the therapeutic use of the specific or of a single vitamin in adequate dosage without necessarily requiring an increase (or decrease) in dosage of the other vitamins. There is no direct evidence that vitamins have a supplemental effect on one another when in combination. It should be pointed out here that the administration of complex vitamin preparations is open to all of the objections that may be urged against the routine use of mixtures containing ingredients in fixed proportions.

It is well known that the commonly used vitamins are peculiarly susceptible to destructive effects when they are removed from their natural chemical environment, it does not therefore seem necessary to discuss in any detail the antagonistic action of the different factors in the destruction of each individual vitamin. Yet there are certain pertinent facts that may be of interest.

For instance, it has been shown that there is impairment in potencies of vitamins A and E when they are subjected to

aeration, especially in the presence of heat. As early as 1920, Hopkins showed that vitamin A in butter, although resistant to heat alone, is rapidly destroyed by heat plus aeration. Later, Mattill discovered that not only oxidation but rancidity developing in sources of vitamins A and E destroyed their specific action. Another procedure that decreases the availability and hence the effectiveness of vitamins A and E is admixture of mineral oil. Presumably this results from the solvent action of the oil, so that the vitamins escape absorption. The ease with which vitamin C potency is impaired by heat and by varying the pH of the solution in which it is contained has been repeatedly observed and is of practical significance in the canning of fruits and vegetables. The catalytic action of copper in such processing is well established as responsible for destruction of vitamin C.

Further evidences of the lessening of the potency of vitamin concentrates in mixtures are found in their combination with minerals. The references consulted are those concerned chiefly with iron, but there is some reason to suppose that iodine may destroy the potency of vitamins. McCollum was the first to note the destructive effect on vitamin A of diets containing iron salts, when fed to white rats. Subsequently, Jones showed that ferrous sulphate could so effectively destroy vitamin A that xerophthalmia might be produced (in rats). Mattill and also Waddell and Steenbock reported that vitamin E could be destroyed by the addition of iron salt to a stock ration.

It appears, therefore, that within recent years the contributing causes for the destruction or prevention of the characteristic effects of vitamins have received much attention, with the result that special efforts have been made in manufacturing such preparations to make them effective. In the case of some preparations this has been found possible. The use of antioxidants, the regulation of the pH and of the thermal conditions, and various other measures have been designed to aid in preventing the destructive action. It may be said that vitamin concentrates of vitamins A and D can be manufactured so that in the finished product the concentrate will meet the requirements of the recent U S P X-revised dosages for these vitamins. But it is very difficult to find any evidence whatever that a deterioration of the potency may not take place on standing or from the interaction of highly potent concentrates of other vitamins when combined. This holds true for combinations of vitamin concentrates in the form of capsules, in tablets and in liquid or oily mixtures, and of vitamin concentrates with minerals. Tablets and concentrates containing vitamins A and D have been quite stable for the period of years in which it has been possible to test them by biologic assay.

There is experimental evidence supporting the view that an antagonistic reaction exists between certain of the vitamins when given in combination. Certain investigators have advanced the belief that large amounts of vitamin A concentrate may be responsible for a disturbing effect on vitamin B. As early as 1922 it was reported by Mouriquand and Michel that, in a series of experiments on the interference with the curative action of vitamin C in the treatment of scurvy, they attributed the interference to the presence of vitamin A.

The Council's referee recently reviewed a considerable number of cases of scurvy occurring in an eastern hospital where there was practically an epidemic of scurvy. Nearly every year from forty to sixty children with scurvy are seen. Reviewing the number of cases in his service in the last ten years, the referee found something like 300 or 400. When asked, some of the mothers stated that their children had been fed orange juice. When asked how the orange juice was given, they stated that it had been mixed with cod liver oil preparations.

There have been numerous investigations on the toxicity of vitamin D concentrates in large quantities. A few of these are the investigations of Kreitmar and Moll, Pfannenstiel, Light, Miller and Frev, and Klein. In such experiments the addition of extra amounts of vitamin B complex has been shown to diminish the toxicity of excessive vitamin D dosage according to the work of Harris and Moore.

These are some of the better known examples of the interrelationship of the total quantities of vitamins to one another. It certainly would seem that one vitamin in varying propor-

tions, might render ineffective quantities of another vitamin that normally are adequate. Further investigation seems necessary before one is able to say just which vitamin concentrates may be safely mixed without impairment of the activity of the ingredients, how much of each is necessary in such mixtures, and what deleterious influences may result from the presence in such mixtures of various oils, oxidizing agents, mineral salts, and so on.

From this relatively short review concerning the combination of vitamin concentrates for prophylaxis and therapeutic effects, certain points stand out.

It has been brought out that there has been practically no experimental or clinical evidence which tends to show that vitamin concentrates are enhanced or have any supplementary action when given in combination, either for prophylaxis or for therapeutics. The best that may be expected from any given combination is that each specific vitamin will produce its maximum effect independently of the other ingredients of the mixture.

It has also been shown that certain inorganic, organic and even physical agents may destroy the potency of vitamins with which they come in contact. For example, vitamins A and E, especially the former, are destroyed by contact with oxygen, especially during heating, by mixture with mineral salts like iron, and with certain organic fats. Even food materials and certain inert substances may interfere with the effect of or absorption of vitamins. For example, lard and other unsaturated food fats and mineral oil so affect vitamin A. This makes it important to study further the influence of other ingredients in synthetic preparations of vitamins where they have been removed from the protective influences present in their natural sources, and to investigate the results of administering vitamin concentrates in close relation to food intake. The presence of pathologic states may also influence the absorption of vitamins given even in ordinarily adequate amounts, that is, abnormalities in the small intestine or operative shunts may interfere with the absorption of vitamins A, D and B, biliary disease may likewise interfere with vitamin A utilization, and gastric anacidity may prevent the proper utilization of vitamins C and B.

It has been pointed out that there is ever increasing evidence that a delicate interrelationship exists between vitamins, because of either a physiologic relationship or actual incompatibilities of various vitamins, that the administration in combination of concentrates of vitamins, each of which is active independently, may so alter the effectiveness of each as to render it inadequate or to necessitate an increase in its dosage. For example, vitamin B has been reported to be rendered less effective when given with large amounts of vitamin A. In order to offset that, it seems that much larger amounts of vitamin B complex are necessary in such mixtures. In the case of vitamin C, large quantities of cod liver oil may render it ineffective in the prevention and cure of scurvy. There is not even a sound empirical basis for fixing the relative ratios of the various vitamin ingredients of mixtures.

The attempt to supply a sufficient amount of a single vitamin concentrate specifically indicated, when a mixture of vitamins is prescribed, may result in an excess of the remaining active agents. The possibility of harm from such excess must be kept in mind, even when no harm is done, such a combination may constitute an economic waste.

From this review the Council concluded that there is a wide field for the study of this question as to the incompatibilities, the impairment of vitamins when they are prepared in concentrate and prepared in mixtures, and as to the manner in which they are administered to the patient.

One of the cardinal principles of the Council has always been that the burden of proof lies with the manufacturer. From the foregoing brief review it is discerned easily that the status of mixed vitamin therapy is on insecure grounds. The Council therefore will not accept mixtures containing vitamin concentrates until the manufacturers are able to present adequate evidence of their rationality. This does not refer, however, to concentrates of vitamin A and D, which occur combined in nature as such in cod liver oil, nor does it apply to any combinations of vitamins that may occur in nature in therapeutic amounts.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMOTION TO THE PUBLIC THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

RAYMOND HERTWIG Secretary

CELLU BLACKBERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House Inc, Chicago

Packer—Eugene Fruit Growers Association Eugene, Ore

Description—Canned cooked blackberries packed in water without added sugar or salt

Manufacture—Blackberries picked at the proper stage of ripeness are mechanically graded according to size (imperfect fruit or foreign material is removed), spray-washed and automatically filled into cans. The berries are covered with water heated for a definite time at 91 C, and the cans are sealed and processed at 100 C. and cooled

Analysis (submitted by distributor) —

per cent

Moisture	89.0
Total solids	11.0
Ash	0.4
Fat (ether extract)	0.8
Protein (N x 6.25)	1.0
Reducing sugars as invert sugar	4.6
Sucrose	0.2
Crude fiber	2.0
Carbohydrates other than crude fiber (by difference)	6.8

Calories—0.4 per gram 11 per ounce

Claims of Distributor—For diets in which sweetened fruit is proscribed

MONARCH STRAINED APPLESAUCE, CARROTS, PEAS, PRUNES FLAVORED WITH LEMON JUICE, SPINACH, STRINGLESS BEANS AND VEGETABLE SOUP WITH CEREAL AND BEEF BROTH UNSEASONED

Distributor—Reid, Murdoch & Company, Chicago

Packer—The Larsen Company, Green Bay, Wis

Description—Respectively strained applesauce, carrots, peas, prunes flavored with lemon juice, spinach, stringless beans and vegetable soup (carrots, potatoes, tomatoes, celery, peas, beans, spinach) with pearl barley and beef extract prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vegetables and fruits (THE JOURNAL, July 22, 1933, p 282, July 29, 1933, p 366, Aug 12, 1933, p 525, Aug 19, 1933, p 605, Aug 26, 1933, p 675, Aug 10, 1935, p 437)

(1) BLUE AND WHITE BRAND CRYSTAL WHITE TABLE SYRUP

(2) BLUE AND WHITE BRAND GOLDEN TABLE SYRUP

Distributor—Red and White Corporation Chicago

Packers—Manufacturers of accepted brands of syrups

Description—(1) Table syrup, corn syrup with cane sugar syrup, plum or flavored with vanilla or with vanilla and coumarin (THE JOURNAL, Oct 15, 1932, p 1353, Sept 3, 1932, p 833, Nov 18, 1933, p 1635, and April 15, 1933, p 1174). (2) Table syrup, corn syrup flavored with refiners' syrup (THE JOURNAL, Dec. 3, 1932, p 1948, July 23, 1932, p 309, Oct 28, 1933, p 1393, and March 5, 1932, p 817)

CHIPPEWA IODIZED SALT

Manufacturer—The Ohio Salt Company, Wadsworth, Ohio

Description—Table salt containing added magnesium carbonate, sodium bicarbonate and potassium iodide (0.02 per cent)

Manufacture—Salt containing 1 per cent magnesium carbonate prepared as described for Chippewa Free Running Salt (THE JOURNAL, Sept 7, 1935, p 800), is admixed with potassium iodide and a small quantity of sodium bicarbonate and automatically packed

Analysis (submitted by manufacturer) —

Moisture	trace
Calcium sulphate	0.7
Calcium chloride	0.08
Magnesium carbonate	1.0
Potassium iodide	0.02
Sodium bicarbonate	0.1
Sodium chloride (by difference)	98.2

Claims of Manufacturer—For all table and cooking uses. The added magnesium carbonate tends to preserve free running qualities and the sodium bicarbonate to prevent loss of iodine. The iodine in the salt aids in preventing simple goiter caused by insufficient iodine in the diet. Used daily as the only salt on the table and in cooking, it richly supplements the iodine of diets deficient in that element and thus helps to protect against simple goiter

SIEVED APPLES, APRICOTS, ASPARAGUS, BEETS, CARROTS, CELERY, GREEN BEANS, PEACHES, PEAS, PRUNES, SPINACH, TOMATOES

UNSEASONED

- (1) IRIS BRAND
- (2) SEAKIST
- (3) TRUPAK
- (4) WELLMAN BRAND

Distributors—(1) Haas, Baruch & Co, Los Angeles, (2) The Nielsen Corp Ltd, San Francisco, (3) Haas Brothers, San Francisco, Oakland, Fresno, (4) Wellman Peck & Co, San Francisco

Packer—The Nielsen Corp Ltd, Oakland, Calif

Description—Respectively sieved apples, apricots, asparagus, beets, carrots, celery, green beans, peaches, peas, prunes, spinach and tomatoes prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. The products are the same as the respective accepted Warranty vegetables and fruits (THE JOURNAL, May 11, 1935, p 1708, March 9, 1935, p 835, April 27, 1935, p 1504, April 13, 1935, p 1331, March 16, 1935, p 923, March 9, 1935, p 835, April 6, 1935, p 1241, March 23, 1935, p 1007, April 20, 1935, p 1419, March 30, 1935, p 1074, Feb 2, 1935, p 399, June 1, 1935, p 1999)

FAIRWAY WHEAT CEREAL

Distributor—Twin City Wholesale Grocer Company, St Paul

Manufacturer—Pillsbury Flour Mills Company, Minneapolis

Description—Granular wheat endosperm or farina, practically free of germ and bran.

Manufacture—Wheat is cleaned, washed, scoured, crushed, and the bran and germ separated from the flour middlings (endosperm) by the usual milling methods. Endosperm graded to uniform granulation is heated to destroy any insect infestation and packed in cartons

Analysis (submitted by distributor) —

per cent

Moisture	8.7
Ash	0.4
Fat (ether extraction method)	0.8
Protein (N x 5.7)	10.5
Reducing sugars as dextrose	0.2
Sucrose	1.3
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	79.2

Calories—3.7 per gram 105 per ounce

Claims of Manufacturer—For use as a breakfast cereal or other table dishes also for infant feeding as a carbohydrate supplement to milk under the directions of a physician

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 28, 1935

THE VITAMIN ALPHABET

In 1911 Funk proposed the term "beriberi vitamin" for the active substance the lack of which in the diet led to polyneuritis. Subsequently the designation "vitamin" (later contracted to "vitamin") was employed for an ever growing group of principles of unknown chemical constitution occurring in the diet and necessary to health or, ultimately, to life. In order to avoid difficulties in the nomenclature of these dietary factors, which became associated more or less fortuitously, McCollum suggested that alphabetical designations be employed for them until such time as chemical names could be assigned. Drummond in 1920 combined the terms of Funk and McCollum,¹ since then "vitamin A, B, C" and so on have been used almost uniformly in the literature, though not always to designate the same substances.

It appears that, owing to popularization of the terms, the use of the alphabetical designations of McCollum has persisted in some cases at least beyond the time intended by their originator. Moldavan² has recently pointed out

The crystallization, the isolation and our more or less definite knowledge of the physiological properties of the so-called vitamins show that there is no longer any scientific basis to maintain such widely different chemical substances as carotenes, ascorbic [cevitamic] acid, irradiated sterols, pyrimidine-thiazole compounds, sodium phosphate, manganese compounds, etc. under the same heading, except perhaps for historical purposes.

The academical disagreement between British and American biologists over mere initials to be given to otherwise well-defined products adds to the confusion.

Antineuritic, antiscorbutic, antirachitic, antianemic, anti-goitric, etc., substances should be classified with the chemical family to which they belong or grouped with the natural or pharmaceutical substances which have closely related physiological properties.

This is in accord with the conclusions of the Council on Pharmacy and Chemistry, whose report on "Shotgun Vitamin Therapy"³ appears elsewhere in this issue. The association of a number of unrelated essential dietary factors under one name has had several unde-

sirable results, particularly in therapeutics. For no other reason than that they are grouped under one name, various vitamins, even those that do not occur together in natural sources, have been administered in pharmaceutical combination. Mixtures containing almost every conceivable combination of vitamins, some including also other real or alleged dietary essentials, have been offered to the medical profession by drug manufacturers. As the Council points out, "From a physiologic standpoint, it is just as irrational to prescribe a mixture of a number of the vitamins as a combination consisting of cystine, iodine, iron, and linoleic acid or any other combination of dietary essentials."

The functions of the vitamins are as diverse and independent as their chemical constitution would indicate. The Council discusses evidence relating to chemical and biologic incompatibility of different vitamins. It emphasizes the necessity of considering concentrated preparations of these agents in the same light as drugs, "the administration of complex vitamin preparations is open to all of the objections that may be urged against the routine use of mixtures containing ingredients in fixed proportions." With increasing knowledge of the nature and effects of the substances that have been grouped as "vitamins" the necessity for a more rational approach to their therapeutic use becomes evident.

REX BEACH WRITES UP BONINE

Rex Beach's promotion of the claims for Mahlon Locke in the *Cosmopolitan* magazine must have sold a good many copies. It may even have had something to do with the large display advertisement of M. W. Locke shoes that appeared in the same issue as one of the Rex Beach ballyhoos for the toe-twister of Williamsburg. Nobody knows how many sick people it caused to waste considerable sums of money traveling to the Locke shrine for the kind of faith healing that Locke employs. But that apparently does not worry Rex Beach! It is his business to write articles that he can sell, he seems to be little, if at all, concerned with the public health aspects of the matter.

Cosmopolitan magazine now announces in association with the publishing of Mr. Beach's latest article that "This article reflects the impressions of the author, and we publish it for its human interest value and not as carrying an endorsement." This announcement appears in very small type and, doubtless, will not make nearly as much of an impression on the readers as the display type and the pictures that accompany Mr. Beach's exposition of the qualities of Dr. F. N. Bonine as a "famous benefactor of the blind" and a "Modern Miracle Man."

The record of Dr. F. N. Bonine in the field of medicine can be recounted in a few short lines. He graduated from the University of Michigan in 1886 and received his license to practice medicine in Michigan in 1900. He seems to have been practicing continuously

¹ Cited from Sherman and Smith: *The Vitamins*. New York: Chemical Catalog Company, Inc., 1931.

² Moldavan: *Andrew's Vitamins*, Science 81: 639 (June 28) 1935.

³ *Shotgun Vitamin Therapy*, report of the Council on Pharmacy and Chemistry, this issue, p. 1037.

in Niles, Mich., but did not become a member of his local medical society until 1927. He is not a Fellow of the American Medical Association nor is he a member of any national organization in the field of ophthalmology. Dr. Bonine does not advertise, but he has apparently for years been doing a large business under the claim of dissolving cataract. Patients who have been to Niles to see Dr. Bonine describe a typical experience which much resembles that associated with the practice of Mahlon Locke. Great numbers of people come to see him. They are charged \$2 for the first visit and \$1 for subsequent visits. The doctor practices in his shirt sleeves and the "miracles" are performed under circumstances which are calculated to impress by their simplicity. The usual method of treatment for patients with cataract is the prescription of eye drops which consist largely of boric acid and sodium salicylate in witch hazel water. There is not the slightest scientific basis for the claim that any cataract is benefited or removed by putting such drops in the eyes.

While Dr. Bonine does not advertise, he has certainly been no modest violet as far as concerns the use of publicity. His name has continuously been associated with the employees of the prize ring, the wrestlers, track athletes and similar inhabitants of the spotlight. In 1928 when he had pneumonia, there was a lot of furor associated with the shipment of a pneumonia serum by airplane. At that time a newspaper called the Benton Harbor *Palladium* said "Dr. Bonine is undoubtedly the World's greatest physician in the treatment and removal of eye cataracts. He uses a secret formula for which he has been offered a fortune by hospitals and physicians in private practice. Dr. Bonine is said to have declared that he will take with him to the grave this formula with which he has so successfully treated cataracts for the last quarter century. However, friends of his declare that when the Bonine strong box is opened and his will read, this safely guarded formula will be made known to the world."

This is just about the whole story in relationship to Dr. Fred N. Bonine. Every one knows that a patient with gradually developing cataract passes through phases in which he sees better simply because of his anxiety to improve and that cataracts vary greatly in the length of time required for them to mature or in the length of time in which eyesight is sufficiently lost to make surgical procedure necessary. The cataract may spontaneously regress, advance or remain quiescent. During this period of gradual development the hopeful patient is likely to claim improvement with any method of treatment given to him with a strong enough suggestion that it will be of benefit. Dr. Bonine is not the first physician to be misled into a belief of efficiency by this aspect of human nature. Yet eventually every scientifically minded man learns to distinguish between the conviction of the believer and the appearances seen with the ophthalmoscope and other

scientific devices that cannot be misled by the vagaries of the human mind.

Mr. Rex Beach and the *Cosmopolitan* are not rendering a service to mankind by their exploitation of so-called miracle men. They are likely to cause a considerable number of sick people to spend money for transportation which might very well be spent in securing good medical care at the hands of competent physicians. Mr. Beach is himself hardly sufficiently trained in scientific medicine to have the slightest comprehension of the significance of testimonials or of the enthusiastic utterances of neighbors and friends in the villages which depend on the "miracle men" for such business as comes to them.

Incidentally, Mr. Beach spent some time last June in the Scientific Exhibit of the American Medical Association in Atlantic City. What he saw there were actual miracles of science with the evidence to support them. Yet he did not choose to exploit these established discoveries, fearing perhaps that they lacked the romance associated with the fictional records of the "miracle workers" of whom he writes.

MEDICAL SERVICES UNDER WORKS PROGRESS ADMINISTRATION

The United States Works Progress Administration has announced that mutually satisfactory arrangements with medical groups and hospitals are now in process of formulation for the medical, surgical and hospital care of employees of the administration who are injured in the performance of their work. Under the provisions of the United States Employees' Compensation Act of 1916, as amended, such services must be furnished by or on the order of United States medical officers and hospitals, but when that is not practicable they may be furnished by or on the order of private physicians and hospitals designated or approved by the United States Employees' Compensation Commission. When no such physician or hospital is available, however, the proper local representative of the Works Progress Administration may approve physicians and hospitals to render necessary services. The term "physician" is construed by the United States Employees' Administration to include only graduates of recognized medical schools who hold the degree of doctor of medicine and are licensed to practice medicine in the states in which they reside.

Under the Works Progress Administration organization an accident compensation officer in each state is to be responsible for the entire conduct of the compensation program there. A state compensation office and such local compensation offices as may be necessary are to be established to facilitate the handling of claims. A deputy compensation officer, empowered to act locally for the state compensation officer, is to visit each compensation district at least once each week. Competent first aid men are to be on duty on each job undertaken by the administration.

Physicians and hospitals should submit their vouchers for services rendered to employees of the Works Progress Administration to the local compensation representative. In the case of employees of other federal establishments, vouchers should be submitted to the official superior of the injured employee. The local compensation representative or the official superior of the injured employee, as the case may be, is to see that the services rendered were properly authorized, that charges are itemized on the correct form and that the signatures on the voucher are proper. When the voucher is in proper form, he is to endorse it and transmit it to the United State Employees' Compensation Commission in Washington for payment.

Physicians should not submit vouchers direct to the United States Employees' Compensation Commission in Washington, since this will result in delay and expense owing to the necessary returning of such vouchers to local compensation representatives or official superiors of injured employees for endorsement.

BIOLOGIC PHOTOGRAPHY

Today the great advances in medical science seem to depend largely on the ingenuity of inventors who prolong and project the senses of mankind. It would almost seem as if the human brain and the human eye unaided could proceed no further in their accomplishments. By the use of the microscope, vision is magnified thousands of times, by the use of the telescope it is prolonged thousands of miles, by the use of the cystoscope, the ophthalmoscope and similar devices it is projected into cavities that were formerly dark and obscure. With the x-rays and the various dye substances and devices that have been developed auxiliary to the x-rays, organs and tissues within the body are made apparent. Diagnosis has been greatly facilitated and much that formerly was left to imagination and guesswork is now susceptible of actual measurement and permanent record.

In the development of records as well significant changes have occurred. In earlier times men made crude drawings of appearances which they wished to record permanently. Gradually medical art developed. The evolution of anatomic illustration, as described by Choulant, Frank, Garrison and many others, is one of the most interesting chapters in the history of medicine. Next came the use of photography for the making of permanent records, and, with the development of photography, colored illustrations, black and white motion pictures and colored motion pictures, which have successively been the focus of medical interest. Moreover, the possibilities of the use of illustrations in teaching have been extended by the development of the microscopic slide, the lantern slide, the stereoscopic illustration, the projectoscope, the bioscope and similar apparatus. By means of these devices medical teaching has been greatly facilitated. The future is sure to yield

a vast amount of improvement beyond the results already available.

Another significant aspect of medical illustration is the development of photography for medicolegal purposes. The patient who comes to a plastic surgeon for repair and remodeling of a nose, the pinning back of flapping ears or the removal of an unsightly scar is not likely to remember after the operative procedure his appearance previous to the operation. The wise physician makes permanent photographic records of the evolution in the patient's appearance, so that the results of his work are clearly apparent.

The importance of photography as a means of recording specimens both in the living and in the dead subject cannot be overestimated. Photographs are accurate, impressive and easily interpreted. A good picture with a few words of description gives the reader an idea of the conditions actually seen better than a whole page of descriptive matter, even when written by a master in the use of words.

So rapidly has the interest in these phases of medical recording developed that there has existed for a number of years an association devoted to improvement in the art and technic of this practice. At the annual session of the Association of Biologic Photographers, just held, the topics discussed included intragastric photography, infra-red photography, the development of the surgical motion picture, the miniature camera and microcinematography. Photographic apparatus has been used for recording extraordinary motions and for making available records of the actions of organs within the body. Among the extraordinarily varied number of technicians now available in the medical field, the expert in clinical photography has an accepted position. No doubt the future development of the large hospital, the institution for investigation and the institution for medicolegal study will include, as an economic and scientific necessity, suitable equipment and personnel in this field.

Current Comment

EFFECT OF VITAMIN D ON CALCIUM CONTENT OF DENTIN

Controlled clinical experiments seem to indicate that therapeutic doses of vitamin D will both prevent and arrest dental caries when the lesions produced are apparently due to vitamin D or calcium deficiency.¹ It is assumed in explanation that the vitamin will increase the calcium content of the dentin and that such an increased calcium content will prevent or arrest caries. In a recent report Fish² records an unsuccessful attempt to alter the calcium content of the dentin of dogs by giving heavy doses of vitamin D and calcium over a prolonged period of time.

1 Mellanby: May Diet and the Teeth. III. The Effect of Diet on Dental Structure and Disease in Man. Special Reprint Series. Medical Research Council 191. 1934.
2 Fish, E. W. The Effect of Vitamin D on the Calcium Content of the Dentin. J. Physiol. 84: 272 (June 18) 1935.

Three dogs from the same litter were used in his observations. Two teeth were excised from each animal at the beginning of the feeding experiment and the two symmetrically opposite teeth were removed at the end. A specimen of the dentin was prepared from each tooth and analyzed. Each specimen was freed mechanically from pulp tissue and from enamel and cementum and was prepared from the cervical part of the tooth. The pieces were dried at 105 C. for eighteen hours. This dry weight was therefore taken as a basis for calculation and the calcium content was expressed as the proportion of calcium oxide to this weight. The basic diet of raw meat hounds' meal and water was continued with all animals, but calcium and large doses of vitamin D for varying periods were added. This regimen almost doubled the normal calcium content of the blood. Roentgenograms showed marked increase in opacity of the bones but no apparent change in the teeth. The chemical analysis of the dentin gave no significant increase in calcium content as compared with the preexperimental period. Definite as are these results for the period of about seventy days in dogs the case against vitamin D cannot be considered definitely closed. The fact that a dog has a lower calcium content of dentin than man and that he is absolutely immune to dental caries raises the question as to whether the mechanisms involved are entirely similar physiologically. Doubt is thus thrown on the reliability of the fundamental assumption that caries is dependent on the calcium content of the dentin alone. Furthermore, caries is generally of slow development and it may be necessary to carry the crucial investigations over a period of years rather than of weeks.

INFANT MORTALITY IN NEW YORK A HUNDRED YEARS AGO

It has been generally assumed that the infant mortality rates must have been exceedingly high a hundred years ago and that a fairly continuous reduction has taken place since that time. Bolduan and Weiner¹ have recently attempted to determine the accuracy of that assumption when applied to New York City. The statistical data of that time are admittedly inaccurate and incomplete, but by the use of the so-called city inspectors' reports compiled regularly from the interment records of the various cemeteries it was found possible to approximate the number of infant deaths. Evidence exists also for believing that the birth rate at the time was about 40 per thousand. It was therefore possible to postulate statistics carrying a reasonable accuracy. A chart constructed from these statistics and extended by the more accurate recording of later years brings out the fact that from a relatively low infant mortality rate at the beginning of the nineteenth century the rate rose to a maximum during the sixties and that it thereafter declined. The evidence therefore indicates that in New York City the infant mortality rate at the beginning of the nineteenth century was probably no higher than it was at the opening of the present century. The factors affecting the rate were, of course, quite different at that time than at present.

¹ Bolduan, Charles, and Weiner, Louis. Infant Mortality in New York City One Hundred Years Ago. *J. Pediatr.* 7: 55 (July) 1935.

Association News

RADIO BROADCASTS

The American Medical Association will broadcast over the Blue network of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) October 1 and each Tuesday thereafter, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program will be "Your Health." The program will be recognizable by a musical salutation through which the voice of the announcer will offer a toast "Ladies and Gentlemen, Your Health!" The theme of the program will be repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The October schedule is as follows:

October 1	Burns, Morris Fishbein, M.D.
October 8	Hazards from Foreign Shores, W. W. Bauer, M.D.
October 15	Unconsciousness, Morris Fishbein, M.D.
October 22	Asphyxiation, W. W. Bauer, M.D.
October 29	Poisonous Plants and Insects, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Hospital News—The San Diego Hospital, San Diego, has changed its name, effective September 15 to "Hoffman Memorial Hospital," to perpetuate the name of the man in whose honor the hospital was originally dedicated. There will be no change in management or personnel.—Dr. Edouard S. Loizeau has been appointed superintendent of the San Diego County General Hospital, San Diego, to succeed Dr. Charles E. Sisson.

Society News—Dr. Robert W. Meals, Los Angeles, discussed "Endocrinology from the General Practitioners' Standpoint" before the San Diego County Medical Society, San Diego, September 10.—At a meeting of the Alameda County Medical Association in Oakland, September 16, speakers included Drs. Homer W. Crane, Berkeley, and Herman V. Allington on "Spirillosis of the Lung" and "The Treatment of Acne Vulgaris," respectively.—Dr. Montague S. Woolf, San Francisco, addressed the Solano County Medical Society, September 10, in Vallejo, on "Commoner Diseases of the Anorectal Region and Their Treatment"—Dr. Lucius W. Johnson, captain, medical corps, U. S. Navy, discussed "Medicine and Surgery in the Fleet" before the Hollywood Academy of Medicine, September 19, and Dr. Paul E. Walker, assistant surgeon, U. S. Public Health Service "Relation of the U. S. Public Health Service to Immigration"—Dr. Arthur S. Granger, among others, addressed the Los Angeles Society of Ophthalmology and Otolaryngology, September 23, on "Oil Tumors of the Lungs Produced by Intratracheal Instillation."

CONNECTICUT

Personal—Dr. Edward J. Finn has been appointed health officer of Shelton, succeeding Dr. Francis I. Nettleton.—Dr. John D. Milburn has been named health officer of East Hampton, to succeed the late Dr. Frederick T. Fitch.

Milk-Borne Epidemics—Two milk-borne outbreaks were reported to the state health department in June. In one, nineteen cases of paratyphoid B fever affected ten families among consumers of milk handled by a paratyphoid B carrier. The other was an outbreak of mild gastro-enteritis involving eighty-four persons, members of fifty-five families, all using milk from a dairy which supplied 300 quarts per day out of a total supply of about 4,500 quarts for the community. Investigation disclosed mastitis in some of the cows. In the last ten years nineteen milk-borne outbreaks have been reported in Connecticut. Seven occurred in 1925 and the other twelve during the succeeding nine years at the rate of one or two each year.

with no outbreak in 1927. Of the seven in 1925 four were of typhoid, two of paratyphoid and one of septic sore throat. Of the twelve during the subsequent years, four were of scarlet fever, three of septic sore throat, three of typhoid, one of paratyphoid and one of undulant fever. The state health department points out that this list of outbreaks does not include the numerous instances in which one or two cases of undulant fever were traced to milk. The outbreak of undulant fever, which consisted of fourteen cases with three deaths, occurred in 1934 among users of one milk supply.

DISTRICT OF COLUMBIA

New Dean at Georgetown—David V. McCauley, S. J., has been appointed dean of Georgetown University School of Medicine, succeeding Dr. William Gerry Morgan, who recently announced his retirement. Father McCauley was from 1928 to 1930 professor and head of the department of biology at Canisius College, Buffalo, N. Y. In 1931 he went to Jesuit Pontifical University, Woodstock, Md., as professor of biology and experimental psychology, and in 1934 was named regent of the Georgetown University Schools of Medicine and Dentistry.

Course in Public Health Teaching—A four year integrated curriculum in public health teaching has been established at George Washington University School of Medicine, Washington, to parallel its curriculum in mental health established three years ago under Dr. William A. White. The public health course has been made a part of the regular medical course for the degree of doctor of medicine but is open also to special and graduate students in the public health field. Courses in community health, sanitation, hygiene, preventive medicine and the public health aspects of medicine and surgery are included. The faculty is composed of:

Dr. Roscoe Roy Spencer, Dr. Warren F. Draper, Dr. Walter L. Treadway, Dr. Royd R. Sayers, Dr. William C. White, Dr. Louis L. Williams, Dr. Raymond A. Vonderlehr, Dr. Estella F. Warner, Leslie C. Frank, C. E. Ralph, E. Tarbett, B. S. Selwyn, D. Collins, Ph. D.

Other new appointments to the faculty and staff for the coming year include those of Arnold K. Balls, Ph. D., as adjunct professor of biochemistry, and Dr. Edward Lewis, assistant professor in pediatrics.

GEORGIA

Society News—Drs. Rudolph A. Bartholomew, Atlanta, and Roy R. Kracke, Emory University, presented a paper entitled "The Role of the Hypercholesterolemia of Pregnancy in Causing Vascular Changes in the Placenta Predisposing to Infarction and Toxemia" before the Fulton County Medical Society, Atlanta, September 19. A symposium on proctology was presented September 5 by Drs. Marion C. Pruitt, Ward Beecher, Duvall, George F. Eubanks, Jr., Weldon E. Person, Charles E. Hall, Jr., and Hulett H. Askew.—Dr. William L. Pomeroy, Waycross, read a paper on "Surgical Diseases of the Thyroid Gland" before the Ware County Medical Society, Waycross, September 4.

ILLINOIS

Typhoid Outbreaks—Raw milk was responsible for three outbreaks in July, two of typhoid and one of gastro-enteritis, according to the state health department. More than thirty cases of typhoid with one death were reported at Grand Tower and Windsor, while twenty-five cases of severe gastro-enteritis occurred at Enfield (THE JOURNAL, August 17, p. 519).

Tests Show Drivers Unfit for Speeding—Tests on 3,837 persons at the recent state fair in Springfield showed conclusively that the mental processes of nearly half of them are so slow that it is not safe for them to drive automobiles at high speed. The tests were conducted by the state health department as features of the exhibit on health and safety, to determine the skill of automobile drivers. One third of the persons tested required five eighths second to apply the brakes on an automobile after a visual signal was given while one in each ten tested required at least three-fourths second. The health department points out that, since at 60 miles an hour a car travels 88 feet per second, the importance of delayed mental response to an emergency situation is apparent. It further points out that motor accidents are now the cause of 2,500 deaths and more than 70,000 painful injuries annually in Illinois.

Chicago

Society News—Officers of the Chicago Urological Society, elected at the recent annual meeting are Drs. Benjamin E. Ellis, president, William J. Baker, vice president, and Colquitt Otis Ritch, secretary.—A symposium on the present concept of focal infection was presented before the Chicago Dental Society at a meeting, September 17. Speakers were Dr. William P. Murphy, Boston, Boyd S. Gardner, D. D. S.,

Rochester, Minn., and Dr. Lloyd L. Arnold, who presented the views of the internist, dentist and bacteriologist, respectively.—Dr. Frank H. Lahey, Boston, will address the North Side Branch of the Chicago Medical Society, October 3, on "Newer Aspects of Hyperthyroidism and Hyperparathyroidism, Together with a Consideration of Total Ablation of the Thyroid."—Dr. Sarah A. Pearl will present a paper before the Chicago Council of Medical Women, October 4, entitled "A New Active Principle of Ergot and Its Clinical Significance."

INDIANA

State Medical Meeting in Gary, October 8-10—The eighty-sixth annual session of the Indiana State Medical Association will be held in Gary, October 8-10, with headquarters at the Hotel Garv, under the presidency of Dr. Walter J. Leach, New Albany. The following physicians will participate among others:

Isaac A. Aht, Chicago, Management of the Infant During the First Three Months of Life.
Ralph M. Waters, Madison, Wis., Inhalation Anesthesia, Newer Developments.
Norman F. Miller, Ann Arbor, Mich., Cesarean Section.
Louis J. Karnosh, Cleveland, Clinical Aspects of Frontal Lobe Disease.
Abe L. Schwartz, Cincinnati, Professional Anesthesia, A Hospital Plan in Operation Eighteen Years.
Virgil S. Counseller, Rochester, Minn., Some Changing Concepts Regarding the Endometrium and Their Significance.
Sanford R. Gifford, Chicago, Problems of Senile Cataract.
Elfeous T. Bell, Minneapolis, Pathology of Tumors of the Breast.
William F. Braasch, Rochester, Minn., Recent Advances in the Treatment of Infections Involving the Urinary Tract.
Louis G. Herrmann, Cincinnati, Passive Vascular Exercise Method of Treating the Obstructive Arterial Diseases of the Extremities.
Emmet F. Horine, Louisville, Ky., Practical Management of Cardiovascular Emergencies.

In addition, the various section programs will be presented by Indiana physicians. At the annual banquet Dr. Everett E. Padgett, Indianapolis, immediate past president, will receive the certificate of merit. Speakers will include Dr. James Tate Mason, Seattle, President-Elect, American Medical Association, on "The Work of the American Medical Association," and Dr. Karnosh, "Insanities of Famous Men." The annual golf and trap shooting tournaments will be played Tuesday morning, October 8. Entertainment will include luncheon, a buffet supper, smoker and stag party. The woman's auxiliary to the association will meet, October 8-9.

IOWA

Graduate Courses in Therapeutics—The speakers bureau committee of the state medical society opened its graduate course on general therapeutics in Davenport, September 13, to continue every Friday until November 15. Physicians presenting the lectures are:

George B. Eusterman, Rochester, Minn., Treatment of Gastro-Intestinal Disorders.
Roy W. Scott, Cleveland, Modern Aspects of the Treatment of Hypertension.
William F. Braasch, Rochester, Minn., Treatment of Infections of the Genito-Urinary Tract.
Oliver S. Ormsby, Chicago, Diagnosis and Treatment of Common Skin Disorders.
Everts A. Graham, St. Louis, Treatment of Diseases of the Gallbladder.
Walter Freeman, Washington, D. C., Diagnosis and Treatment of Neuroses.
Bernard Fantus, Chicago, Recent Advances in Therapeutics.
William P. Murphy, Boston, Modern Treatment of Anemia.
Ernest E. Irons, Chicago, Immunologic Therapy.
Howard L. Beye, Iowa City, Surgical Treatment of Diseases of the Lungs and Pleura.

A combined course in medicine and surgery opened at Cherokee September 19 and will continue to November 21, presented by members of the faculty of the State University of Iowa College of Medicine. Courses have been started also at Charles City and Newton.

New Board in Basic Sciences—The Iowa basic science law enacted by the forty-sixth general assembly became effective July 4. The first meeting of the board of examiners in basic sciences appointed by the governor, was held in Des Moines, July 9. Members of the board are:

Joseph H. Bodine, Ph. D., professor and chairman, department of zoology, State University of Iowa, Iowa City.
Edward A. Benbrook, V. M. D., professor and head, department of veterinary pathology, Iowa State College, Ames.
Benjamin H. Peterson, Ph. D., professor and head, department of chemistry, Coe College, Cedar Rapids.
William L. Strunk, D. Sc., professor of biology, Luther College, Decorah.
Charles H. Carter, Ph. D., professor of biology, Parsons College, Fairfield.
Robert E. O'Brien, Ph. D., president, Morningside College, Sioux City.

At the meeting, July 9, Professor Strunk was elected chairman and Professor Benbrook, secretary. The new law requires that no member of the board shall hold a degree in any of the healing arts. The act does not apply to Christian scientists.

or to those holding licenses in any of the healing arts or related professions in Iowa. Nor does it apply to students regularly registered enrolled and in attendance as of July 1, 1936 in accredited schools of medicine, osteopathy or chiropractic in the state. With these exceptions, the law will affect all persons who hereafter apply for licenses to practice medicine or surgery, osteopathy and surgery, chiropractic or any other system or method of healing hereafter to be legalized in Iowa who will be required to present a certificate of having successfully passed an examination in the six basic sciences, anatomy, physiology, chemistry, pathology, bacteriology and hygiene. The first examination will be held October 8-10. Iowa is the ninth state to enact a basic science law.

MICHIGAN

Society News—Dr. Loren W. Shaffer was elected president of the Detroit Dermatological Society at its recent annual meeting.—Dr. Ira G. Downer, Detroit, addressed the Kent County Medical Society June 27, on "Obstructive Lesions in the Kidney."—Dr. William A. Hudson, Detroit, addressed the Berrien and Cass County medical societies July 24 on pulmonary tuberculosis.—The Muskegon County Bar Association was entertained by the Muskegon County Medical Society, August 23, at the first joint session in five years. Speakers included Milton D. Schanecutt, assistant attorney general of Michigan, on "Interdependence of the Medical and Legal Professions" and Harry Rogers, Grand Rapids, "Legal Aspects of Medical Problems."—Dr. Grover C. Penberthy, Detroit, addressed the first of the monthly fall meetings of the Calhoun County Medical Society, Battle Creek, September 3 on fractures.—Dr. George L. Waldbott, Detroit, addressed the Oakland County Medical Society, September 18 on Allergic Theory of So Called Thymic Death and Its Practical Applications.

MISSOURI

Follow-Up Study of Encephalitis Epidemic—Six persons who displayed physical signs of the continuance of encephalitis acquired in the St. Louis epidemic in 1933 were found during a recent follow-up study described in the annual report of the health commissioner. According to a newspaper account the study consisted of a physical examination and a questionnaire designed to reveal the immediate and lasting effects of epidemic encephalitis. This is the second follow-up study made. Although efforts to examine 874 patients were made, examinations of only 331 were reported. A total of 175 had symptoms of the disease in one form or another, it was stated, and eighty-two reported no complaints of any kind. Two persons have since died from other causes and one has become insane. Of those examined, 236 stated they were perfectly well before acquiring the disease, ninety-five were not. Since recovery seventy-nine are better, 111 are worse and 141 the same. 265 are now working and sixty-six were unable to return to their work, nearly one half of these being unable to find employment. 228 of the cases investigated were classed as severe, 103 as mild. One hundred and sixty-four persons reported they were suffering from nervousness and 135 said they were troubled with headaches. Food tastes for fourteen have changed and sixteen find difficulty in smelling, seventy experience trouble in walking and sixteen have suffered speech disturbances. Dizziness, fatigability, weakness, irritability, excitability and inability to concentrate are reported by a variable number. Sixty-five said they still suffered from sleeplessness. The results of the survey and further procedure will be studied at a meeting of the follow-up committee of the Metropolitan Health Council which is planned in the near future, it is reported. There were 221 deaths reported in the epidemic that occurred in St. Louis and St. Louis County during the summer and fall of 1933.

NEBRASKA

Agreement for Medical Relief Ends—Cooperation of the Nebraska State Medical Association with the Nebraska Emergency Relief Administration in an arrangement to give medical service at reduced cost during the emergency created by the depression has been terminated by a new acting administrator of relief, who discontinued the services of the coordinator named by the association and announced that his office would deal directly with physicians. The association's committee on public policy and legislation in a statement in the *Nebraska State Medical Journal* said that physicians have worked harmoniously for a year with the relief administration under the former director under an agreement that was to run during the emergency or until either party had reason to withdraw. With the end of the emergency in sight with the profession growing restless and a fear arising that the precedent is to be established and with the dismissal of the coordinator the com-

mittee sees no reason for continuing efforts as a body at cooperation according to the statement. Because of the inadequate provision for medical care in the relief budgets the service has been unsatisfactory and of a type that the well trained physician does not care to render it continued. The committee listed several complaints frequently heard from physicians participating in the arrangement. They included red tape, which was often irritating and prevented satisfactory service establishment of precedent for payment of fees below the cost of the service domination by welfare workers of a field in which they had no experience, gradual placement of all emergency cases on relief service to unemployables hence not an emergency problem and building up a riffraff practice made up of persons expecting but not appreciating the service.

NEW YORK

Commission Studies Disease Control—A special commission of New York physicians spent several weeks in August studying methods of controlling venereal disease in the Scandinavian countries. Members of the group were Drs. Thomas Parran, Jr., Albany, state commissioner of health, John L. Rice, health commissioner of New York City, Thomas P. Farmer, Syracuse, chairman of the committee on public health and medical education of the Medical Society of the State of New York and David J. Kaliski representing the New York County Medical Society. Dr. Parran was to go on to Budapest to attend the Ninth International Congress of Dermatology and Syphilology as chairman of the United States delegation.

Health at Albany—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended September 14 indicate that the highest mortality rate (154) appeared for Albany and the rate for the group of cities as a whole was 97. The mortality rate for Albany for the corresponding week of 1934 was 95 and the rate for the group of cities, 99. The annual rate for the eighty-six cities for the thirty-seven weeks of 1935 was 115, the same as for the corresponding period of last year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rates.

New York City

Lectures for the Public—Dr. Walter Bradford Cannon, George Higginson professor of physiology, Harvard University Medical School, Boston, will give the first of a series of lectures for the public at the New York Academy of Medicine October 3. Dr. Cannon's subject will be "The Wisdom of the Body."

Society News—A clinical session on chronic pulmonary diseases will be held in the amphitheater at Cornell University Medical College, October 2, under the auspices of the Tuberculosis Conference of Metropolitan New York. Dr. Dickinson W. Richards, Jr. will speak on "Clinical Forms of Dyspnea and Their Treatment."

Kings County Afternoon Lectures—The fall series of Friday afternoon lectures sponsored by the Medical Society of the County of Kings, Brooklyn, will begin October 4. Lectures for October will be:

October 4 Dr. Stanley S. Lamm: Convulsions in Infancy and Childhood.

October 11 Dr. Abraham S. Gordon: Chronic Arthritis.

October 18 Dr. Russell S. Fowler: Appendicitis, Acute and Chronic.

October 25 Dr. Thurston S. Welton: Common Obstetrical Problems.

Personal—Dr. Oswald Swinney Lowley, director of the department of urology at New York Hospital, on a recent trip to Mexico addressed the Merida Academy of Medicine in Yucatan on renal surgery and the Academy of Medicine of Mexico City on urologic surgery. He also conducted an operative clinic before members of the university faculty in Mexico City and was guest of honor at a dinner given by the Mexican Urological Association.

Research Program at Rockefeller Institute—The Hospital of the Rockefeller Institute for Medical Research announces that diseases under investigation in its program for 1935-1936 will include aplastic, idiopathic pernicious or severe microcytic anemia, sprue or severe glossitis and stomatitis without anemia, nephritis in its initial stages, nephrosis, arteriosclerotic nephritis and hypertension in subjects under middle age, advanced heart failure in all age groups, early acute rheumatic fever and acute sore throat in rheumatic subjects, measles, chickenpox and encephalitis following measles, vaccinia, chickenpox, whooping cough or the common cold, and acute lobar and bronchial pneumonia preferably in the early stages.

Physicians should communicate by telephone or personal application to the resident physician before sending patients to the hospital

NORTH CAROLINA

Personal—Dr Coy C Carpenter, professor of pathology at Wake Forest College of Medicine, has been appointed assistant dean.

First Graduate Assembly—The Medical Society of the State of North Carolina sponsored the first of a series of graduate assemblies arranged by the committee on graduate study at Banners Elk, August 23-24. The entire session was devoted to study of gynecology and obstetrics, with the following speakers, among others:

- Dr Thomas V Goode Jr Statesville Ectopic Gestation
- Dr Robert A Ross Durham, Serum Tests for Pregnancy
- Dr Paul W Johnson Winston Salem, Elliott Treatment of Pelvic Infection
- Dr Addison G Brenizer Charlotte, Ureteral Transplantations
- Dr Hubert A Royter Raleigh Tumors of the Breast
- Dr Clyde M Gilmore Greensboro Heart Conditions During Pregnancy
- Dr Roy Hamilton Long Morganton Psychotic Manifestations Associated with Pregnancy the Puerperium and the Menopause

Similar sessions will be arranged for physicians in the central and eastern parts of the state, according to plans of the committee, of which Dr Ronda H Hardin, Banners Elk, is chairman.

PENNSYLVANIA

Personal—Dr Frank P Strome, Ashley, has been appointed chief of the bureau of vital statistics of the state department of health to succeed Dr Emlyn Jones, Johnstown.—Dr James I O'Connor, Barnesboro, was appointed medical director of Cambria County, August 1, to succeed Dr William E Matthews, who had served forty-six years.—Drs Charles Seaton Hendricks, Altoona, and Charles S Dutenhofer, Churchtown, were recently advanced to the grades of lieutenant colonel and major, respectively, in the 103d Medical Regiment, Pennsylvania National Guard.

Society News—Speakers before the west section of the Fifth Councilor District Medical Society at Piney Mountain Inn, Adams County, July 18, included Drs Clarence R Phillips, Harrisburg, "A Résumé of Health Legislation in Pennsylvania, 1935 to 1937", George L Laverty, Harrisburg, "Emergency Medical Relief—A Coordinate Project", Ruth H Weaver, Philadelphia, "Prenatal and Maternal Care," and Richard A Kern, Philadelphia, "Clinical Allergy".—Drs Max Levin and John Moore Campbell Jr addressed the Dauphin County Medical Society, Harrisburg, September 3, on "Delirium" and "Epidemiology of Poliomyelitis in Pennsylvania respectively".—Dr Walter E Dandy, Baltimore, addressed the Harrisburg Academy of Medicine, September 17, on "Diagnosis and Treatment of Lesions of the Cranial Nerves".—Dr William L Mullins, Pittsburgh, spoke on "Cardiac Emergencies" before the Fayette County Medical Society, Uniontown, September 5. Drs Jesse O Arnold II, George W Ramsey and James W McKennan, Washington, addressed the society, August 1, on heat therapy.—Dr Jacob Hoffman, Philadelphia, addressed the Lycoming County Medical Society, September 13, on "Diagnosis and Treatment of Functional Menstrual Disorders of Endocrine Origin." At the annual outing of the society at Highland Lake, August 9, Dr James R Rankin, Muncy, was elected "Nestor" of the society, having reached the age of 75 and having practiced fifty years. He received a leather bound album containing his picture, history, and the autographs of the members.—Dr Maurice Brodie, New York, addressed the Main Line Branch of the Montgomery County Medical Society at Haverford, September 9, on "Poliomyelitis Epidemiology and Immunization," and Dr James P Leake of the U S Public Health Service, Washington, D C, discussed the recent epidemics in the South Atlantic states.

TENNESSEE

Community Hospital Opened in Kingsport.—The Holston Valley Community Hospital, Kingsport, with fifty-three beds and eight bassinets, was opened August 9. The new hospital is the seventh sponsored by the Commonwealth Fund of New York in its rural hospital program, under which the fund furnishes about three fourths of the cost on condition that the community provide the remainder of the cost of building and equipment, furnish the site and undertake operating expenses. The Kingsport project cost \$300,000 and includes a separate home for twenty-five nurses. George W Eutsler is director of the hospital and Dr Thomas B Yancey, Kingsport, chairman of the medical staff, which includes twenty-seven physicians in the hospital area. A hospital service plan offering

hospital care to groups of employees for as much as twenty-one days a year for regular payments of 75 cents a month has been announced. The benefits include maternity care after ten months' membership but do not apply to conditions provided for under workmen's compensation laws, chronic diseases or conditions known at the time of application to require hospitalization. At the opening exercises addresses were made by Judge E T Carter, Gate City, Va., of the circuit court of southwest Virginia, Dr Eugene L Bishop, Nashville, director of health of the Tennessee Valley Authority, and Mr Barry C Smith, general director of the Commonwealth Fund. Rural hospitals previously built by the Commonwealth Fund under the same plan are at Murfreesboro, Farmville, Va., Glasgow, Ky., Farmington, Me., Beloit, Kan., and Wauseon, Ohio.

WEST VIRGINIA

Veteran Physician Honored—The Barbour-Randolph Tucker County Medical Society observed the ninety-ninth birthday of Dr John Woodbridge Bosworth, Philippi, September 3, with a special meeting at Philippi. Dr Charles B Williams, Philippi, son-in-law of Dr Bosworth, presided. Dr Bosworth was born at Beverly, then in Virginia, in 1836, according to family records. He graduated from Virginia Military Institute and was attending Jefferson Medical College, Philadelphia, when the Civil War opened. After the war he settled in Philippi and practiced until about five years ago. Several years ago he was made an honorary member of the Barbour-Randolph-Tucker society.

PUERTO RICO

Personal—Joseph H Axtmayer, Ph.D., has recently returned to the School of Tropical Medicine of the University of Puerto Rico, conducted under the auspices of Columbia University, after a year of research in biologic chemistry at the University of Rochester, and Mr Luis Hernández from special study in clinical pathology at the University of Michigan Medical School, Ann Arbor. Other members of the faculty who are studying in the United States and Europe include Dr Enrique Koppisch of the department of pathology, who is at Basel, Switzerland, studying filtrable viruses on a fellowship from the Rockefeller Foundation, Mr Luis M González, at the Henry Phipps Institute of the University of Pennsylvania, Philadelphia, for study of tuberculosis, Mr Americo Pomales Lebron at the University of Michigan for a doctorate in bacteriology, Dr Rafael Rodríguez-Molina and Mr Félix Lamela at the University of Chicago for courses in hospital management and administration.

GENERAL

License Lost—Dr Russell M Gray, Indio, Calif., has reported that his license to practice medicine in California has been lost or stolen from his office at Indio. The number of his license, issued Aug 11, 1927, is A-04497.

Saleswoman Is Impostor—A woman using the name Kate C Adams is reported to have taken orders in Jamestown N D, for uniforms, posing as a representative of the Maid-Rite Uniform Company, 3717 Monmouth, Cincinnati. She carried a sample uniform and a catalogue and collected an advance payment on orders. Investigation by her victims in Jamestown revealed that there is no such firm in Cincinnati.

Society News—The forty-third annual meeting of the Association of Military Surgeons of the United States will be held in New York, October 3-5, at the Waldorf-Astoria, under the presidency of Dr William Seaman Bainbridge, New York. Brig Gen Frank T Hines Administrator of Veterans' Affairs, Washington, D C, will be a guest speaker.—The annual convention of the American Red Cross will be held in Chicago, May 11-14, 1936.

Fraudulent Salesman—A Utah physician reports that he ordered a suit of clothes through a salesman who claimed to represent the "Mastercraft Tailoring Company, Inc." of Durham, N C. The physician paid \$175 as a down payment, the remainder of the cost to be paid on delivery of the suit. When the suit did not arrive in a reasonable time, he wrote to the firm and his letter was returned with the information that such a firm did not exist in Durham. The salesman used the name H B May.

Casselberry Prize to Be Awarded—The secretary of the American Laryngological Association, Dr James A Babbitt, Philadelphia, announces that the Casselberry Prize of \$500 is open to competition for work in laryngology and rhinology. The award was established by the late Dr William E Casselberry, Chicago, who left a fund to the association, the interest from which was to be awarded in sums of \$500 or less for a prize award, a decoration or the expense for original invest-

gation in laryngology and rhinology. These or reports of work must be in the hands of Dr Babbitt, 1912 Spruce Street, Philadelphia, before February 1 of any given year.

Impostor Poses as Poliomyelitis Expert—From Lexington, Ky., comes a report of a man who appeared in the town September 2 posing as a representative of the U S Public Health Service investigating the poliomyelitis outbreak in Kentucky. After registering at the Phoenix Hotel under the name "Dr Robert Coldwell" and explaining that he came from Johns Hopkins Hospital, Baltimore, as a special representative of the federal health service, the man visited the county health officer, who took him on an "inspection trip" in Lexington and to Paris, where the impostor said he would set up an organization. He carried a brief case filled with medical and health literature and displayed hypodermic syringes, mentioning frequently the number of spinal punctures he had made on afflicted children. With the chairman of the board of governors of the Lexington unit of the Shriners' Hospital for Crippled Children, who is also the manager of the Phoenix Hotel, "Coldwell" visited the hospital. While there he asked if the public health service was paying the hospital an allotment of \$142 per capita for the care of indigent children with poliomyelitis said that there must be some oversight in the matter and that he would communicate with the surgeon general about it. Suspicion was soon aroused by his activities and verbosity, especially when it was found that he had had a local printer make up some report cards for him headed "Special Memo United States Public Health Service." Meanwhile he had cashed checks amounting to \$55 at the hotel. A telephone call to the bank revealed that "Dr Coldwell" had no account another to Johns Hopkins that he had not been employed by the hospital and a telegram to the public health service that he was not an official representative. About two hours before it was decided to have the man arrested he disappeared, leaving some syringes and vials of so-called serum in his room. Later it was learned that a man of his description had been in Louisville the previous week, working at Red Cross Headquarters where he said he was organizing a group of nurses to operate from Berea in preventing spread of poliomyelitis in south eastern Kentucky. This man is about 40 years old, 5 feet 9 inches tall, smooth shaven, with a full face and Roman nose. Later investigation by the public health service revealed that in 1931 the state health officer of Ohio reported a "Dr Robert Coldwell," who had concerned himself with an investigation of a typhoid epidemic at the State Hospital for the Insane at Cleveland, claiming to be a special representative. At that time it was reported that the man had never been employed by the service.

CANADA

University News—The University of Toronto Faculty of Medicine will offer a two weeks course in pediatrics to the physicians of Canada, November 4-16.—The University of Manitoba Faculty of Medicine presented a graduate course in cooperation with the Manitoba department of health September 9-14, among speakers were Drs Jonathan C Meakins, president of the Canadian Medical Association and William V Cone, Montreal, Robert I Harris, Toronto, and George J Wherrett, Ottawa, executive secretary of the Canadian Tuberculosis Association.

Personal—Dr William A Scott, assistant professor of obstetrics and gynecology, University of Toronto Faculty of Medicine, has been appointed head of the department, to succeed Dr William B Hendry, who recently resigned.—Dr Robert M Benvie, Stellarton, was elected president of the Medical Society of Nova Scotia at the annual meeting in Sydney, July 3-4, and Dr Harry G Grant, Halifax, secretary.—Dr Allan Roy Dafeo, Callander, Ont., received the Order of the British Empire from King George V in the list of honors issued on the occasion of the king's birthday and his silver jubilee.—Dr Joseph L Jackson, assistant professor of anatomy at the University of Manitoba Faculty of Medicine has been appointed professor of anatomy at the University of Saskatchewan School of Medical Sciences to succeed the late Dr Robert T McGibbon.

CORRECTION

Agranulocytosis—In the special article entitled "Agranulocytosis," by Roy R Kracke and Francis P Parker (THE JOURNAL, September 21, page 960), there appears a list of American proprietary preparations that did or do contain amidopyrine. The list was in error in including Analgin and Antabs, both of the William S Merrell Company, because these two preparations do not contain and never have contained amidopyrine, according to a statement from the firm.

Government Services

Changes in Public Health Service

Drs James P Leake, Lawrence Kolb and Hermon E Hasseltine have been promoted and commissioned as medical directors in the regular corps of the service. Dr Hasseltine was recently relieved of his duties at San Francisco and assigned to Carville, La, in charge of the marine hospital. The promotion and commission of the following physicians as senior surgeons in the regular corps has also been announced: William S Bean Jr, Gleason C Lake, Thomas B H Anderson and Herbert A Spencer.

Examination for Psychiatric Position

The U S Civil Service Commission announces an open competitive examination for a position as psychiatric medical supervisor for the Department of the Interior to have charge of the 300 legally adjudged insane of Alaska, confined in Morningside Hospital, Portland, Ore, which is operated under contract with the United States. The position carries a salary of \$5600 a year, subject to a deduction of 35 per cent toward a retirement annuity. Applicants must have graduated from a recognized medical school, must have had either a regular rotating or a psychiatric internship of one year or experience considered equivalent to such internship and must have had not less than five years of responsible and progressive specialized experience in neuropsychiatry, of which at least three years must have been in a senior administrative capacity in a mental hospital with a daily average of not less than 300 patients under their care. They must not have reached their fifty-third birthday and must be in sound physical health. Further details and application forms may be obtained from the secretary of the Board of Civil Service Examiners at any first class post-office from the commission at Washington, D C, or from the district offices of the commission at Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St Louis, St Paul, San Francisco, Honolulu, Balboa Heights, C Z or San Juan, P R. Applications must be filed not later than October 6.

Department of Vital Statistics Reorganized

With the completion of the primary objective of the department of vital statistics of the U S Bureau of the Census, namely, the extension of birth and registration areas which has been its concern for about thirty-five years, a reorganization is now under way to undertake new tasks. In 1933, on the completion of this work with the admission of Texas, the joint advisory committee of the director of the census took steps to explore the various questions and problems involved. A report of this study points out that "while it is still necessary to work for more complete and accurate recording of the facts as to births and deaths, new and intensive efforts can be devoted now to analytical treatment of the data and to the presentation of more refined results. A better statistical basis for public health work will be laid, and for all studies of population structure and changes." The appointment of new supervisory personnel in charge of each of three important types of functions within the division is announced, following the recommendations contained in the report. Dr Halbert L Dunn, formerly director of the University of Minnesota Hospitals and professor of biometry, University of Minnesota Graduate School of Medicine, Minneapolis, has been placed in charge of the division as chief statistician. He will also have charge of research and analytic developments which are also included in the reports recommendations. Dr John Collinson Jr, recently registrar of vital statistics for the state of Maryland and secretary, American Association of State Registration Executives, as assistant chief statistician, will be in immediate charge of the development and perfection of registration and of relations with state health officers and registration officials. A technical assistant to the chief statistician will be appointed to have immediate charge of the classification and coding of causes of death, the development of the joint manual, representation of the division respecting changes in the International List, and relations with medical schools and the medical profession. Forrest E Linder Ph D, who resigned from a position with the Worcester (Mass) State Hospital, will assist in the development of the program. Six field agents will be appointed and the districting of the United States for this purpose is proposed. Dr Timothy F Murphy, the present chief statistician, has been appointed to take charge of a newly established division of religious statistics, general information and records.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 31, 1935

The Campaign Against Noise

In a previous letter, the formation was reported of the Anti-Noise League to combat the growing torment of noise, which is injurious both to the sick and to the well. The movement began about two years ago with a letter to the *Times* by some well known persons, including members of the medical profession such as Lord Horder, Sir James Purves-Stewart (neurologist) and Dr. Dan McKenzie (otologist), asking for assistance in the formation of the league. The response was excellent. The revolt against noise has crystallized into a campaign supported by thousands of people. The report which has just been issued, states that the league had to meet two criticisms. It was stated that noise had always existed in cities. The reply is that traffic noises have grown more penetrating, more strident and more unhythmically continuous in the last twenty years. The second criticism was that the ill effects of noise on human beings cannot be scientifically assessed. But medical experts testify that the noises of modern civilization produce nervous disorders.

The main difficulty in taking effective action is that there is no simple generally accepted instrument for measuring noise outside the laboratory. Such an instrument would no doubt facilitate the enforcement of the law, but an enlightened public opinion insistent on action and the cooperation of experts who understand the causes of noise with the public who suffer from its effects are the aims to be achieved. Universal support has been given to the league by the press, eminent writers, the National Physical Laboratory, the Ministry of Transport, the Ministry of Health, the Royal Institute of Architects, the British Broadcasting Corporation, and industrial firms and others engaged in research as to noise. The government has issued a regulation prohibiting the sounding of motor horns in the hours of the night but the problem of this evil is not yet solved. At the Oxford conference of the league a resolution was carried aiming at abolition of motor horns altogether except in cases of emergency. It is claimed that the loud and strident horns in use encourage the habit of "driving on the horn" and are responsible for many accidents. Many local authorities have adopted a new model by-law to control wireless loud speakers, phonographs and street musicians. The Westminster city council permits the cost of silencers on road drills to be added to quotations for road breaking. Milk distributors are cooperating by replacing milk carts by silent electric vans and pneumatic-tired horse vans, and rubber devices are being used in glass and metal containers. Railway companies are taking steps to reduce the blowing of whistles and to deaden the noises of platform trucks by the use of rubber linings.

Crank Medical Cults in England

Sir Ernest Graham-Little (dermatologist and member of parliament) has done good service by his exposure, in communications to the *British Medical Journal*, of some of the crank medical cults that exist in England. The Medical Herbalists publish a monthly journal described as the organ of the 'National Association of Medical Herbalists of Great Britain,' who have in London what they call the 'College of Botanic Medicine.' This appoints 'an education committee of which four "principals" (none medically qualified) are said to give instruction in anatomy, physiology, materia medica and therapeutics, pathology and physical diagnosis, diseases of women and children and chemistry.' There is further a system of postal tuition in these subjects forming part of the course

leading to the issue of "qualifications" to practice. On the passing of examinations, "degrees" enable the herbalist to put LCBM and M.N.A.H.M. after his name. There is also a still higher "degree," DBM (Doctor of Botanic Medicine) to be obtained on presentation of a "thesis" and payment of a fee of \$125. The same amount is payable for the course. The dangerous nature of this cult is shown by the number of coroners' inquests in which herbalists figure. But this is a free country and they seldom are even censured. The only thing that can bring them within the grip of the law is representing themselves to be qualified physicians, which they avoid.

Another cult is the "Naturopaths" who since 1934 have established a "register," which is claimed "to protect the public and the fully trained naturopath from those who with inadequate knowledge claim to practice as nature-cure physicians." In a printed form of registration issued by this body, an applicant is asked to specify types of treatment which he gives and the following are cited as examples of such treatment "psycho-analysis, colonic lavage, electrotherapy, biochemistry, herbal medicine, orificial surgery." A circular issued with the application form reads "Our standard of professional education is four years' full-time training with clinical experience. As the profession is still young, however, it has been impossible for many now in practice to obtain such complete equipment. We are therefore following the example set by other young professions and accepting proportionate experience in practice in lieu of a certain amount of training." It seems to be a common form with the irregular cults (probably in imitation of the most blatant of them—osteopathy) to name four years' training (usually fictitious) as the basis of "professional education." But no mention is made of the school where the applicant for registration in 'naturopathy' can get his training.

The most successful of all the cults in capturing the British public is osteopathy, an American importation. The British School of Osteopathy, founded in 1917 posed as giving its 'graduates' a four years course until its devastating exposure, which was described in *THE JOURNAL*. The first two years was declared to be "the same course as medical students take" and 'the dean' received the honor of publication in the *Times* of a half-column letter in large print.

Sir Ernest Graham-Little thinks that the present rage for setting up 'registers' of these irregular practitioners deserves the attention of the medical profession. He has drawn the attention of the minister of health to the scandal of these schools fraudulently pretending to qualify persons to practice various branches of medicine and surgery and has received his promise to look into the matter.

Assistance to Scientists the Victims of Political Persecution

The annual report of the Academic Assistance Council formed under the presidency of Lord Rutherford to assist the scientists and scholars the victims of political persecution on the continent who have been deprived of their means of living has been issued. Up to June 1935, out of 1,300, 650 left Germany and of these 287 are now permanently placed. Of the 287, seventy-six are workers in medicine or its ancillary sciences, forty are chemists, thirty-seven are economists, twenty-five are physicists and twenty are mathematicians. Of those permanently placed, seventy-six are in the United States, fifty-seven in Great Britain, thirty-eight in Turkey and thirty in Palestine. Temporary placements of 336 have been effected, of which 155 are in Great Britain, a larger number than in any other country. The next largest number is fifty-eight in the United States. Of the temporary placements, sixty-seven are of medical workers. During the year the council received in donations and subscriptions (mainly in small sums) \$100,000 and grants from Jewish charitable organizations to the extent of \$17,500. The council proposes to end its emergency grants

by July 1936, though it recognizes that even then some deserving scholars and scientists will not have been reestablished. It is felt that to continue emergency work beyond three years would be difficult to justify. But, if sufficient financial support is available, the council hopes to establish a limited number of research fellowships to maintain in this country workers of special distinction or promise, particularly in the humanities and subjects in which it is difficult to find semipermanent positions elsewhere.

Protection Against Air Raids

In a previous letter, arrangements recommended by the government for the protection of the civilian population against air raids were reported. The subject is considered so important that a series of publications is to be issued. One has just appeared on Treatment of Casualties and Decontamination of Personnel. The first step recommended is to draw up a general plan for each district. This is primarily a matter of forming the appropriate organization and preparing lists and schedules of buildings and equipment required. Next comes training of personnel and finding what equipment is needed to supplement that already available. The government will arrange to supply respirators, protective clothing and bleaching powder. The memorandum distinguishes four classes of patients who may require attention: (1) those suffering from injuries due to bomb explosions or fire but not affected or contaminated with gas; (2) those suffering from such injuries and also affected or contaminated with gas; (3) those who require treatment because they have inhaled gas or whose skin has become contaminated with gas; (4) those who do not require medical treatment but whose clothing has been contaminated with gas. It is recommended that all should be dealt with by a single organization, which would combine the normal type of ambulance and hospital service for the treatment of accidents, with special arrangements for dealing with gas contamination of persons and their clothing.

The following organization is outlined: 1. Mobile first aid parties for dispatch to any place where air raid casualties have occurred. 2. First aid centers and decontamination centers (preferably combined) to which persons with minor injuries or suffering slightly from gas or with contaminated clothing can proceed independently for treatment and, if necessary, change of clothing. 3. Casualty clearing hospitals to which more serious cases could be taken by ambulance and if not fit for immediate transfer to base hospitals, detained and treated. 4. Base hospitals situated, so far as possible outside areas of special danger, for cases evacuated from casualty clearing hospitals as soon as fit to be moved. Separate base hospitals may be impracticable in some cases. 5. An ambulance service for use in conjunction with first aid parties and for the movement of stretcher cases from first aid centers to casualty clearing hospitals and from these to base hospitals. 6. Laundry services for decontamination of clothing. 7. A clerical organization for keeping records of casualties, their property and valuables and their places of treatment.

The manning of the various services will require special staffs. For preference, men under 25 should not be enrolled. So far as possible the first aid and decontamination centers should be selected in advance and the personnel trained. Arrangements should also be made in advance for supplementing in case of need the nursing staff of hospitals selected as casualty clearing hospitals and supplementing or perhaps creating staffs of base hospitals. Arrangements for anti gas instruction of these nurses should be made wherever possible. On a threat of air attack, beds in casualty clearing hospitals should be freed by removal to outlying hospitals, existing or improvised of all patients who can be removed with safety. Thereafter no patients, whether air raid casualties or not, should be accepted for lengthy treatment unless unfit to be

taken elsewhere. Following a raid no casualties fit to be removed to base hospitals should be retained in casualty clearing hospitals.

In rural areas, reliance for first aid should be primarily placed on the local physicians and district nurses and the local Red Cross society. This might be supplemented by mobile first aid parties from neighboring towns. County councils are recommended to plan out large areas for the organization of complete schemes providing for casualty clearing and base hospitals, the latter to be shared, possibly, with a neighboring county or borough group. It would be important to organize mobile first aid parties, with motor transport, in suitable centers, which would cover surrounding districts. Every village should have a call on two or even three first aid parties in a prearranged order.

Tuberculous Milk

The problem of obtaining a milk supply free from tubercle bacilli has so far not been solved. Dr. G. M. Fyfe, health officer for St. Andrews, states in his annual report that about 40 per cent of the cows in the country are infected with tuberculosis and that about one cow in 500 is suffering from tuberculosis of the udder and therefore is producing milk containing the bacilli. In Scotland about 9,000 cases of tuberculosis in man are notified annually. Research has shown that about 4 per cent of persons suffering from tuberculosis of the lungs are infected with bacilli of bovine origin and that for tuberculosis of the bones the incidence is as high as 50 per cent and of the lymphatic glands 85 per cent. Dr. Fyfe states that measures for the eradication of tuberculosis from dairy herds are alarmingly defective. The schemes in force are voluntary and are undertaken only by a few enlightened dairymen.

PARIS

(From Our Regular Correspondent)

Aug. 9, 1935

Reinforcement of the Immunizing Action of Toxins and Antitoxins

Guinea-pigs and rabbits in laboratory work can be immunized by the injection of the diphtheria and tetanus anatoxins. G. Ramon and Lemetayer, in a paper read at the May 6 meeting of the Academy of Sciences, call attention to the fact that this immunity can be greatly increased by adding to these antigens such substances as tapioca, cholesterol and hydrous wool fat. One can immunize rabbits against tetanus by means of a single dose of unmodified tetanus toxin in hydrous wool fat. The authors have attempted recently to apply these principles to the antitetanic immunization of domestic animals such as the horse and sheep. In the production of antitetanus serum, this method utilizing either the toxin or anatoxin, will greatly shorten the time necessary to immunize the animal from which the serum is to be obtained. Using anatoxin their method will greatly facilitate the vaccination of domestic animals against tetanus; the immunity thus obtained taking place more rapidly and being of longer duration than is at present possible.

Theory on Etiology of Eclampsia

At the June 4 meeting of the Academy of Medicine, Metzger stated that eclampsia was the result of abnormal mobilization of proteins. To provide for the needs of the fetus the mother builds up reserves in her tissues. When the fetomaternal symbiosis ceases to be harmonic, "the nitrogenous reserves suddenly enter the maternal circulation and the result is eclamptic convulsions."

Recent research on the polypeptides enable one to understand such accidents. Disintegration of the tissue albumins produces the polypeptides. Hepatic and renal insufficiency result in inability of these viscera to destroy and eliminate the polypeptides. Edema also plays an important part in the distur-

bances of protein metabolism. It is probable that the nitrogen content of the blood throughout pregnancy is low, because the maternal organism constantly utilizes the proteins to build up its reserves.

Metzger reported a case which in his opinion confirms the preceding theory. At the end of six and a half months the patient suddenly ceased to feel fetal movements. Edema of the face and legs, headache, a blood pressure of 180 mm of mercury and marked albuminuria were noted on admission to the hospital eight days later. The uterus was emptied and a dead, very edematous macerated fetus was found. The placenta was very thick. About twelve hours after the operation the patient, who had voided scarcely 500 cc of urine in twenty-four hours, suddenly passed 2,000 cc containing a large amount of albumin. There was only a trace forty-eight hours later, and the albumin and edema had completely disappeared at the end of three days. This is an example of protein intoxication. There was an effort to eliminate the albumin as soon as the fetal death took place, then retention with aggravation of the general condition, followed by massive elimination of albumin and recovery. The death of the fetus does not mean that of the placenta. In this case the placenta was found edematous, the fetal circulation being interrupted by vascular changes in and persistence of the epithelial covering of the villi (Langerhans cells). Metzger thinks that the fetomaternal metabolism is of placental and not of fetal origin. When the placenta is normal, its death occurs simultaneously with that of the fetus. If the placental vitality is abnormal or pathologic, complications cannot be avoided and may necessitate rapid emptying of the uterus. The hypophysis mobilizes the metabolism but the placenta acts in a regulatory capacity.

Use of Spinal Cord of Animals for Nerve Grafting

The advantages of direct end-to-end suture of divided nerve trunks is the ideal method, but one encounters cases in which there is so much destruction that some form of graft must be employed. Up to the present time, only nerve segments from rabbits, calves or dogs have been used as heteroplastic grafts. The failures in most cases were due to imperfect aseptic technique and to the large amount of fibrous tissue that develops between the severed nerve ends, thus rendering the graft impermeable.

Gosset and Ivan Bertrand have attempted to find a tissue with less fibrous elements so that the nerve fibrillae might penetrate it more easily. They also tried to obtain some tissue containing as much myelin substance as possible. The results of their experiments were reported at the June 26 meeting of the Société de chirurgie. As grafts they employed portions of the dorsal spinal cord, chiefly because of the parallel nerve fibrillae and relatively small amount of fibrous tissue. The experiments were carried out on adult rabbits and rats. After removal of the segment of spinal cord needed for the graft, the latter is immediately placed in a 10 to 20 per cent formaldehyde solution to prevent retraction of the removed segment. The coverings of the latter are removed on the following day. A young dog weighing 20 Kg, in which the sciatic nerves had been severed, first on one side and then on the other, was employed for the first experiments, in which spinal cord grafts taken from a rabbit were utilized. Six weeks later, both the functional and the electrical results showed complete restoration of the severed sciatic nerves. A portion of the spinal cord graft, on histologic study, revealed the fact that the graft had been penetrated by newly formed nerve fibrillae from the proximal segment of the divided sciatic nerve, thus preserving the general pattern of the proximal nerve trunk. In recent traumatic nerve lesions or in cases in which the presence of a neuroma necessitates the removal of a relatively large segment of an important nerve trunk the use of this form of graft should be borne in mind.

Peritonitis Due to Calculous Pyonephrosis

At the June 15 meeting of the Société de chirurgie, R. Couvelaire reported a case in which a woman, aged 40, had acute abdominal symptoms of twelve hours' duration. The pain had been felt at the onset in the right upper quadrant but soon became diffuse. Similar attacks had been noted during the preceding three months, accompanied by painful urination and urgency. On admission the pulse was 130, the temperature was 103 F and there was generalized abdominal rigidity, but none over the kidney regions. The preoperative diagnosis was diffuse peritonitis due to perforation of either the gallbladder or the appendix, but both of these were found normal at the exploratory operation, which revealed a diffuse suppurative peritonitis. A mass was felt filling the right iliac fossa, from which pus was escaping through a perforation of the overlying peritoneum. A right nephrectomy was performed. The examination of the specimen revealed a large calculous pyonephrosis with a perforation at its upper pole into the peritoneal cavity. In the discussion, Fey added two similar cases, one due to rupture of a large renal abscess and the other of a pyonephrosis. In both, there was a diffuse peritonitis.

Huet reported a case in which a large pyonephrosis had ruptured into the peritoneal cavity.

Comparative Value of Lumbar and Suboccipital Puncture

Certain syphilologists, especially Sezary, have recently advocated suboccipital puncture for the examination of cerebrospinal fluids in syphilis of the central nervous system. Guillaum and Mollaret read a paper at the May 24 meeting of the Société médicale des hôpitaux de Paris in which they failed to see any advantages in the suboccipital over the lumbar method of puncture. They compared the results of the examination of the fluid obtained by these two methods. Such a comparison must first of all be based on the position of the patient at the time the puncture is made. If the patient is in a straight sitting position, the fluid obtained is of cranial origin, if the patient is sitting but leaning forward in the position used for lumbar puncture, the fluid is entirely of spinal origin, whereas, if it is obtained while the patient is lying on the side, the liquid is cerebrospinal. These observations are the result of pressure studies on human beings and on monkeys, which reveal the fact that gravity is the chief factor controlling the escape of cerebrospinal fluid. Other factors, such as respiration, play a subordinate part. Under normal conditions the liquid obtained by lumbar puncture is twice as concentrated in human beings as is that by suboccipital puncture. It is three times more concentrated in monkeys. The albumin content and the colloidal benzoin reaction differ in the liquid obtained by suboccipital and by lumbar puncture. A comparison of the ventricular and lumbar puncture liquids shows still more difference. Suboccipital puncture is followed by serious accidents such as puncture of the medulla or of arteries such as the vertebral and postero-inferior cerebellar. Death may follow suboccipital puncture. These sequelae are rare but must not be overlooked. Lumbar puncture is the only method that yields information as to the condition of the spinal cord and cauda equina in syphilis. The lumbar method is to be especially recommended in agitated and emotional patients, for children and for private practice.

In the discussion, Cathala stated that he had seen two deaths following suboccipital puncture and believed it should be employed only in unusual cases. Tzanck reported an epileptic attack following suboccipital puncture. Basch, on the other hand, had employed the latter method in 140 cases without accident. He preferred it to lumbar puncture in syphilis and advocated the use of needles of fine caliber. Flandin warned against suboccipital puncture in cases of suspected brain tumor. He had observed only one fatal result in 1,000 suboccipital

punctures. In this instance the patient had a generalized syphilitic arteritis and died three days after the puncture.

The suboccipital method is more difficult and requires much experience.

Pinard endorsed the views of Guillain and Mollaret as to neurologic cases but preferred the suboccipital method in cases of syphilis especially in ambulatory patients. He had never observed an accident in more than 600 suboccipital punctures.

De Gennes reported a death from meningeal hemorrhage twenty-four hours after a suboccipital puncture. This method should be seldom employed, owing to danger of injury to one of the vessels.

Guillain stated, in closing, that statistics show one death to 10,000 suboccipital punctures. The suboccipital will not replace the lumbar method. The dangers of the former should be better known than they are at present.

Puerperal Infection Due to Anaerobic Organisms

In the February issue of *Gynecologie et obstetrique* a bacteriologic study of 100 cases of puerperal infection is reported from one of the Moscow maternities by Morosova and his associates.

Weinberg of the Pasteur Institute has called attention to the fact that when an anaerobic infection (B. Welchii) even of slight degree is associated with a B. coli infection the virulence of the anaerobic organism is greatly increased. The authors believe that this is applicable to puerperal infections. The presence of anaerobic organisms (B. Welchii and the anaerobic streptococcus) is a quite frequent finding in the vaginal secretion during pregnancy. One of the most characteristic but rare symptoms of anaerobic puerperal infection is a sense of crepitation on palpation of the uterus, and another is the accumulation of a nonfetid serous peritoneal exudate. The temperature curve is of the continuous type with moderate remissions unless a mixed infection exists, the temperature curve may then vary. Anaerobic infection may involve only the uterine cavity, which is the more favorable type or it may involve the wall with evidences of a generalized infection of a very severe character. In 38 per cent of the 100 cases, the organisms found were B. Welchii and the anaerobic streptococcus. In 25 per cent only B. Welchii was found, and in 20 per cent only the anaerobic streptococcus. The most virulent cases were those in which B. Welchii and the anaerobic streptococcus were associated. The aerobic streptococcus was found in the vaginal secretion of all 100 cases. B. Welchii was present in blood cultures in only two cases and the anaerobic streptococcus in one case.

The clinical picture of anaerobic infection is characterized by the early appearance of symptoms of toxemia, by the triad symptoms (jaundice, cyanosis, brownish color of urine and blood serum), rapid formation of exudates (peritoneal), at times abscess formation in the uterine wall, and pelvic cellular tissue. Crepitation on palpation of the uterus is seldom found.

The mortality in mixed anaerobic infections is much higher (from 53 to 66 per cent) than in aerobic infections. As the anaerobic infection destroys the oxygen-carrying function of the erythrocytes with resultant symptoms of asphyxia blood transfusion is indicated in conjunction with serum therapy.

Professor Terrien Elected Fellow of Academy of Medicine

By an almost unanimous vote, the ophthalmologist Prof. Felix Terrien has just been made a fellow of the Academy of Medicine. This is one of the highest honors that can be bestowed on a physician in France. Professor Terrien has occupied the chair of ophthalmology at the Faculté de médecine, the only medical school in Paris, since 1925. His contributions to the anatomy and diseases of the eye have been most important.

BERLIN

(From Our Regular Correspondent)

July 29, 1935

Problems of Heredity

Since the last report on the subject of sterilization (THE JOURNAL, June 8, p. 2109), a number of important facts have been published. The official journal *Deutsche Justiz* gives the number of court decisions imposing sterilization in 1934. It appears that in 1934 a total of 84,525 petitions were filed, the two sexes being about equally represented. Of these 84,525 petitions 64,499 were heard before the eugenics courts, and in 56,244 instances sterilization was ordered, the representation of the two sexes being about the same. It is evident, therefore, that at the close of the year about 25 per cent of the petitions remained undecided. Of the petitions that were heard, in 93.8 per cent sterilization was ordered, and in 6.2 per cent the petition was denied by the court. The 205 eugenics courts and twenty-six eugenics superior courts participated in the rendering of these decisions. In nearly all appealed cases the decision of the court of first instance was confirmed. Of 8,219 appeals taken against a sterilization order, only 377 were upheld. It is significant to note that in 438 instances (11.9 per cent) an appeal was taken against the rejection of sterilization by the eugenics courts before which petitions were heard, with the result that of the 299 appeals heard by the end of 1934, in 179 the appeal was granted and the decision of the trial court was reversed. With a population of more than 65,000,000, there were 130 petitions per thousand inhabitants, or one petition to each 771.2 inhabitants.

The minister of the interior has issued a bulletin in which he calls special attention to the necessity of all persons who participate in the court proceedings or in the execution of the intervention preserving absolute secrecy. With regard to the suitable time for the sterilization of young women, a eugenics court has expressed the view that the intervention, by reason of the operative technic, should not take place before completion of the fourteenth year.

Statistics on libido, or sexual desire, following late castration have now been collected and published. In a series of fifty-eight male cases collected by Dr. Kolle in Frankfurt-on-Main, as far as information could be secured, in at least one third libido and potency were preserved, although sometimes weakened. On the other hand, de Quervain and Wolf, reporting on their experiences with Swiss patients at the Berne Surgical Clinic, state that in twenty-nine of their series of thirty-five male and female cases complete success (that is, entire suppression of libido and potency) was achieved. From Denmark, Goll reports complete success in forty out of forty-one cases. In a third of the cases, however, the observations extend over a period of only two years. In any event, a large portion of the castrated criminals guilty of sexual offenses do not become repeaters (possibly 30 to 50 per cent).

The opposition to sterilization is strong and is on the increase, at least the voiced objections are more vehement. The Catholics are opposed to it on religious grounds; others because they regard it as undue interference with personal rights. Many have a dread of the operation. The middle classes consider sterilization as a reflection on the dignity of a family. Of late, the ruling party in Germany has taken a strong stand against these objectors. For example, in an article in the correspondence column of the national-socialist party headed "Life or Death," it is strongly emphasized that the life of the nation takes precedence over dogma and conflicts of conscience. Reference is made to the sharp retaliation that will follow continued opposition to the government's plans. At the close of the article the statement is made that such a spirit of opposition is not justified morally or from any other point of view. Likewise Dr. Gross (M.D.) the head of the party's racio-

tical bureau, has expressed himself publicly in a similar manner "Resistance will not be tolerated," he stated, "tolerance and forbearance do not appear to be properly understood in all quarters" Even the minister of the interior felt called on to issue a bulletin in which he expressed the government's intention to take energetic measures to curb the opposition to the law He demands of his subordinates that, if further cases arise, they institute legal proceedings against persons who openly oppose the law and thus promote malicious attacks on the government and the national-socialist party Any attempt on the part of a third party to induce persons who are to be subjected to the intervention to offer resistance to the execution of the order in question and to yield only to direct coercion by the police shall be regarded as unlawful opposition to the law Rust, federal minister of education, recently expressed his views on the subject of "Hereditary Disease in Relation to Our Schools" He urged that in the selection of pupils worthy of a higher education undue weighting of intellectual factors be avoided

- According to this decree, 'carriers of a predisposition to a disease,' although not subject to sterilization, are not suitable to receive a higher education and hence should not be admitted to institutions of higher learning This decree has come in for some criticism, which appears justified, for among such children there are certainly some who would prove valuable members of society and promoters of culture, in spite of slight manifestations of disease that are under the ban of the law, whereas these mild manifestations appear to be taken as seriously as the more grave evidences of hereditary disease Recently hereditary disease was declared an argument in favor of the granting of a divorce, the wife in question being affected with schizophrenia In another case the registrar in a department for the issuance of marriage licenses refused to issue a license because the prospective bridegroom gave evidence of hereditary weak-mindedness The courts supported him in his decision, to which no objections may be raised.

The questions concerning the limitations of interruption of pregnancy in connection with sterilization have not been fully clear, in fact, instructions have been quite contradictory (THE JOURNAL, July 20, p 212) The legislators have, however, again intervened and have ordered that in the case of pregnant women concerning whose sterilization a valid court decision has been issued the pregnancy may be interrupted only so long as the child is not viable that is before the end of the sixth month of pregnancy The previously cited fundamental decision of the Hamburg court is therefore not approved Furthermore, interruption of pregnancy should not be resorted to if such an intervention would entail a serious menace to the life and health of the woman If there are no contraindications, interruption of pregnancy and sterilization should be carried out simultaneously For the execution of these measures the ministry has created special expert centers, which must declare the intervention to be necessary and which are equipped to apply all the precautions that the law requires Only Aryan physicians may serve as experts The experts themselves may not aid in carrying out the intervention The expense will be borne in the given cases by the *krankenassen* or by the welfare centers Every interruption of pregnancy, every miscarriage occurring before completion of the thirty-second week of pregnancy, and every premature birth must within three days be reported in writing to the health officer having jurisdiction, this obligation rests on the physician, the midwife or any other person rendering aid but not on relatives or persons belonging to the same household

Of late, sterilization of all habitual criminals has been proposed, likewise of all criminals who on close scrutiny of their family history, give evidence of their criminal tendencies with the first criminal offense Dr Gerecke, of the Institute of Criminobiologic Research in a penal institution made in 164 cases a search for evidence of familial contamination, which

furnished valuable bases in only eighty habitual criminals. In this investigation only such offenders were considered as had received jail or prison sentences more than seven times The family histories of eighty criminals were studied, and in 157 relatives the deficiencies shown in the adjacent tabulation were discovered

	Alcohol Addicts	Criminals	Weak-minded ness, Epilepsy, Mental Disease	Commercial Unchastity	Totals
Father	32	30	4		36
Mother		10	6	5	21
Brother	3	32	5		40
Sister		9		4	13
Grandfather	5	5			10
Grandmother					
Paternal uncle	1	3	1		5
Paternal aunt				1	1
Maternal uncle		3	1		4
Maternal aunt			3		3
Totals	41	81	20	10	157

These data are incomplete, especially as regards the grand parents The actual number of asocial individuals in these eighty families would doubtless be much greater The same is true of the illegitimate children, whose progenitors are frequently unknown Nevertheless these data constitute valuable material In only fourteen of the eighty families were no evidences of degeneration discovered (which does not prove that there was no degeneration) From the standpoint of hereditary biology, it was evident that there were some dominant and some recessive (or sex-bound) hereditary predispositions.

In Frankfurt-on-Main the largest German heredobiologic center was dedicated as *Universitäts-Institut für Erbbiologie und Rassenhygiene* The institute which is under the direction of Prof Freiherr von Verschuer, is located in the municipal Haus der Volksgesundheit recently erected by the local *krankenkasse* Von Verschuer, who was formerly engaged at the Kaiser Wilhelm-Institut für Anthropologie in Berlin Dahlem will serve at the same time as *orduarus* at the University of Frankfurt The new institute will be devoted to research, instruction purposes and eugenic practice The practice will be chiefly of a polyclinical nature. On four forenoons and one evening lectures will be held, at which, in cooperation with the referring clinics, physicians and bureaus, heredobiologic investigations, consultations and the rendering of expert opinions will be carried on Eight rooms and a small laboratory (used also for photographic work) are available A number of young women will aid in the securing of information from various sources and in the preparation of genealogical trees For more detailed research four single rooms and four double rooms are provided. In addition to the rooms for the scientific workers, there is an auditorium with 250 seats an assembly room for sixty auditors, and a room for collections and paraphernalia used for demonstration purposes For medical students regular courses of lectures are provided in the first clinical semester Hereditary Biology of Man (three hours a week), the next semester Race Hygiene (likewise three hours a week) in the last clinical semester Clinic for Hereditary Diseases (two hours a week) In addition there will be lectures for auditors of all faculties, that is, for other than medical students

Finally, it should be noted that at these health bureaus government consultation centers for heredoracial research, which may be utilized voluntarily by the people, will be established These consultation centers are obligatory only for persons who are applying for a marriage loan and for persons who wish to settle in the country or desire to make application for citizenship These centers will investigate a person's hereditary antecedents which will include the preparation of a family tree which must go back to his four grandparents, and will comprise also information obtained from members of his family

from hospitals, and from other institutions. For every person a record card must be made out for the archives of hereditary biology. A copy is sent to the bureau of health of the examinee's birthplace, and a second copy to the federal bureau of health. Through the use of all available data in the bureau of health, in the juvenile bureaus, in the courts and in other institutions, it will be possible gradually to complete the archives of hereditary biology and to make them an unerring source of information as affecting families with hereditary defects residing within the limits of the bureau of health. In connection with legal adoption of children, these consultation centers must see to it that only children without hereditary defects are adopted (when the progenitor of the child is known). The consulting physician at these centers must above all, serve as the protector of the family that is free from hereditary defects. He must therefore promote, as far as possible marriages between persons with no hereditary defects, and must advise against a person with grave hereditary defects marrying into a family in which hereditary taints are absent. Another duty of these consultation centers is to dissuade parents who are not ill but who already have one child with grave hereditary defects from having further children.

VIENNA

(From Our Regular Correspondent)

Aug 8, 1935

Changes in the Medical Curriculum and Examinations

As a step in the long expected reorganization of the universities, a new division of the school year, applicable to all Austrian universities, including the medical faculties, has been announced. The regulations will apply to the coming winter semester. The new plan does away with the abnormally short summer semester, which has been only two and one-half months in length. There will be two semesters of virtually equal length: the winter semester, the lectures beginning October 1 and extending to January 31 and the summer semester, the lectures beginning February 15 and closing June 28. The regular period for matriculations for the winter semester is from September 23 to October 15 and for the summer semester from February 1 to February 21. The Christmas holidays will extend from December 19 to January 7 and the Easter holidays from March 16 to April 20. Examinations and conferring of degrees may take place, if desired any time during the vacations, and, after the close of the summer semester, on up to July 15, and also from September 20 on, preceding the opening of the winter semester. Continuation of the clinical hospital service during the vacations, and on Sundays and holidays will be regulated by special provisions. The regulations pertaining to medical examinations, which have been in force since April 14, 1903 have likewise been changed. Beginning with Oct. 1, 1935, the following regulations will be in effect. The three so-called *rigorosen* (rigorous tests) will be retained. In the first *rigorosum* the test in general biology has been omitted so that this examination will consist of tests in physics for medical students (only a theoretical test) chemistry for medical students anatomy, histology and physiology (these four tests being from both the theoretical and the practical point of view). In the second *rigorosum* the test in general and experimental pathology has been omitted. The subjects that remain are pathologic anatomy and histology pharmacology and prescription writing, internal medicine, pediatrics neurology and psychiatry. Pharmacology and prescription writing are treated only theoretically, the other subjects theoretically and practically. Those students who, on Oct. 1 1935, have not yet completed their first (or second) *rigorosum* do not need to be examined in the subjects that have been omitted (biology and pathology) from the *rigorosum* concerned (nor will a previous failure in these omitted subjects have to be made good). The

third *rigorosum* will cover, as before, surgery, gynecology, obstetrics, ophthalmology, dermatology, syphilis, forensic medicine and hygiene. One precondition, however, is that every candidate must furnish evidence that he has heard the clinical lectures on all the subjects of the second and third *rigorosum*. These lectures are made "obligatory," whereby it is hoped to attain an even and thorough training in all the principal clinical branches.

The second part of the examinations regulations concerns the rules that obtain in the event that the candidate fails to pass the tests in all subjects. Formerly any single test in the six subjects comprising the first *rigorosum* might be repeated even more than three times, if the candidate failed in a previous test. Now no more than three further trials in any one subject are permitted and if the candidate fails in two subjects of the first *rigorosum* he will be allowed only two more trials. If the candidate fails in four subjects of the first *rigorosum*, he will be excluded from further study of medicine in Austria. He can never secure the degree of doctor of medicine at an Austrian university, even on the basis of a diploma obtained in a foreign country. Furthermore, any candidate who has not completed the first *rigorosum* within two years of the time he passed the first test will be excluded from further study in Austria. An exception may be made if the candidate can show that the delay occurred through no fault of his (sickness, war). The main purpose of the more severe rules applied to examinations in medicine is that students who have revealed by their repeated failures in tests that they are not adapted to the study of medicine may take up some other profession without undue loss of time. Degrees will be conferred, at the latest, within six weeks of a candidate's passing his last test. If a candidate does not take his degree within the specified time, he may have to wait a long while before a second opportunity will be afforded him.

Prevention of Posterity with Hereditary Taints

The renewed interest that the German sterilization laws have awakened throughout the world in the hereditary transmission of disease induced Prof. Dr. Julius Bauer to deliver a lecture on 'The Prevention of Posterity with Hereditary Taints' before the Akademischer Verein für medizinische Psychologie. The desired goal may be best attained through the sterilization of all persons who are likely to generate posterity with hereditary taints, among which the German sterilization law mentions congenital weak-mindedness, schizophrenia, circular insanity epilepsy, hereditary blindness hereditary deafness grave alcoholism, and many other conditions. Professor Bauer admitted, however, that the goal sought is attained but imperfectly by the sterilization law, because only those persons with manifest defects and not persons with pathologic hereditary predispositions (who are apparently healthy) are held to trial through the operation of the law. This apparently healthy group perpetuates the hereditary defects. On the other hand a far-reaching application of the sterilization law to persons with slight disturbances may effect a loss of valuable hereditary qualities in sterilized persons. It is well known that Beethoven's father was gravely addicted to indulgence in alcohol. The parents of many artists and poets were not quite normal mentally, their sterilization would have constituted a great loss to mankind. A much more ethical and less dangerous (though, to be sure less reliable) method of preventing offspring with hereditary defects is by means of consultations on marriage and possibly prohibition of marriages, particularly with reference to persons with so called recessive predispositions. Especially marriages of relatives in families with recessive hereditary taints should be absolutely prohibited. Through publicity campaigns, a knowledge of the laws of heredity and the resulting responsibilities resting on citizens should become more widespread.

Marriages

JOHN MONTGOMERY ANDREW, Lexington, N. C., to Miss Mabel Winnifred Wain of Granite Quarry, August 25

PAUL MULFORD MECRAY JR., Moorestown, N. J., to Miss Justine Godchaux Eisman of St. Louis, July 6

WILLIAM LEMUEL GRIGGS JR., Saint Charles, Va., to Miss Dorothy Fugate of Clinchport, September 7

THOMAS FINCHER MCDANIEL to Miss Josephine Richardson, both of Atlanta, Ga., June 15

GEORGE BOWERS MANSDORFER to Miss Louise Warfield Hook, both of Baltimore, August 28

ASHELEY CURTIS NORFLEET to Miss Dorothy Edwards, both of Tarboro, N. C., June 22

LAURISTON L. KEOWN, Baltimore, to Miss Gladys May Dykes of Eden, Md., August 30

LEONARD J. MONSON, Hendricks, Minn., to Miss Eunice Johnson of St. Paul, July 27

BRUCE N. WOLFF, Gettysburg, Pa., to Miss Dorothy Seiple of Harrisburg, June 8

CARLO S. SCUDERI to Miss Alice Kathryn Regan, both of Chicago, July 31

ROBERT E. ROCK to Miss Beryl Canfield, both of Minneapolis, June 18

Deaths

Francis Wenger Heagey, Omaha, Columbia University College of Physicians and Surgeons, New York, 1912, associate professor of medicine, Creighton University School of Medicine, and at one time assistant professor of medicine and assistant professor of anatomy, instructor in anatomy at his alma mater, 1915-1916, fellow of the American College of Physicians, president of the Nebraska State Tuberculosis Association, on the staffs of the Creighton Memorial, St. Joseph's Hospital and the Douglas County Hospital, for three years on the staff of St. Luke's Hospital in New York, aged 51, died, August 23, of embolism, one week following an appendectomy

John Ignatius Fanz, Philadelphia, Jefferson Medical College of Philadelphia, 1912, professor of pathology, bacteriology and hygiene, Temple University School of Medicine at various times instructor in anatomy and physiology, and demonstrator in pathology at Jefferson Medical College, and demonstrator in biology at the Daniel Baugh Institute of Anatomy and Biology of the college, on the staff of the Philadelphia General Hospital, aged 44, died, August 26, of heart disease at his summer home in Bozeman, Md.

Harry Wardwell Carey, Troy, N. Y., Johns Hopkins University School of Medicine, Baltimore, 1901, fellow of the American College of Physicians, past president of the Rensselaer County Medical Society, formerly instructor in physical diagnosis and medicine, Albany (N. Y.) Medical College, author of a textbook entitled "Bacteriology for Nurses" aged 60, on the staffs of the Cohoes (N. Y.) Hospital and the Samaritan Hospital, where he died, August 14, of coronary thrombosis

Elbert William Rockwood, Iowa City State University of Iowa College of Medicine, Iowa City, 1895, professor of chemistry and toxicology at his alma mater, and at different times demonstrator in chemistry, and associate professor, first director of the University Hospital, author of "A Laboratory Manual of Physiological Chemistry" and "Introduction to Chemical Analysis for Medical Students" aged 75, died, July 17, of heart disease

Adolph Oscar Loe, Seattle, University of Minnesota Medical School, Minneapolis, 1897, member of the Pacific Coast Surgical Association and the North Pacific Surgical Association, fellow of the American College of Surgeons, past president of the King County Medical Society, member of the state board of medical examiners, on the staff of the Seattle General Hospital, aged 63, died suddenly, July 31, of coronary occlusion.

Charles Naumann McCloud, St. Paul, University of Minnesota Medical School, Minneapolis, 1901, medical director and vice president of the Minnesota Mutual Life Insurance Company, past president of the Ramsey County Medical Society and the Minnesota Academy of Medicine, aged 63, for many years on the staffs of St. Luke's Hospital and the Miller Hospital, where he died, August 13, of tularemia

Thomas Wilbur Bath, Reno, Nev., St. Louis College of Physicians and Surgeons, 1892, secretary of the Washoe County Medical Society, veteran of the Spanish-American and World wars, formerly county health officer, fellow of the American College of Surgeons, aged 70, on the staffs of the Washoe County Hospital and St. Mary's Hospital, where he died, August 11, of acute myocarditis

James Comer Johnston, McAlester, Okla., Fort Worth School of Medicine, Medical Department of Fort Worth University, 1908, member of the Oklahoma State Medical Association, past president and secretary of the Pittsburg County Medical Society, aged 57, on the staffs of St. Mary's Infirmary and the Albert Pike Hospital, where he died, July 26, of carcinoma of the colon

Philemon Emile Hommell, Jersey City, N. J., Bellevue Hospital Medical College, New York, 1894, member of the Medical Society of New Jersey, one of the founders and dean emeritus of the New Jersey College of Pharmacy, Newark, at various times delegate to the U. S. Pharmacopoeial conventions, aged 72, died, August 21, of carcinoma of the rectum

Alfred Woodhouse, Toms River, N. J., Hahnemann Medical College and Hospital of Philadelphia, 1904, member of the Medical Society of New Jersey, president and formerly secretary of the Ocean County Medical Society, on the staffs of the Paul Kimball Hospital, Lakewood, and the Point Pleasant (N. J.) Hospital, aged 56, died, July 27

Lawson Lee Simmons, Greensboro, N. C., University of Tennessee Medical Department, Nashville, 1893, Vanderbilt University School of Medicine, Nashville, 1899, member of the Medical Society of the State of North Carolina, aged 65, on the staff of the Wesley Long Hospital, where he died, July 22, of cancer of the pancreas

Osce Pierce Sweatt, Waxahachie, Texas, Hospital College of Medicine, Louisville, Ky., 1891, member of the State Medical Association of Texas, served during the World War, on the staff of the Waxahachie Sanitarium, aged 66, died, July 27, in the Veterans Administration Facility, Muskogee, Okla.

Frederick Taylor Van Eman, Kansas City, Mo., Kansas City (Mo.) Medical College, 1897, member of the Missouri State Medical Association, past president of the Jackson County Medical Society, served during the World War, aged 64, died, July 21, in the Trinity Lutheran Hospital

Frank W. Bullen, Hibbing, Minn., Rush Medical College, Chicago, 1896, for twelve years member of the school board, coroner for fifteen years, on the staff of the Rood Hospital, aged 65, died, July 21, of cerebral hemorrhage while playing golf at Swan Lake, Pengilly

Harry Clay Boyd, Waynesboro, Tenn., University of Louisville (Ky.) School of Medicine, 1887, member of the Tennessee State Medical Association, past president of the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, aged 70, died, August 9

Evan Coleman Brock, Columbus, Ohio, Starling Medical College, Columbus, 1904, fellow of the American College of Surgeons, aged 54, on the staffs of the White Cross Hospital and the Mount Carmel Hospital, where he died, August 15, of cerebral hemorrhage

Eugene Yetman Young, Champaign, Ill., Rush Medical College, Chicago, 1903, member of the Illinois State Medical Society, on the staff of the Burnham City Hospital, aged 55, died, July 22, in the Mercy Hospital, of bilateral tuberculosis of the kidneys

Robert Bruce Wilson, Newton Grove, N. C., Kentucky School of Medicine, Louisville, 1889, member of the Medical Society of the State of North Carolina, aged 79, died, July 12, in a hospital at Fayetteville, of chronic nephritis and prostatic obstruction

Michael Manley Waterhouse, New York, Bellevue Hospital Medical College, New York, 1898, member of the Medical Society of the State of New York, veteran of the Spanish-American War, aged 65, died August 21, of carcinoma of the stomach

Mary Fish Fleckles, Brooklyn, New York Medical College and Hospital for Women, 1894, on the staff of the Prospect Heights Hospital, Cumberland Hospital and the Methodist Home for the Aged, aged 71, died, August 15, of heart disease.

Howard Marshall Batson, Mannington, W. Va., Medical College of Virginia, Richmond, 1906, served during the World War, aged 60, died August 10, in the Cook Hospital, Fairmont, of tonsillitis, septic arthritis and mesenteric thrombosis

Harry Herr Smiley ♂ Texarkana, Ark., University of Missouri School of Medicine, Columbia, 1901, fellow of the American College of Surgeons, served during the World War, aged 60, died suddenly, August 20, of coronary thrombosis

Henry Dreer McCormick, Germantown, N. Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1890 member of the Medical Society of the State of New York, aged 69, died, August 26

George L. Rice, McSherrystown, Pa. Washington University School of Medicine, Baltimore, 1873, formerly county coroner and member of the state legislature for thirty six years justice of the peace, aged 85, died, July 15

George Edgar Newby ♂ Hartford, N. C., Jefferson Medical College of Philadelphia, 1900, secretary of the Chowan-Perquimans Counties Medical Society, aged 60, was instantly killed, July 28, in an automobile accident

Franklin M. Leitch, Moscow, Idaho, Homeopathic Medical College of Missouri, St. Louis, 1889, member of the Idaho State Medical Association, formerly health officer of Moscow aged 84, died, August 6, of myocarditis

John Mann ♂ Old Westbury, N. Y., University of the City of New York Medical Department, 1884 aged 77 for many years on the staff of the Nassau Hospital Mineola, where he died, August 19, of heart disease.

Nectar Miriam Kalaljian Fisk, Royal Oak, Mich. Michigan College of Medicine and Surgery, Detroit, 1896 member of the Michigan State Medical Society, aged 59 died August 19, of carcinomatosis

Alexander Wood Brodie, Prince Albert, Sask. Canada McGill University Faculty of Medicine, Montreal Que., 1917 served with the Canadian Army during the World War aged 44, died suddenly, June 13

James Wilton Thurman, Floyd, Va., University of Virginia Department of Medicine, Charlottesville 1883, aged 79 died, July 23, in the University Hospital, Charlottesville, of cerebral hemorrhage

Milton R. Thrailkill, Caldwell, Kan., Northwestern Medical College, St. Joseph, Mo., 1885, aged 72, died August 19 in a hospital at Ardmore Okla. of injuries received in an automobile accident

James Henry Oughton ♂ Dwight, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907 aged 53 was shot and killed by bandits, August 1

John Gordon Love, Hartman Ark. (licensed in Arkansas in 1903), member of the Arkansas Medical Society, on the staff of the Johnson County Hospital Clarksville aged 56 died, July 14

Emil Frederick Baur, Chicago University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892, aged 67, died, August 25, in the Presbyterian Hospital of infarction of the lungs

William H. Melster, Milwaukee, Northwestern University Medical School, Chicago, 1906, member of the State Medical Society of Wisconsin, aged 51 died August 20 of lymphosarcoma.

Frank James Shook, Warren, Ill., Rush Medical College Chicago, 1900, aged 68, died, August 2 in St. Francis Hospital, Freeport, of cerebral hemorrhage and arteriosclerosis

John W. Ross, Cohoes, N. Y., McGill University Faculty of Medicine, Montreal, Que., Canada, 1881 on the staff of the Cohoes Hospital aged 80, died, July 29 of arteriosclerosis

Simeon David Bashore, Palmyra, Pa., Jefferson Medical College of Philadelphia, 1896, served during the World War aged 63, was found dead, August 22, of angina pectoris

Charles Amiot, Montreal, Que., Canada School of Medicine and Surgery of Montreal, 1898 formerly municipal councillor and mayor of Asbestos, aged 61 died, June 13

Bennett Newton Sewell ♂ Boyce, La. Tulane University of Louisiana Medical Department, New Orleans 1893 aged 65 died, July 21, of coronary thrombosis

Edwin Thomas Cundiff, Pittsburgh, Kan., Howard University College of Medicine, Washington, D. C. 1933 aged 28 died, July 27, of a gunshot wound

Arthur Ormsby Nicholson, New York. Cornell University Medical College, New York, 1911, on the staff of St. Vincent's Hospital, aged 49, died, July 22

Frederick Lee Sandel, Columbia S. C., University of Georgia Medical Department, Augusta 1888 aged 70 died August 5, of chronic endocarditis

Austin L. Cleveland, Dallas City, Ill., Bennett College of Eclectic Medicine and Surgery, Chicago, 1906, aged 63, died August 1, in Rockford, of pyemia

Charles Lee Behrns, Alice, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1903, aged 66, died recently of paralysis agitans

Allan Sterling, Fredericton, N. B., Canada McGill University Faculty of Medicine, Montreal, Que. 1897, aged 62, died May 26 of angina pectoris

Rollin Henry Knowles, New York, Starling Medical College, Columbus, 1881, aged 79, died, August 13, of angina pectoris and coronary occlusion

Sterling Price, Fort Worth, Texas, Hospital College of Medicine Louisville, Ky., 1893, aged 69, died, July 31, of endocarditis and hypertension

Earl Webb Smith, Phoenix, N. Y. Syracuse University College of Medicine, 1885 aged 76, died, July 7 of coronary occlusion and arteriosclerosis

Noah Rouse ♂ Carson City, Nev., George Washington University School of Medicine, Washington, D. C., 1924, aged 36 was drowned, August 3

Max Myers Fields, Dante, Va., Medical College of Virginia Richmond 1928, aged 30, died, June 17, in the Clinchfield Hospital, of pneumonia

George Walker Davidson, Cincinnati, Trinity Medical College, Toronto, Ont., Canada, 1892, aged 66 died in July, at Mariposa, Ont., Canada

Joseph Lauffer Sowash, Irwin, Pa., Western Pennsylvania Medical College, Pittsburgh 1897, aged 65, died, July 28, of carcinoma of the lung

George W. Ressler, Valley View, Pa. Jefferson Medical College of Philadelphia, 1884, aged 71, died, July 24 in a hospital at Philadelphia

George Dudley Riggs, Bristol, Va. Meharry Medical College Nashville, Tenn., 1926, served during the World War aged 46, died, July 29

Dallas Texas Odell, Christopher, Ill., Keokuk (Iowa) Medical College, College of Physicians and Surgeons 1901, aged 55, died, July 30

Jules Fred Constantin, Roberval, Que., Canada Laval University Faculty of Medicine, Quebec, 1887 aged 69 died May 28, of angina pectoris

Edward F. Suhre, Forest, Ind., Central College of Physicians and Surgeons, 1897 aged 66, died, August 12 of cerebral hemorrhage

Mary Florence Lemmon, Cadiz, Ohio, Homeopathic Hospital College, Cleveland 1893, aged 75, died, July 23 of cerebral hemorrhage.

William D. Sydnor, Hamilton, Va. (licensed in Virginia in 1899), aged 59 was found dead in bed, August 8 of cirrhosis of the liver

Taylor W. Scott, Stafford, Kan., University of Louisville (Ky.) School of Medicine 1881, aged 75 died July 12, of chronic nephritis

Robert Roy McClenahan, Port Nelson, Ont., Canada University of Toronto Faculty of Medicine 1912 aged 44 died, July 19

Gavin Steel Scott, Ramona, Calif. University of Glasgow Medical Faculty Scotland, 1884, aged 74 died July 27, of pneumonia

Forrest Snowden King ♂ Muskogee Okla. Western Pennsylvania Medical College Pittsburgh, 1907 aged 55 died, August 5

Henry Wolin ♂ New York, Long Island College Hospital Brooklyn 1915, aged 51, died July 18, in the Mount Sinai Hospital

John George Tapper, Elgin Ill. Rush Medical College, Chicago 1882 aged 82 died, September 10 of chronic myocarditis

George W. Crum, Arenzville Ill. St. Louis Medical College, 1874 aged 86, died August 7 of coronary thrombosis

Douglas Corsan, Fernie B. C. Canada, McGill University Faculty of Medicine, Montreal, Que., 1885 died, July 13

Henry J. Trachman, Windsor, Calif., Baltimore University School of Medicine, 1900, aged 64, died July 14

Stillman Marion Benner, Campbell Calif., Rush Medical College, Chicago, 1879, aged 81, died, July 26

William R. Loftin, Grubbs Ark. (licensed in Arkansas in 1903) aged 70, died, July 7

Bureau of Investigation

MST TREATMENT FOR RHEUMATISM

Another Fraud Debarred from the Mails

Mortin Products of Kansas City, Mo., and Denver, Colo. has been selling a neo-cinchophen-amidopyrine nostrum as a cure for rheumatism under the names "MST Treatment" and also "Mortin's No 1" and "Mortin's No 2". On August 31, 1935, the Postmaster General, having been satisfied that the Mortin Products concern was swindling the public through the United States mails, issued a fraud order closing the mails to the outfit.

The memorandum of Mr. W. E. Kelly, Acting Solicitor for the Post Office Department, to the Postmaster General, embodying the finding of facts and recommending the issuance of a fraud order, gives some interesting data on this swindle. According to the memorandum, Mortin's Products was promoted by three men, W. H. Menzel, C. O. Butler and Walter L. Kight, the first two operating from Kansas City, Mo., and the last from Denver. The business was started, however, in Oakland, Calif., and was an attempt to carry on a business that had been conducted from Houston, Texas, under the name of Mortin Products. Menzel and Butler had been employed by the Mortin Products concern, which sold an alleged cure for rheumatism under the name "MST" ("Martin's Specialized Treatment"). In September, 1934, the promoters of the Houston outfit were cited by the postal authorities to show cause why a fraud order should not be issued against them. At that time the Mortin concern filed with the Post Office an affidavit stipulating that the business had been absolutely discontinued and abandoned and would not be resumed and the Postmaster at Houston was directed to return to the writers all letters addressed to Mortin's Products, stamping on the envelopes "Out of Business".

At this point it is worth noting that cases of acute yellow atrophy of the liver, some fatal, due to the use of MST (which first was a cinchophen-amidopyrine product and later a neocinchophen-amidopyrine preparation) had begun to accumulate.

Menzel and Butler had in the meantime had trouble with their employers, Mortin Products and they adopted the name Mortin Products, copied the literature and advertising of Mortin Products and attempted to duplicate the Mortin Products preparation. They started business in Oakland, California, but the promoter of Mortin Products went to Oakland and secured an injunction restraining Butler, Menzel et al., from operating under the name Mortin Products. Butler and Menzel thereupon removed to Denver and Kansas City and continued the operation of the scheme with advertising matter copied from that formerly employed by Mortin Products.

According to Mr. Kelly's memorandum, also both Kight and Butler had formerly been employed by a Chicago concern that sold a nostrum for rheumatism. Neither Kight, Butler nor Menzel are physicians, pharmacists or chemists—in fact, Kight is said to have been an oil-tank wagon driver and Butler to have been in the shoe business.

From a letter received from the Board of Medical Examiners of the State of California it appears that W. H. Menzel had also been a field representative for another fake rheumatism remedy, the Nue-Ovo Laboratories of Portland, Ore. (Nue-Ovo was declared misbranded under the National Food and Drugs Act in Notice of Judgment 16390, an abstract of which was published in this department of THE JOURNAL, Aug. 30, 1930.)

The Mortin nostrum was described as a 'scientifically compounded medicinal preparation for rheumatism' that was "a new and recent discovery, not like so many so-called cures reputed to have been discovered fifty or one hundred years ago." The Mortin preparations were analyzed for the postal authorities by the chemists of the Food and Drug Administration. "Mortin's Product No 1" was found to be tablets each weighing about four grains and containing over one grain of neocinchophen and slightly under one grain of amidopyrine to the tablet the balance of the tablet being made up of milk

sugar and chalk. "Mortin's Specialized Preparation No 2" had essentially the same composition. With this mail-order treatment there was also sent a bottle of "MIT" ("Mortin's Intestinal Tonic," an imitation of "Martin's Intestinal Tonic") which the victim was told to use when a laxative was required. Analysis showed the tablets to contain plant extractives, including asafoetida and emodin-bearing (laxative) drugs, ginger, red pepper and strychnine.

According to the advertising of the Mortin outfit, the laws of the United States prohibit any one but a licensed physician from diagnosing or prescribing for any ailment. This statement, of course, is, unfortunately, wholly false. The Mortin advertising went on to state further that the concern had 'one of the best physicians on the Pacific Coast serving as a "chief of staff physicians".'

In addition, the Mortin quacks sent to each prospective victim a questionnaire containing twenty-nine questions that were to be answered by the sufferer. It is brought out by Mr. Kelly in his memorandum that the questionnaire was not examined by any physician and the representations with respect to the "staff physicians" were a fraudulent pretense employed by the promoters to lend respectability to their scheme. Kight, who operated the Denver branch of this fraud, informed the Post Office inspector that Dr. A. O. McMichael of that city was the company's physician there.

The files of the Bureau of Investigation show that a few years ago McMichael was exploiting a "patent medicine known as 'Dr. McMichael's Allgland With Radium'." This preparation was advertised under fraudulent claims and was declared misbranded under the National Food and Drugs Act. It was the subject of a brief article in this department of THE JOURNAL July 23, 1927. According to the records of the American Medical Association, Americus O. McMichael was born in 1863, claims a diploma from Drake University College of Medicine, 1894 and is licensed in Iowa, Missouri and Colorado. In 1924 McMichael's name was given as the director of another nostrum outfit, the Carnotite Gland Extract Company, in 1920 as president and medical director of the Radioactive Chemical Company of Denver and in 1925 as "Medical Director" of the Allfood Laboratories.

Acting Solicitor Kelly's memorandum to the Postmaster General stated further that when the Post Office inspector questioned C. O. Butler in Kansas City with respect to the representations as to staff physicians he claimed that all questionnaires received at Kansas City were turned over to Dr. McMichael at Denver, although Kight, in charge of the Denver office, had admitted to the inspector that none of the questionnaires were turned over to McMichael.

In their answer to the charge by the postal authorities Menzel, Butler and Kight stated that they maintained a registered and licensed physician to examine the questionnaires, make laboratory analyses and prescribe diet routine and other therapy wherever indicated, and they submitted an affidavit executed Aug. 15, 1935 by Lewis J. Greenfield, M.D., of Denver, in which Dr. Greenfield averred that he is a "Staff Physician for Mortin's Products Distributors." However, the affidavit made no statement as to when Dr. Greenfield was employed, nor did it indicate that he had ever examined any questionnaires or given any advice. The files of the American Medical Association show that Dr. Lewis J. Greenfield was born in 1896, holds a diploma from the "diploma mill" St. Louis College of Physicians and Surgeons, 1925, and a Colorado license issued the same year. Dr. Greenfield is, of course, not a member of the American Medical Association.

Solicitor Kelly states that the evidence indicates that after the Mortin quacks found they were under investigation by the postal authorities, the arrangement with Greenfield was made so as to give them something to present to sustain the advertised claim regarding "staff physicians." The postal authorities reported further that the same tablets were sent to all purchasers, and the same printed instructions with respect to diet, hygiene and exercises were also sent, regardless of the cause of trouble or the condition of the patient. Mr. Kelly summed up his findings as follows:

"The evidence shows that the preparations are merely pain killers and nothing more and that respondents' representations to the contrary are knowingly false and fraudulent. The evi-

dence shows that the preparations will not reach directly to the source of rheumatic infection, cleanse the blood, regulate and tone the stomach, liver, kidneys and bowels, and that it is false to represent that even though a person may not be suffering from rheumatism these preparations are incomparable system builders, blood purifiers, and restorers of normal bodily functions"

As a result, Mr. Kelly recommended the issuance of a fraud order, which, as already stated, has gone into effect debarring this swindle from the United States mails

Correspondence

HYPERGLYCEMIA

To the Editor —In the article by Dr. Herman O. Mosenthal on "Hyperglycemia: Evaluation in the Treatment of Diabetes," in *THE JOURNAL*, August 17 the statement is made by him and most of those who discussed the paper that diabetes is a contributing factor in the causation of arteriosclerosis. I believe Dr. Joslin is the most important sponsor for this view. It is rather curious that in the study of arteriosclerosis most observers have overlooked a rather simple observation which completely disproves any metabolic origin in the causation of arteriosclerosis, namely, the complete independence in the incidence of arteriosclerosis between the general and pulmonary circuits (Moschowitz, Eli. *The Cause of Arteriosclerosis Am J M Sc* 178:244 [Aug.] 1929). A false perspective is given to the study of human arteriosclerosis when observations are confined, as is conventionally done, to the aorta and its branches. If, however, observations on the aorta and the pulmonary artery are made it will be quickly realized that simultaneous arteriosclerosis in the two circulations is the exception rather than the rule, so that if arteriosclerosis is found in the aorta the lesion is not necessarily present in the pulmonary artery and vice versa. Early anatomic arteriosclerosis is almost universal in individuals in the third decade of life and increases in intensity and distribution as one passes to the senescent years even when the blood pressure remains normal (decreased arteriosclerosis) whereas arteriosclerosis in the pulmonary artery is almost exclusively associated with conditions in which an increased pressure in the pulmonary circuit can be predicated. These are, in the order of frequency: mitral stenosis, pulmonary emphysema, extensive pleural adhesions and fibrosis of the lung, patent foramen ovale, and communications between the right and left sides of the heart. Pulmonary arteriosclerosis is therefore entirely independent of age and sex, I have observed it not uncommonly even in infants with congenital heart disease. The relation of intravascular tension in the causation of arteriosclerosis therefore is vital in the study of the problem. If diabetes were the cause of arteriosclerosis, one would expect as great an incidence of arteriosclerosis of the pulmonary artery as of the aorta, because the same blood bathes the two circulations but even a casual inspection of autopsy material will show that pulmonary arteriosclerosis never occurs in diabetes unless such disease as I have referred to is associated.

Many writers have confused arteriosclerosis with the lipid imbibition of the aorta witnessed in nurslings on a high fat diet, in advanced diabetes and nephrotic syndromes associated with hypercholesteremia, and in the experimental arteriosclerosis initiated by Amitschkow and his school produced by excessive cholesterol feeding. This is the lesion that Leary in the same issue of *THE JOURNAL* calls "atherosclerosis." I believe that such a conclusion is not justified first because such lesions unless too far advanced are regressive; secondly, because such lesions are not limited to the arterial tree but are distributed as well to the intima of the veins and to the reticulo endothelial system; thirdly, because the pulmonary artery and the aorta are simultaneously involved and fourthly experimental arterio-

sclerosis is produced only under conditions entirely unphysiologic. Human arteriosclerosis histologically presents all the earmarks of a reaction compensatory to intravascular tension. It represents an involutionary process. It is generally overlooked that hypertension is not a new insult that has entered the organism but represents an exaggeration of a normal physiologic function, namely, intravascular tension. Therefore, normal intravascular pressure will also cause arteriosclerosis, given a sufficient period. That is why arteriosclerosis is a normal phenomenon in the greater circulation in the senescent years. The reason it is absent in the pulmonary artery except under the conditions I have mentioned is that the normal intravascular pressure in the pulmonary artery is one-sixth that of the aorta.

While the complete independence in the incidence of arteriosclerosis in the pulmonary and aortic arteries furnishes the most obvious argument against the metabolic origin of arteriosclerosis the absence of arteriosclerosis in most cases of juvenile diabetes is additional evidence.

To my mind all evidence seems to show that arteriosclerosis is the cause of diabetes rather than the reverse. I have tried to show that arteriosclerosis is only a localized form of vascular sclerosis and that pathologically and pathogenically there are lesions of the capillaries, veins and the lining of the heart chambers that are precisely comparable. When diabetes occurs in arteriosclerosis the inference is that the capillaries of the islands of Langerhans are affected. Why in arteriosclerosis the clinical brunt should be on one or the other organ is a problem that awaits a solution.

ELI MOSCHOWITZ, M.D., New York

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

ALOPECIA AREATA

To the Editor —My son now 12 years 11 months old has had alopecia areata since he was 5 years old. His height is 5 feet 6½ inches (168 cm.), his weight 130 pounds (59 kg.). He is in excellent health and has never had any serious illness. Physical examination is entirely negative except for alopecia. The basal metabolic rate is 0. The blood count is normal. At times the alopecia becomes almost complete then hair begins to fill in but never completely—always one or two patches of alopecia remain. At present the alopecia is extensive. He has made rounds of many dermatologists with but little success. Kindly discuss in *Queries and Minor Notes* (1) etiology (2) prognosis especially what may be expected at puberty and (3) treatment. Has anterior pituitary any value? If so what untoward effect on the growth of the skeleton? The patient is very sensitive about his trouble and spends much time worrying about the eventual outcome. Kindly omit my name.

M.D., Colorado

ANSWER—1 The etiology of alopecia areata is still obscure after many years of research. The chief theories are (a) the trophoneurotic, (b) focal infection, (c) syphilis, (d) heredity, (e) contagion and (f) the endocrine sympathetic theory.

(a) Much evidence favors the influence of nervous instability, trauma affecting the nervous system, or reflex nervous influence on the occurrence of alopecia areata. The experiments of Joseph Nivelli and others most recently of Beeson and Pickett (*Experimental Alopecia, Arch Dermat & Syph* 28:53 [July] 1933) on cats produced localized patches of alopecia within a month. There has been some argument that these are not patches of genuine alopecia areata but the fact remains that they do resemble alopecia areata in many respects. The literature is full of references to cases of alopecia areata occurring after physical trauma to the nervous system and shock or nervous disturbances of various kinds.

(b) Jacquet's theory that alopecia areata is one of the symptoms of a general condition comparable to the molting of animals is not now considered seriously, but his emphasis on reflexes from the teeth, eyes and so on is still to be considered in some cases of the disease. Chipman's theory of focal infection as a cause of alopecia areata has not received much support but it also should be kept in mind.

(c) Syphilis is considered by the French authorities as one of the most significant factors in the etiology of alopecia areata. Outside of France this relation is not stressed. Undoubtedly in rare cases, syphilitic alopecia resembles alopecia areata to some extent. If syphilis has a relation to real alopecia areata it is probably an indirect one, an influence on general resistance or perhaps a more direct influence through the nervous system.

(d) The evidence in favor of heredity in alopecia areata is considerable. It has in many instances occurred in several members of a family. This may be explained as due to similar endocrine disturbances or anomalies in the family or due to contagion.

(e) The latter has always been stressed in the etiology of this peculiar disease. Epidemics have been reported in England, Germany, France and Italy. While some of them have been successfully explained away as alopecia due to impetigo or to neurotic rubbing, it seems that some of the epidemics have been composed of genuine cases of alopecia areata. If alopecia areata is a distinct disease due to a single cause, and its symptomatology and course favor this opinion, the contagion must be a weak one able to gain a foothold only in a few persons of low resistance, or as that of herpes simplex—able only now and then to become strong enough to manifest itself. Its trait of recurring sometimes at regular intervals, in other cases erratically, strengthens the analogy.

(f) The role of endocrine disturbance in the etiology of alopecia areata is based chiefly on the occurrence of the disease with vitiligo, scleroderma, acromegaly, exophthalmic goiter, ovarian dysfunction, adiposogenital dystrophy and other symptom complexes considered of endocrine origin. The microscopic observation that the primary change in alopecia areata is disturbance of pigment lends support to the relation with vitiligo.

Recently Hocker has reported a case of alopecia areata in a girl with irregular menses, with long limbs and large hands and feet, who evidenced, in his opinion, lack of ovarian secretion and an overabundance of the anterior pituitary hormone. She improved both in menstrual regularity and in hair growth on the administration by mouth and subcutaneously of estrogenic substances, but recurrences appeared and after three years' treatment she was suffering another recurrence in spite of energetic treatment (Hocker, H. *Hormonbehandlung einer kreisförmigen später vollkommenen Haarlosigkeit [Alopecia Areata] des Kopfes, Med. Klin.* 30 603, 1934). Others report similar temporary benefit. No evidence of relation to the pituitary gland has been obtained. There is a form of alopecia seen in some cases of pituitary deficiency, but it does not resemble alopecia areata.

2 The prognosis of alopecia areata is good in most cases. Even when the alopecia becomes generalized, the chances of recovery are fair if there is a growth within two years of the onset. After two years without growth of hair the prognosis is not favorable. However, recovery has been known to occur after twenty and thirty-five years of alopecia. The prognosis is best in children, "in whom the disease ceases with development" (Galewsky, in *Handbuch für Haut- und Geschlechtskrankheiten*, Berlin, Julius Springer 13 290, 1929). This is the only reference found to the chance of improvement at puberty.

3 First, search should be made for focal infection or any disturbance of the teeth, eyes or ears that might be causing reflex irritation. The patient should be studied for indications of nervous disturbance or endocrine dysfunction. There is little evidence in favor of treatment with anterior pituitary. There is no experimental evidence that the anterior pituitary or lack of it has anything to do with alopecia areata. In one case moderate improvement occurred during a long course of such treatment. The sister of this patient took the same treatment without benefit. Both had total alopecia. The brother, after about one year of rest, has a recurrence in his sparse scalp hair. The disease is following a typical course and there is grave doubt whether anterior pituitary was of any benefit. Many patients have taken it for long periods without benefit. No effect on the skeletal development of children at puberty has been noted.

General measures to improve resistance are important. Daily salt baths or cold douches are well thought of. General ultraviolet baths may be found helpful, especially in winter. Medication as indicated by any general deficiency or disease should be supplied.

Locally, daily epilation of the loose hairs in the border of the lesions is recommended, followed by a stimulating antiseptic lotion, as red mercuric iodide 1:5,000 in 50 per cent alcohol. Once a week or oftener, according to the reaction, each spot should be treated with ultraviolet rays or an irritant chemical to the point of sharp irritation enough to cause exfoliation. Graded strengths of cresol in alcohol or a mixture of phenol 1 part and lactic acid 4 parts or of equal parts of

chloral hydrate, tincture of iodine and phenol, are among the best chemicals although each dermatologist has his favorite.

If such rough treatment fails, even after long use, the irritants may be stopped and x-rays given, one-eighth skin unit once a week or once in two weeks for three treatments. Irritants should not be reapplied for three weeks after the final dose. Care must be taken to avoid overlapping of exposures, best accomplished by sheet lead or lead rubber protection applied close to the head.

Nothing in this is new and it is probable that the patient under discussion has had all of it at one time or another, but persistence is a virtue in the treatment of alopecia areata, if it is indicated anywhere.

POSSIBLE PSYCHONEUROSIS WITH SUSPECTED HYPERTHYROIDISM

To the Editor—I have under my care a woman aged 32, weight 113 pounds (51 Kg.), who complains of a somewhat tight feeling in the right side of the neck, mucous shreds in the feces flakes in the urine, and a tightening sensation in the bladder after urination. She complains also of soreness when the abdominal aorta is rolled under the palpating fingers, this soreness traveling down the sacrum. She was married at 22 and had her first child seven years ago. Delivery was normal. She always has felt jittery or nervous; there is no evidence of mental or emotional instability. In 1930 the appendix was removed, the uterus suspended to the anterior abdominal wall and the cervix cauterized. The menses have always been normal of the twenty-eight day type (four days) with moderate bleeding prior to and after the operation. She was told by several physicians that she had a goiter and that it would have to be removed before her symptoms would improve. The eyes are normal. There is no facial tremor. The eyes follow well. The tongue protrudes in the midline. Physiologic enlargement of the thyroid is present (struma). The chest and heart are normal. The pulse always runs around 110 to 130 when the patient is up and around 80 while she is asleep and 100 when she is quiet but not asleep. The blood pressure remains around 186 systolic, 110 diastolic and comes down to 160/100 on vasodilator drugs. The abdomen is normal except for various elusive tender spots which are never really constant. Pelvic examination reveals a very dry introitus and vault with much white cheesy material lining the mucous walls. The cervix is normal but the uterus is distinctly atrophic and infantile. The patient has had all sorts of hormone therapy, including protracted courses of antuitrin S with some benefit, theelin and all the others. The rectum is very dry and baggy like, and the rectal folds seem to be abnormally large. The Kahn reaction is negative and laboratory work gives negative results. Including the urine. She has taken compound solution of iodine in the past without result. In spite of all therapy she has her ups and downs, worries a great deal about herself and wonders whether there will ever be any change in her condition. She wakes up at 4 a. m. (hears the passing milk train) and then cannot go back to sleep. Four basal metabolic tests give from plus 4 to plus 14. Do you feel that a subtotal thyroidectomy is indicated? Have you any suggestions as to further treatment? At present she is receiving phenobarbital and sodium nitrite by mouth. According to Crile the thyroid condition (exophthalmic) can be cleared up by sympathectomy. Would it be logical in this case? The patient is rather anxious to have something done to relieve the condition. Your analysis and suggestions will be appreciated. Please omit name.

M. D. Illinois

ANSWER.—The bizarre, disconnected symptoms of which this patient complains suggest a functional disturbance not associated with organic disease. Patients with such complaints are frequently encountered and are often the source of great anxiety to their physicians. During the course of their management medication of all kinds—drugs, endocrine products, compound solution of iodine, sedatives and such—are tried but uniformly without real benefit. Operations, most frequently operations on the pelvic organs, the ductless glands or the abdominal viscera, may have been done but with no more success.

In the present instance a diagnosis of severe psychoneurosis and moderate hypertension is suggested and is probably correct. These two conditions may be related or may be independent of each other. The hypertension should not be taken too seriously. With time and a fair degree of control of her psychoneurosis the blood pressure may well drop to a lower level. In the light of our past knowledge of hypertension, little effect may be expected from specific medication directed toward its control and, conversely, much may actually be effected in lowering the patient's blood pressure if and when her psychoneurosis is controlled.

Patients of this type differ greatly and must be treated individually. They have but one feature in common, a functional basis for their disability, the manifestations of which may be as different in two individuals as their personality. Effective management, therefore, requires resourcefulness and individualization on the part of the physician. The sensible family physician can do much in the care of these psychoneurotic patients. He should endeavor to instill confidence and eliminate fear and should encourage the patients to disregard their imaginary disabilities by constant mental training and direction, in most cases such management will result in a material improvement of their condition. Time, perseverance and a sympathetic under-

standing are essential. Certainly the family physician occupies a strategic position in the care of these patients that may overbalance the advantages possessed by the more highly trained psychotherapist in the management of an individual case.

In the present instance it is noted that the patient is underweight and probably is undernourished. She has abdominal complaints and signs suggestive of "mucous colitis" and she is worried about the state of her health. Such accessory conditions are incidental to the underlying functional disturbance. Reassurance as to the absence of organic disease and a sensible nutritious diet probably would accomplish much in building up her physical condition. Drugs are not advised and may be harmful.

As to the specific questions asked: 1. A subtotal thyroidectomy is not advised and probably would only do harm. 2. Sedative drugs, such as phenobarbital, only tend to aggravate the condition. Healthful, outdoor physical exercise, inducing a natural demand for rest and sleep, probably would accomplish more in the individual case. 3. In the light of our present knowledge, sympathectomy is not indicated and if done in the present instance would only add to the patient's hardship.

CHRONIC COLITIS IN A CHILD

To the Editor—A boy, aged 7 years, who to general inspection appears to be a normal well-nourished child and who has had the usual diseases of childhood but otherwise has had no illness of any consequence began to have a looseness of the bowels beginning at the age of about 2 weeks. This sometimes borders on a diarrhea for days at a time, with inability at all times to control the movement of the bowel when the desire to stool appears. The blood count and urinalysis give negative results. An examination of the stool does not reveal the presence of any parasites or ova, no occult blood or blood cells are found. There is considerable mucus, and a moderate number of pus cells. Sometimes the stool contains copious quantities of mucus but at no time has the mother found evidence of blood or a dark stool. The stools are usually brown or brownish yellow. The child was nursed by his mother and has since had a normal appetite, and general examination reveals normal health. Rectal examination discloses a sphincter muscle of normal tone and proctoscopic examination reveals a red and congested mucosa for a distance of about 5 inches up in the bowel, but otherwise no bowel or rectal disorder. I should appreciate a diagnosis and suggestion for treatment. Please omit my name.

M D Nebraska

ANSWER—There appear to be two factors involved in this case: a looseness of the bowels since the child was 2 weeks of age and an "inability at all times to control the movement of the bowel when the desire to stool appears." These two conditions are perhaps related in this case but not necessarily so. From a description of the case, the stool containing copious quantities of mucus, the boy apparently has a chronic colitis of some sort, somewhat corresponding to the adult condition loosely referred to as mucous colitis. This term is merely a symptom complex of varied etiology. In this particular case infectious causes of colitis such as amebic and bacillary dysentery should be and apparently have been excluded by proper bacteriologic examination of the stools. Such conditions as ulcerative lesions and polyps have been eliminated by the absence of blood in the stools. Celiac disease is ruled out by the early age of onset, the well-nourished appearance and the normal appetite of the child. It might be well, however, to determine the fat content of the stools. The absence of attacks of pain or "colic" tends to exclude a chronic appendicitis, a Meckel's diverticulitis or congenital adhesions about the intestine as reflex causes of the condition. However, a complete gastro-intestinal roentgen study with barium sulphate might possibly reveal something.

At least two possibilities have not as yet been excluded. An allergic reaction of the intestine to certain foods must be seriously considered, especially if there is an allergic family history and other manifestations of allergy in the boy, such as asthma, urticaria, hay fever or transient rhinitis. A diet diary kept by the parents might furnish a clue as to the offending food, or complete skin testing with food allergens might be done.

A congenital neurogenic dysfunction of the colon must be considered, analogous to neuromuscular dysfunctions of the bladder in some children. The two conditions are at times associated. If the child has frequency of urination, anuresis or incontinence of urine the suspicion would be strengthened. Occasionally incontinence may be associated with a spina bifida occulta. A roentgenogram of the lumbar and sacral spine would be indicated. In such conditions incontinence may be associated with normal tone of the external sphincter, as in this case. Because of the diarrhea, the patient may know when his bowel is going to act but cannot retain control for any length of time. Another possibility is that although the loose stools have a physical basis the incontinence may result from a behavior problem, i.e., a continuance or reversion to

infantile habits in an attempt on the part of the child to gain something or to keep himself in the limelight.

The therapy consists in finding the etiologic factor or factors and eliminating them if possible: if food allergy, avoiding the offending foods. If the incontinence results partly from a social maladaptation, proper psychotherapy should be instituted similar to that used in an analogous enuresis, efforts being made especially to impress on the boy that he is no longer a baby and could control himself if he really wanted to.

Symptomatic treatment should be directed toward diminishing the hyperperistalsis by feeding a bland diet, purged foods with no roughage, giving antispasmodics, as atropine, and astringents, bismuth subnitrate and tannates. Occasionally absorbing substances, as kaolin or charcoal, might be of value. Possibly astringent enemas of 1 per cent tannic acid might help.

FEVER OF UNKNOWN ORIGIN

To the Editor—I would appreciate suggestions as to further diagnostic and therapeutic measures that I may take regarding a white woman, aged 21 who has headache and vomiting as the principal symptoms both of unusual duration. The father died of pulmonary tuberculosis, her mother and one half sister are living and well. The patient had measles, pertussis and pneumonia in childhood with uneventful recovery. She has always been thin but was rarely ill until two years ago. Menstruation began at 14, scanty and irregular. The present illness began with what was thought to be influenza in April 1933. She improved slowly until May 1933 when she fell and fractured the right ninth rib. The chest was strapped with adhesive plaster. Recovery was satisfactory. In July 1933 she began to have headache and some fever which rarely was above 100 with slight loss in weight. She was admitted to a hospital where a diagnosis of atypical typhoid was made. A roentgenogram of the chest showed a healed fracture of the ninth rib. There was no evidence of tuberculosis or other abnormality. After one week in the hospital the patient's temperature became normal and remained so until her discharge four weeks later. One week after admission the patient complained of headache and began vomiting. This continued until her discharge. She continued to vomit, complained of headache and still had a low grade fever. She was again admitted to the hospital in September 1933 and was given numerous hypodermoclyses of dextrose and saline solution to control the vomiting and dehydration. A gastro-intestinal series after a barium sulphate meal revealed hypermotility of the stomach, cardiospasm and slight six hour retention. No ulcer was seen. The gallbladder after intravenous injection of dye was normal. She stayed in the hospital three months had headaches and vomiting the whole time and was then allowed to come home under the care of a physician who treated her with diet, antiemetics, sedatives and rest in bed until February 1934 when she came under my care. The patient is well developed but emaciated and very dehydrated. The temperature ranged between 98.6 and 101 from March 1934 to March 1935. The head, eyes, ears, nose, throat and neck are normal. There is no thyroid enlargement. The chest is flat with a rachitic rosary; expansion is good. The lungs are apparently normal. The breasts are small and atrophic. The heart rate is constantly above 100 and is regular in rhythm with no enlargement, murmur or other abnormalities. The abdomen is sunken; there are no masses or tenderness but the patient complains of epigastric discomfort. Vaginal examination has not been done. The pupils are equal and react to light and in accommodation. The knee jerks are slightly hyperactive and equal. The Romberg, Babinski, ankle clonus and Kernig signs are all negative. The superficial abdominal reflexes are normal. Skin sensation is apparently normal over the whole body. I tried all the usual drugs to relieve vomiting: then a liquid diet and then thick foods. After having no success I inserted a Levine tube into the duodenum. Since then I have had the patient take milk, eggs, cod liver oil and orange juice and other liquids. She continues to vomit but does not vomit food. She has been fed by this method almost exclusively for about ten months. The vomiting has never been of a projectile type. Kindly omit name.

M D, Tennessee

ANSWER—The determination of the causes of fever of unknown origin is one of the really difficult problems of internal medicine. In a series of 173 patients discharged from the Peter Bent Brigham Hospital in whom no diagnosis of the cause of the fever was made at the time over a period of about sixteen years, in seventy-eight a definite diagnosis was never made (Alt, H. L., and Barker, M. H. *Fever of Unknown Origin*, *THE JOURNAL*, May 10, 1934, p. 1457). In the twenty-three in whom eventually a diagnosis was made, some form of tuberculosis was ultimately diagnosed in six, valvular endocarditis in six, and malignant conditions in various parts of the body in several cases. It is interesting to note that, in two patients whose temperature reached 104, syphilis was diagnosed on a therapeutic test in one and malaria in another. Not mentioned in this list are cases of undulant fever in which agglutination tests are important for diagnosis. These cases may continue for several months or a year or more. More recently some writers have called attention to amebiasis as a possible cause of fever of unknown origin, even in the absence of diarrhea. If repeated stool examinations, including stool cultures are negative, the Arnold modification of the Craig complement fixation test for amebiasis might be tried. Blood cultures should be frequently repeated and the heart must be repeatedly exam-

ined for endocarditis. Repeated urine examinations are indicated for pyelitis, which might be closed at the time of one of the urinalyses.

Intravenous injections of dye for the determination of some form of renal lesion should be made. Roentgen examination of the long bones in a search for Hodgkin's disease, which involves the periosteum, is indicated. The form of treatment will depend entirely on the ultimate diagnosis. In the meantime, supportive and tonic measures as are being used now should be continued.

ESSENTIAL HYPERTENSION WITH ENCEPHALOPATHY

To the Editor—I wish to inquire about the pathogenesis of epileptiform seizures in arteriosclerotic patients. I have in mind a woman aged 48 until recently a school teacher weighing 174 pounds (79 Kg.) For five years she has presented such signs and symptoms of arteriosclerosis as frequent severe headaches, vertigo, insomnia, irritability, hypertension (averaging around 190 systolic, 100 diastolic), retinal hemorrhages (October 1932) sufficient to cause blindness in the right eye, a high degree of sclerosis of the retinal vessels on ophthalmoscopic examination and an occasional trace of albumin in the urine. In December 1933 she had an intensely severe headache followed in a few hours by a severe epileptiform seizure lasting around five minutes. The patient was stuporous for nearly two days following this and cannot recall events that took place from the onset of the headache to about two days after. The spinal fluid was under moderately increased pressure and a lumbar puncture seemed to relieve the headache and aid in the patient's recovery at that time. She remained very weak for several months but gradually recovered her strength. At present she presents on physical examination essentially the same condition that she did two years ago. At times she feels quite well. Was I justified in giving the relatives of this patient a decidedly unfavorable prognosis? In *Steven's Practice of Medicine*, page 713, it states: "Rarely arteriosclerotic patients suffer from typical epileptiform seizures or stuporous states which are apparently not due to complete vascular occlusion by thrombosis or embolism to heart block and the Adams Stokes syndrome or to uremia but to the vascular changes themselves. I am curious to know something more definite about these vascular changes and particularly why they should cause the convulsions at one time and not subsequently, considering the progressive nature of the disease." Please omit name.

M D Ohio

ANSWER.—We prefer to designate this a case of essential hypertension with "hypertensive encephalopathy." The latter syndrome is well described by Oppenheimer and Fishberg (*Arch Int Med* 41:264 [Feb.] 1928) and more recently by Grinker in his textbook of neurology, page 587. Headache, vertigo, convulsions and retinal hemorrhages are common features. Increase in cerebrospinal fluid pressure is common. Grinker says that the relation between arteriosclerosis and hypertension as to cause and effect is not definitely known, but probably the sclerotic changes are secondary to the hypertension. Whether the hypertension is the result of a central process cannot be stated. The attack in December 1933 was one of the "cerebral vascular crises" common in this condition. As Grinker says, their mechanism is unknown. He suggests that "a small arteriole may go into spasm and relax quickly, but still the time may be long enough to produce quite a reaction in the parenchyma, an edema of the interstitial tissue and hyperemia of the neighboring vessels. The processes clearing quickly, leave a normal functioning area." Horace Evans (*Lancet* 2:583 [Sept. 9] 1933), in discussing hypertensive encephalopathy, also emphasizes ischemia and edema as bringing on the cerebral crises. The serious prognosis was justified, but fortunately, in this particular case perhaps the physician unknown to himself brought about a mental tranquility favoring subsidence of the cerebral process underlying hypertension.

POLYCYTHEMIA

To the Editor—A man aged 23 whose previous health was normal has been suffering for about six weeks with polycythemia. The hemoglobin is 122 per cent, red blood cells 6,200,000, eosinophils 4 per cent. There are albumin and casts in the urine. No signs of lead have been found. The patient was exposed to ethyl gas (lead) in washing airplane motors from June 1924 to April 1935. Can I consider tetra-ethyl lead as a causative factor? What clinically can I consider as the remote effects of tetra-ethyl lead in ethyl gas on a susceptible individual?

M D Ohio

ANSWER.—While the use for cleaning purposes of ethyl gasoline is not condoned, it is unlikely that a polycythemia can be attributed to tetra-ethyl lead in this cleaning agent. Two other possible causes should be considered as more nearly practical. The first of these is carbon monoxide. The query does not state that the airplane motors were in operation at the time of washing, but it is believable that any such work might at least at times be carried out under conditions providing exposure to this gas. It is reasonably well established that workers in garages and other places where moderate exposure to carbon monoxide is provided develop a mild polycythemia.

A second possible causative agent is to be found in the gasoline itself. Gasoline (benzine), kerosene, naphtha, Stoddard's solvent and similar substances are capable of inducing a stage of intoxication in which polycythemia is a feature. Ordinarily this condition comes early in the period of exposure. All in all, it is believed that greater significance should be attached to the influence of carbon monoxide if exposure can be shown to have existed.

The method of determining the 122 per cent hemoglobin may be of some importance. Current attitudes toward hemoglobin determination lead to unfavorable criticism of many widely used methods. Instead of expressing observations in percent, ages it seems that much more accurate results can be obtained through the determination of actual grams of hemoglobin in a given sample of blood. The Haden-Hausser apparatus is a usable instrument for the determination of hemoglobin on the gram basis. So far as is known, the remote clinical effects of tetra-ethyl lead are not dissimilar to those produced by other forms of lead, with the possible exception that tetra-ethyl lead may exercise a predilection for nervous system tissues. Tetra-ethyl lead differs from inorganic lead compounds with respect to toxic features in that it may enter the body by way of the skin. The extent that inorganic lead compounds enter the body through this portal is negligible. Notwithstanding the small amount of tetra-ethyl lead in a gallon of gasoline, this agent should not be utilized for cleaning purposes or for any other purposes that lead to extensive skin contact.

ROSE FEVER

To the Editor—A woman about 50 years of age complains of headaches dating from twenty years ago at about which time she had a criminal abortion with an infection. Five years later she had an appendectomy and oophorectomy on the right side. She had her tonsils removed five years later for she complained of rose fever. Now she comes to me with a history of having rose fever every June for twenty years. This year she got her attack in the middle of August. This so-called rose fever followed immediately on her smelling roses. The symptoms are typical of hay fever with itching of the eyes, lacrimation, coryza, a tickling sensation of the throat and difficult breathing at times. Roentgenograms of the sinuses are negative. Physical examination is negative. Pollen tests with ragweed, the grasses, timothy, red top, cottonwood and the common pollens are negative. The patient gives a negative history for food or animal sensitivity. Kindly advise as to probable cause and treatment.

M D New York.

ANSWER.—"Rose fever" is a title still used although scientifically incorrect. The symptoms coming on in May, June and July, consisting of rhinitis and conjunctivitis frequently complicated by bronchial asthma, have been definitely proved to be due to the inhalation of the pollens of various grasses, especially of June grass, timothy, orchard grass and redtop in the northern part of the United States. In the South, Bermuda and Johnson grass are most important.

The pollen of roses does not cause hay fever, except by close contact, as by inhaling roses or by working in a rose garden or in a florist shop. These statements are known to be facts because: 1. The pollen of grasses is carried by the wind and deposited on slides, the grass pollen is easily recognized under the microscope, the pollen of roses is not found on these slides unless the slides are placed very close to roses. 2. The symptoms of the patients coincide exactly with the time and quantity of grass pollination; they do not vary with rose pollination. 3. Skin tests are usually positive to grass pollen, sometimes to rose pollen also. 4. Inhalation of grass pollen in susceptible individuals is positive any time of the year; this may be true also of rose pollen.

Similarly, goldenrod is still often accused of causing the August-September hay fever, which as known for many years is due solely to inhalation of ragweed pollen.

In this patient the diagnosis is doubtful but should be cleared up by retesting as follows. The important pollens in her vicinity (to be found in any of several books on allergy or which may be ascertained on request from any of the several pharmaceutical houses manufacturing pollen extracts) should first be skin tested by the cutaneous method. If negative, the intracutaneous method should be tried with 1:1,000 dilutions of the pollen. If this likewise is negative, a few grains of the raw pollen should be laid against one of the lower eyelids and allowed to remain for five to ten minutes (conjunctival test); a positive reaction is shown by redness, lacrimation, photophobia and itching and, if severe, may be cleared up promptly by a drop or two of 1:1,000 epinephrine instilled into the conjunctival sac. If a positive reaction is obtained, the diagnosis of true hay fever is assured in this case because of the symptoms present. Treatment should be begun about March 1 of next year for grass hay fever if this should be found, and

about June 1 for ragweed hay fever if this is present. If both occur, the grass pollen extract should be injected in one arm, the ragweed in the other.

If the pollen tests are entirely negative the patient should be completely tested, cutaneously and intracutaneously, for non-pollen proteins, especially orris root, foods and animal derivatives. It is possible to have seasonal symptoms from one or more of these and the treatment will depend on the results of testing. Elimination of the causative factor is most important, if possible, if not possible, desensitization should be tried.

INFECTION OF UROGENITAL TRACT

To the Editor—I would appreciate advice as to further procedure with a case of gonorrheal prostatitis and evident gonorrheal arthritis. A white man aged 26 first infected in 1919 has had fifteen years of irregular treatment both by himself and by physicians. He came under my care in October 1934, complaining of an intermittent discharge burning on urination and pains in the sacroiliac areas. Examination revealed from 12 to 15 pus cells to a high power field but the urine otherwise was normal. The prostate was boggy and tender. Prostatic secretion was moderate in amount, containing white flakes and hundreds of pus cells seen under the microscope. Wassermann reaction was negative. Gonococcus fixation was positive. A 26 F sound passed with ease. Treatment has included prostatic massage every five to seven days, sexual hygiene, rest, methenamine diathery to the prostate every five days for two months, foreign protein therapy in moderate amount and Parke Davis gonococcus filtrate every seven days for the last eleven weeks. Local irrigation was done with 15,000 potassium permanganate twice daily during the periods of discharge and once daily or not at all when the discharge was absent. At present he complains of continued pain in the sacroiliac region especially after exercise or work and continued burning at the base of the penis. Very little discharge remains and that is after the use of the filtrate. Examination now reveals a nontender small prostate. There is very little secretion which contains occasional flakes or none and many pus cells under the microscope often in small clumps. The Kahn reaction is negative. Gonococcus fixation is positive. The second glass of urine shows an occasional white blood cell. Is a negative gonococcus fixation test to be hoped for in this case? I wondered whether malarial or other fever therapy would be of benefit and if so whether it could be obtained for the patient at one of the state hospitals. Any suggestion as to further procedure will be welcome kindly omit name. M D Illinois

ANSWER.—A chronic urethral discharge in a given patient is not indicative of gonorrhea.

The complement fixation test, if done properly, is a valuable diagnostic aid. In this instance one would doubt the accuracy of the test.

Gonococcus filtrate should not be used unless there is more positive evidence of gonococcal infection than is obtained in this case.

Examination of the upper urinary tract should be done by retrograde or intravenous urography with urine cultures. Careful examination should be made for focal infection (teeth and tonsils).

Heat therapy induced by malaria should not be considered or, if induced electrically, is of doubtful value.

There has been too much medication and instrumentation used here.

This patient seems to be suffering from infection of the upper urinary tract due to focal infection. Prostatic, urethral and joint involvement is a secondary manifestation of a systemic infection of some kind. In case of negative cultures, one should look carefully for tuberculosis of the urogenital tract.

FOOD POISONING DURING PREGNANCY

To the Editor—March 12 a husband and wife were stricken with vomiting and diarrhea apparently due to food poisoning. The woman is seven months pregnant. The husband was rather prostrated for three days but fully recovered. The woman who was well previously continued to have mild attacks of nausea and vomiting and felt ill until the 23d when she had occasional lower abdominal pains which continued until the 27th when obvious labor pains began combined with a sort of tetany of the uterus. The fetal heart became irregular and ceased about four hours after the onset of regular labor. Could this premature labor and fetal death have resulted from food poisoning? No analysis of the suspected food—in this case strawberry pie—was made. Please omit name. M D, New York

ANSWER.—The apparent food poisoning may have had nothing to do with the fetal death and premature labor in this case. Food poisoning accompanied by vomiting and diarrhea are not uncommon during pregnancy, but rarely is there interruption of gestation as the result of it. When food poisoning does lead to fetal death and premature emptying of the uterus, the cause is not definite. It may be due to a combination of factors such as toxins in the maternal blood, sudden and violent increases in intra abdominal pressure due to persistent and repeated vomiting and changes in metabolism. An interesting

fact is that pregnancy has been interrupted spontaneously in about one third to one half of all reported cases of mechanical intestinal obstruction.

OPACITY IN VITREOUS

To the Editor—A man, aged 59, is suffering from hyalitis. The patient's history goes back about two months at which time he had an attack of grip. He was laid up about five days with this illness. His chief complaint is the seeing of one spot floating before his left eye. The only freedom he has from this complaint is when he goes to sleep at night. He describes the spot as that of a half bird which continually floats before his left eye. He has had cataracts removed from both eyes, the right four years ago and the left one year ago. Other complaints are a slight weakness, frequent headaches and slight dizziness at times. He suffers from chronic constipation having always taken something for a bowel movement. On ophthalmoscopic examination slightly tortuous vessels in the optic disk are seen. No opacities can be determined. The heart sounds are of good force and rhythm. There is a slight systolic murmur at the apex. The pulse is of good volume and tension. The pulse rate is 80 beats a minute and the blood pressure is 140 systolic, 90 diastolic. The abdomen is slightly obese with the upper portion a trifle larger than the lower portion suggestive of an enlarged transverse colon. The Wassermann reaction is negative. The hemoglobin is 80 per cent. Red blood cells number 4,430,000, white blood cells 9,300, polymorphonuclears, 70 per cent, large lymphocytes 14 per cent, small lymphocytes 13 per cent, myelocytes 2 per cent, basophils, 1 per cent. Urinalysis on both a single sample and a twenty-four hour specimen is negative. Chemical examination of the blood reveals sugar, 129.0 mg, urea nitrogen 15.0 mg, urea, 32.1 mg. I have been treating the patient with saturated solution of potassium iodide and injections of solution of pituitary. The latter afford marked relief from headache. Any information as to the probable cause of the condition and an outline of treatment will be appreciated. Kindly omit name. M D New York

ANSWER.—The patient undoubtedly has a formed opacity in the vitreous and, as is so frequently the case in such conditions, has focused his attention on the opacity until it has become an obsession. Such opacities are not infrequently found after cataract extraction, particularly when there is the sclerosis of the retinal vessels, as evidenced by "slightly tortuous vessels in the optic disk." There is no known treatment today that will eliminate isolated vitreous floaters, but they will decrease in size with time and no longer command the all-arresting attention of the possessor.

SEPARATION OF RECTUS ABDOMINIS

To the Editor—A boy aged 3 years a normal child with negative family history complains of a peculiar pain in the umbilicus with some loss of appetite. During these attacks he lies on the abdomen for relief. The most recent attack came on simultaneously with a slight cough. The boy is vigorous and healthy and is of normal weight and height. Physical examination reveals considerable separation of the abdominal rectus muscle at the midline from the sternum to the umbilicus. There is no deep tenderness. There seems to be very little support to the abdominal wall in this separation. I have never heard or seen such a condition and would like to know whether or not there is such a malformation and if this could produce the symptoms complained of. Kindly omit name. M D Wisconsin

ANSWER.—The separation of the rectus abdominis in the midline between the xiphoid process and the umbilicus is not unusual in young children. This separation may be easily detected if the examiner's fingers are placed in the midline of the abdomen with the child lying on his back, and the child is then slowly raised to a sitting position. It has been said that so-called navel colic may be caused by a pinching of the peritoneum when separation of the rectus abdominis is present. Frequently small preperitoneal fatty masses that have penetrated through the linea alba because of a diastasis of the rectus muscles may be felt. It has been believed that these nodules, by drawing on the attached peritoneum, may produce critical attacks of pain, especially after eating. So-called navel colic is often of psychic origin and without organic basis.

SENSITIVITY TO SUNLIGHT

To the Editor—A white woman, aged 35, well nourished, a brunette has urticaria when any part of her body is exposed to the sun longer than five minutes. This may come on in an hour or so or it may be twenty-four hours. It is relieved by a soothing lotion and disappears in from twenty-four to thirty-six hours. Although she lives in southern California she had it while visiting in Oregon this summer.

G HORACE COSHOW M D Carpinteria Calif

ANSWER.—The best treatment for a case of this sort is avoidance of sunlight and the wearing of colored clothing. The patient can be desensitized by carefully graduated increasing doses of sunlight or ultraviolet rays applied to the skin generally. The doses should be so regulated as to avoid causing reaction. The patient should be warned against exposing the eyes to sunlight, since the retina might be damaged thereby.

The subject was discussed by W W Duke in an article entitled "Urticaria Caused Specifically by the Action of Physical Agents (Light, Cold, Freezing, Burns, Mechanical Irritation, and Physical and Mental Exertion)" in THE JOURNAL, July 5, 1924, page 3

DANGER OF TUBERCULOSIS FROM CONTAMINATED WATER

To the Editor—I am writing you for definite information regarding the effect of the chlorination of water on tubercle bacilli. In a nearby community the effluent from an Imhoff tank at a tuberculosis sanatorium discharges into a small branch a few hundred yards below. This branch in turn passes into a creek which serves as one of the sources of water for a certain outdoor swimming pond. Below this pond is another pond on which are located two other bathing resorts. The first pond is about two miles below the outlet of the tank the second pond about four miles below. The first branches and creeks in the neighborhood of the sanatorium apparently all reach these ponds. For this reason it is not practicable to divert the effluent to another creek. In view of this it has been suggested that a dry feed chlorination apparatus be set up over a manhole below the tank and thus chlorinate the effluent before it reaches its first destination. To what extent would you consider the health of bathers in these two ponds to be jeopardized as a result of the present set up? Would you consider chlorination of the effluent to be of any value in its effect on the tubercle bacilli? What solution or suggestions can you offer in regard to correction? Please omit name and address

M D South Carolina

ANSWER.—Although there seems to be no direct evidence that tuberculosis is contracted by bathing in contaminated water, the possibility cannot be altogether ignored. As is well known, the wide dissemination of tubercle bacilli makes the exact source of a tuberculous infection peculiarly difficult to trace. The situation described must be regarded as undesirable. On the other hand, considerable destruction of tubercle bacilli may take place in the Imhoff tank, other germicidal influences are at work in the flowing stream, and there would seem to be high dilution. The danger to bathers from tuberculosis would seem to be slight. Chlorination of the effluent from the Imhoff tank is advisable, not only to meet possible criticism but to insure that the effluent is free from intestinal pathogens, which may constitute a more serious menace than tubercle bacilli. It might be wise, under the conditions described, to use special care within the sanatorium in the cremation of sputum cups

CHRONIC CONJUNCTIVITIS

To the Editor—A woman aged 23 complained of pain in the left eye with photophobia and a feeling as of sticks in the eye. The attack was ushered in by and recognized by the seeing of halos around lights at night. She began to have these attacks in 1932 when they were treated as iritis. They have recurred coming more frequently so that she has had two during the past week. She is highly sensitive to many things and has been on a diet the past year with little apparent effect, since she has had more attacks during the past three months than she had before. The physician who had seen her last was treating her for allergic glaucoma and advocated intravenous sterile peptone 1 cc for the attacks. I gave her the peptone and she seemed to get relief. I have never heard of allergic glaucoma before. There is no marked difference in tension that I can determine and the disk seems normal immediately after the attack wears away. Can you help me make a diagnosis or explain the action of the peptone? Please omit name

M D Massachusetts

ANSWER.—"Allergic glaucoma" falls into much the same category as the Purple Cow. The described condition sounds very much like a chronic conjunctivitis with subacute exacerbations. The secretion that could result from this might account for the halos. Neither glaucoma nor iritis would occur in attacks twice a week with spontaneous disappearance. The peptone acts merely as a foreign protein, which naturally would be beneficial to the inflammatory process, whatever it was

IMPETIGO OR PEMPHIGUS?

To the Editor—Please advise treatment for a woman who following erysipelas of the face and scalp developed patches up to an inch in diameter of dermatitis which is thick, brownish greasy and resembles seborrheic dermatitis to me. These patches are scattered over the entire face and scalp and when removed leave raw areas. Ointment of rose water hydrous wool fat sulphur ointment and ointment of ammoniated mercury have given no relief. Please omit name and address

M D Texas

ANSWER.—From so meager a description it is difficult to formulate theories about a possible diagnosis. If impetigo, there should be the initial vesicle visible at times, at least, and some benefit should have been derived from the use of ointment of ammoniated mercury. Nothing is said of temporarily bald areas in the scalp on healing of the excoriations, such as impetigo sometimes leaves

If impetigo seems to be the probable diagnosis, and the rule of prevalence favors it, an adhesive plaster dressing over each lesion will prevent spread and eventually result in cure. Some antiseptic lotion, such as 1:5,000 mercuric iodide solution, should be applied between the dressings once a day. The probable diagnosis is impetigo, spread by the fingers. This is sometimes not benefited by ointment of ammoniated mercury.

Nothing is said of symmetry of the lesions on the face. The Senear-Usher type of pemphigus produces thick greasy crusts, but there should be involvement of the cheeks resembling lupus erythematosus, and there should be bullae on the body or in the mouth

DIAGNOSIS OF SYPHILIS

To the Editor—A white woman came into my office complaining of sore mouth which looked very much like a Vincent's infection superimposed on pyorrhea. No smear was made from the mouth because of recent antiseptics. There was no other evidence of syphilis but blood was taken for examination. This blood showed the Wassermann test slight fixation 1 plus and with the Kahn precipitation test 2 plus. The patient was given neosarsphenamine, 0.3 Gm and asked to return in one week. At this time blood was taken from her and from her husband and both gave negative reactions. No other treatment was given than treatment by her dentist. I took blood for examination again today. Should this blood come back positive I feel that I should continue treatment should it come back negative however, should I consider that this is sufficient evidence to discontinue all treatment except local treatment for pyorrhea provided follow up blood examinations are made?

M D Virginia

ANSWER.—The diagnosis of syphilis in this case was based on insufficient evidence. There are many oral lesions that simulate syphilis. The diagnosis of a Vincent's infection can be easily corroborated by a smear. Unless further positive serologic or clinical evidence is obtained, additional antisyphilitic therapy is not justified

TREATMENT OF VITILIGO

To the Editor—Please give me information concerning responsive treatment for abnormal pigmentation of the skin. I have a patient who has the characteristic milk white patches on the hands and arms. Apparently it is a disturbance of the normal pigmentation of the skin and I believe not an uncommon condition. It seems that he has been told that there is a treatment being used now that helps greatly to remove the ugly blemishes. If you cannot go into the details of the treatment, if any I would be glad of any references

CHARLES G PRATHER M D Westwood N J

ANSWER.—The use of gold sodium thiosulphate intravenously in the treatment of vitiligo was advocated by H C L Lindsay (The Treatment of Leukoderma with Gold Sodium Thiosulphate, *Arch Dermat & Syph* 20:22 [July] 1929). He was successful in three cases. In other hands it has not been so successful. The patient's health should be built up in every way possible. In winter, ultraviolet treatments should be given, in summer, sun exposure carefully graduated. After many such exposures the pigment will begin to return in most cases and continued treatment will bring about great improvement. The treatment is tedious but not disagreeable and is probably of general as well as local benefit. Active pulmonary tuberculosis may be a contraindication, as are pellagra and a very blond freckling skin

SWIMMING AFTER EATING—RAW APPLE DIET IN DYSENTERY

To the Editor—1. There is a widespread belief among the laity that taking a bath or going for a dip in the lake after a meal is harmful. Obviously the strenuous exercise involved in swimming is not desirable immediately after a meal but I wonder if there is any real evidence that mere wading into the water or bathing is undesirable. 2. What are the various methods of preparing the raw apple diet for children with diarrhea?

M D New York

ANSWER.—1. Mere wading in water or taking a bath after a meal is not likely to be harmful to a person with a good digestive and circulatory system. When, however, either digestion or circulation is enfeebled, the changes in the distribution of blood produced by a cold plunge may interfere with the function of the enfeebled organ.

2. Moro (1929, 1931), who established the raw apple diet as a means of treating diarrhea, used thoroughly ripe, peeled and cored apples and converted them into a reddish brown pulp by rubbing them on a grater. From one to four tablespoonfuls or more of this pulp was given every hour or two, the average quantity administered in the twenty-four hours being thirty tablespoonfuls. For forty-eight hours no other food or medicine was given, excepting that a little water or weak tea was allowed if the patient was thirsty. If the patient was dehydrated, physiologic solution of sodium chloride with or without

dextrose was administered. Banana pulp may be added to the apple, if the latter is refused. It makes the apple pulp more palatable. After the third day a transitional diet is used by adding toast, cereal and potato gruel, scraped meat and cocoa.

MENINGITIS IN INFANT AFTER PNEUMONIA

To the Editor—A baby, aged 1 month, contracted pneumonia during an epidemic. It made a good recovery from the pneumonia but about forty-eight hours before it died spasms began, and according to the nurse fifty-one occurred. Just before death the head rapidly dilated until it was approximately twice its normal size. I cannot account for the dilatation of the head. Omit name, please. MD Kansas

ANSWER—Meningitis probably developed after the pneumonia. It is impossible to know the extent of the meningeal inflammation though it is most likely that the inflammatory process occurred, in part at least, at the base of the brain, interfering with the passage of the cerebrospinal fluid to its absorptive surfaces. In consequence of the obstruction to the flow of fluid produced by the acute meningitis, a hydrocephalus occurred, which would explain the rapid dilatation of the head.

The frequent convulsions were undoubtedly due to the irritation caused by the meningeal and brain inflammation, both of which occur during the course of meningitis.

AIR AND BONE CONDUCTION IN HEARING

To the Editor—When testing hearing with a 2 A audiometer with a rubber diaphragm over the ear piece is this testing bone or air conduction? NORTON H. GOOD MD, Buffalo

ANSWER—In testing the hearing with the audiometer with the earpiece placed in contact with the auricle, the perception one gets is partly the result of air conduction and partly the result of bone conduction. With the rubber diaphragm placed over the earpiece the element of air conduction will be less than in using the earpiece without a rubber diaphragm but the perception is still due partly to air conduction and partly to bone conduction.

ANTITYPHOID VACCINATION

To the Editor—I have been accustomed to using typhoid vaccine in the usual three dose series of injections repeating the whole series of three injections when a period of time had elapsed or conditions arose that seemed to indicate revaccination. I have heard of the practice of a physician in this community of giving one injection of typhoid vaccine every spring to children previously given the usual three injections. Is this practice any better than repeating all three injections after a lapse of two or three years? Is this practice widely followed? I have under my care a large group of children whom I have immunized against typhoid with the usual three injections. None is going to rural or typhoid communities. How should immunity in these children be maintained? MD Georgia

ANSWER—So far as known, the practice of giving one injection of typhoid vaccine every spring is not followed widely at all. The protective effect of such injections has not been studied carefully and it is not known whether the practice is better than repeating the usual three injections when indicated.

In children who have received the usual three injections, no other way is known of maintaining and reinforcing the immunity than revaccination after a number of years or when conditions arise that definitely require effective protection against typhoid.

AUTOHEMOTHERAPY IN URTICARIA

To the Editor—Recently a patient of mine who is suffering from urticaria of unknown or rather undiscoverable origin was advised to have 10 cc of blood drawn from the median basilic vein and injected into the gluteal muscle this procedure to be repeated once or twice weekly for from six to ten weeks. Will you please inform me as to the rationality of this procedure? Is it a method of foreign protein shock? Is it preferable to sterile milk or some other form of foreign protein? Kindly omit name. MD West Virginia

ANSWER—The use of autohemotherapy in urticaria is an established procedure among others, and the results obtained are often striking. In cases of nervous origin, however this procedure may also fail. It is believed by some workers that autohemotherapy is antianaphylactic, and other studies have indicated that the procedure lessens the permeability of the blood vessels. Rejection of the patient's own serum or blood is believed by some writers to bring about a desensibilization. The treatment should be continued for several weeks after the cessation of all symptoms. It is a method of nonspecific therapy that is a very mild form of foreign protein shock and exerts an action in some conditions, such as urticaria, that is preferable to sterile milk or some other form of foreign protein.

CATARACTS AFTER DINITROPHENOL

To the Editor—Kindly outline to me the course and prognosis of cataracts developing in younger women as a result of treatment with dinitrophenol. Can these cataracts be treated and operated on the same as senile cataracts with the same expectation as to the results? The patient is 39 years old and the cataracts in each eye have developed and matured in less than thirty days. They have the same appearance as ordinary senile cataracts except that the lens is evidently greatly swollen, because while there is no dangerous tension at the same time the anterior chamber is practically obliterated and the pupils remain dilated.

MD Missouri

ANSWER—Ophthalmologists are just beginning to learn about the course of cataracts as a result of dinitrophenol. In the early stages there are opacities under the anterior and posterior capsules. Later the whole lens becomes opaque and swollen. Results in those which have been operated on have been just as good as those operated on for senile cataract. In some cases the opacities were not noticed until after treatment had been stopped but went on to complete maturity afterward.

HEMOLYTIC JAUNDICE

To the Editor—Is it possible to have hemolytic jaundice without any enlargement of the spleen or any visible jaundice even during exacerbations? A man who has been anemic for eighteen years has increased fragility of the red cells and an increased icteric index. He has exacerbations during which his red cells drop to a million. The color index is high. No parasites have been found in twenty examinations including examination for filariasis. The leukocyte count is normal with a tendency toward eosinophilia and the platelet count is normal. Does such an atypical picture ever occur in hemolytic jaundice? Please omit name.

MD Missouri

ANSWER—Hemolytic anemia may occur rarely without splenomegaly and with a slight increase in serum bilirubin. The long history of anemia with crises, which result from the destruction of blood and which are accompanied by severe anemia and increased serum bilirubin, are typical of this disease. There may or may not be a familial history of icterus. The reticulated erythrocytes are increased, as a rule, particularly during the crises, and the fragility of the erythrocytes to hypo isotonic salt solution is increased. Morphologically the erythrocytes usually are smaller than normal, although many macrocytes (regenerative) are present. Most of the microcytes are well filled with hemoglobin and appear to be spherical. Slight enlargement of the spleen may occasionally be demonstrated by an oblique roentgenogram.

If this case meets the preceding criteria, with the exception of demonstrable splenomegaly, the diagnosis of hemolytic anemia is warranted.

WATERMELON AND WHISKY

To the Editor—Time and again one hears that it is often fatal to eat watermelon and then take a drink of gin or whisky. Is there any truth in this? Kindly omit name.

MD Florida

ANSWER—There seems to have been no such accident reported in the literature, and there apparently is no good reason why it should happen.

SIMULTANEOUS IMMUNIZATION AGAINST INFECTIOUS DISEASES

To the Editor—In *Queries and Minor Notes* in *THE JOURNAL* July 20 page 221 in your discussion on the simultaneous inoculations against smallpox and diphtheria you say that if no emergency exists it probably would be best at this time not to immunize against diphtheria and smallpox simultaneously. I wish to bring to your attention the procedure that I have been using in immunization against smallpox and diphtheria. All children presented for immunization are simultaneously immunized against smallpox and diphtheria. The materials used are glycerinated smallpox virus vaccine and alum precipitated toxoid. I have inoculated approximately 1000 children by this method varying in age from 4 months to 13 years. Multiple immunizations of this character have been found as effective as separate immunizations and are much accompanied by any greater reactions than those produced by separate inoculations of the respective materials. By this method of immunization it is possible to protect a greater number of children at one sitting against these two diseases.

In a series of 100 cases in which I have studied the simultaneous multiple immunization against smallpox and diphtheria I found that the reactions were no greater than in the single immunizing treatment and that the immunity and the rapidity of immunity were not affected.

I have come to the definite conclusion that the simultaneous multiple immunization against smallpox and diphtheria is a practical method applicable as a routine procedure in mass immunization as well as in private practice that the simultaneous immunization against smallpox and diphtheria is a safe and effective procedure.

CHARLES S. STERN MD West Allis Wis
Commissioner of Health

¶ Examined in medicine and surgery

Book Notices

The Appraisal of Public Health Activities in Pittsburgh Pennsylvania 1930 and 1933 By Marian H. Ewalt Research Assistant Bureau of Social Research Federation of Social Agencies and Ira V. Illscock Professor of Public Health Yale School of Medicine Paper Price \$1.00 Pp 125 Pittsburgh Bureau of Social Research Federation of Social Agencies of Pittsburgh and Allegheny County [n.d.]

Standardization of the essentials of public health practice on a quantitative basis has been a ten-year aim of the Committee on Administrative Practice of the American Public Health Association, though the pioneer work in such standardization was done by Chapin in 1915 for the Council on Health and Public Instruction of the American Medical Association, and reported in *THE JOURNAL*. The Chapin report in book form, has become a rare and valued piece of public health literature. The work under review is an excellent example of the health appraisal at its best. As its makers have realized from the beginning, the appraisal idea has possibilities of evil as well as of good. It is only a quantitative measure, though some quantitative measures may in themselves be indications of quality, if little or nothing is being done toward a desirable objective, obviously the quality of progress is poor. On the other hand much activity does not in itself indicate quality. The difficulties encountered in the effort to establish objective measures of quality in public health endeavor have not yet been overcome. All this by way of background for consideration of the report on public health activities in Pittsburgh. This is a measure of the organization of public health agencies in that city, and the quantity of work performed by them, according to the 1934 revision of the Appraisal Form for City Health Work published by the Committee on Administrative Practice. Health activities in Pittsburgh official and voluntary are clearly described in sufficient detail to give a comprehensive picture of what the community is doing. Pittsburgh's score on a basis of a maximum 1,000 points is 790, a creditable showing but one leaving room for growth and development. The significant fact in the report is that it represents the work of a community committee in which the active agencies interested in public health work and social service work in Pittsburgh have cooperated. The Medical Society of Allegheny County endorsed the survey and took an active part in it. There was no minority report.

In this appraisal Pittsburgh can find a chart for planning and directing its health progress for the next five years with a clear understanding on the part of all concerned as to what has gone before and therefore a minimum liability of misunderstanding or conflict in planning for the future. In this report public health officials, social workers and the medical profession may find an example of community cooperation for better health. More of this kind of cooperation more such reports will not only enrich the literature of public health but contribute to progress toward the common objective, the better health of the people.

Recherches expérimentales sur quelques esters de la choline Par Maurice Villaret, professeur à la Faculté de médecine de Paris. L. Justin Besançon médecin des hôpitaux de Paris et René Cachere chef de clinique à la Faculté de médecine de Paris. Paper Price 38 francs Pp. 254 with 79 illustrations Paris Masson & Co 1934

This monograph is essentially a record of the pharmacologic studies conducted by the authors on various esters of choline derivatives. After a brief outline of the chemistry of the choline and their general pharmacology, the authors present their own studies in two main parts. In the first part they describe in detail the action of the chlorides or bromides of various esters such as acetyl, formyl isobutyryl and methylacetyl and the carbaminoyl esters of choline. Most of the experiments were conducted on dogs the drug being given by intravenous, subcutaneous or intrajejunal injections. The cardiovascular system and the site of the action of the choline esters thereon were first studied and next in similar manner the action on the cerebrum and on respiration. From these the authors conclude that death is produced in choline poisoning through its action on the respiration. Ergotamine tartrate was found to intensify the respiratory response. The actions of acetylcholine and methylacetylcholine on smooth muscle were determined by studies on the intestinal gallbladder, bronchial and iris muscu-

latures. Acetylcholine was found to stimulate salivary and pancreatic secretion by "direct action." Acetylcholine does not alter the effects on blood pressure observed on stimulating the peripheral or central ends of the pneumogastric nerve. From one experiment on a dog, the authors conclude that the intravenous administration of methylacetylcholine produces a fall in alkali reserve, dextrose and water, but a rise in protein content in the blood. The question of the hormone nature of acetylcholine is reviewed briefly. The second part covers the studies on the effects of choline derivatives on man. The importance of the purity of the product and of the solvent used as a vehicle is stressed. Such solvents as diacetyl glycerol, monoacetyl glycol ethyl lactate and diethylene glycol are recommended mainly because they prevent the hydrolysis of the acetylcholine ester. The intravenous injection is not recommended. The effects of the intramuscular or subcutaneous injection of methylacetylcholine and acetylcholine esters on vasodilatation in the retina on peripheral dilatation and on gastric and pancreatic secretions are reported. The authors suggest acetylcholine as a good substitute for histamine in testing achlorhydria. The work is well illustrated by excellent reproductions of kymograph records. It is a good general treatment of a broad survey of the subject.

The Rise of Modern Physics By Henry Crew Second edition Cloth Price \$4.00 Pp 434 with 16 illustrations Baltimore Williams & Wilkins Company 1933

The increasing use of physical therapy has caused the medical profession to appreciate the value of a knowledge of physics. This volume on the history of physics is intended for readers who have had little previous knowledge of the subject but who would be glad to have an informal introduction to the fascinating science of physics. The chapters on the foundation of modern optics pioneers in electricity and magnetism, the nature of heat, the discrete nature of matter, electromagnetism, the origin of modern electrical units, the inertia of electricity and the rise of modern spectroscopy indicate the interest this volume should have for the medical profession. For instance the standard unit of measuring the wavelength of radiant energy is the angstrom unit. How this originated as the wavelength of the red cadmium line independent of the metric system enables one to comprehend its significance more than a mere definition does. Archimedes, who was born about 287 B. C., discovered the most fundamental principle of hydrostatics, which is used in underwater exercises.

While the science of physics has aided medicine, many physicians have made worthy contributions to physics. Empedocles (490-430 B. C.), a statesman physicist and physician, wrote his views in poetry, explaining the cosmos in terms of the elements earth, air, fire and water. Crew says that few ideas in physical science have played a more conspicuous part, and perhaps none for a longer time, than the four elements of Empedocles.

Jerome Cardan (1501-1576), a physician and mathematician, wrote a book that represents the best physical learning of his time. In the early part of the nineteenth century Sir Humphry Davy who was a practicing physician in Cornwall until Beddoes made him an assistant, received scientific honors for his work in physics from many European countries.

Dr W. H. Wollaston (1766-1828), a London physician and chemist, well known for his discovery of the elements palladium and rhodium, observed for the first time in 1802 that the spectrum of sunlight is crossed by dark lines. He also succeeded in decomposing water by the sparks of a frictional electric machine.

The author remarks that no serious minded student of physics will fail to make the acquaintance of Dr Thomas Young, for he is the last man of the race who knew everything that was to be known. His explanation of color vision as modified by Helmholtz is today perhaps the most widely accepted if not the best, of the various theories on this subject. His contributions to science cover many fields of physics.

In 1855 Dr David Alter a practicing physician of Pennsylvania, used the electric spark to map the spectrums of eleven different elements and metals.

To those interested in physical therapy it is of interest to find that the author gives W. W. Coblentz a member of the

Council on Physical Therapy, the credit of developing with Melloni and Pfund the use of the thermo-electric current in the measurement of temperature and in the detection of minute quantities of radiation. The delicacy of these modern thermocouples is so great that the radiation from a single candle at a distance of fifty miles can be detected. Crew's book should prove interesting and profitable reading for all physicians and especially to those interested in the use of physical therapy.

The Image and Appearance of the Human Body. Studies in the Constructive Energies of the Psyche. By Paul Schilder M.D. Ph.D. Research Professor of Psychiatry New York University. Psyche Monographs No. 4. Boards. Price 10/6. Pp. 353 with 7 illustrations. London: Regan Paul Trench Trubner & Co. Ltd. 1935.

For years the author of this monograph has been making observations in neurology and in psychiatry tending toward the development of the hypothesis which he now expresses. Before 1926 he had written a first thesis on the present central theme, namely, that every individual has in his mind a set of ideas or perceptions which present to him an unconscious scheme of his whole body. While the author admits that there have been partial hypotheses leading up to this idea, he also brings out that there lies a basic concept that reveals to the psychiatrist and the neurologist the reason why some of the more obscure symptoms of nervous and mental disorder take the form that they do. Since the writer is a prominent neurologist with much psychoanalytic training, he is able to present by means of extensive references to the technical literature as well as by means of numerous valid and interesting cases from his own experience the fact that, with certain neurologic diseases, wherein there is destruction of brain tissue, the patient's ideas of his body form and structure are lost. By means of psychoanalysis of functional cases in which changed bodily ideas are symptoms, some explanations for these changes can be deduced. As examples of the first type of case the author presents those paralyzed patients who ignore their paralysis and the phenomenon of phantom limbs after amputation, and of the second type the neurotic, particularly the hysterical, who use some other part of the bodies for the erogenous zones. There is also a social concept of the body with varying changes in ideas of nearness and contact with those who enter into the individual's sociopschoanalytic picture. The monograph is carefully worked out and well systematized, and the style is excellent. One can see that it is not intended as casual reading for physicians in general, even though the ideas are expressed in such a way that lay readers can get a great deal from it. But for the neurologist, the psychiatrist and the psychologist it represents a neat interweaving of neurology and psychiatry which may lead to significant progress in these fields or, if not that, add an intelligent academic standpoint, which has not previously been made readily available concerning certain types of lesions. There are two appendices, one presenting case histories, the second, illustrated with diagrams, showing the neural structures involved in the body image process.

Midwifery. By Ten Teachers under the direction of Clifford White M.D. B.S. F.R.C.P. Edited by Sir Comyns Berkeley J. S. Fairbairn and Clifford White. Fifth edition. Cloth \$0. Pp. 740 with 294 illustrations. Baltimore: William Wood & Company. 1935.

This edition presents evidence of a thorough revision and it includes discussions of practically all the new developments in obstetrics. As with the previous editions, the ten teachers share a common responsibility for the book and there is no way of telling which of the authors wrote any particular chapter. Four separate chapters are headed "The Toxemias of Pregnancy." One contains a general discussion of the subject of toxemias, the second is devoted to preeclampsia and eclampsia, the third takes up hyperemesis gravidarum and acute yellow atrophy of the liver, and the fourth deals with toxic antepartum hemorrhage. In addition to these four chapters devoted to the toxemias there is a separate chapter on albuminuria. The authors favor the conservative treatment of eclampsia. For most cases of placenta praevia the authors advocate the use of a Colpeurynter, Willett's forceps, a vaginal pack or version. They believe that abdominal cesarean section has a limited field in cases of placenta praevia. For the control of postpartum hemorrhage after delivery of the placenta, the authors recommend compression of the uterus between one

fist in the vagina and the other hand on the abdomen. They condemn intra-uterine packing, but many prominent obstetricians in this country have found uterine tamponade a valuable and sometimes life-saving procedure in cases of severe postpartum hemorrhage. In the discussion on analgesia, the authors say "The routine administration of powerful narcotic drugs in normal cases to obtain 'painless labor' cannot be defended on medical grounds." This question has recently aroused a great deal of controversy in Great Britain, and the authors express the sentiment of most obstetric authorities of that country. A special chapter is devoted to the use of solution of pituitary in labor. In the discussion on cesarean section, both the classic and the cervical operations are briefly described. However, the author who wrote this chapter presumably has not had personal experience with the cervical operation as it is generally performed. The book is well written and the illustrations are numerous and instructive. It should prove to be popular.

Praktische Anatomie. Ein Lehr- und Hilfsbuch der anatomischen Grundlagen ärztlichen Handelns. Von Dr. T. von Lanz a. o. Professor für Anatomie an der Universität München und Dr. W. Wachsmuth Privatdozent für Chirurgie an der Universität Bonn. Band I Teil 3. Arm. Cloth. Price 20 marks. Pp. 276 with 208 illustrations. Berlin: Julius Springer. 1935.

The word "praktische" in the title does not signify that the book is a manual of dissection. It indicates that the gross anatomy of the arm is presented in its functional and clinical significance. It deals with proportions, with movements, with the work and use of the arm and with the risks of injury and disease to which it is especially exposed. Muscle insertions are considered in relation to movements and to their effect on amputation stumps. Left-handedness and its relation to accidents are discussed. The sites and lines of fracture are indicated. The first part deals systematically with the skeletal, arterial, venous and lymphatic systems, concluding after forty-eight pages with the nervous system. The larger part (up to page 246) is regionally arranged, beginning with the shoulder and concluding with the finger tips. Although it is an "applied" anatomy, development, evolution and the biologic significance of structure are treated with more than ordinary appreciation. One of the authors is an anatomically minded clinician, the other a clinically minded anatomist.

The illustrations, for the most part new, are instructive and beautifully reproduced. A valuable feature is the well selected bibliography arranged under headings identical with those of the text.

Recent Advances in Endocrinology. By A. T. Cameron M.A. D.Sc. F.I.C. Professor of Biochemistry Faculty of Medicine University of Manitoba. Second edition. Cloth. Price \$5. Pp. 496 with 55 illustrations. Philadelphia: P. Blakiston's Son & Co. Inc. 1935.

The second edition of this pretentious work appears within a period of little over a year after publication of the first—a tribute to the efforts of author and publisher to keep it abreast of recent developments in endocrinology. The new volume is longer by about forty pages than its predecessor (which was reviewed in *THE JOURNAL*, May 5, 1934). Actually, however, the new material exceeds the content of the additional pages, as parts of the text of the first edition have been omitted from the second. The author has avoided some of the errors of the first edition (chiefly by deletion) but unfortunately he has added as many or more in the new material. For information on chemistry in many cases he now refers the reader to the book by Harrow and Sherwin, the deficiencies of which have already been pointed out in *THE JOURNAL* (Aug. 18, 1934).

As material in the present volume has been considered in detail in the previous review, it need not be discussed again. A few more points may be considered here, however. The author states that Allen and Doisy have demonstrated the presence of theelin (estrone) in ovarian follicular fluid. He claims further that "replacement therapy with spayed animals and injection experiments with immature animals have demonstrated conclusively that oestrone is the ovarian principle." Both statements are, of course, in direct contravention of the facts, isolation of theelin from ovarian follicular fluid has never been reported. "Thymophysin," a combination of extracts of thymus and pituitary, is given the benefit of serious discussion, although the Council on Pharmacy and Chemistry several years

ago exposed it as a useless and unscientific preparation. For some reason, the author includes a discussion of the drug ephedrine. If it was his intention to consider the effects of chemical modifications of the epinephrine molecule, it is surprising that descriptions of other related drugs such as synephrin, neosynephrin or beizedrine are not also presented. A section is devoted to the pupil body, yet none of the recent work (especially that by Burger, by Engel and by Saphir) is considered.

As with other recent reviews of endocrinology, this book may be recommended only to those with a sufficient knowledge of the subject to estimate the probable accuracy of the dissertations on the various subjects.

The American Illustrated Medical Dictionary. A Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology, Medical Biography, etc., with the Pronunciation, Derivation and Definition. By W. A. Newman Dorland, M.D., F.A.C.S., Lieut. Colonel M. R. C. U. S. Army. With the collaboration of E. C. L. Miller, M.D. Seventeenth edition. Fabrikoid. Price \$1. Thumb Index \$7.50. Pp. 1573 with 645 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

Since the year 1900, this medical dictionary has progressed through seventeen editions, that fact alone signifies the usefulness of the book as well as its popularity. Medical terminology is ever growing and, without constant revision such as has been done with the American Illustrated Medical Dictionary, it would scarcely be possible to keep in touch with all the new technical terms. The first edition of this dictionary contained only 770 pages while this edition contains 1573, an increase of more than 100 per cent. In addition to the ordinary dictionary material there is a large amount of information arranged in tabular form. There are tables of tests, tables of staining methods, tables of methods of treatment, a table of the arteries, a table of the veins, tables of weights and measures, and a table of the doses and actions of numerous drugs. There are numerous illustrations many of which are in color. The present edition retains the form of the previous edition in that the book is flexible, is thumb indexed, and is of convenient size.

Lethargic Encephalitis. By Isador Abrahamson, M.D., Associate Neurologist, Mount Sinai Hospital, New York City. With a foreword by William J. M. A. Maloney, M.D., LL.D., Consulting Neurologist, City Hospital, New York City. Cloth. Pp. 103. New York, 1935.

This book, sponsored by the Isador Abrahamson Fellowship as a memorial to the deceased author, consists of a foreword of seven pages by Dr. Maloney and six papers on encephalitis by Dr. Abrahamson published between the years 1920 and 1925. In the foreword Dr. Maloney credits Abrahamson with being the first to recognize epidemic (lethargic) encephalitis in America. In the first chapter, entitled "The Epidemic of Lethargic Encephalitis," Abrahamson states that he recognized this case in New York in September 1918. He states that the second case was detected by Major Pothier at Camp Lee in October 1918, the third a few days later at Des Moines by Dr. Ely, and the fourth in Chicago a few weeks later by Dr. Bassoe. The second chapter deals with the mental disturbances, the third with motor disturbances, the fourth with chronicity, the fifth with syndrome changes, and the sixth with changes in muscle tone. A complete list of Dr. Abrahamson's publications is added.

The Child: His Origin, Development and Care. By Florence Brown Sherbon, M.D., Professor of Child Care and Development, Department of Home Economics, University of Kansas. Paper. Price \$3.50. Pp. 107 with 147 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1934.

The endeavor of the author is to present to the student facts about the child from his earliest origin until he enters school, so that later on the student will be able to study the literature on child development understandingly. There are chapters on biochemistry, heredity and biology, followed by material on reproduction, the glands of internal secretion, pregnancy and childbirth. The second portion of the book deals with the care of the child and the third portion with behavior, development and training. In the book are synthesized the current scientific discoveries in terms of child care and training. The material is presented in such a way that it should be easily understood by the student, and there is adequate bibliographic and

reference material. As a textbook for the teaching of child care development and training, the book should prove quite satisfactory.

Methods of Treatment. By Logan Clendening, M.D., Clinical Professor of Medicine, Medical Department of the University of Kansas. With chapters on special subjects by H. C. Andersson, M.D. and others. Fifth edition. Cloth. Price \$10. Pp. 870 with 102 illustrations. St. Louis: C. V. Mosby Company, 1935.

Like its predecessors, the present edition presents the subject of therapeutics in two parts: first, methods, second, applications. Chapters on the rationale of various types of therapy comprise the first 526 pages of the work, the remaining 333 pages (exclusive of the index) being devoted to the application of these procedures and techniques in a selected list of diseases, a plan which the author believes to be the most effective for avoiding unnecessary repetitions. At times these applications are presented in quite terse outline form, while in other instances the discussions are much longer, a notable example of the latter is the fine article on the psychoneuroses, which doubtless comprises one of the author's indulgences in "the luxury of some philosophic comment" of which he speaks in the preface. Among those works which aid the student in understanding the various therapeutic techniques and procedures in clinic and ward, this book is preeminent.

Nursing Mental Diseases. By Harriet Bolloy, R.N. Third edition. Cloth. Price \$2.50. Pp. 258. New York: Macmillan Company, 1935.

This is the first revision in several years of Miss Bailey's excellent work. In the present edition a brief summary of personality development and alteration has been added for the purpose of emphasizing the importance of understanding mental reactions so that the patient may be nursed more efficiently. Other changes are noted throughout the work. The text is limited to nursing and aspects of psychiatric diseases and disorders that come in the field of nursing practice. Many additions have been made to the nursing procedures with which this textbook is primarily concerned. It is generally acknowledged with regret that mental symptoms, so frequently found in some form and degree in almost any of the disorders of physical function, are almost totally neglected in the usual training course for nurses. While Miss Bailey's book is primarily written for the nurse specializing or intending to specialize in psychiatric nursing, it covers a subject not too technical to be included in the training course of every good school. The thoughtful and understanding nurse, through simple procedures, can often do much to relieve a patient who is depressed, to quiet a restless and excited one, to arouse one who is indifferent, and to manage one who is resistive and quarrelsome. No nurse can read this volume without a much better understanding of the nervous patient. For those specializing in psychiatric nursing it will be found an invaluable aid. The work is most highly recommended.

Sémiologie des affections de la bouche et des dents. Par le Dr. Charles Ruppe. Paper. Price 32 francs. Pp. 271 with 53 illustrations. Paris: Masson & Co., 1935.

This covers only the symptomatology of the diseases of the mouth and teeth, including the maxillary sinus, the floor of the mouth, the parotid region and the cervical glands. The illustrations are simple drawings for the most part of a schematic character depicting the relationship of symptoms to anatomic structure. Seventeen tables summarize the contrasting pictures of closely related conditions. This material is valuable for both the clinician and the student with respect to differential diagnosis and a clear understanding of the part played by structure in modifying symptoms.

Manual of Diabetes. By J. J. Conybeare, M.C., M.D., F.R.C.P., Physician to Guy's Hospital. Cloth. Price \$2. Pp. 123 with 5 illustrations. New York and London: Oxford University Press, 1935.

This manual is far above the average of its type and is heartily recommended. It is relatively short, contains essentials, and is well written and in such a manner as not to make the patient apprehensive. It is primarily for patients but will be found useful for physicians. The text is sound and any doctor would find his patient helped by its perusal. The English flavor of its language adds rather than detracts from it for American readers.

Medicolegal

Hospitals, Charitable Liability for Negligence of Nurse—The physician-defendant operated on the plaintiff at the defendant hospital. Subsequently it was discovered that a sponge had been left in the patient's body, and she and her husband sued the physician and the hospital. The trial court directed a verdict in favor of both defendants but later granted the plaintiffs a new trial. The defendants appealed to the district court of appeal, third district, California.

The alleged acts of negligence on which the plaintiffs relied to fasten liability on the hospital were that the sponges used in the operation did not have tapes attached to them and that the nurse assisting the physician, who had been furnished by the hospital, failed to count the sponges used. The hospital defended, claiming that it was a charitable institution and that it used due care in the selection of its nurses and hence was exempt from liability. The hospital further contended that it was not responsible for any alleged negligence of the nurses during the operation.

To determine the charitable status of a hospital, said the district court of appeal, it is necessary to consider not only the hospital's articles of incorporation and by-laws but also its method of doing business. The purposes for which the defendant hospital was formed, according to its articles of incorporation were "to acquire and maintain suitable and permanent convents, orphanages, hospitals and other charitable institutions." It treated pay and charity patients. If there was any surplus above operating expenses, it went to the upkeep of the institution and to educate young women to be teachers and nurses. The court accordingly concluded that the hospital was a charitable hospital and as such was not liable for the alleged negligence of its nurse and of the physician. The fact, the court added, that the patient was a pay patient did not alter the rule of law exempting a charitable hospital from liability.

Furthermore, continued the court, even if the hospital were not a charitable institution, it still would not be liable for the acts of the nurse which it furnished to the operating physician. During the preparation and progress of an operation the nurses in the surgery are under the control of the operating physician, and he, and not the hospital, is responsible for their negligence. *Schloendorff v Society of New York Hospital*, 211 N. Y. 125, 105 N. E. 92.

For these reasons, in effect, the district court of appeal ordered that judgment be entered in favor of the hospital but that a new trial be had as to the physician—*Armstrong v Wallace (Calif.)* 37 P. (2d) 467.

Workmen's Compensation Act Malpractice of Physician, Liability of Employer—Hughes, an employee, was awarded compensation by the workmen's compensation commission of Missouri for the aggravation of preexisting trachoma, through the accidental splashing of mortar into his eye. He signed a release discharging his employer and his employer's insurance carrier from liability under the workmen's compensation act. Later he sued them in a court of law, for aggravation of the original injury by the malpractice of the physicians employed by the insurance carrier. From a judgment by the trial court in favor of Hughes the employer and the employer's insurance carrier appealed to the Kansas City court of appeals, Missouri. They contended that the proximate cause of Hughes' injury, if any, by the physicians, was the original accident and that that injury was covered by the compensation paid to Hughes under the workmen's compensation act, that jurisdiction over Hughes' present claim was vested in the compensation commission and not in a court of law.

It is the well established principle of common law, said the court, that if the injuries of a person who is injured by the negligence of another are aggravated by the negligence of a physician employed in the exercise of ordinary care either by himself or by the person doing the injury, the negligence of the wrongdoer in causing the original injury is to be regarded as the proximate cause of the damage flowing from the negligent treatment by the physician. Furthermore, continued the court, while the theory of compensation is not recovery based on negli-

gence or wrongful acts of the employer, but recovery based wholly on the fact of employment, yet the overwhelming weight of authority is that in compensation cases the malpractice of a physician selected by the employer to treat the injuries of his employee is directly traceable to and a proximate result of the primary injury for which the injured workman is treated, and, if his injuries are aggravated by the negligence of the physician, compensation for such aggravation must be procured in the proceedings provided for in the workmen's compensation act. Concluding that Hughes' claim had no standing in a court of law, the judgment in his favor was reversed—*Hughes v Maryland Casualty Co. (Mo.)*, 76 S. W. (2d) 1101.

Compensation of Physician Liability of County for Fee of Physician Performing Emergency Operation on Pauper—In an emergency, says the Supreme Court of Nebraska, requiring an operation to save the life of a pauper, the operating physician should, if reasonably possible, attempt to communicate with the proper county authorities charged with the care of the poor, but if the situation demands an immediate operation, the necessary services may be rendered and the law imposes an obligation on the county to pay the reasonable value of such services. In this case, a pauper exhibited the symptoms of a rupture of some kind in the alimentary tract and was hurriedly driven by friends to the nearest hospital, which was out of the county of the pauper's residence. No attempt was made by the hospital to communicate with the authorities charged with the care of the poor in the county in which the pauper resided to secure authorization for an operation and for hospital service, but the patient was immediately operated on. A ruptured stomach was revealed and necessary hospitalization was rendered. The Supreme Court of Nebraska held the county of the pauper's residence liable for the operating physician's fee and for the value of the hospital services rendered—*Burnham v Lincoln County (Neb.)*, 257 N. W. 491.

Malpractice Injury to Spinal Accessory Nerve Incident to Removal of Branchial Cyst—One of the physician-defendants removed a branchial cyst from the right side of the plaintiff's neck, under local anesthesia. The patient, according to his testimony later, noticed immediately after the operation that the right side of his face was numb and shortly thereafter suffered pains, aches and discomfort in his right arm and shoulder and could not raise his right arm above his head. The wound healed promptly, but an incomplete paralysis and atrophy of the muscles of the right shoulder persisted, with about 25 per cent impairment of function. The patient then sued the operating physician and his copartner for malpractice. From a judgment in favor of the plaintiff, the defendants appealed to the Supreme Court of Oregon.

The plaintiff charged that the operating physician, one of the defendants negligently injured the right spinal accessory nerve and thus caused his disability. An expert medical witness called by the patient, whom he had treated, testified that in his opinion the spinal accessory nerve had been severed. The defendants and their expert medical witnesses thought that the nerve had not been severed, although it might have been bruised or otherwise injured, but the testimony indicated that if the nerve had been only bruised, regeneration should already have taken place.

The defendant who had performed the operation and one other expert witness were asked to state their opinions as to certain matters concerning which they had testified. To this the defendants objected claiming that expert opinions by physicians could properly be elicited only through hypothetical questions. But, said the court, when an expert is requested to express an opinion on facts observed by himself, which he has already related to the jury, the request need not be in the form of a hypothetical question. The jury can determine whether his conclusions are sound.

The defendants contended that there was no evidence to show negligence or to show that negligence, if there was any, was the proximate cause of the plaintiff's condition. But we have here, said the court, the testimony of a competent medical expert that the nerve had been severed, the operating physician's own admission that in removing a cyst such as was removed in this case it would be improper to sever the nerve unless by "accident," and that no accident occurred in the

course of this operation, and that a severance of the nerve would produce the condition found in the plaintiff after the operation. Thus, the court held, was substantial evidence competent to support the finding of negligence.

Finally, the defendants contended that a physician is not responsible for an unfavorable result when his method of treatment is one that is recognized as proper by at least a part of the medical profession. This rule, said the court, is not involved in the present case, since the patient did not criticize diagnosis or treatment. He claimed that during the operation the defendant who operated wrongfully severed a nerve, and apparently all medical men, including the operating physician himself, agreed that the severance of that nerve was improper. The jury determined that the nerve had been severed, which was in fact the sole issue in the case, apart from the amount of damages.

The judgment of the trial court in favor of the plaintiff was affirmed.—*Heider v Barendrick (Ore)*, 39 P (2d) 957

Malpractice Sponge Left in Operation Wound—The defendants removed the plaintiff's left kidney. In the course of the operation they used small sponges, so called "fluffs" and larger laparotomy sponges. After her discharge from the hospital, the patient did not recuperate as it was expected that she would, and Dr Hunsucker, her family physician, was consulted. He found the wound healed except where an opening had been left for drainage. He enlarged this opening and packed it with iodoform gauze, but the wound continued to give trouble. He called in Dr Shuford, who, on opening the wound its entire length and probing it found a sponge similar to the "fluffs" employed in the original operation. He threw this sponge away and repacked the wound but with gauze dissimilar to that in the sponges used in the original operation. A few days later Dr Hunsucker removed from deep in the wound another sponge of the "fluff" type. The patient, claiming that the operating physicians had left two sponges in her body, instituted this action for malpractice. From a judgment in her favor, the physician-defendants appealed to the court of appeals of Tennessee, eastern section.

At the trial, the defendants testified that they did not leave sponges in the wound. In this they were corroborated by the anesthetist and by a nurse. As there was only circumstantial evidence to show that they did so, the defendants argued that the suit should be dismissed because of the absence of evidence to support the verdict. The facts of the case however, said the appellate court made it incumbent on the defendants to do more than to deny positively that they left gauze within the wound, since it is conceded that it is negligence for a physician to leave gauze within a wound, the defendants must show before they can escape liability that some one else had an opportunity to place the gauze where it was found. The defendants insisted that the evidence did not exclude an inference that Dr Hunsucker might have packed gauze through the small opening left for drainage, and that the gauze removed by Dr Shuford was gauze packed in the wound by Dr Hunsucker. But, said the court of appeals, both Dr Hunsucker and Dr Shuford testified that they did not leave sponges in the wound and that the sponges found were not of the same type as the gauze or sponges used by them. Except for a bare possibility that Drs Hunsucker and Shuford left gauze in the wound there was no circumstance supporting the inference attempted to be drawn by the defendants and other proved circumstances negated this inference and supported the positive and uncontradicted testimony of Drs Hunsucker and Shuford. The court called attention to a letter written by one of the defendants soon after the first sponge had been removed from the wound in which he said

I am indeed greatly humiliated over the gauze being left in. Would you mind asking the doctor whether it was a gauze pack or a gauze sponge.

These unfortunate occurrences happen in the best hospitals but of course does not keep one from feeling very badly about such an accident.

It must be conceded, said the court that either one of the physician-defendants or Dr Hunsucker, or Dr Shuford left the gauze in the wound and the case presented therefore an issue for the jury to determine from the preponderance of evidence.

The court of appeals affirmed the verdict against the defendants, but only on condition that the plaintiff would consent to a reduction in the judgment from \$4,000 to \$2,500. Otherwise a new trial was to be granted the defendants.—*Barry v Maxey (Tenn)*, 75 S W (2d) 823

Evidence Opinion of Expert Based on Evidence Heard at Trial, Testimony of Expert Invading Province of Jury—In a will contest in which the mental competence of the testatrix was questioned, the trial court sustained the will and the contestant appealed to the Supreme Court of Michigan. A medical expert who had been present throughout the trial was permitted, over the objection of the contestant and without being interrogated in the form of a hypothetical question, to testify on the basis of all the evidence that he had heard at the trial as to the competence of the testatrix. Such procedure, said the Supreme Court, was error. It permitted the witness to put his own construction on the testimony that he had heard. Without a recital of the facts or assumptions embodied in a hypothetical question as a basis for the expert's answer, it was not possible for the trial court to make an intelligent ruling, or for opposing counsel to interpose timely objection, or for jurors to consider accurately the testimony given. The difficulty of testing the accuracy of the witness's declaration that he has heard and has in mind the testimony of all preceding witnesses condemned the practice, as such accuracy could be tested only by cross-examination, which in the average case would be so lengthy and tedious as to be intolerable. As authority for this holding the court quoted from 11 R. C. L. 581, reading, in part, as follows:

It may perhaps safely be stated as the majority rule that generally an expert cannot be allowed to base his opinion on the evidence which he has heard given in the case.

The same medical expert was permitted to testify also that all the evidence presented did not show that the testatrix was either mentally competent or mentally incompetent. Such testimony said the Supreme Court, was not permissible, as it allowed the expert in effect to say to the jury that the testimony of the expert witnesses who had preceded him was not entitled to any credence and therefore allowed the expert to usurp the function of the jury.

For these reasons the Supreme Court set aside the judgment of the trial court sustaining the will and ordered a new trial.—*In re Elliott's Estate Elliott v Collins (Mich)* 257 N W 919

Accident Insurance Death from Anesthesia—The plaintiff, as beneficiary, sued on a policy of insurance that provided certain benefits if the insured's death should result directly and independently of all other causes from bodily injury effected solely through external, violent and accidental means, but not if death resulted directly or indirectly from bodily or mental infirmity. Judgment was given for the defendant insurance company, and the plaintiff appealed to the United States circuit court of appeals, fifth circuit.

The plaintiff claimed that the insured died from bodily injuries effected solely through external violent and accidental means, in that an anesthetic was administered in the performance of an abdominal operation on the insured and the anesthetic though skilfully administered and ordinarily harmless, produced death because of an impairment of the insured's heart, which was unknown to the physician who administered the anesthetic. This condition of the heart the plaintiff claimed, was caused by an automobile accident that occurred shortly before the operation but the date of which was not stated. The use of the anesthetic, said the circuit court of appeals, was intentional and no mistake or slip is alleged in its administration. In addition to its usual and expected sedative results an unexpected result occurred, due to a heart weakness of short duration but antedating the operation. There was an accidental death caused in part by an external means that the means that caused death was accidental is not so plain. By the weight of authority, a means is not made accidental because some unexpected result follows, in addition to that which was intended to be accomplished. But irrespective of that, said the court, it is clear that the fatality cannot be said to have been effected solely by external violent means, because it was due also to the internal bodily weakness, with-

out which there would have been no death. This also was a "bodily infirmity" within the meaning of the exception in the policy, for infirmity includes abnormal weakness as well as acute disease. If a bodily infirmity, though unknown at the time, is a concurring cause without which death would not have resulted, the policy does not cover the case.

The judgment in favor of the insurance company was accordingly affirmed.—*Davis v. Jefferson Standard Life Ins. Co.*, 73 F (2d) 330

Hospitals Liability for Negligence of Special Nurse—An abdominal operation was performed on the plaintiff at the defendant hospital by a physician selected by the plaintiff. He was thereafter cared for by his own physician and by nurses employed by him or by his physician—and not by hospital employees. Some time later he experienced great physical discomfort. The operation incision was opened and a toothpick was found and removed. Later, cotton also was found in his body. He sued the hospital, alleging that the toothpick and cotton found their way into his body while he was in the hospital, as a result of the hospital's negligence in furnishing the nurses who cared for him with what are commonly termed "toothpick applicators", that is, toothpicks with cotton on each [sic] end for use in caring for his wound. From a judgment for the plaintiff, the hospital appealed to the district court of appeal, second district, division 1, California.

Both parties stipulated that it was the duty of the hospital to exercise ordinary care to furnish to the attendants of the patient suitable supplies, equipment and facilities commensurate with the requirements of his case, and to use reasonable care in providing the same for the use of those charged with his care and treatment. All the medical testimony, said the district court of appeal, was to the effect that the use of toothpick applicators with surgical dressings is a dangerous practice. Under the evidence in this case, can it be said that the injury which the plaintiff suffered was a natural or probable consequence of the act of the hospital in furnishing the toothpick applicators? In this case the persons who used the applicators were trained nurses employed by the plaintiff. They are members of a profession which the law recognizes as one of skill and learning. The hospital, if it furnished the toothpicks as the plaintiff contends, sent them to a professional employed by the plaintiff to care for him. If she used them with injurious consequences, her act was certainly one of a responsible and intelligent person, which relieves the defendant of any liability which might be created by its primary negligence.

The duty of the hospital to furnish suitable supplies and equipment, continued the court, does not make the hospital liable for furnishing articles which a trained nurse should know, from training and experience and the standards of care ordinarily used in her profession, are dangerous. If the article furnished is obviously unfit for the use for which it is furnished by the hospital, and the plaintiff's employee uses it in violation of all the standards of care of nursing practice, the defendant cannot be charged with any injurious effects from it.

The judgment in favor of the patient was accordingly reversed.—*Payne v. Santa Barbara Cottage Hospital (Calif.)*, 37 P (2d) 1061

Dental Practice Acts "Advertising" Not Synonymous with "Soliciting"—The dental practice act of North Carolina authorizes the state board of dental examiners to revoke the license of any dentist "guilty of false notice, advertisement, publication, or circulation of false claims, or fraudulent misleading statements of his art, skill, or knowledge, or of his methods of treatment or practice or [who] has by himself or another solicited professional business." Proceedings were instituted to revoke the license of a dentist, the respondent in this case, under an accusation charging him with soliciting professional business by paid advertisements in the newspapers and by signs in colors and of large dimensions on the building in which his office was located. The board revoked his license and, from a judgment of the superior court upholding the board's action, he appealed to the Supreme Court of North Carolina.

The dental practice act, said the court, inveighs against two offenses (1) false advertising, and the circulation of false

claims or fraudulent or misleading statements, and (2) soliciting professional business. There was no charge of false advertising or of the circulation of false claims or fraudulent or misleading statements. This appeal therefore raises the question only as to whether the use by a licensed dentist of paid advertisements of his work and prices in newspapers with a large circulation, and of signs in flaring colors and of large dimensions, constitutes such soliciting of professional business as is inhibited by the dental practice act. Advertising and soliciting are not synonymous terms. If they were so, every dentist who inserted a professional card in a registry directory or other publication, and paid for such insertion, or who placed on the window or door of his office, or on the wall of the building in which his office is located, his name, followed by the word "dentist," would subject himself to an accusation that might lead to the revocation of his license. The act makes unlawful only the use of false advertising and the circulation of fraudulent and misleading statements, and the corollary follows that the use of truthful advertising and the circulation of truthful statements are not unlawful. The record contains no suggestion of any soliciting by the respondent otherwise than by advertising in newspapers and by signs.

The court expressly refrained from passing on the ethics of the advertising resorted to by the respondent and suggested that if the North Carolina board of dental examiners desires further to limit the nature and extent of the advertising to which members of their profession may lawfully resort, their remedy lies with the legislature and not the courts. The law making branch of the government, the court said, if in its wisdom it saw fit, might make unlawful any kind of advertising by members of the dental profession, whether false or otherwise. For the reasons stated, the judgment of the superior court, upholding the action of the board in revoking the respondent's license, was reversed.—*In re Owen (N. C.)*, 177 S E 403

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago November 13-15
Dr. Louis J. Mitchell, 86 E. Randolph St. Chicago Secretary
American Clinical and Climatological Association Princeton N. J. Oct. 21-23
Dr. Francis M. Rackemann 263 Beacon Street Boston, Secretary
American College of Surgeons San Francisco October 28-November 1
Dr. George W. Crile, 40 East Erie St. Chicago
American Hospital Association, St. Louis Sept. 30-Oct. 4
Dr. Bert W. Caldwell 18 East Division Street Chicago Executive Secretary
American Public Health Association Milwaukee Oct. 7-10
Dr. Reginald M. Atwater 50 West 50th Street New York, Executive Secretary
American Society of Tropical Medicine St. Louis November 19-22
Dr. Alfred C. Reed 350 Post Street San Francisco Secretary
Association of American Medical Colleges Toronto Canada Oct. 28-30
Dr. Fred C. Zapffe 5 South Wabash Avenue, Chicago Secretary
Association of Military Surgeons of the United States New York, Oct. 3-5
Dr. H. L. Gilchrist Army Medical Museum Washington D. C. Secretary
Central Association of Obstetricians and Gynecologists Omaha Oct. 10-12
Dr. Ralph A. Reis 104 South Michigan Boulevard Chicago Secretary
Delaware Medical Society of Wilmington Oct. 8-9
Dr. William H. Speer 917 Washington Street Wilmington Secretary
Indiana State Medical Association Gary Oct. 8-10
Mr. T. A. Hendricks 23 East Ohio Street Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America Detroit October 14-18
Dr. W. B. Peck 27 E. Stephenson St. Freeport Ill., Managing Director
Kansas City Southwest Clinical Society Kansas City Mo. Oct. 7-10
Dr. Ralph R. Coffey 1103 Grand Avenue Kansas City Mo. Secretary
Kentucky State Medical Association, Louisville Sept. 30-Oct. 3
Dr. A. T. McCormack 532 West Main Street Louisville, Secretary
Mississippi Valley Medical Society Quincy Ill. Oct. 2-4
Dr. Harold Swanberg 510 Maine Street, Quincy Ill. Secretary
Nevada State Medical Association Elko Oct. 25-26
Dr. Horace J. Brown 120 North Virginia Street Reno Secretary
Ohio State Medical Association Cincinnati Oct. 2-4
Mr. C. S. Nelson Hartman Theatre Building Columbus Executive Secretary
Omaha Mid West Clinical Society Omaha Oct. 28-Nov. 1
Dr. J. D. McCarthy 107 South 17th Street Omaha Secretary
Pacific Coast Society of Obstetrics and Gynecology Los Angeles Nov. 6-9
Dr. T. Floyd Bell 400 29th Street Oakland Calif. Secretary
Pennsylvania Medical Society of the State of Harrisburg Sept. 30-Oct. 3
Dr. Walter F. Donaldson 500 Penn. Avenue Pittsburgh Secretary
Southern Medical Association, St. Louis November 19-22
Mr. C. P. Loran Empire Building Birmingham Ala. Secretary
Virginia Medical Society of Norfolk Oct. 15-17
Miss A. V. Edwards 1200 East Clay Street Richmond Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Pathology, Boston

11 591 710 (July) 1935

- Primary Melanosarcoma of Leptomeninges. A J E Akelatis Rochester N Y—p 591
- Influence of Anaphylactic Shock on Finer Structure of Liver in Dog H L Weatherford Boston—p 611
- *Lesions in Roots of Pulmonary Artery and Aorta in Rheumatic Fever L Gross New York—p 631
- Nuclear Inclusions Suggestive of Virus Action in Salivary Glands of Monkey Cebus Fatuellus E V Cowdry and G H Scott St Louis—p 647
- Nuclear Inclusions in Kidneys of Macacus Rhesus Monkeys E V Cowdry and G H Scott St Louis—p 659
- *Neuropathology of Experimental Vitamin Deficiency Report of Four Series of Dogs Maintained on Diets Deficient in B Vitamins Margaret Crone-Lillie Gildea W B Castle E F Gildea and S Cobb Boston—p 669
- Monocytes as Source of Alveolar Phagocytes J Ungar Jr and G R Wilson Pittsburgh—p 681
- Chronic Pulmonary Arteritis in Schistosomiasis Mansoni Associated with Right Ventricular Hypertrophy Report of Case E Clark and I Graef, New York—p 693
- Early Cardiac Infarction Caused by an Embolus of Caseous Tuberculous Material Report of Case E M Medlar, Mount McGregor N Y—p 707

Lesions in Pulmonary Artery and Aorta in Rheumatic Fever—Gross describes the lesions found within the roots of the pulmonary artery and aorta proper in 150 hearts, i. e., the purely musculo-elastic portions, as well as within the vessels found in their enveloping pericardial mantles. Sixty-six cases presented active rheumatic fever as manifested by the presence of fibrinous pericarditis, acute verrucous endocarditis, Aschoff bodies, eosinophilic collagen changes (fibrinoid) and other inflammatory phenomena in the myocardium. Thirty-four cases represented inactive rheumatic material, according to the criteria formulated by Rothschild, Kugel and Gross. The remaining fifty cases were from a nonrheumatic control series representing various age periods from birth to the ninth decade of life. This series was carefully selected to eliminate past or present hypertension, since this condition is associated with vascular changes in the periaortic and peripulmonic sheaths. After fixation of the heart in a 10 per cent neutral solution of formaldehyde sodium chloride, blocks were cut according to the standardized method of Gross, Antopol and Sacks. Sections were cut from each block and stained as a routine with hematoxylin and eosin and with Weigert's elastic and Van Gieson's connective tissue stains. An unexpectedly high incidence of capillarization was observed, both of the pulmonic and of the aortic roots. This occurred in 70 per cent and more of inactive as well as active cases, as compared to 25 per cent of the control non-rheumatic series. Not infrequently the capillaries were larger, more irregular and of wider distribution in the rheumatic series. It appears that the very florid inflammatory and destructive phenomena in the aortic root, together with the somewhat different observations in the pulmonic root and its pericardial sheath, serve to differentiate histologically syphilis from rheumatic fever. All the active rheumatic cases presented in the peripulmonic sheaths either a microscopic pericarditis or an acute exudative pericarditis, and in the inactive rheumatic series many cases showed scattered lymphocytes and large mononuclear cells in this area. It seems possible that this inflammatory condition of the pericardial mantle bears a causal relation to the markedly increased capillarization of the great vessel roots. At any rate, this mechanism must be considered a factor in addition to spread of the irritative agent by way of the vasa vasorum (Klotz) and by way of the main blood stream (Pappenheimer and VonGlabn). While scarring is not a conspicuous

feature in the pulmonic root in rheumatic fever, it becomes extremely important in the aortic root, in which the lesions may be so extensive as to be confused with syphilis. In such instances the damage may undoubtedly express itself functionally by producing diminished resilience and elasticity of the great vessel roots. The finding of inflammatory lesions in 20 per cent of aortic roots in the active rheumatic series was not unexpected, even though the 6 per cent incidence of intimal verrucous lesions was certainly more than anticipated from gross observations. On the other hand, the 14 per cent incidence of inflammatory lesions in the pulmonic root, with one case showing a verrucous lesion of the intima, was surprisingly high and of considerable interest. The intimal reduplications are important histologically only when they are quite fresh and serve to indicate the presence of activity. The vascular lesions in the peripulmonic and periaortic mantles are similar to those described by Gross, Kugel and Epstein. The considerable increase in these lesions both in active and inactive cases is in keeping with the observations in the coronary ramifications within the myocardium proper. The somewhat lower incidence of the more characteristic lesions in the pulmonic and aortic roots of the inactive as compared to the active rheumatic fever series indicates that some of them may heal with little discernible residues, that some may become transformed into the less characteristic alterations seen in the control series due to age period changes, and that the more marked lesions probably occur in patients so violently afflicted with the disease that many fail to reach the inactive stages.

Neuropathology of Experimental Vitamin Deficiency—Gildea and her associates state that seventeen dogs given a diet deficient in vitamin B (Cowgill) developed signs of acute disturbance of the central nervous system and died without treatment with vitamin B concentrates. Only minimal histologic changes were found in the central nervous system. Eight dogs given a similar diet, but whose acute neurologic signs were repeatedly and temporarily relieved with vitamin B concentrates, developed gradually a residual degree of spastic ataxia and eventually motor paralysis, with reflexes present. Definite histologic lesions of the central nervous system were found in all but one animal. Nissl stains of the cerebral and Purkinje cells and of the ventral horn cells revealed evidence of degeneration. Weigert-Pal stains of the spinal cords showed definite losses of myelin in seven dogs. The peripheral nerves of three dogs showed an increase of material staining with scarlet red or with the Marchi technic. The results of observations on the effect of partial starvation, of supplements of cod liver oil and of therapy with dried yeast on morphologic changes in the central nervous system were rendered inconclusive, probably because the basic deficiency was not sufficiently prolonged to produce morphologic changes in the nervous system of any of the animals.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill

34 1 144 (July) 1935

- Bone Tumors C F Geschickter Baltimore—p 1
- Mucocoele of Frontal Sinus with Especial Reference to Roentgen Aspects and Report of Four Cases A Hartung and T Wachowski Chicago—p 30
- Cholesteatoma L J Friedman New York—p 37
- Cleidocranial Dysostosis Case Report W W Eldridge A Simon and R Ramos Washington D C—p 41
- Tuberculosis of Humeral Diaphysis and Cranial Vault Case L D Van Antwerp Meriden Conn—p 50
- Adenocarcinoma of Oral Cavity W L Watson New York—p 53
- *Radium Dosage and Technic in Carcinoma of Tongue F E Simpson Chicago—p 63
- Intraoperative Insertion of Radon and Gastro-Enterostomy in Carcinoma of Pyloric End of Stomach I Levin New York—p 69
- Complications and Injuries in Radium Therapy I I Kaplan, New York—p 77
- *Correction of Dietary Errors in Connection with Radium Treatment. D T Quigley, Omaha—p 81
- Ionization of Liquid Carbon Disulphide by Roentgen Rays F L Mohler and L S Taylor Washington D C—p 84
- Bactericidal Effects of Roentgen Rays Note F L Mohler and L S Taylor Washington, D C—p 89

Radium Dosage in Carcinoma of the Tongue—Simpson discusses the technic and dosage that he is employing in the treatment of carcinoma of the tongue. The application of radium to the surface of the tongue lesion is inadequate to

accomplish a clinical cure necessitating the implantation of radium or radon. In the average case of squamous cell carcinoma of the tongue with cell nests, which is radioresistant, the practice of implantation should be continued. Lymphocytic and transitional cell cancer without cell nests, which are radio-sensitive, sometimes recede greatly or even disappear for a time under the influence of surface irradiations only. It seems safer to implant every carcinoma confined to the tongue, unless it is too extensive, regardless of its pathologic type. The implantation method in general should be limited to rather small, well circumscribed, favorably situated lesions, in which there appears great probability that radium or radon may be successfully implanted in every part of the growth and in which surface irradiation or excision has been generally found to be inadequate or inadvisable. If every part of a given neoplasm can be reached with tubules and the attendant conditions are favorable, a clinical cure frequently results. If every part of a given tumor cannot be reached and the attendant conditions are unfavorable, it is unwise to subject patients to a procedure that is somewhat heroic and painful, when it does not promise complete eradication of the disease. Success in radium therapy of carcinoma of the tongue depends largely on meticulous attention to a chain of details: roentgenograms of the lower jaw and chest, syphilis and diabetes are unfavorable factors in the radium treatment of carcinoma, hygienic condition of the mouth and teeth representing foci of infection. The author prefers to delay all ordinary disinfecting measures until the growth has been treated with short, powerful applications of radium. His discussion of the technic and dosage includes biopsy, the primary lesion, indications for implantation, methods of implantation, lead tubules, pitfalls, control of pain, protection of bone, metastases, nonpalpable and palpable nodes.

Dietary Errors in Connection with Radium Treatment

—Believing that a study of the diets of persons suffering from various kinds of tumor might be valuable, Quigley began an inquiry in 1922 and continued it through 1932. The number of patients involved was 2,707. Inquiry was made as to the food habits for as far back as the patient could remember and the relative amounts of various foods noted. In checking the cases, it was found that all were on more or less deficient diets and that none had cancer as a single disease. The deficiencies were in calcium, vitamins and iodine and cellulose, the concurrent diseases were those of the heart and blood vessels, the joints and the gastro-intestinal tract, with a few having cataracts and between 5 and 6 per cent diabetes. Obesity was a factor in more than 30 per cent of the cases. Many of the patients had been operated on for gallbladder disease and a large percentage were suffering occasional gallbladder colic, 95 per cent suffered from constipation or some form of stomach or intestinal disease. Some of the diets taken by these patients were almost completely composed of refined carbohydrates, an occasional salad being the only normal food eaten. The food consumed showed universal deficiencies in calcium, iodine and iron. Vitamin deficiencies were shown by certain signs and symptoms. The author has found the optimal requirements of vitamin A for adults to be 2 quarts of whole milk or its equivalent, for vitamin B 2 drachms (8 Gm) of dried yeast or its equivalent, for vitamin C 12 ounces (360 cc) of orange juice or its equivalent, and for vitamin D such an amount as may be represented by one hour of midday sun at half season or 2 drachms (8 cc) of cod liver oil. Unless a sufficient amount of calcium is present, vitamin D is likely to prove irritating to the nervous system. If a sufficient amount of cellulose in its natural state is taken as implied under the term equivalents, there is no room left for any refined carbohydrates. It is important that sugar and patent flour products be eliminated, as these furnish energy and high calories without necessary physiologic concomitants, minerals, cellulose and vitamins. Table salt should also be eliminated and replaced by a mixture of salts corresponding to those in Ringer's solution. Patients with external accessible malignant manifestations who have followed this regimen have had 20 per cent less recurrences, have been relieved of the unpleasant effects of concurrent diseases and have enjoyed increased energy and freedom from fatigue, the most striking examples of benefit being in cases of associated arthritis, gastro-intestinal troubles and obesity. In this connection, no case of carcinoma showed

any material improvement until the diet was so arranged that sugar disappeared from the urine. Therefore every person should be studied from the standpoint of the organism as a whole and all necessary dietary corrections made.

American Journal of Syphilis and Neurology, St. Louis

19: 313-472 (July) 1935

- Incidence of Syphilis in the American Negro R S Jaxon Washington D C—p 313
 *Arsphenamine Poisoning Occurring Among Negro Women G Walsh and C S Stickley Fairfield Ala—p 323
 Syphilitic Anemia with Diffuse Osteitis and Superinfection. E B Tauber and L Goldman Cincinnati—p 339
 Cisternal Puncture in Syphilis J T Belgrade Wheeling W Va and C S Wright Philadelphia—p 344
 Effect of Treponema Pallidum Infection on Metabolism of Rabbit Testis Ruth M Kraft C S Robinson and S Harris Jr, Nashville Tenn—p 354
 Comparative Study of Rosenthal Precipitation Test with Wassermann Reaction and the Kahn Test in Syphilis K L Yang Shanghai China—p 364
 Cause of Zone Phenomenon in Complement Fixation and Its Relation to Greater Sensitivity of Icebox Type of Wassermann Reaction Critical Study B S Levine, Chicago—p 367
 Syphilis of Spinal Cord N W Winkelman Philadelphia—p 378
 Pseudotumor Cerebri A Silverstein Philadelphia—p 399
 Myotonia Acquisita Case Showing Myotonia in Both Lower Limbs Following Injury M T Moore Philadelphia—p 409
 Encephalomyelitis Following Use of Serum and Vaccine Report of Two Cases One with Autopsy N W Winkelman and N Gotten, Philadelphia—p 414

Arsphenamine Poisoning in Negro Women.—Walsh and Stickley believe that arsphenamine poisoning in the Negro differs in many ways from the same type of poisoning in the white race. Of fourteen cases of arsphenamine poisoning admitted to the Employees' Hospital in five years, eleven occurred in Negroes. The fact that the symptoms and skin changes in the Negro do not receive the attention that they do in the Caucasian is believed to be one reason why these cases are not discovered by the physician in time to prevent an occasional fatality. The mental attitude of the Negro, marked by disinterestedness, secretiveness and a certain callousness toward his own suffering, is believed to be another reason why the treatment is persisted in until the poisoning has become an accomplished fact. The fragility and small caliber of the veins of the Negroess and the difficulties incident to giving the arsphenamine without spilling into the perivenous tissue are suggested as reasons for the frequency of arsphenamine poisoning in the female sex. Eosinophilia was a common observation. Whether or not its presence is an expression of an allergic phenomenon the authors do not know. The effects of epinephrine in allaying the itching were almost miraculous and suggested an underlying allergy.

American Journal of Tropical Medicine, Baltimore

15: 407-494 (July) 1935

- Theobald Smith and Insect Transmission of Disease C F Craig—p 407
 *Brucellosis in Man Treatment with New Antiserum W B Wherry A E O Neil and L Foshay Cincinnati—p 415
 Natural Immunity and Susceptibility of Culicine Mosquitoes to Avian Malaria C G Huff Chicago—p 427
 New Species of Tick Which Is a Vector of Relapsing Fever in California. C M Wheeler Berkeley Calif—p 435
 *Use of Aqueous Smears in Study and Identification of Ameba of Man E G Hakansson Panama Republic of Panama—p 439
 Plumbing in Relation to Infectious Diseases H N Bundesen Chicago—p 455
 Experimental Studies with Torula from Knee Infection in Man J F Kessel and F Holtzworth, Los Angeles—p 467
 Relative Susceptibility of Anopheles Quadrimaculatus to Plasmodium Vivax and Plasmodium Falciparum M F Boyd W K Stratman Thomas and S F Kitchen Tallahassee Fla—p 485

Antiserum Treatment of Brucellosis.—Wherry and his co-workers produced antisera for the initial therapeutic trials from goats after subcutaneous inoculations with chemically treated suspensions of Brucella. The sera used during the first year represented six strains, one bovine and five porcine. At the beginning of the second year five melitensis strains were added. During the past year the authors have adopted a total amount of 60 cc., usually given in three daily injections of 20 cc. each, as the average adult dosage for infections of average severity. Unconcentrated serum has been given by vein, intramuscularly and subcutaneously. It is clear that some of their first patients did

not receive enough serum. Serum sickness has been infrequent and usually mild. Of their twenty patients who responded favorably to serum therapy, the indicated averages are significantly encouraging. After serum therapy the average duration of fever was nine days, the average duration of symptoms was fifteen days and the average duration of disability was three and a half weeks. The average total disability period was two and three fourths months, and the average time at which serum therapy was begun was at one and nine-tenths months. Hence two thirds of the total disability period represents elapsed time of illness before serum was given. There were six cases that were either doubtfully improved or clearly unimproved by serum therapy. One doubtfully improved patient was a man with an unusually severe infection, with continuous high fever, profound prostration, severe anemia, a palpable spleen and an enlarged liver with intense general icterus. In three of the patients, who had either bland or extremely slight, transient, favorable responses, the disease had existed for a year or more before treatment was begun. Experience with serum therapy in tularemia has taught the authors that the chronic infections due to *Bacterium tularense* are most frequently not modified by serum therapy. The possibility of a similar refractory state in chronic brucellosis must be considered. They consider the time of administration an important factor in successful therapy and think it advisable to use it early in the course of illness, preferably before the end of the fourth month of symptoms. The effect of serum therapy on the fever curve was usually shown by a fairly prompt fall in temperature to normal, accompanied by a rather well marked antitoxin-like response characterized by an amelioration of myalgias, arthralgias, headache, gastric symptoms and general subjective discomfort including sweats. The chief therapeutic action of the antiserum is very probably its capacity to induce specific phagocytosis.

Aqueous Smears in Identification of Ameba—Hakanson presents the observations of the trophozoites of *Endamoeba histolytica*, *coli* and *nana* and of *Diandamoeba fragilis* that he has observed in aqueous smears. The observations indicate that certain features in the morphology of the ameba can be demonstrated in the aqueous medium: (1) the distensibility of the ectoplasm of *Endamoeba histolytica*, (2) the relative fragility of the ectoplasm of *Endamoeba coli* and *nana*, (3) the resilience of the ectoplasm of *Diandamoeba fragilis* and (4) the remarkable strength of the nuclear membrane of *Endamoeba histolytica* and *coli*. Some of these characteristics together with the visibility of the nuclei help to differentiate the species of ameba in the human stool. The annoyance of *Blastocystis hominis* can be eliminated by the use of the aqueous smear.

Archives of Otolaryngology, Chicago

22:1130 (July) 1935

- Contact Ulcer of Larynx C Jackson and C L Jackson Philadelphia—p 1
Influence of Anatomic Structure in Diseases of Nose and Ear E U Wallerstein Richmond Va—p 16
*True Papilloma of Nasal Cavity R Kramer and M L Som New York—p 22
Anomalous Capillary Plexus in Scala Tympani Dorothy Wolff St Louis—p 44
Malignant Tumors of Nasopharynx L H Heine Boston—p 51
Considerations on Suppuration of Petrous Pyramid M C Myerson New York H W Rubin and J G Gilbert Brooklyn—p 62
Bilateral Encapsulated Peritonsillar Abscess in a Child Review of Literature and Report of Case R W Teed, Ann Arbor Mich—p 90

True Papilloma of Nasal Cavity—An analysis by Kramer and Som of the literature reveals the fact that at least four distinctly different types of tumors have been included under the heading of papilloma. These are 1 Mucous polyps, or soft papillomas (Hopmann). The true inflammatory nature of these growths can no longer be questioned regardless of their epithelial lining. While these polyps are lined most frequently by columnar epithelium, metaplastic changes with transition to squamous epithelium are not uncommon. Such changes are undoubtedly associated with external physical chemical and inflammatory processes in the nasal chambers. 2 Innocent cutaneous warts arising from the vestibule of the nose, especially on the antero-inferior portion of the septum. They are localized slightly elevated, papillary epithelial hyperplastic lesions surrounded by an area of normal mucosa. They can be removed

with ease and show no tendency to recurrence. The literature contains records of numerous instances in which such lesions have been reported erroneously as true papillomas of the nose. 3 Papillary carcinomas, which are malignant neoplasms that possess invasive characteristics and tend to metastasize to regional lymph nodes. These tumors are often referred to as malignant papillomas. Although their development on the basis of a true papilloma is a possibility, they should be classified with the carcinomas. Only a small percentage of the growths heretofore reported as papilloma fall into the category of true papillomas. Papilloma durum is a true nonmalignant neoplasm of epithelial origin and should not be confused with the preceding types. Papilloma durum appears in the form of grayish red indurated papilliferous new growths, which bleed readily on manipulation. Their hardness is primarily dependent on the marked proliferation of the epithelial tissue. These neoplasms arise from the nasal accessory sinuses and the deeper structures of the nasal cavity. They readily involve a large area of mucous membrane and may attain a huge size. Their tendency to multiple recurrences and malignant transformation is characteristic.

Arch of Physical Therapy, X-Ray, Radium, Chicago

16:385-448 (July) 1935

- Status of Electrosurgical Prostatic Resection H C Rolnick Chicago—p 391
Electrosurgery in Urology F G Harrison Philadelphia—p 393
Immunologic Studies in Hyperpyrexia Ruth Westlund Jung Chicago—p 397
Nasal Ionization by New Simplified Technique M H Cottle Chicago—p 405
Orthopedic Management of Anterior Poliomyelitis A M Rechtman Philadelphia—p 411
Relation of Body Mechanics to Surgical Diagnosis W Bates, Philadelphia—p 416
Delayed Union of Fractures A F Voshell Baltimore—p 421
Arthroscopy by Fluorescence Experimental Study M S Burman and C J Suto New York—p 423
The American Congress of Physical Therapy Ten Years of Progress A R Hollender Chicago—p 425

Archives of Surgery, Chicago

31:175-344 (Aug) 1935

- Pilonidal Sinus Explanation of Its Embryologic Development Mims Gage New Orleans—p 175
Intradiploic Epidermoid (Cholesteatoma) of the Skull P C Bucy, Chicago—p 190
*Aberrant Pancreatic Tissue in Gastro-Intestinal Tract Report of Twenty Four Cases C D Brauch and R E Gross Boston—p 200
*Ulcerative Colitis Study of Bacteria in Isolated Colons of Three Patients by Cultures and by Inoculation of Monkeys G M Dack, T E Heinz and L R Dragsstedt Chicago—p 225
*Peptic Ulcer Following Experimental Jejunocolostomy P E McMaster Los Angeles—p 241
Infectious Gangrene of Skin Due to Bacterial Synergism with Particular Reference to Noma and Postoperative Cutaneous Gangrene N F Hicken Omaha—p 253
Lateral Dislocation of the Wrist Joint Report of Case of Radiocarpal Dislocation of Radial Side R K Packard and J D Kirshbaum, Chicago—p 266
Primary Thrombosis of Axillary Vein Anatomie and Roentgenologic Study of Certain Etiologic Factors and Consideration of Venography as Diagnostic Measure J R Veal and Elizabeth M McFetridge New Orleans—p 271
*Clinical Study of Spermatogenesis of Undescended Testicles D W MacCallum Boston—p 290
Cystic Hygroma of the Neck D P MacGuire New York—p 301
Bactericidal Effect of Hirudin and Heparin I Intravenous Injection of Hirudin and of Heparin and Leeching in Experimental Bacteremia A Ochsner and H R Mahorner New Orleans—p 308
Review of Urologic Surgery A J Scholl Los Angeles E S Judd Rochester Minn J Verbrugge Antwerp Belgium A B Hepler Seattle R Gutierrez, New York and V J O'Connor Chicago—p 315

Aberrant Pancreatic Tissue in Gastro-Intestinal Tract.—Branch and Gross report twenty-four other cases in which aberrant pancreatic tissue was found in various locations in the wall of the alimentary canal. In three instances the tissue was found in the stomach or pylorus, in ten, in the duodenum (in one in a duodenal diverticulum) in four, in the jejunum, in one, in the ileum, and in six in a Meckel diverticulum. These structures contained ductal and acinar elements the histologic structure of which closely resembled that of normal pancreatic tissue. In fifteen specimens there were no islets of Langerhans in the sections studied, but in the other nine cases there were typical islets. The age of the patients in whom the

anomalous tissue was found varied from 8 days to 82 years. The cases occurred in equal numbers in males and in females. The presence of this aberrant pancreatic tissue in the gastro-intestinal tract probably represents a congenital anomaly in most, if not in all, instances. Four of these twenty-four cases had important pathologic significance. In one of these the nodule caused pyloric obstruction, and in the other three it was the site of ulceration in the stomach or duodenum. Such a nodule in the wall of the gastro-intestinal tract has been mistaken for carcinoma. The gross appearance of the tissue should indicate that it is pancreatic in type and should obviate the danger of unnecessary removal when it is not the cause of intestinal obstruction or the site of an important pathologic lesion.

Ulcerative Colitis—Dack and his associates observed that the isolated colons of the three patients in whom ileostomies had been performed contained at first many species of organisms in large numbers. After some months the flora became largely anaerobic. In all three cases the same type of organism eventually predominated, it closely resembled *Bacteroides fragilis* and *funduliformis* (Thompson and Beaver), *Actinomyces necrophorus* (Shaw, Cunningham) and *Bacillus necrophorus* (Orcutt). This organism was pathogenic to rabbits and, following subcutaneous injections of large amounts of culture, produced local abscesses, which tended to heal after a long time. The organisms isolated were similar to the necrophorus organisms. In mediums they produced a putrid odor resembling that of butyric acid. They grew well on blood agar and serum dextrose mediums and in dextrose mediums to which a small amount of cystine was added. Exposure to oxygen was highly lethal in a short period. Complement-fixing antibodies have been demonstrated in the serum of four patients with ulcerative colitis, with antigen prepared from the predominating anaerobic organism cultured from the isolated colons of two patients. Very slight fixation of complement occurred with an antigen of monkey origin. The serum of one young adult without a history of intestinal lesions gave slightly positive results, whereas the serum of four other healthy young adults gave negative results. The serum taken from one patient gave a negative reaction. This result is difficult to explain in view of the agglutination reactions, which were positive. There was extensive disease of the intestine in the four cases in which the serum gave positive reactions. The complement fixation tests with the serum of the three monkeys tested were all positive, but in varying degrees. Agglutination tests were performed, the serum of five patients with ulcerative colitis against strain 40 being used. Agglutinins were present in all this serum. The serum from three healthy persons contained no agglutinins for this strain, whereas the serum from a fourth healthy person contained only a trace of agglutinins and then only in the strongest dilution of serum. Bacteriologic and serologic studies in a larger series of cases of ulcerative colitis may help to evaluate the significance of the organism described.

Peptic Ulcer Following Experimental Jejuno-cystostomy—McMaster performed duodenocystostomy on twenty dogs without resecting the intestine between the points of duodenal transection and anastomosis into the colon in an endeavor to determine how often peptic ulceration occurred after jejuno-cystostomy both with and without retention of the intestine between the points of anastomosis and, if possible, what the etiologic factor might be. He found that, following jejuno-cystostomy in which the distal portion of the jejunum and the ileum were left in place as a blind stump, acute, subacute or chronic peptic ulceration developed in thirteen dogs operated on. Three of the ulcers perforated the wall of the intestine, leading to peritonitis. In three dogs on which duodenocystostomy was performed, the distal portion of the duodenum, the jejunum and the ileum being left as a blind stump, peptic ulceration was not observed. When a jejuno-cystostomy was performed with resection of the intervening intestine, peptic ulceration occurred in two of eleven dogs operated on. A rather marked loss of weight occurred in nearly all these animals, but this did not seem to be the etiologic factor responsible for the peptic ulcers. Gastritis and duodenitis, as evidenced by inflammatory reaction in the surrounding walls of the stomach and duodenum, seemed to follow rather than precede the peptic ulceration, as nearly as could be determined by microscopic studies.

Study of Spermatogenesis of Undescended Testicles—MacCollum studied the fertility of eighty-nine men with undescended testicles. He forms three conclusions: 1. Except in a small percentage of cases, the fertility of all persons with cryptorchidism seems to be lower than that of the normal person. 2. The cosmetic result after orchiopexy cannot be used as a criterion of fertility. 3. In eighteen patients with bilateral undescended testicles on whom orchiopexy had been done there was definite fertility in eleven, and in three more, in whom the counts were lowered but active sperm were present, potential fertility. The proportion of definite fertility in persons who have undergone orchiopexy may then be computed as 61 per cent, in contrast to the estimated 10 per cent in persons without orchiopexy. In the author's opinion these statistics definitely make orchiopexy a justifiable procedure. His main purpose has been to stimulate an interest in other clinics to carry out a similar type of investigation. He is continuing the investigation and hopes to correlate the types of orchiopexy with the resulting spermatogenesis.

Journal of Biological Chemistry, Baltimore

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Histochemistry of the Adrenal Gland II Quantitative Distribution of Lipolytic Enzymes D Glick and G R Biskind San Francisco—p 575
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Thyroglobulin Studies I Thyroxine and Iodine Content of Normal and Goitrous Human Thyroglobulin J W Cavett, C O Rice and J F McClelland Minneapolis—p 673
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Electric Heater Designed to Prevent Losses from Creeping in Evaporation of Concentrated Salt Solutions Preliminary to Mineral Analysis G M Guest and E Leva Cincinnati—p 777

Journal of Immunology, Baltimore

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*Studies on Scarlet Fever Anatoxin Simultaneous Immunization Against Scarlet Fever and Diphtheria K Ando and S Nagata Dairen South Manchuria—p 47

Studies on Scarlet Fever Anatoxin—Ando and Nagata observed that antigenicity of the so-called scarlet fever anatoxin produced by detoxifying scarlet fever toxin with formaldehyde and heat is due to presence of toxoid. Rabbits can be used for the determination of antigenicity of scarlet fever anatoxin. The antigenicity of the purified and concentrated scarlet fever anatoxin has been demonstrated by animal and human test. The antigenicity of the anatoxin prepared from scarlet fever toxin produced in a semisynthetic medium has been demonstrated. The addition of alum seems to increase the antigenicity of scarlet fever anatoxin. The degree of immunity conferred on rabbits by immunization with combined scarlet fever and diphtheria anatoxin is as high as that conveyed by a single anatoxin.

Journal of Nervous and Mental Disease, New York

82: 125-248 (Aug.) 1935

- Bromide Permeability Test in Schizophrenia H T Carmichael J C Rheingold and I E Under Worcester Mass.—p 125
- Paraplegias Their Significance in General Practice G B Hassin Chicago—p 134
- Role of Psychologic Maladjustment in College and in Later Placement Elizabeth Ann Sullivan Cambridge, Mass.—p 147
- *Studies of Blood Sugar Curves in Mental Disorders S Katzenbogen and W S Muncie Baltimore—p 162
- Ameliorative Effects of Therapeutic Castration in Habitual Sex Offenders A W Hackfield Seattle—p 169

Blood Sugar Curves in Mental Disorders—Katzenbogen and Muncie obtained repeated blood sugar curves during the course of various psychoneurotic and psychotic conditions. On many occasions, improvement in the curve coincided with improvement in the mental state. Discrepancies between the former and the latter, however, were not infrequently observed: (1) normal blood sugar curve associated with quite marked emotional reactions, (2) anomalous curve paralleled by average spontaneous activity, (3) relapse in the blood sugar curve coinciding with clinical improvement and (4) relapse in the patient's condition accompanied by improvement in the blood sugar curve. No correlation could be established between the blood sugar curves and the various kinds of emotional reactions considered separately. The explanation for this is that in the authors' patients emotional manifestations did not present themselves separately but always in more or less inclusive combinations. If, in some of their patients one or another kind of emotion stood out conspicuously, it also was accompanied by other emotional reactions. In these patients no specific types of curves were obtained that could be attributed to one or another apparently predominant emotional manifestation. The study suggests that the relationship between blood sugar curves and various kinds of emotions in human beings can be adequately studied only under experimental conditions in individuals in whom particular emotional reactions can be provoked separately, and in individuals who, under the influence of certain occurrences equivalent to experiments, will display rather single specific emotions.

Journal of Pediatrics, St. Louis

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- Leukocytes in Infancy and Childhood. Statistical Analysis of One Thousand and Eighty One Total and Differential Counts from Birth to Fifteen Years K Kato Chicago—p 7
- Erysipelas in Children Under Two Years of Age Clinical Study C S Culotta New Haven Conn.—p 16
- *Antirachitic Properties of Irradiated Evaporated Milk Fed to Normal Babies Under Home Conditions R A Strong E F Naef and Ina M Harper New Orleans—p 21
- Intussusception Occurring in the Course of Paratyphoid Fever J Mignone and J M Arena, Durham N C—p 37
- Unusual Case of Glomerular Nephritis with Uremia R H Dennett and C H Myron, New York—p 40
- Spontaneous Hypoglycemia Due to Hyperinsulinism in a Child Report of Case with Autopsy Findings A M Dannenburg M A Bell and B Gouley Philadelphia—p 44
- Infant Mortality in New York City One Hundred Years Ago C Bolduan and L Weiner New York—p 55
- Is Benefit of Lactic Milk in Infant Feeding Due to Bactericidal Action of Lactic Acid? K B Rothery Durham N C—p 60
- Bacteriologic Studies of Three Small Epidemics of Infectious Diarrhea in Children Two Caused by *Bacillus Dysenteriae* (Sonne) and One by *Bacillus Dysenteriae* Marion M Johnston and Mildred J Kaake Toronto—p 65
- Tonsil and Adenoid Problem Systemic Influence of Upper Respiratory Infection G M Coates and W Gordon Philadelphia—p 70
- Poisoning from Bite of Black Widow Spider (*Latroctes Mactans*) Case Report E H Rohlfing and B M Bullington St. Louis—p 79
- Vitamin A and Infection I F Gittleman and A S Wiener, Brooklyn—p 81
- *Endocrine Studies in Infants and Children II Time of Onset of Teething Walking and Talking in Endocrine Disorders Its Relationship to Intelligence in Endocrine and Nonendocrine Conditions M B Gordon and L Kuskin Brooklyn—p 89

Antirachitic Properties of Irradiated Evaporated Milk.—Strong and his co workers fed twenty-two normal, artificially fed infants living in poor to middle class homes, irradiated evaporated milk without any additional vitamin D. The period of the study embraced approximately the first six months of life of the individual infants. A control group of eleven normal infants was fed a formula of whole cow's milk, with from 10 to 15 drops (0.6 to 1 cc.) of viosterol daily or 4 tea-

spoonfuls of plain cod liver oil as the source of vitamin D. The average daily consumption of evaporated milk ranged from 6 ounces (180 cc.) in the 1 to 4 week group to 16 ounces (480 cc.) in infants 6 months of age or more, giving a variation of from 266 to 589 units in the average vitamin D content of the food. Roentgenograms of the forearms of the twenty-two infants fed irradiated evaporated milk, taken at approximately 6 months of age, showed "slight evidence of rickets" in two of the infants. None of the infants in the control group showed roentgen evidence of rickets. Irradiated evaporated milk containing 38 Steenbock units to the ounce offers a source of vitamin D in an amount sufficient to reduce greatly the incidence or severity of rickets among patients whose parents either have not been educated to the necessity of antirachitic supplements to the food of all babies or who cannot afford them. As yet the irradiation of evaporated milk should not be relied on exclusively to provide protection to all infants throughout the first year of life. It should be supplemented with additional vitamin D units in the early months of life when the intake of irradiated evaporated milk may be insufficient to provide the unitage necessary to protect the infant.

Endocrine Studies in Children.—Gordon and Kuskin present a statistical study of the time of onset of teething, walking and talking in endocrine disturbances and of the relationship of intelligence to the developmental rate. Of 570 children studied, 369 presented evidence of endocrine disturbance and 201 manifested some degree of mental retardation without any sign of endocrine dyscrasia. The endocrine group is almost evenly divided into those with normal intelligence and those with mental retardation. 1 The time of onset of teething, walking and talking depends on four factors: the functional activity of the thyroid and of the growth hormone of the anterior pituitary lobe, nonendocrine factors, such as racial stock, familial tendencies, chronic conditions (such as rickets), acute infections, the mentality of the infant in the first 6 months of life, and the chronological relationship between time of inception of the influencing factor (endocrine or nonendocrine) and the normal time of teething, walking and talking. 2 In a mentally normal child, the time of onset of teething, walking and talking may serve as a criterion of endocrine function. Delay in the appearance of one or all indicates endocrine disturbance, provided all possible nonendocrine factors are excluded. 3 In a mentally retarded child, the time of onset of teething, walking and talking cannot be considered a diagnostic criterion of endocrine disorder. 4 Teething is within normal age limits in mentally normal children with adiposogenital dystrophy, thyrotoxicity and hypothyroidism. In the pituitary group there seems to be a relationship between the time of onset of teething and general growth. Dentition is delayed to the greatest extent in anterior pituitary deficiency of growth and in childhood myxedema. Premature teething was noted in 22.4 per cent of the pituitary cases. The time of eruption in hypothyroidism depends on the relationship between time of inception of the dyscrasia and normal teething time and also on the mentality of the infant in the first six months of life. 5 Unaided walking appears in mentally normal infants at about the same average time in all endocrine conditions except hypothyroidism in which there is a slight delay. 6 The onset of talking is within normal limits in mentally normal children in all pituitary conditions and is slightly delayed in hypothyroidism. 7 Infants with mental retardation teethe, walk and talk later than mentally normal infants in the same endocrine groups. Those with mental retardation due to nonendocrine antenatal factors, such as mongolism, congenital syphilis and microcephalus, teethe, walk and talk later on the average than those with postnatal disorders, such as epilepsy, encephalitis or brain injury. Considered as two groups, children with nonendocrine mental retardation teethe, walk and talk later than those with endocrine disorders. 8 The relationship between endocrine conditions, mental retardation and delay in onset of teething, walking and talking may be as follows. All may be expressions of some common factor present during antenatal or neonatal life. The glandular disturbance may be the cause of the delayed developmental rate and/or the mental retardation. The delay may be due to the mental retardation irrespective of the existing endocrine disorder.

Minnesota Medicine, St. Paul

18:491 560 (Aug) 1935

- Historical Notes on the Minnesota Valley Medical Association and the Southern Minnesota Medical Association M C Piper Rochester —p 491
- Influence of Gastric Lavage on Familial and Nonfamilial Erythremia J F Briggs and H Oerling St Paul —p 499
- Idiopathic Hypochromic Anemia S H Boyer Jr, Duluth —p 504
- Ascites of Indeterminate Origin M W Binger and N M Keith Rochester —p 510
- Amelias Diagnosis Prevention and Treatment P W Brown and T B Magath Rochester —p 515
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- Dysmenorrhea L W Barry St Paul —p 525
- Nonorganic Causes of Fatigue Concept of Fundamentals N Johnson, Minneapolis —p 531
- Cutis Verticis Gyrate Formation J F Madden St Paul —p 536
- The Milwaukee Convalescent Sernm Center M Hardgrove Milwaukee —p 541

Nebraska State Medical Journal, Lincoln

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- Treatment of Chronic Arthritis B L Wyatt, Tucson Ariz —p 281
- *Atypical Leukemic States and Leukemoid Reactions A. S. Rubnitz Omaha —p 287
- Deficient Menstruation S A Osheroff Omaha —p 292
- Nonspecific Granuloma of Gastro-Intestinal Tract J M Shramek and B C Russum Omaha —p 296
- Progress of Surgery Review of Literature for First Six Months of 1935 H H Davis Omaha —p 301
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Atypical Leukemic States and Leukemoid Reactions—Rubnitz presents four atypical cases of leukemia in which an individual hematologic picture was observed. From their study he concludes that malignant tumors of lymphoid tissue may establish a free communication with the circulation, tumor cells are fed then to the blood stream from such a focus. The cellular composition of the blood in such cases may be that of normal blood with the added tumor cells. The tumor cells may vary in their makeup in the same way as different lymphosarcomas vary histopathologically. The blood, on examination, may have the appearance of leukemic blood. There is, however, this basic difference. In true leukemias one is dealing with a primary disturbance of the hematopoietic system as a whole and, because of that, all the elements of the blood are affected, whereas, in the blood dyscrasias on a lymphoid tumor basis abnormalities only in the lymphoid elements may be seen, the rest of the cellular constituents of the blood are not affected. Of course, sooner or later, a situation is reached in which the hematopoietic tissue as a whole is invaded by the malignant cells and a picture of frank leukemia may set in. The author's first three cases exemplify atypical leukemic states superimposed on the basis of lymphosarcoma. Epithelial tumors ordinarily do not affect the cellular composition of the blood alone. A breaking down epithelial tumor may bring about puzzling bizarre changes in the blood.

New Orleans Medical and Surgical Journal

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- *Treatment of Some Vascular Disturbances of Extremities I Cohn, New Orleans —p 73
- Treatment of Hirschsprung's Disease by Spinal Anesthesia Preliminary Report J D Rives and L H Strug New Orleans —p 81
- Renal Tuberculosis B B O'Mara Biloxi Miss and C H McCall Gulfport Miss —p 85
- Plea for Better Obstetrics C Le Baren Gulfport Miss —p 89
- Incidence and Clinical Manifestations of Lymphogranuloma Inguinale in New Orleans E von Haam and L Lichtenstein New Orleans —p 92
- *Use of Artificial Pneumothorax in Treatment of Lobar Pneumonia I L Robbins New Orleans —p 102
- Modified Murphy Tube for Constant Suction Drainage of Gastro-Intestinal Tract E L Sanderson and P D Ahramson Shreveport La —p 109

Treatment of Some Vascular Disturbances of the Extremities—Cohn states that in the treatment of occlusive vascular disorders all measures which attempt to cure a symptom or manifestation which is local in character are basically wrong from a physiologic standpoint. The fundamental factor of importance is that manifestations of nutritional disturbances, such as acrocyanosis, claudication and gangrene, are local evidences of a general disease. Developments in the treatment of occlusive vascular phenomena, whether spastic or oblita-

tive in character, have followed many leads, some physiologic, others as by-products of increased knowledge of the sympathetic system. The author states that, believing that simple physiologic methods applicable to all extremities with ease offer hope of relief from pain and possibly the saving of limbs, he tried the method of passive vascular exercise. He found that it is by no means a cure-all, it does help and probably has prevented several amputations, favored healing of sluggish wounds, and in several instances made it possible for patients formerly crippled and incapacitated on account of pain to go back to their usual occupations. He asserts that vascular disturbances of the extremities are merely local manifestations of a general disease. When obliterative or organic disease of the vessels exists, local operation such as ganglionectomy does not offer more than relief of pain of a particular part. It cannot cure a disease in which the changes are to be found in every part of the vascular tree, as evidenced by the fact that many of the patients who die of Buerger's disease die with evidence of coronary disease. At necropsy this has been shown to be identical with the condition found in the extremities. If collateral circulation can be improved and pain relieved by methods that cause a dilatation of the peripheral vessels and thus help establish a collateral circulation to prevent gangrene, such methods should be used by preference over operations of considerable magnitude, the value of which has not been proved and which have been in use too short a time to show any ultimate results beyond the fact that some of them have resulted in failure. In the after-care of patients who by reason of an operation or an embolic process have had a sudden interference with circulation in an important trunk vessel the immediate value of a simple procedure such as passive vascular exercise is to be preferred to either ganglionectomy or blockage. The mechanical treatment for obtaining passive vascular exercise as suggested by Herrmann and Reid offers one of the most valuable contributions to the treatment of nutritional disturbances of vascular origin that have thus far been devised.

Artificial Pneumothorax in Treatment of Lobar Pneumonia—Robbins believes that artificial pneumothorax is a therapeutic agent of great value in the symptomatic treatment of lobar pneumonia as revealed by the results obtained in five cases. The amelioration and the alleviation of symptoms were prompt and permanent. In one case the specific action of the procedure was evidenced by the induction of an artificial crisis. The small number of cases treated and the admission of the patients to the hospital rather late in the disease prevented the possibility of more proof concerning this feature of the treatment. It cannot be gainsaid that artificial pneumothorax is a therapeutic agent that appears to be a great boon to the physician in the treatment of lobar pneumonia. The author states that at present artificial pneumothorax must be considered as one, though a most important one, of the several agents employed to combat this disease. The use of this treatment in pneumonia necessitates the warning that, unless one is experienced in the use of artificial pneumothorax, it is better to refrain from its employment because of the dangers attendant on its use and the added dangers of damage to the pneumonic lung.

New York State Journal of Medicine, New York

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- Thoracic Injuries J V Bohrer New York —p 749
- Significance of Laboratory Tests and Methods R G Stillman New York —p 757
- Septicemia Following Tonsillitis C Hirsch, New York —p 767
- Vitamin D Milk Control Administrative Aspects P B Brooks Albany —p 776
- Favus in a Native School Child Phyllis Schuyler Kerr White Plains —p 781

Oklahoma State Medical Assn. Journal, McAlester

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- Present Status of Radiation Therapy E S Lain and M M Roland Oklahoma City —p 285
- Diagnosis and Treatment of Some Common Anorectal Diseases F B Campbell Kansas City Mo —p 288
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- Report on Hysterectomies F A Hudson Enid —p 295
- Treatment of Acute Gonorrhea by the General Practitioner J W Henry Anadarko —p 300
- Laws of Interest to the Medical Profession L H Ritzhaupt Guthrie —p 304

Philippine Journal of Science, Manila

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Public Health Reports, Washington, D C

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Roentgenologic Appearances in Silicosis and Underlying Pathologic Lesions Report by Committee Composed of H K Pancoast E P Pendergrass A R Riddell A J Lanza W J McConnell R R Sayers H L Sampson and J U Cardner—p 989

Dedication and Opening of the Lexington Narcotic Farm W L Treadway—p 996

South Carolina Medical Assn Journal, Greenville

31:129 144 (July) 1935

Malignant Melanoma (Black Cancer) K M Lynch Charleston—p 129

Treatment of Fractured Skulls C O Bates Greenville—p 132

Texas State Journal of Medicine, Fort Worth

31:185 250 (July) 1935

Raw Apple Diet in Treatment of Diarrhea S R Kaliski San Antonio—p 191

Fever Therapy A U Desjardins Rochester Minn—p 194

Use of Short Wave Therapy in Medicine J W Torbett Jr Marlin—p 200

Observations on Recent Epidemic of Diarrhea with Bacteriologic Studies C O Terrell and May Owen Fort Worth—p 204

Use of Sodium Lactate in Treatment of Acidosis R L Moore Dallas—p 206

Combined Agglutination Tests and Blood Clot Culture in Diagnosis of Typhoid Fever S W Bohls and V T Schuhradt Austin—p 210

Immunization with Pertussis Vaccine B Reading Galveston—p 213

Control and Prevention of Whooping Cough D Greer Houston—p 215

Control and Prevention of Acute Exanthemas E R Cockerell Abilene—p 218

Diphtheria Prevention and Control C E Gilmore Paris—p 221

Communicable Diseases of Eyes of School Children and Their Prevention, F P Schnster El Paso—p 225

Cataract Surgery in India W S Webb Fort Worth—p 227

Bacteriologic Studies of Epidemic of Diarrhea—During September, October and November 1934 Terrell and Owen observed an epidemic of diarrhea affecting infants, children and adults in Fort Worth, Texas and its surrounding territory. In Fort Worth alone the number of cases was well into the thousands, cases in infants and children predominating. Etiologic studies of the diarrhea epidemic were made by physicians in private practice, clinical laboratories and, to a certain extent by the city health department. Water, milk and food supplies were carefully investigated. The diets of the infants had been varied, some being fed powdered milk and others evaporated milk many had boiled cow's milk and a number were breast fed. Clinically the condition simulated Sonne's dysentery to such a degree that cultures of stools and agglutination tests of the blood for this condition, Hiss-Y Duval Shiga Flexner dysentery and the typhoids were made in fourteen cases all were negative. Almost all the cultures made from fresh stools showed a predominance of large gram positive diplococci that were neither hemolytic nor green producing. These cultures were best obtained from the freshest stools. In a few instances the first transplants showed practically pure cultures of streptococci. Stools from thirty patients exhibited streptococci as the predominating organisms sixteen of these were examined for fermentation. All the cultures fermented dextrose, lactose, maltose and sucrose, and all except one fermented mannite. The diplococcus in these cases differed from Bagen's diplococcus in that all the cultures except one fermented mannite. Cultures from twelve of the patients were given intravenously to rabbits (20 cc of a twenty-four hour culture) seven of which showed lymphoid hyperplasia and hemorrhages in the mucosa of the colon with superficial ulcerations similar to those seen in the intestine of the babies on whom necropsies were done. One of the experimental animals exhibited lymphoid hyperplasia and a congested intestinal mucosa with a very large amount of mucus but no ulcerations four exhibited no gross changes. Eight of the rabbits had

bloody mucus in the stools. The colon of one rabbit was filled with clear, light yellow, jelly-like material. Cultures from the ulcers and intestinal contents showed gram-positive diplococci that had the same cultural characteristics as those isolated from the patients. The treatment of the patients in this epidemic consisted of isolation, as the diarrhea was probably transmitted by direct contact. For the dehydration, abundant fluids were given, consisting chiefly of Hartman's solution by hypodermoclysis, intraperitoneally and intravenously. The infants were given fat free milk with a moderate amount of carbohydrates and increased proteins. The older children were given skimmed milk, bananas, banana powder and case. Opiates were given only when the stools became too frequent. Enemas of physiologic solution of sodium chloride or sodium bicarbonate relieved the tenesmus and seemed to hasten recovery.

Yale Journal of Biology and Medicine, New Haven

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Thomas Lodge Doctor of Physick N B Paradise New Haven Conn—p 499

Pulmonic Endocarditis Clinical and Pathologic Report of Three Cases D M Grayzel New Haven Conn—p 515

*Chronic Cystic Mastitis as Physiologic Aberration and Its Significance in Diagnosis and Treatment of Tumors of the Breast S C Harvey New Haven Conn—p 521

Dysmenorrhea Clinical Note E L Stone New Haven Conn—p 533

Bacteriophage Inhibition by Serum M L Rakieten G Zalkan and T L Rakieten New Haven Conn—p 541

Chronic Cystic Mastitis—Harvey points out that there is a sharp line of demarcation between carcinoma and cystic mastitis. In the former the natural history of the disease is that of a malignant state, in the latter of benignity. The histologic picture of the benign lesion, particularly during the most active phase of physiologic hyperplasia, often gives the impression that the epithelium is about to plunge through the barrier of the membrana propria and establish an invasive focus of cancer. The histologist hesitates to call such a picture benign, an equivocal answer may be found in terming it "precancerous," in which case he is always right whatever the later course of the disease may disclose. Bloodgood has pointed out that, when the proliferating epithelium is not unquestionably and readily seen to be invasive, the lesion is benign. Therefore, a true malignant condition does not simulate benign disease, whereas many forms of benign disease may suggest histologically the malignant. The fallacies of the determination of the incidence of cancer in chronic cystic mastitis are twofold: one is the assumption that the diagnosis of microscopic cancer is valid, the other that the sampling of instances of this cystic disease is a fair one and therefore that the incidence of cancer is high. One cannot emphasize too strongly the difficulties of a differential diagnosis in a situation in which an error may be fatal. In the generalized disease without an individual tumor or definite localization, the chances of error are so small that operative attack is unjustifiable. But when there is a definite tumor or a localized area of disease, the error of diagnosis increases to the point at which actual examination of the excised tissue must be obtained. Hart has followed up a borderline group which is supposedly most malignant in potentiality that is the intracystic papillomas. It seems that about 20 per cent of this so called borderline group are malignant and that the error of clinical diagnosis is less than 3 per cent for the group as a whole and about 10 per cent for the malignant component. It is unsafe to depend on a purely clinical diagnosis in such instances and excision of the tumor or area in question, often involving a quadrant of the breast or, when the involvement is greater a conservative total mastectomy is necessary. When the clinical diagnosis of carcinoma is presumptive the attack should be a radical mastectomy at once. The differential diagnosis and treatment of tumors of the breast rests on a concept of the so-called chronic cystic mastitis as an aberration of the cyclic changes in that organ associated with estrus, that is to say, it is a benign lesion. In the generalized form diagnosis is safe but in the types limited to certain areas in the breast or to a single tumor, exploration is necessary because the differential diagnosis from cancer cannot be made with sufficient security.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anæsthesia, Manchester

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Avertin: Analysis of Sixteen Hundred Administrations. F. E. Shipway —p. 151

Spinal Anesthesia. J. Sebrechts —p. 176

British Journal of Physical Medicine, London

10: 41-56 (July) 1935

Physical Methods in Treatment of Cardiovascular Disease. F. Bach —p. 42

Close Radiation of Carcinoma of Neck of Uterus by Body Cavity Tube. W. Schaefer —p. 46

Fibrositis of Neck. E. Cyriax —p. 49

The "Fango" Method of Treatment in Rheumatism. D. D. Brown and A. Woodmansey —p. 51

British Journal of Surgery, Bristol

23: 1-240 (July) 1935

Carcinoma of Gallbladder. C. F. W. Illingworth —p. 4

*Operative Treatment of Fibrous Stricture of Rectum: Description of New Technic. J. P. Lockhart-Mummery and O. V. Lloyd Davies —p. 19

Notochordal Tumor of Cauda Equina in Child of Eight Years. V. H. Ellis —p. 25

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Hyperinsulinism Relieved by Partial Pancreatectomy. Case. J. A. Berry —p. 51

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Omental Torsion with Unusual Symptoms. C. R. Salisbury —p. 115

Strangulated Internal Hernia: Report of Cases of Strangulation in Fossa Iliacosubfascialis and Through Foramen of Winslow. G. F. Langley —p. 119

Value of Urea Clearance Test in Urinary Surgery. E. W. Riehes and J. D. Robertson —p. 128

Effect of Tracheal Occlusion on Hypertrophy of Thyroid Transplants and Remnants. E. W. Workman and G. G. Miller —p. 141

Cholecystography: Its Present Clinical Value. R. McWhirter —p. 155

Unusual Tumor of Neck. R. E. Norrish —p. 188

Operative Treatment of Stricture of Rectum—A case is presented in which a procedure was adopted that Lockhart-Mummery and Lloyd-Davies believe to be original and seems to offer an alternative to Hartmann's method of resecting the stricture. It gave a better result than could have been obtained by resection. It is not applicable in all cases of fibrous stricture of the rectum, as it is essential that free access should be obtainable to the whole of the strictured area. Since the operation does not involve opening the peritoneum, it is very much safer than a resection operation. The patient was given a low spinal anesthetic and then placed in the Sims position. The rectum was thoroughly washed out with a weak antiseptic solution and an incision was made in the midline posteriorly, extending from a point over the lower part of the sacrum to a point just behind the anal orifice. The coccyx was removed and the postrectal fascia divided. The rectum was then freely mobilized by stripping it from the pelvic wall on each side. In this way it was possible to draw down into the wound that part of the rectum containing the stricture. A considerable amount of dense fibrous tissue had to be divided before the actual rectal wall could be exposed and the stricture was then divided longitudinally into the rectum, the incision extending into healthy intestine both above and below the narrowed portion. Tissue forceps were placed on the edge of the rectal wound on each side in the middle of the longitudinal incision and the rectum was drawn open. A large rubber tube was next passed into the rectum through the anus, the upper end passing well above the strictured area. The incision in the rectum was closed transversely by interrupted catgut sutures, with the knots on the mucous side, and covered by a second line of Lembert sutures. The fascia was stitched over the line of suture and the skin was closed, a small drain being placed in the upper part of the wound. The drainage tube in the wound was removed in

twenty-four hours and the rectal tube in four days. Satisfactory healing took place except for a small sinus, which healed in a few weeks. On examination of the rectum no sign of stricture was present. A year has elapsed since the closure of the colostomy, and the patient's bowels open normally and regularly every day and there is no sign of the original stricture.

Posterior Segmental Block Excision of the Neck of the Bladder—Harris presents the operation of posterior segmental block excision of the neck of the bladder with primary closure in the belief that it is an improvement on the well recognized operations of cuneiform (or wedge) resection and of complete extirpation of the neck of the bladder. The operation has been carried out in thirty-three cases without mortality. After the base of the bladder is exposed by the same technic as the author employs for prostatectomy, the tip of the right forefinger is gradually but firmly insinuated through the internal meatus. Two fingers of the left hand are passed into the rectum and provide an invaluable point of counterpressure during this maneuver. Two deep traction sutures are placed in position, one on each side about half way round the dilated prostatic rim. Following this, at least three-fourths inch of the hindmost sector is excised. In order to carry out this excision two deep parallel vertical incisions are made, one on each side of the midline and reaching down to the level of the floor of the prostatic urethra. The intervening lip is then firmly drawn up by traction forceps and cut out deeply and cleanly in a transverse direction by sharp scissors. The bared base must be carefully examined and, if need be, trimmed up. It is important that no gross fibrous or adenomatous remnants be left at this site. The crosscut ends of the prostatic rim are next freely undercut on each side to permit of their complete retraction. Two deep hemostatic sutures are then passed on each side behind the two traction sutures that were inserted prior to the excision. These sutures also serve to turn in on each side the bared face of the crosscut ends, thus eliminating the raw surface. When hemostasis has been accomplished, retrigonization is carried out and completes the plastic portion of the operation. The anterior obliterative sutures employed after suprapubic prostatectomy are not required for this operation, as the anterior segment of the neck of the bladder has not been interfered with and there is no raw surface left to obliterate. A number 22 French rubber catheter is passed through the urethra into the bladder, and its end including the eye, is cut off after an opening has been cut about 1 inch behind the eye. The catheter is suspended in position by a silkworm intestinal suture. The bladder and abdominal wounds are completely closed and the silkworm intestinal suture is suspended to a small glass rod on the abdomen according to the author's practice after prostatectomy. The after-treatment is the same as that employed after prostatectomy.

British Medical Journal, London

2: 147-194 (July 27) 1935

Famly Tuberculosis Due to Bovine Tubercle Bacilli. A. S. Griffith and W. T. Munro —p. 147

The Acute Hemolytic Anemia of Lederer. H. Joules and L. M. Masterman —p. 150

*Histidine Treatment of Peptic Ulcer of Lesser Curvature: Note on Twelve Cases. D. Smith —p. 154

Closed Methods of Anesthesia in Surgery of Chest. Note. J. Halton —p. 159

Localized Nonsuppurative Encephalitis of Otitic Origin. J. B. Horgan —p. 161

Histidine Treatment of Peptic Ulcer of Lesser Curvature—Smith employed the histidine treatment of peptic ulcer in twelve cases that fulfilled certain criteria: (1) a history suggestive of gastric ulcer, (2) the exclusion of cases obviously surgical and (3) unequivocal roentgen evidence of ulcer of the lesser curvature. Ordinary diet was permitted without restriction. Daily injections of 5 cc. of a 4 per cent solution of histidine were given. No other form of treatment was used. Of the twelve cases, seven were treated in the wards in order to study them more carefully, and five were treated as ambulatory cases in private. The hospital patients were allowed to be up, and they assisted in various ward duties. Four private patients continued their ordinary occupations, and one was up and about but not at his work. The first symptom to disap-

pear was discomfort. This refers to the vague feelings of fullness, soreness, nausea and tastes in the mouth. Vomiting was almost immediately controlled, and before long pain ceased to be a disturbing factor. Loss of appetite was not a common complaint, but, when present, there was a speedy return of a desire for food. The patients soon had a better color, and their weight increased each week. In no case was there a failure to gain substantially in weight. In cases in which there had been gastric retention due to pylorospasm the emptying time improved. The better function was also seen in the relief from constipation. Definite flatulence was the most obstinate subjective symptom. In two cases, in which it persisted throughout the whole course of injections, it was completely relieved by the daily administration of two tablets each containing one-fifth grain (0.013 Gm) of histidine. Tenderness on palpation was present in all cases until several injections had been given, but the most refractory yielded after the twentieth dose. Striking roentgen improvement was observed.

Guy's Hospital Reports, London

85 129 248 (April) 1935

- William Henry Trethowan I. Some Personal Impressions J. J. Conybeare—p. 131
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Criterion for Treatment of Asthma E. T. Conybeare and L. J. Watts—p. 138
Delayed Chloroform Poisoning in Obstetric Practice Clinical Study Reports on Three Cases G. F. Gihberd—p. 142
Cirrhosis of Liver with Ascites Due to Novarsenobenzol Case J. R. Forbes—p. 161
Leuko-Erythroblastic Anemia with Account of Four Cases I. G. Robin—p. 163
*Monocytic Leukemia Case W. N. Mann—p. 178
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Hyperpiesia with Cerebral Crises Two Cases I. Hyperpiesia with Amaurosis A. M. G. Campbell—p. 191
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Achalasia of Cardia Associated with Chronic Gastric Ulcer Two Cases H. J. Starling—p. 197
Achalasia of Cardia with Severe Pressure Symptoms I. Achalasia of Cardia with Pressure Symptoms Relieved by Antispasmodic Drugs Two Cases H. J. Starling—p. 201
Id. II. Achalasia of Cardia with Pressure Symptoms and S-Shaped Distortion of Lower End of Dilated Esophagus F. E. Camps—p. 203
Severe Melena from Polyp of Meckel's Diverticulum H. J. Starling—p. 207
Portable Thermo-Electric Couple for Measuring Skin Temperature R. T. Grant—p. 209
Hysterical Tetanus J. J. Conybeare—p. 212
*Headache as Feature of Ménière Symptom Complex L. H. Cohen—p. 215
Cerebellar Hemorrhage Case R. H. Blazehy—p. 225
Observations on Erythema Nodosum and Erythema Induratum G. P. A. Whitwell—p. 227
Myelolipoma (Bone Marrow Heterotopia) of Suprarenal Gland Case S. De Navasquez—p. 237
Report on Treatment by Radium at Guy's Hospital 1930-1933 I. Surgical Cases P. Reading—p. 241

Monocytic Leukemia—Mann describes a case of monocytic leukemia with an account of the necropsy and microscopic examination of the tissues, and he analyzes fourteen such cases. The history of monocytic leukemia may be divided into two phases. The first, lasting a few months, is marked by infection, progressive pallor and lassitude. The second, the beginning of which is often marked by ulceration of the gums and in which a stomatitis is almost invariable, consists of a rapid deterioration of the patient, often with further necrosis in the mouth. The spleen and liver are palpable in about half the cases, but the enlargement is rarely extreme. Enlarged lymph nodes other than those draining the infected area in the mouth are present only in less than half the cases. The second phase is associated as a rule with a rapid increase in the number of circulating white cells, a high proportion of which are mature monocytes. The case described is evidently a typical case of monocytic leukemia of the acute variety. The first subacute phase of progressive weakness and increased pallor lasted about five weeks and was followed by an acute terminal illness of a duration of six days. Blood counts showed typical mature as well as immature monocytes while the postmortem exami-

nation revealed leukemic infiltration in many organs, with reticular hyperplasia in the spleen and lymph nodes.

Headache as a Feature of Ménière Symptom Complex—Cohen reports eleven cases in which the picture of the Ménière symptom complex was present, with particular reference to headache. The nature of the headache did not appear to be characteristic, since it was variously described as sharp, dull, continuous, intermittent, throbbing, stationary or radiating. Its localization, however, seemed characteristically to be in the sagittal plane of the head (frontal, vertical, occipital or radiating in this plane). Headache is a more common feature of the Ménière symptom complex than tinnitus and should for this reason be more generally recognized as important in the diagnosis of the condition. The data of the cases bear more specifically on the neurologic aspects of the disorder. Of the eleven cases, in seven there were positive family histories for organic nervous system disease in the immediate line, in nine cases there were neurologic signs other than those referable to disease of the middle ear. It would appear, therefore, that an organic neurologic basis for this disorder is primary. It does not necessarily follow that the headache found in the Ménière symptom complex is also primarily neurologically conditioned, since it may arise in association with circulatory changes. On the other hand, the fact that in seven of the cases headache was present from the beginning of the symptomatic stage, if not before, argues for a common origin of this symptom with the others (vertigo, tinnitus, deafness). The fact that the headache was localized would argue against circulatory dysfunction as its primary cause. The sagittal headache is localized in and/or over the surface projection of the falx cerebri and the tentorium cerebelli. These anatomic structures are formed by a reduplication of dura mater. Why headache has this localization in this condition, the author states cannot be accounted for on the basis of his data.

Japanese Journal of Experimental Medicine, Tokyo

13: 275 356 (June 20) 1935

- Studies on Mitochondria and Metachondria of Gland Cell of Pancreas I. Suzuki—p. 285
*Experimental Serotherapy of Smallpox. H. Yaori—p. 307
Microdosage of Formol S. Ohya—p. 327
Studies on Virus of Lymphogranuloma Inguinale Nicolas Favre and Durand. Y. Miyagawa T. Mitamura H. Yaori N. Ishii and J. Okanishi—p. 331
Studies on Etiology of Scarlet Fever A. Imamura H. Ono T. Endo and I. Kawamura—p. 341

Experimental Serotherapy of Smallpox—Yaori obtained an active antiviral serum by repeated subcutaneous inoculation into the goat of the purified vaccinia virus, the inoculations were made with successively increasing amounts of vaccinia virus over a period of from three to seven months, with an interval of five days. Provided the amount of the purified vaccinia virus inoculated into the marginal vein of the ear of rabbits (weighing 1,000 Gm.) was sufficient to produce a generalized skin lesion, a generalized vaccinia occurred on the fourth or fifth day, but in case of animals weighing about 2,000 Gm. the occurrence of generalized vaccinia was postponed until the seventh day. In animals thus inoculated with the vaccinia virus, if later treated with the antivaccinal serum either intravenously or intramuscularly, the appearance of eruptions is completely or strongly inhibited. The effect of the serum appears not in the least different according to the divergent periods of its administration, i. e., from one to seventy-two hours after the infecting inoculation. Monkeys (*Macacus fuscatus* and *rhesus*) inoculated with a strain of variola virus by the intravenous route develop a generalized lesion five days later. The appearance of the eruption resembles human smallpox. The eruption proceeds to papule, vesicle and pustule, further scab formation and its falling off, and scars remain at least until the twenty-seventh day, as depilated white spots. In a monkey thus previously infected with a variola virus, if injected with the antiviral serum intramuscularly while it is developing papules or vesicles the eruptions are so influenced as never to proceed beyond the pustule stage, and quick drying and falling off of scabs set in and the eruption clears up completely. The quick disappearance of disease symptoms, recovery of the well being and appetite and an increase in body weight are evident.

Presse Médicale, Paris

43:1081 1104 (July 6) 1935

- *Paralysis of Vasomotor System by Volatile Industrial Solvents L. Dautrebande—p 1081
Distribution and Evolution of Vitamin C in Body A Giroud and C P Leblond—p 1085

Vasomotor System and Industrial Solvents—Dautrebande discusses the mode of action of the volatile industrial solvents, such as benzene, petroleum ether, amyl acetate and cellulose varnish. Most of his observations were made on anesthetized dogs. He concluded that the volatile solvents possess the property of paralyzing the vasomotor system and that this intoxication is rapid like detoxification. The action does not affect the centers but bears on the periphery and especially the smooth muscle of the vessels. Both in the intact animal and in isolated organ preparations reversibility of the effect is dependent on the duration of action of the poison. In general, if the intoxication by benzene does not exceed two minutes, the isolated organ renews its spontaneous contractions if placed in pure Ringer's solution. If longer than three minutes, this does not occur. This paralyzing action at the level of the muscle itself affects all the muscles approximately equally.

43 1105 1120 (July 10) 1935

- *Degenerative Lesions of Liver and Insulin Resistant Diabetic Coma M Labbé R Boulin and Balmus—p 1105
Intoxication by Polypeptides P Cristol—p 1107

Lesions of Liver and Diabetic Coma—Labbé and his co-workers report observations of the liver in four fatal cases of diabetic coma. In all instances the patients were in complete coma with abolition of reflexes. The urine regularly showed glycosuria and diacetic or beta-oxylbutyric acids. The blood constantly presented a low alkali reserve. In spite of strong doses of insulin, the patients all died the same day or the next. In all cases glycosuria persisted throughout. Three of the patients showed symptoms of cardiac collapse. Renal lesions involving principally the glomeruli, largely old and usually slight, were found. The liver changes were more important and consisted in increase in volume of the organ, which weighed from 1,950 to 3,400 Gm., disappearance of the lobular structure and changes in the cells involving fatty infiltration in two cases and spongy aspect in the other two, the nuclei being often absent or poorly colored. The authors believe, therefore, that there is thus a fourth type of hepatic lesion in diabetes. It is possible, though not confirmed, that renal and hepatic insufficiency constitute important factors in insulin resistance and are accountable for part of the mortality from diabetic coma.

43 1137 1152 (July 17) 1935

- *Staphylococcus Anatoxin and Its Use in Specific Treatment of Certain Staphylococcal Disorders G Ramon A Bocage R Richou and P Mercier—p 1137
*Vaccinotherapy by Staphylococcus Anatoxin P Nélis—p 1141

Staphylococcus Anatoxin—Ramon and his collaborators report the results of treating certain local staphylococcal infections with toxoid. The toxin was obtained by growing the staphylococci in a semisolid medium composed of bouillon and gelose. This medium, with or without sugar, is inoculated with a toxigenic strain. A gaseous current consisting of 80 per cent air and 20 per cent carbon dioxide is passed over the culture. After five days of incubation at 37 C it is filtered, the filtrate containing the toxin. The antigenic power of the toxin can be tested in vitro. To this bouillon, formal is added (4 cc per liter) and left in the drying oven at 39 or 40 C for two weeks. The important properties to determine are the innocuousness and the intrinsic antigenic power. The latter is expressed in antigenic units of flocculation. The patients were treated first with injections of diluted and later of the undiluted toxoid. In the majority of instances both were well tolerated. Local reactions were commonly slight and transitory. General symptoms occurred less commonly but were not severe. Focal reactions were rare. The therapeutic effect was encouraging from the beginning. Forty-two patients having obstinate furunculosis were treated and thirty-seven recovered. Of twenty-two having simple chronic furunculosis and of seventeen having incidental furunculosis, all recovered. Nineteen patients

of twenty-three having pustular acne recovered. Six patients with sweat follicle infections and perionyxis recovered. The authors conclude that the results are satisfying.

Vaccinotherapy by Staphylococcus Toxoid—Nélis discusses the use of toxoid in various staphylococcal infections. His results especially in furunculosis were usually good and he believes that this method of vaccinotherapy is superior to all other methods of treatment heretofore employed in local staphylococcal disorders.

Giornale di Clinica Medica, Parma

16 1117 1230 (Aug 10) 1935 Partial Index

- *Trimethylamine in Urine in Normal and in Certain Pathologic Conditions G Monasterio—p 1117
Intravenous Injections of Insulin Clinical and Experimental Study A Gnarino and M Stellatelli—p 1132
Hemotherapy Morphologic Picture of Blood L Gipperich—p 1156
Functions of Heart and Electrocardiogram After Effort in Bronchial Asthma E Castellani and Lina Gozzi—p 1175
Mediastinal Hernia Cases G Reggiani—p 1201

Trimethylamine in Urine—Monasterio made determinations of the contents of trimethylamine in urine in normal and in certain pathologic conditions and concludes that trimethylamine is a constituent of urine that under normal conditions varies between 0.0009 and 0.00303 Gm per hundred cubic centimeters of urine and between 0.00108 and 0.003412 Gm in the total amount of urine eliminated during twenty-four hours. Trimethylamine is a product of the metabolism of certain phosphatides and betaines. Its origin in the putrefaction of lecithins, choline and certain food proteins in the large intestine is scanty. Probably synthetic processes of the substances, on the one hand, and oxidative or hydrolytic processes, on the other, are involved in the production of urinary trimethylamine. There is no parallelism between trimethylaminuria and indicanuria. The elimination of urinary trimethylamine increases in normal conditions after abundant ingestion of either meat or lecithins and in pathologic conditions that stimulate the catabolism of the phospholipins and body proteins, such as diseases of the nervous system, diabetes and cachectic diseases. Its increase in diseases of the liver is explained by the fact that the defective functions of the organ result in insufficient catabolism and the use of the amines in the processes of synthetization of choline and lecithins.

Klinische Wochenschrift, Berlin

14: 1129 1160 (Aug 10) 1935 Partial Index

- Studies on Action of Resuscitation Measures in Experimental Asphyxia S Koeppe—p 1131
*Occurrence of Variants of Spirochaeta Icterohaemorrhagiae (Spirochete of Weil's Disease) H Schlossberger J Grillo and L Scheele—p 1133
Carbohydrate Metabolism of Warm Blooded Animals During Muscular Exertion E Jökl—p 1139
*Behavior of Amount of Bile Pigment in Blood in Intensive Muscular Exertion L Stanoević and Sava Petrović—p 1146

Variants of Spirochaeta Icterohaemorrhagiae—In the examination of numerous serums from patients with infectious jaundice for the presence of agglutinins and lysins for Spirochaeta icterohaemorrhagiae, Schlossberger and his associates were able to corroborate the observations of Baermann and Zuelzer, namely, that the majority of serums react with various strains of Spirochaeta icterohaemorrhagiae but that there are some serums that in the agglutination and lysis experiments give positive results only with a few of the strains, occasionally only with one. Repeated tests on the serum of the same patient (withdrawn at different times) occasionally reveal an increase in the number of strains that can be influenced in the agglutination and lysis tests. The agglutination and lysis experiments indicate that, in examining serums from patients in whom an infectious jaundice is suspected, it is necessary to test a larger number of different strains of Spirochaeta icterohaemorrhagiae in order to obtain reliable results. Moreover, the results of the experiments correspond with the observation that the potent monovalent antisera against infectious jaundice which are obtained by the immunization of rabbits influence many but not all the strains of Spirochaeta icterohaemorrhagiae. On the basis of these observations, as well as of prophylactic experiments with monovalent antisera (passive immunity) and of active immunization experiments with monovalent iodine and formal

dehede vaccines, it may be assumed that the spirochetes of Weil's disease cannot be differentiated into sharply defined types, but rather that the antigen apparatus of the various strains is probably composed of different partial antigens and that the distribution of these partial antigens differs in the various strains. The authors conclude that in the serotherapy of infectious jaundice only the polyvalent immune serums give any prospect of therapeutic efficacy.

Bile Pigment in Blood in Muscular Exertion—Stanojevic and Petrovic state that it is generally assumed that under physiologic conditions the spleen is the source of the bilirubin that appears in the blood. For this reason, some investigators succeeded in producing an increase in the bilirubin content of the blood by causing contraction of the spleen by means of epinephrine injections. Since muscular exertion leads to contraction of the spleen, the authors decided to investigate the behavior of the bilirubin content of the blood during and after muscular exertion. Their studies were made on healthy young men who were not accustomed to intense muscular exertion. The bilirubin was determined according to the method of Hymans van den Bergh by means of Autenrieth's colorimeter. Specimens of blood were withdrawn before, during and after muscular exertion. It was found that intense muscular exertion increases the bilirubin content of the blood by from 20 to 45 per cent. The increase becomes noticeable within the first few minutes of the exertion and reaches its maximum at the end. During the rest period the bilirubinemia decreases gradually, but in the majority of cases it does not entirely return to its initial value even after a prolonged rest. If the muscular exertion is resumed, the bilirubin content increases again, but it is now less than during the first exertion. The experiments indicated that the intensity and the duration of the exertion influence the increase in the bilirubin content.

Medizinische Klinik, Berlin

31:997 1028 (Aug 2) 1935 Partial Index

Surgery of Liver and of Extrahepatic Bile Passages P Walzel—p 997

Prevention of Communicable Disease in Children's Institutes E Slawik—p 1005

Diagnostic Mistakes in Bone Tumors V Lieblein—p 1008

Therapeutic Use of Phenol as Caustic in Dermatology C L Karrenberg—p 1010

*Case of Rumination Lotte Sylla—p 1011

*New Method for Testing Pectoral Fremitus D Sucić—p 1012

Rumination—In the case reported by Sylla a woman, aged 26 complains that about twenty minutes after a meal her food comes up again. She chews it again and then swallows it, but some of the food is extremely bitter and is expelled by the patient. Particularly after sweet foods she has an unpleasant feeling of pressure in the region of the stomach. She has had this disorder since her twelfth year and for several years has had recurrent attacks of severe gastric spasms. The roentgenologic examination disclosed an enlarged stomach, which after filling showed a peristaltic wave in the upper portion from which retroperistaltic ascending waves could be observed. The raising of the food was effected by the action of the abdominal muscular pressure by the action of the diaphragm by retroperistaltic waves and by the opening of the cardia following eructation of air. The patient's condition could be improved by gastric lavage and by giving small quantities of food at short intervals. In this case the disorder was apparently a combination of aerophagia and rumination. The cause of rumination is not fully understood. The older writers consider some cases hereditary and others the result of a neuropathic constitution. In the reported case there were indications for neither of these origins.

New Method for Testing Pectoral Fremitus—Sucić shows that pectoral fremitus together with bronchial respiration and bronchophony, make up the triad of symptoms by means of which an abnormal sound permeability of the pulmonary parenchyma can be detected. To be sure bronchial respiration is the most important of the three in the recognition of infiltrative processes in the pulmonary parenchyma but although bronchophonia and pectoral fremitus have as a rule only confirmative value in connection with the results of the

bronchial respiration, there are some cases in which they furnish the most important auscultatory signs. The author discusses the sound mechanism of pectoral fremitus and shows that when, as is usually the case, pectoral fremitus is elicited by letting the patient speak loudly, it is essential that the vocal cords function properly. However, in patients with aphonia, such as those who have a laryngeal stenosis or who have undergone a laryngectomy or a tracheotomy, it is impossible to elicit the pectoral fremitus by letting the patient speak loudly. The author found that hawking or coughing will produce a clear pectoral fremitus. He found that in patients with normal vocal cords hawking is more effective, while in patients with aphonia, particularly in those who have undergone tracheotomy or laryngectomy, better results can be obtained by urging the patient to cough. The author illustrates this with several case reports and explains the mechanism that is involved when pectoral fremitus is elicited by hawking or coughing.

Monatsschrift f Geburtshilfe u Gynäkologie, Berlin

99 321 380 (July) 1935

*Hypophyseal Disturbances Following Pregnancy and Delivery L Seitz—p 321

Premature and Early Rupture of Bag of Waters Its Pathogenesis and Therapy E W Winter—p 332

Dermographism During Period of Gestation H Eufinger and H Krupp—p 343

Unilateral Krukenberg Tumor H G Müller—p 348

Pathologic and Clinical Aspects of Heterotopic Endometrioid Proliferations M Karlin and Alexandra Osajkina—p 353

Hypophyseal Disturbances Following Pregnancy—Seitz mentions factors that indicate the dominating position of the hypophysis among the endocrine glands and in the metabolic processes and as an explanation he cites the fact that through the infundibulum the hypophysis is in direct connection with the diencephalon the site of the sympathetic centers. Considering the great changes that take place in the organism during pregnancy, it is not surprising that the hypophysis is to a great extent involved in these changes. It has been determined that the hypophysis becomes considerably enlarged during pregnancy. This hypertrophy involves chiefly the anterior lobe and especially the main cells, whereas the acidophils and the basophils are not increased. For this reason the main cells have been referred to as pregnancy cells. The author gives his attention to changes and disturbances that occur during pregnancy and after delivery the symptomatology of which indicates a connection with irregularities in the hypophyseal function. He points out that an abnormal function of the hypophysis may become manifest during pregnancy in that the woman's hands, feet nose and chin become enlarged. Mild forms of this acromegaly of pregnancy and even a severe form are occasionally observed. The author noticed a considerable number of women who had polydipsia and polyuria during their pregnancy, and he describes one case in which acromegaly and diabetes insipidus occurred during pregnancy. He discusses hypophyseal disturbances that develop after delivery. He calls attention to the so called lactation atrophy of the uterus and expresses the opinion that lactation is only a contributing cause and that the hypophysis plays an important part in this phenomenon. He thinks that a severe hyperinvolution and atrophy of the uterus after delivery is the first and mildest manifestation of an excessive involution of the hypophysis. Then he gives his attention to the hypophyseal obesity that occasionally develops after delivery. This condition is usually accompanied by oligomenorrhea or by amenorrhea, and the author considers it the result of an excessive involution of the hypophysis. This assumption is corroborated by the fact that hypophyseal preparations exert a favorable influence on this condition. Estrogenic substance also seems to have a favorable effect, however, its effect is not as satisfactory as that of the hypophyseal preparations. Another disorder that may result from a hyperinvolution of the hypophysis is emaciation. The author concedes that it may appear contradictory to ascribe obesity and emaciation to the same cause, but he asserts that the contradiction is only apparent, there being only a difference in the degree of the hypophyseal changes. The hypophyseal emaciation that develops after delivery is really a mild abortive form of Simmonds' disease. The author describes a case history in which ovarian

preparations proved ineffective but the administration of hypophyseal preparations was followed by the disappearance of the symptoms. Whereas the aforementioned conditions were caused by a hypofunction of the hypophysis as the result of hyperinvolution, there are also cases in which disturbances result from a retarded or insufficient involution of the hypophysis. In this connection the author mentions certain cases of subinvolution of the uterus with hemorrhages. In such cases curettage is usually effective.

Monatsschrift für Kinderheilkunde, Berlin

63: 161-240 (July 20) 1935

*Aspects of Heerfordt's Syndrome (Uveoparotid Fever) M. Haferkorn—p. 161

Aspects of Pneumococcal Meningitis During Childhood P. Bode—p. 165

Symptomatology of Essential Hypertension During Childhood Leonore Liebenam—p. 171

*Articular Manifestations in Infantile Leukemia B. Fuchs—p. 185
Studies on Diameter of Erythrocytes During Childhood H. Fischer—p. 194

Circumscribed Pulmonary Emphysema in Tuberculosis of Lymph Nodes at Root of the Lung Min Shu Chao—p. 205

*Is Rickets in Spasmophilic Children with Tetany Always in Same Roentgenologically Demonstrable Stage? E. E. Joepchen—p. 217

Aspects of Heerfordt's Syndrome (Uveoparotid Fever)—Haferkorn points out that Heerfordt's syndrome, in which fever, iridocyclitis and parotitis are the most noteworthy symptoms, occurs mostly in children and young persons. He describes a case of his own observation. In a boy, aged 13, there developed in rapid succession paralysis of the three branches of the facial nerve, swelling of the parotid gland and iridocyclitis. The patient also had polydipsia and polyuria. The author thinks that the polydipsia was the result of a deficient secretion of the parotid gland, for the existence of diabetes insipidus could be excluded because of the inefficacy of the hypophyseal preparations and on the basis of the sodium chloride tolerance test. The swellings of the parotid gland and of the bronchial lymph nodes yielded to roentgen therapy. In discussing the etiology of the uveoparotid gland, the author points out that Heerfordt assumed an infectious-toxic origin and rejected a connection with mumps. However, several other investigators gave consideration to the problem of chronic mumps, for in a number of cases, the reported case included, an attack of mumps preceded the development of Heerfordt's syndrome. Other authors assume a connection with tuberculosis. In the few cases in which a histologic examination of the eyes was done, the diagnosis of tuberculosis could be corroborated. In the author's case, roentgenologic examination of the lung revealed signs indicative of tuberculosis of the bronchial lymph nodes. Moreover, a calcified tuberculous focus was found in the abdomen and an excised piece of the parotid gland showed, on histologic examination, caseous granulation tissue, which doubtless was of tuberculous character.

Articular Manifestations in Infantile Leukemia.—Fuchs shows that the diagnosis of leukemia is difficult during childhood because during early childhood there is a physiologic lymphocytosis. Then there is a certain type of obese children in whom the spleen is palpable and who retain a lymphocytosis longer than is normally the case. Moreover, children occasionally have a tendency to respond to an infection with a lymphatic reaction. These factors show that in children the differential blood count may meet considerable difficulties when the possibility of a lymphatic leukemia has to be decided. The author relates the history of a girl, aged 3. The involvement of the joints made the diagnosis still more difficult. He describes another case with articular involvement. In this child there existed a lymphatic leukemia, the most noteworthy symptoms of which were severe pains in the joints, fever and inflammatory swelling of some of the joints. In view of these symptoms, articular rheumatism was first thought of. However, when swelling of the lymph nodes developed, a blood disease was suspected and the disorder was diagnosed as leukemia. In both cases areas of lesser density were noticeable in the bones, and the author considers these as characteristic for leukemia. Both children died, but, since necropsy was done in neither of them, there is no definite proof of the leukemic nature of the bone disorder. However, on the basis of reports of other investigators, the author concludes that

these bone changes were the result of a destruction of the normal bone structure by proliferating leukemic tissues. He thinks that the pains in the joints were likewise the result of leukemic proliferations in the *juxta-articular* portions of the bone. He reviews the literature on cases of leukemia that presented the aspects of febrile articular rheumatism and discusses the differential diagnosis, pointing out that, although osteitis fibrosa and Gaucher's disease may present similar roentgenologic aspects, their clinical aspects differ from that of leukemia. He concedes that the differentiation from acute articular rheumatism and from Still's disease may present considerable difficulties.

Relations Between Rickets and Tetany—Joepchen calls attention to the fact that studies by Rominger and his associates disclosed that, as the cure of rickets begins, larger quantities of phosphorus are retained, while the calcium retention is still insufficient. Thus the blood presents at this time the typical distribution of minerals that is found in tetany, and Rominger concluded from this that the tetany of children develops on the basis of rickets and is an accompanying symptom of a beginning cure of the metabolic disturbance of rickets, that tetany is, so to speak, the curative crisis of rickets. Gerstenberger maintained that an interruption of the antirachitic treatment leads to tetany. At any rate, he too thought that improvement in the rachitic bone process is demonstrable when tetany develops. The theories of both these investigators were corroborated by the observation of Hulschinsky and others, who, in the roentgenogram of the rachitic child with tetany, noticed calcium deposits in the preparatory calcification zone. However, since these authors had studied only a small material, the author decided to verify the observations on a larger material. All children with tetany who came to his clinic were subjected to careful roentgenologic control. He examined thirty children with tetany and made comparative studies on thirty children who had rickets but were free from spasmophilic manifestations. He observed the presence as well as the absence of calcium lines in children who had only rickets and in children who had rickets and spasmophilia. He was unable to detect a characteristic roentgenogram in children in whom rickets was combined with spasmophilia and considers it unjustifiable to accept the roentgenograms that show a calcium line as indicative of a curative phase of rickets. He thinks that this calcium line may also be the manifestation of incompletely developed rickets. He concludes that there is no roentgenologic proof that spasmophilia is a curative crisis of rickets.

Münchener medizinische Wochenschrift, Munich

82: 1225-1266 (Aug. 2) 1935 Partial Index

Constitution and Formation of Urinary Calculi G. B. Gruber—p. 1225
Criticism of Treatment and Prognosis of Poliomyelitis in Children H. Mai—p. 1228

Gymnastic After Treatment of Poliomyelitis in Children K. Bragard—p. 1231

*Bronchial Cancer of Smokers F. Lickint—p. 1232

Hyperchronic Anemia as Result of Subacute Liver Dystrophy H. Schoenemann—p. 1235

Ptoxis of Stomach Sutter—p. 1236

Bronchial Cancer of Smokers—Lickint cites reports which indicate that carcinoma of the organs which are within the so-called smoke tract (lips, oral cavity, larynx and so on) are more frequent in smokers than in nonsmokers. Then he gives his attention to bronchial carcinoma. He shows that in some smokers the bronchi are within the so-called smoke tract and that, as the habit of inhaling the smoke increases, the incidence of bronchial tumors increases likewise. He admits that bronchial carcinoma occurs also in nonsmokers and he recognizes that this indicates the existence of cancerigenous factors other than tobacco. Moreover, he concedes that not all bronchial carcinomas which develop in smokers are necessarily caused by tobacco, but he believes that tobacco is the chief cause in the majority of cases. In many cases the effect of tobacco probably concurs with other cancerigenous factors. The author reaches the conclusion that it cannot be doubted that tobacco smoke plays a part in the etiology of bronchial cancer and he thinks that the inhalation of tobacco smoke should be discouraged. Moreover, in persons whose family history seems to indicate a predisposition to cancer, smoking as such should be advised against.

82 1267 1306 (Aug 9) 1935 Partial Index

- Sterility and Its Treatment by Gynecologist H Eymers —p 1267
Anatomic Observations After Death from Hanging A Walcher —p 1273
*Essential Acetonemia of Children H J Sporn —p 1275
Geophagia of Primitive Peoples and Therapeutic Action of Earths L Wacker —p 1279
Hereditary Transmission and Treatment of Hemophilia C H Schröder —p 1281
Pectin Derivative as Hemostatic and Contribution to Treatment of Ulcerative Colitis H Kochs —p 1284

Essential Acetonemia of Children—According to Sporn acetonemic conditions are relatively frequent during childhood. Aside from the symptomatic forms of acetonemia that appear in the course of many infectious diseases during starvation in diabetic acidosis and in other conditions, there is the essential form, namely, the periodic or cyclic vomiting with acetonemia. In the latter condition, attacks of uncontrollable vomiting occur after intercurrent periods of complete health. These attacks appear suddenly or are preceded by several days of indisposition. During the attacks, which persist for several days or a week, the children present a wasted appearance and are unresponsive although conscious, their eyes are sunken and, as a result of considerable dehydration, their skin is slack. The respiration is forced and the expiratory air has an odor of acetone. The vomit at first contains remnants of food but later, after the intake of food has become impossible it consists chiefly of mucus and water with occasional traces of bile or blood. Occasionally the children complain of abdominal pains and often there is constipation. The liver is usually slightly swollen and the urine contains considerable quantities of acetone bodies. After several days the vomiting ceases and the other symptoms disappear. A new attack appears after several weeks or months. In addition to these typical attacks of periodic acetonemic vomiting there are also less characteristic rudimentary forms. These also recur periodically but they are not quite so severe. The author observed a number of cases of essential acetonemia, which differed from the described condition chiefly in that they lacked periodicity. He describes the clinical histories of several of these cases. No causal factor of the acetonemia could be found in any of these cases. The consciousness of the children became suddenly impaired. In some cases there was complete loss of consciousness and areflexia. Usually there was vomiting, with occasional attacks of convulsions. The respiration was forced, the expiratory air had an odor of acetone and the urine contained acetone. The severe symptoms disappeared, as a rule quite rapidly, consciousness returning after a day and the other symptoms disappearing within a few days. In addition to the lack of periodicity, this disorder differs from that described in the first part of the paper in that the loss of consciousness is more pronounced than the vomiting. Although the pathogenesis of these essential acetonemias is not completely understood, they are favorably influenced by the administration of carbohydrates in the form of dextrose.

Wiener klinische Wochenschrift, Vienna

48 983 1006 (Aug 2) 1935 Partial Index

- *Stenosis and Perforations of Large Bronchi and Their Significance for Pulmonary Disease F Fleischner —p 983
Angina Pectoris Problem from Point of View of Angina Pectoris in Severe Anemias O Zimmermann —p 987
*Compression Myelitis in Idiopathic Osteospathyrosis L Deutsch —p 990
Care of the New Born E Nobel —p 995

48 1007 1030 (Aug 9) 1935

- *Suprasellar Tumors A Schüller —p 1007
Most Suitable Treatment of Syphilis Particularly Its Early Cure and Prevention E Hoffmann —p 1010
*New Treatment of Sprains H Kraus —p 1014
*Stenosis and Perforations of Large Bronchi and Their Significance for Pulmonary Disease F Fleischner —p 1016
Anomalies in Position of Teeth H Pilcher —p 1019

Changes in the Large Bronchi—Fleischner discusses the significance of changes in the large bronchi for various pathologic conditions of the lung. He mentions bronchiectasis, the so-called congenital sac lung and honeycomb lung, hemoptyses of obscure etiology, temporary atelectasis, patients who eliminate tubercle bacilli and bronchial obstructions. On the basis of these observations he attempts to explain the pathogenesis of

the early phthisic infiltrate and of the temporary infiltrations. He discusses a ventilatory disturbance that is likely to develop when there exists only a slight stenosis of the bronchus. He thinks that this disorder is quite often the cause of bronchiectasis and that many and perhaps the majority of the cystic or honeycomb lungs observed in adults are the terminal stages of saclike bronchiectases. It would be a mistake to speak of congenital deformities in conditions of this kind, and instead of applying the term sac lung or honeycomb lung, which apply to congenital disorders, it would be better to use the term polycystic disease of the lung. The author shows that hemoptyses originate occasionally in the large bronchi, either in benign tumors, granulation tumors, hyperplasias of the mucous membrane of the bronchi or changes near tuberculous or anthracotic lymph nodes. Reactions in the surroundings of such foci of the lymph nodes, which usually belong to the primary complex, in the form of infiltration of the bronchial wall and perforation with complete or partial expulsion of the focus, lead by way of a bronchostenosis to atelectases and to atelectatic pneumonias of the corresponding pulmonary lobes. There are also perforations without atelectases, they explain the elimination of tubercle bacilli in persons without demonstrable tuberculous changes in the lungs. Complete cicatricial closure of a bronchus produces atelectatic densification of the corresponding pulmonary lobe, while incomplete closure favors the development of suppurating processes beyond the stenosis. It may be assumed that from bronchial perforations of tuberculous foci of the lymph nodes there frequently derives the material that will form the initial foci of the bronchiogenic phthisis. Many foci of the "exudative type," particularly many of the infiltrates along the edges of the lobes, are not really tuberculous foci, nor are they perifocal reactions but rather atelectatic engorgements.

Compression Myelitis in Idiopathic Osteospathyrosis—Deutsch describes the various conditions that favor the development of a compression or transverse myelitis, especially those in which a pathologic bone structure of the vertebral column exists. He discusses chiefly osteospathyrosis, which often produces no subjective symptoms but may cause spontaneous fractures of the vertebrae. He gives a detailed description of the case history of a woman who, since early childhood had repeated fractures, and this together with the blue scleras, the hardness of hearing and the calcium deficiency of the bones does not leave a doubt that osteospathyrosis, or at least a quiet similar disorder, existed. The case is worthy of attention especially because of the myelitic manifestations, which were the result of compression. The true nature of the disease was not detected until a roentgen examination was made following the development of the nervous symptoms, which were produced by the spontaneous fracture of a vertebra. The author calls attention to the similarities and differences between osteogenesis imperfecta and osteospathyrosis and reviews several other interesting cases of osteospathyrosis that have been observed by other investigators.

Suprasellar Tumors—In this summary discussion of the tumors of the suprasellar region, Schüller calls attention to the fact that in recent years the knowledge of the suprapituitary structures has greatly advanced but that there are still a number of unsolved problems particularly as regards the tumors of the suprasellar region. He points out that the most frequent and also the most dangerous symptom of suprasellar tumors is a bilateral involvement of the optic nerve but that quite frequently this symptom is not correctly interpreted, which may be due to the fact that it is often the only symptom of the tumor. He describes the various forms of suprasellar tumors and their symptomatology, particularly hypophyseal tumors and the disorders caused by them. He discusses the differentiation of the suprasellar neoplasms from such conditions as epidemic encephalitis, multiple sclerosis, basal syphilitic meningitis, tabes with blindness, traumatic hemorrhages in the region of the chiasma and internal hydrocephalus of the third ventricle, and from remote symptoms of other endocranial tumors and the disorders of endocrine glands other than the hypophysis. In discussing the treatment of suprasellar tumors, the author points out that in some tumors operation is impossible. Then he mentions several of the surgical procedures and irradiation and

shows that certain disturbances caused by the impairment of the endocrine function of the hypophysis may be influenced by substitution therapy in the form of enteral or parenteral administration of endocrine preparations

New Treatment of Sprains—Kraus mentions the various therapeutic methods that are employed in sprains and shows that the best results are usually obtained in persons who have received no particular treatment but who had the energy to disregard the pain and at once begin with the active exercise of the joint. He points out that among actors it is customary to apply alcohol to a sprained joint and hold it over steam. This stops the pain and makes movement possible. The author followed this suggestion and found that the application of ethyl chloride produces anesthesia of the articular ligaments and that active movements during this anesthesia counteract the stiffness of the joint. He describes the procedure he usually follows. After the diagnosis and roentgenoscopy, he determines the painful point and applies ethyl chloride to it. Freedom from pain is soon established and is protracted by dropping a mixture of ether-alcohol-acetone (100 parts each) and camphor (20 parts) on the joint. Then the patient is urged to make active movements, chiefly in the direction of the greatest functional impairment, which of course has to be determined before anesthesia is induced. The treatment is continued for from ten to twenty minutes and is repeated several times. The patient is urged to apply at home three times daily the alcohol and steam treatment and to do further exercises. The author recommends the treatment for all new sprains that come under the physician's care in the first week or two following the accident and for old relapsing sprains. The treatment is contraindicated in cases in which the articular ligaments are severely torn, or when an intra-articular exudate is present. He warns against excessive freezing with ethyl chloride. Then he reports several cases in which he employed the treatment. He thinks that the method may eventually prove helpful in the after-treatment of fractures as well as for diagnostic purposes and for painless reduction of incarcerated menisci.

Zentralblatt für Gynäkologie, Leipzig

50 1873-1920 (Aug 10) 1935 Partial Index

- *Puerperal Mastitis E Puppel —p 1874
- Tubal Sterilization H Fuchs —p 1876
- Uterus Bicornis in Obstetrics S Zanela —p 1879
- Tubal Rupture Simulating Intra Uterine Abortion W Briem —p 1891

Puerperal Mastitis—Puppel criticizes the treatment of mastitis by means of Bier's stasis and puncture incisions as unsatisfactory and stresses that, as in any other inflammatory process, the inflamed breast should be immobilized. He does not consider lactic stasis dangerous in mastitis, as some obstetricians do, because then mastitis should appear in abortions and in premature births. He thinks that external infection is the most frequent cause of mastitis, pointing out that rhagades are present in nearly all cases. The smallest fissure is sufficient to provide a port of entry for pathogenic organisms. For this reason it is advisable to take preventive measures as soon as fissures or rhagades appear. The breast should be immobilized and the child should not nurse, but the milk should be carefully pressed out. After twenty-four or forty-eight hours the fissures are healed sufficiently to let the child nurse again with the aid of a protector. Similar measures are resorted to if mastitis with high fever develops. The breast should be bound up, an ice bag applied and a vaccine preparation administered. The milk is pumped out only if the breast is overfilled. Nursing at the breast should not be resumed until fever has been absent for several days and after all signs of inflammation have disappeared. Since the author employed these measures, the mastitides that require surgical intervention have decreased greatly. That continuous nursing and puncture incisions are not advisable he observed in cases in which treatment was first given outside his clinic. He considers cessation of nursing also advisable for the sake of the infant, pointing out that the child may become infected. He cites a case in which continued nursing during mastitis resulted in a fatal septic pleuropneumonia of the nursing. The time at which incision should be done is largely determined by the type of the mastitis, whether a subareolar abscess, infiltration of a lobe, deep abscess formation or retro

mammary phlegmon. The author considers the latter condition most dangerous and requiring a wide opening. In these cases it is inadvisable to wait for fluctuation of the process or the positive outcome of an exploratory puncture. He thinks that in all cases in which it seems impossible to avoid abscess formation the incision should be made early so as to provide a discharge for the inflammatory products, because prolonged conservative treatment may lead to the destruction of large portions of the breast.

Hospitalstidende, Copenhagen

78 781 792 (July 23) 1935

- *Renal Injury in Traumatic Shock E Husfeldt and T Bjerling —p 781

Renal Injury in Traumatic Shock—Husfeldt and Bjerling report two cases of marked traumatic shock following fracture of the pelvis and massive contusions in which blood transfusions resulted in improvement but death from uremia occurred one week after the accident. They could not determine whether the renal injury was due to local circulatory disturbances during the state of shock, leading to irreparable injury of the renal tissue, or whether a constant resorption of substances from the bruised tissue took place after the shock, exerting a direct toxic influence on the renal epithelium or maintaining a spasm in the blood vessels. They find the last-named assumption supported by (1) the remarkable emptiness of the glomerulus vessels on microscopic examination, (2) the surprisingly slight histologic changes in the kidneys, (3) the increased blood pressure noted as early as the day after the accident and (4) the results of function tests, showing that the disturbance did not appear until three days after the shock, which is incompatible with the idea of injury to the renal parenchyma during the state of shock itself.

Norsk Magasin for Lægevidenskapen, Oslo

96: 793 904 (Aug) 1935

- Medical School in Salerno and Surgery in Saga Age I Reichborn Njernerud —p 793
- Low Basal Metabolism Casuistic Report. P Hanssen —p 818
- *Hemoglobin Content of Blood and Number and Volume of Red Blood Corpuscles in Healthy Men and Women L L Linneberg and H Schartum Hansen —p 832
- Resorption and Elimination of Iron Under Normal Conditions R Nicolaysen —p 842

Hemoglobin Content of Blood—Among fifty-one men, Linneberg and Schartum-Hansen found an average of 5.27 million red blood corpuscles per cubic millimeter and a hemoglobin content of 113 per cent, corresponding to 156 Gm of hemoglobin per hundred cubic centimeters of blood, or an oxygen binding of 20.9 per cent. Averaging their results with those of Jervell and Warburg gives 5.395 million red blood corpuscles per cubic millimeter and 115 per cent of hemoglobin, corresponding to 15.9 Gm. of hemoglobin per hundred cubic centimeters of blood, or an oxygen binding of 21.3 per cent. Among sixty women the average was 4.49 million red blood corpuscles and 102 per cent of hemoglobin, corresponding to 14.06 Gm of hemoglobin per hundred cubic centimeters of blood, and the hemoglobin content varied from 107.4 in the summer to 96.1 in the fall. Normal limits for men are set at between 99 and 135 per cent of hemoglobin and from 4.7 to 6.3 million red blood corpuscles, while for women values less than 90 per cent and more than 12.4 per cent of hemoglobin and less than 3.6 and more than 5 million red blood corpuscles are regarded as usually pathologic. The authors state that for both sexes the average hemoglobin content per erythrocyte is 30 or 31 micromicrograms, the content varying from 27 to 34 micromicrograms, and the average volume per erythrocyte is 85 or 86 cubic microns, the volume varying from 76 to 93 cubic microns. An anemia with more than 31 micromicrograms of hemoglobin per erythrocyte is hyperchromatic, one with less than 27 micromicrograms being hypochromatic. Color index and volume index are considered superfluous when such characteristic values as hemoglobin and volume per erythrocyte are available. The necessity is stressed of having a hemometer standardized by oxygen determination or other exact method so that the number of grams of hemoglobin per hundred cubic centimeters of blood that corresponds to 100 per cent on the hemometer is known.

